

WIND, WAVE/TIDAL, AND
IN-RIVER FLOW ENERGY:

A Review of the
Decision Framework
of
State Land Management Agencies

Prepared for
Western States Land Commissioners Association

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1. Executive Summary

This report summarizes the decision-making framework surrounding alternative energy resources, specifically wind, wave/tidal, and in-river flow. To the extent possible, it also reflects current management philosophies, written policies and procedures, administrative rulemaking, and legislative action used in making decisions for alternative energy projects. The report is intended to be a factual study that state land managers and policymakers can use in formulating programs, regulations, and statutes to encourage the development of and address emerging issues associated with alternative energy projects on state land. Also, the information contained in this report is dynamic – a snapshot in time – and is intended for general information purposes.

PROJECTS:

Of the 46 states that provided information about alternative energy projects, only 20 have received applications for projects or have authorized projects on state land. The following is a list of states and types of projects. For more detailed information on many of these projects, see the state-specific summaries in Chapter 7 of this report. Agency contacts have been provided for further dialogue.

Wind Onshore:

Wind energy development is primarily on private lands leased/owned by developers; state lands are not used as often because of the land ownership pattern or land management objectives. Also, some states are simply limited by the lack of wind resources to develop; therefore, they do not anticipate any projects on their land.

Texas, Colorado, New Mexico, Washington, and Wyoming have well-established programs. Wyoming is in its second generation of leases and modifying those leases coming up for renewal. Other states are in the process of reviewing applications, issuing leases, or have leases in the research and development phases; these are Alaska, Hawaii, Maryland, Minnesota, Montana, Ohio, Oklahoma, Oregon, and Utah. While California has numerous wind farms, support facilities are the primary authorized use on state land. Illinois has issued one lease, but has adopted a policy limiting further development.

For some states, such as *Kansas, Michigan, New York, Pennsylvania, and West Virginia*, the land management agency has a dual or multiple role as landowner, fish and wildlife manager, and air and water quality regulator. In these cases they may be involved with wind energy development, but primarily from the habitat/air/water management and protection aspect.

Nebraska is in a unique role in that the state is 100% public power. The conflict occurs when the power district receives bids in response to its solicitation, while the Trust's competitive, high bid process would naturally occur later.

Wind Offshore:

Offshore projects are still in their infancy. Only five states indicated an interest from the development community. *Texas* is the most aggressive with a program similar to its oil and gas lease sale program. *Rhode Island* has received two competing proposals; the application process has yet to be defined. *Massachusetts* (Cape Wind) has a project proposed offshore, but at the time of this report, no information is available as to the state's involvement. *Louisiana* has prepared regulations for application processing, but has yet to receive any proposals under those rules. In 2004, *Louisiana* was approached for a possible lease, but that did not come to fruition. *New Jersey's* Office of Clean energy solicited proposals earlier this year to develop offshore wind facilities; no information is available as to the status of that process.

As mentioned, some states' land management agencies have other roles such as air and water quality regulator and fish and wildlife habitat/population manager. In these cases they may be involved with offshore development strictly from a habitat management and fish and marine mammal protection and not issue a land authorization. Some state land agencies, like *New York* and *Connecticut*, are responsible for issuing 401 Water Quality Certifications.

Wave/tidal:

Five states have proposals currently being contemplated, reviewed or authorized. Note that other wave/tidal projects may be proposed, but are authorized by municipalities or other authorities.

Tidal Projects: *New York* has authorized a demonstration project for the tidally influenced East River. *Alaska* has seven FERC permitted tidal power projects, but no authorizations have been sought from the state yet.

Wave Energy Projects: *Washington* has one pilot project and eight additional proposals, *Oregon* has six projects pending and has issued two test-buoys authorizations, and *California* has one project pending. *Texas* has one experimental wave power project under easement on state submerged lands in the Gulf of Mexico off Galveston, TX.

Again, some state land agencies, like *Connecticut*, are responsible for issuing 401 Water Quality Certifications, but have no activities authorized on state land.

In-River Flow:

Only *Alaska* has issued an authorization for an in-river flow project, but it has temporarily stalled because of a conflict with FERC permitting. In addition FERC has permitted ten projects and is considering two more in Alaskan rivers. *Missouri* has been involved with reviewing and commenting on 14 proposals to FERC; none are on state land. *Connecticut* has been similarly involved with an in-river project not on state land.

Table ES-1. Summary of Decision-Making Framework by State

State	Energy Projects on State-Managed Land (includes proposed, pending applications, and authorized)				Energy-Specific Land Use Laws, Regulations and Policies				Process-Driver		Treatment of Applications		Energy-Specific Lease Form
	Wind (Up-land)	Wind (tide & sub-merged land)	Tide/Wave ¹	In-River Flow	Laws	Regs	RPS or other state-level policy	Agency-level policy	Proactive (Request for Proposals, Bid Process, etc)	Reactive (Receipt of application triggers process)	General Land Mgt Process	Energy-specific Process	
AK DNR	Y	n	Y ²	Y ²	n	n	n	Y ³	n	Y	Y	n	n
AK TLO	n	n	n	n	n	n	n	n	n ⁴	Y	Y	n	n
AL	n	n	n	n	n	n	n	n	n	Y	Y	n	n
AR	n	n	*	n	n	n	n	n	n	Y	Y	n	n
AZ	n	n	*	n	n	n	Y	n	n	Y	Y	n	n
CA	Y	n	Y	n	n	n	Y	n	n	Y	Y	n	n
CO	Y	n	*	n	Y	n	Y	n	n	Y	n	Y ⁵	n
CT	n	n	n ⁶	n ⁷	n	n	Y	n	n	Y	Y	n	n
DE	n	n	n	n	n	n	Y	n	n	Y	Y	n	n
FL	n	n	n	n	n	n	n	n	n	Y	Y	n	n
GA	n	n	n	n	n	n	n	n	n	Y	Y	n	n
HI	Y	n	n	n	Y	n	Y	n	n	Y	Y	n	n

¹ * = Not Applicable

² FERC permitted projects.

³ Alaska DNR is developing a policy at the time of this report.

⁴ Alaska TLO is developing an asset management strategy for accepting and soliciting proposals.

⁵ Colorado renewable leasing process was adapted from its solid mineral leasing process.

⁶ Connecticut DEP submitted comments to FERC on two competing tidal projects; not lands managed by DEP.

⁷ Connecticut DEP submitted comments to FERC on an in-river project; not lands managed by DEP.

State	Energy Projects on State-Managed Land (includes proposed, pending applications, and authorized)				Energy-Specific Land Use Laws, Regulations and Policies				Process-Driver		Treatment of Applications		Energy-Specific Lease Form
	Wind (Up-land)	Wind (tide & sub-merged land)	Tide/Wave ¹	In-River Flow	Laws	Regs	RPS or other state-level policy	Agency-level policy	Proactive (Request for Proposals, Bid Process, etc)	Reactive (Receipt of application triggers process)	General Land Mgt Process	Energy-specific Process	
IA	n	n	*	n	n	n	Y	n	n	Y	Y	n	n
ID	n	n	*	n	Y ⁸	n	n	n	n ⁹	Y	Y	n	n ⁹
IL	Y	n	n	n	n	n	Y	Y	n	Y	Y	n	n
IN	n	n	n	n	n	n	n	n	n	Y	Y	n	n
KS	n	n	*	n	n	n	n	Y	n	Y	Y	n	n
KY			*				n						
LA	n	Y	n	n	Y ¹⁰	Y	n	n	n	Y	Y	n	n
MA		Y ¹¹					Y						
MD	Y	n	n	n	n	n	Y	n ¹²	n	Y	Y	n	n
ME	n	n	n	n	n	n	Y	Y	n	Y	Y	n	n
MI	n	n	n	n	n	n	n	n ¹³	n	Y	Y	n ¹³	n
MN	Y	n	n	n	Y ¹⁴	n	Y	n	n	Y	Y	n	n
MO	n	n	*	n ¹⁵	n	n	Y	n	n	Y	Y	n	n
MS	n	n	n	n	n	n	n	n	n	Y	Y	n	n
MT	Y	n	*	n	n	n	Y	n	Y	n	N	Y	n
NC							n						
ND	n	n	*	n	n	n	n	n	n	Y	Y	n	n

⁸ This year, Idaho legislature passed HCR054, a concurrent resolution encouraging IDL to develop alternative energy facilities on state endowment land.

⁹ Idaho is developing an RFP process and specialized lease for wind projects at the time of this report.

¹⁰ Louisiana Act 481 passed in 2005 in response to potential leasing offshore submerged land

¹¹ MMS has a project offshore of Massachusetts – Cape Wind – under consideration.

¹² Maryland is drafting a policy based on public hearings held January 2008.

¹³ Michigan DNR is drafting a procedure for evaluating wind energy proposals on state land.

¹⁴ Minnesota legislature is considering a bill allowing DNR authority to issue long-term leases for wind energy (HF3032).

¹⁵ Missouri DNR has commented on 14 projects in the Mississippi River to FERC; none are on state managed lands.

State	Energy Projects on State-Managed Land (includes proposed, pending applications, and authorized)				Energy-Specific Land Use Laws, Regulations and Policies				Process-Driver		Treatment of Applications		Energy-Specific Lease Form
	Wind (Up-land)	Wind (tide & sub-merged land)	Tide/Wave ¹	In-River Flow	Laws	Regs	RPS or other state-level policy	Agency-level policy	Proactive (Request for Proposals, Bid Process, etc)	Reactive (Receipt of application triggers process)	General Land Mgt Process	Energy-specific Process	
NE	n	n	*	n	n	n	n	n	n	Y	Y	n	n
NH	n	n	*	n	n	n	Y	n	n	Y	Y	n	n
NJ		Y ¹⁶					Y		Y				
NM	Y	n	*	n	n	n	Y	n	n	Y	n	n	Y
NV	n	n	*	n	n	n	Y	n	n	Y	Y	n	n
NY	n	n	Y	n	n	n	Y	n	n	Y	Y	n	n
OH	Y	n	n	n	n	n	n	n	n	Y	Y	n	n
OK	Y	n	*	n	n	n	n	n	n	Y	Y	n	Y
OR	Y	n	Y	n	n	Y ¹⁷	Y	Y ¹⁸	n	Y	Y	n	n
PA DCNR	n	n	n	n	n ¹⁹	n	Y	Y	n	Y	Y	n	n
PA PGC	n	n	n	n	n	n	Y	Y	n	Y	Y	n	n
RI	n	Y	n	n	n	n	Y	n	n	Y	Y	n	n
SC	n	n	n	n	n	n	n	n	n	Y	Y	n	n
SD	n	n	*	n	Y	n	n	n	n	Y	Y	n	n
TN	n ²⁰	n	*	n	n	n	n	n	n	Y	Y	n	n
TX	Y	Y	Y ²¹	n	n	n	Y	n	Y (offshore)	Y	Y	Y (offshore)	Y

¹⁶ New Jersey Office of Clean Energy solicited proposals to develop offshore wind facilities; the bid closed on March 3, 2008.

¹⁷ Oregon DSL has regulations for wave energy and is promulgating regulations for wind energy.

¹⁸ Oregon’s agency renewable energy policies are established through its Asset Management Plan.

¹⁹ Pennsylvania DCNR is currently exploring whether to seek authority to lease state forest lands for commercial wind development.

²⁰ The Tennessee Valley Authority has issued authorization for the Buffalo Mountain wind farm; it is not on land managed by DEC.

²¹ Texas has an experimental project; Corps of Engineers’ permit is being sought for expanded test facility.

State	Energy Projects on State-Managed Land (includes proposed, pending applications, and authorized)				Energy-Specific Land Use Laws, Regulations and Policies				Process-Driver		Treatment of Applications		Energy-Specific Lease Form
	Wind (Up-land)	Wind (tide & sub-merged land)	Tide/Wave ¹	In-River Flow	Laws	Regs	RPS or other state-level policy	Agency-level policy	Proactive (Request for Proposals, Bid Process, etc)	Reactive (Receipt of application triggers process)	General Land Mgt Process	Energy-specific Process	
UT SITLA	Y	n	*	n	n	n	n	n	n	Y	Y	n	n ²²
UT DFFSL	n	n	*	n	n	n	n	n	n	Y	Y	n	n
VA	n	n	n	n	n	n	n	n	n	Y	Y	n	n
VT	n	n	*	n	n	n	Y	Y	n	Y	Y	n	n
WA	Y	n	Y	n	n	n	Y	n	n	Y	Y	n	Y (lease)
WI	n	n	n	n	n	n	Y	n	n	Y	Y	n	n
WV	n	n	*	n	n	n	n	n	n	Y	Y	n	n
WY	Y	n	*	n	n	n	n	n	n	Y	Y	n	Y

²² Utah SITLA expects to have a wind energy lease form by EOY 2008.

ALTERNATIVE ENERGY POLICIES AND LEGISLATION:Legislation:

Most states operate under their general land management statutory authority. Few states have enacted laws that deal directly with how the land agency manages alternative energy projects.

Hawaii's lawmakers have exempted renewable energy producers from public auction requirements. *Colorado* and *Louisiana* established laws allowing them to consider alternative energy projects where it did not previously exist. *South Dakota* legislation provides for a severance of wind energy as a property interest through an easement. *Idaho*'s legislature recently passed a concurrent resolution encouraging the state Land Board to explore opportunities to develop alternative energy facilities on state endowment land. *Minnesota*'s legislative body is considering a bill that would grant the DNR authority to enter into 30-year leases specifically for wind energy projects on state land. *Pennsylvania* is currently exploring whether to seek authority to lease state forest lands for commercial wind development. *New York* would require legislative action before a project could be constructed because DEC controlled lands cannot be used for commercial purposes (state submerged lands are authorized leases by NYS Office of General Services).

Administrative Regulations:

Oregon has adopted administrative rules governing the exploration for and development of wave energy and is in the process of developing rules for governing wind turbines and farms, solar energy installations, and biomass generating facilities. As a result of recent legislation, *Louisiana* adopted regulations detailing an RFP process for offshore wind projects.

Statewide and Agency-Specific Policies:

Legislative or Governor-level stimuli for developing projects include tax incentives, grants, loans, rebates, industry recruitment, bond programs, and production incentives.

Probably the most effective stimulus is the *Renewable Portfolio Standard (RPS)*, which is driving many of the utilities to seek alternative energy resources from state agencies as well as private landowners. Twenty-four states have adopted an RPS, which requires electricity providers to obtain a minimum percentage of their power from renewable energy sources by a certain date. (These renewable sources include wind, biomass, solar, etc.) Four more states, *Illinois*, *Missouri*, *Virginia*, and *Vermont*, have non-binding goals for adoption of renewable energy. Standards range from 4% to 25%, requiring from four to 20 years until it must be accomplished.

In 2007, the Governor of *Maine* signed an Executive Order establishing a Task Force on Wind Power Development to examine regulatory processes, review criteria and financing options currently applicable to wind power projects, identify potential barriers to development, and make

recommendations for changes to policies, regulations, and financial incentives necessary to facilitate wind projects in Maine.

At the agency level, several states have developed policies in answer to queries for renewable energy projects on their land or the need to address a specific issue or land type. *Pennsylvania's* policy establishes areas where wind energy cannot occur (especially critical use areas); other states simply outline what procedures must be accomplished for an application to be considered. *Illinois'* policy outlines coordination and makes a statement that use of state land is for secondary facilities only. *Maine* adopted a guidance document to provide a summary of factors considered during state agency review and assist in identifying potential issues related to siting. *Oregon* has established its administrative policy through the Asset Management Plan. *Vermont's* policy provides guidance on use of state lands for development of renewable energy projects; however, no utility-scale projects are allowed. *Kansas'* policy outlines where facilities should be placed and what wildlife inventories must be made prior to development.

Maryland is developing its policy based on a series of public hearings held in January and an overwhelming negative response to using state uplands for alternative energy projects. *Alaska* is currently developing its policy and *Michigan* is developing criteria to evaluate wind energy proposals on state land.

ADMINISTRATIVE PROCESSES:

What process that an agency uses to evaluate alternative energy proposals is a function of their role as it relates to the land and any title conditions. For instance, most trust land agencies are able to directly negotiate with an applicant based on the interests of the trust, with approval of a board or other managing entity. Agencies that manage sovereign lands that came as a result of statehood (including tide and submerged lands) or acquired over time (such as tax forfeitures, purchases, donations) generally follow a procedure that involves the public and requires a more complex environmental assessment/decision.

Moreover, processes are a function of whether the state is proactive in its approach, such as through a nomination and request-for-bid process, or if it is simply reacting to an application that has been submitted. *Louisiana* has developed a unique registration process that culminates in an RFP. *Texas* has developed its offshore wind program based on oil and gas lease sales. *Montana, New Mexico, and Wyoming* use a competitive or RFP process after an initial, unsolicited proposal. *Alaska's* Trust Land Office and *Idaho* are in the process of developing an RFP process. *New Jersey's* Office of Clean energy solicited proposals earlier this year to develop offshore wind facilities; if the proposals were to consist of lands managed by the Department of Environmental Protection, then an authorization would be required.

Colorado adapted its renewable leasing process from the solid mineral leasing program. All other states follow their general land management authorities and procedures for processing applications.

ENERGY-SPECIFIC AUTHORIZATIONS:

Idaho, New Mexico, Texas, and Washington have authorizations specifically designed for renewable energy. *Utah's* School and Trust Land Administration expects to have a wind energy lease form in place by the end of 2008.

USE FEES:

States with existing wind projects charge a variety of use fees based on price per acre, a percent of gross revenues, the number of turbines installed and capable of production, megawatt capacity, and fees per structure. Percent-of-gross-revenues rates range from 3.5% to 8.5% and are based on what life stage the lease is in. The following table shows a sample of the fees charged and at various years in the lease term.

Table ES-2. Sample State Agency Use Fees for Wind Energy

State	Pre-Construction	Construction/Development	Production Y1-5	Production Y6-10	Production Y11-15	Production Y16-20	Production Y21-25	Production Y26-+
CO	Minimum \$2,000-3,500 per installed MW or \$3/ac plus production payment of 3-4% gross revenues							
HI	Greater of \$150,000 or 2.5% of gross revenues							
MT	\$2/ac		One-time fee \$1,500/MW installed capacity, plus annual payment the greater of \$3% gross revenues or \$3,000/MW installed capacity					
NM	Per acre fee/yr	Base rent plus per generating unit installed on site	3.5% Gross Power Sales	4.5% GPS	5.5% GPS	6.5% GPS	7.5% GPS	8.5% GPS
OK	\$4-5/ac		4% gross revenue		4.25% GR or \$2500-3000 per installed MW			
TX (onshore)	\$10/ac/yr		3.5% gross power sales	At Y9, 4.5-4.75% GPS		5.5-6.5% GPS		
TX (offshore)	\$91,000/yr		3.5% gross power sales	At Y9, 4.5-4.75% GPS		5.5-6.5% GPS		
WA	\$1,000-\$5,000/yr	\$5,000 - \$10,000/yr	During Operations, \$5,000 + % GR; at re-powering, \$5,000 + % GR					
WY	Per acre fee/month	One-time fee per MW installed capacity	% of Gross Revenues or fixed fee for each MW of installed capacity	Increased % of GR or fixed fee	Increased % of GR or fixed fee	Increased % of GR or fixed fee		

CHALLENGES:

While many states may not have alternative energy projects currently proposed or authorized on state-owned lands, most land managers anticipate that interest in those lands will increase as conventional energy prices continue to rise and the search for renewable and sustainable sources grows. However, interest in state lands does not come without some barriers. These include, but are not limited to:

- fractured landownership patterns, which requires the state to occasionally take a secondary role in evaluating the projects;
- competing state land management priorities and objectives, especially for trust land management;
- federal involvement, both in terms of required NEPA processes and FERC permitting,
- public perceptions and involvement;
- lack of infrastructure or transmission grids to receive produced energy from these sources;
- lack of environmental baseline information, especially for offshore and in-river development projects;
- lack of studies for birds, bats, fish and wildlife to accurately develop mitigation/avoidance stipulations;
- understanding these emerging industries as well as the ever-changing designs, especially for wave/tidal and in-river flow projects; and
- developing a cadre of staff to understand the technology and to adequately evaluate and manage these projects.

1. Introduction

Wind and hydrokinetic power are emerging forms of renewable energy for utility-scale projects. The industry of alternative and sustainable energy generation is growing quickly as the price of conventional energy increases and global climate change is being addressed by state agencies. Pressures to use state land and resources have caused managers to search for examples from other state agencies for evaluating and authorizing these projects rather than spending precious time in developing their own methods.

1.1. Intent of this report

This report summarizes the decision-making framework surrounding alternative energy projects, specifically wind, wave/tidal, and in-river flow, and gives project-specific information where available. To the extent possible, it also reflects current management philosophies, written policies and procedures, administrative rulemaking, and legislative action used in making these decisions.

The information contained in this report is dynamic – a snapshot in time – and is intended for general information purposes. In fact, as the report was being prepared over a six-month period, projects changed in scope and some were tabled. Therefore, the information should be relied upon as a single tool in a whole toolbox of available information.

The report is for the use of member states of the Western States Land Commissioners Association (WSLCA) and the Eastern Lands and Resources Council (ELRC). The report is intended to be a factual study that state land managers and policymakers can use in formulating programs, regulations, and statutes to encourage the development of and address emerging issues associated with alternative energy projects on state land. It does not presume a certain outcome nor is it intended to critique any decisions that have been made by agency personnel on authorized activities. Moreover, the report is not exhaustive and only contains information that was readily available from staff, publications, and the internet.

The information contained in this report was generally obtained by polling each of the 50 states' land management agencies, especially members of WSLCA and ELRC. For a listing of state agency contacts supplying information for this report, see Appendix A. In addition, a limited search of the internet provided information. See footnotes throughout the report and appendices for websites of interest and further resource information. The various appendices also provide links to websites for further resources and information.

1.2. How the report is laid out

Sections 2 through 6 are general in nature and cover issues relative to all the states, such as policy drivers, benefits/impacts associated with developing renewable energy projects, and challenges to development from the states' perspective.

Section 7 is the meat of the report where the reader can understand each state's jurisdiction, policy drivers, and process drivers; obtain general project information by resource type; and

understand the general trends and challenges that a particular state may be facing. Section 7 was prepared with the generous assistance of the head of the agency and lead staff; without them, the report would not be possible.

Also, rather than incorporate references into a “list,” each reference has been footnoted to allow each state summary or page to be a stand-alone document.

1.3. What is *not* covered by this report

Other Alternative Energy Projects. There are a variety of alternative energy projects, some with proven methods, some not, that are in various stages of research, planning, and development. This report does not delve into those projects, such as solar power generation or geothermal, bio-fuel, and hydrogen energy generation. Where states have volunteered the information about these projects as part of an array of renewable energy sources they are considering, the information has been included.

Projects on Private or Federal Land. There are many wind farms on private land – from the small windmills used to water cattle to larger, utility-scale turbine wind farms. This report only covers private or federal land to the extent that projects may intersect with state land. In that respect, the research was limited to information that was generally available to the public (such as on the internet) or offered by state agencies that were contacted.

International Decision-Making Framework. Alternative energy projects are more advanced in some countries (especially European countries such as England and Denmark). The scope of work did not include a comprehensive survey of practices to authorize this activity in locations outside of the United States. However, some information, such as design and assessment information (see links in Appendices E and J) have been reviewed and included in this report as appropriate.

Scientific Data and Publications. The body of literature is increasing as more turbines come online, either in demonstration projects or in early research/development stages, making science more obtainable in the early stages of decision-making for more informed decisions. As it relates to impacts and challenges for development (Section 4.2), scientific studies and related publications have been included. (See Appendix F for additional resources.) However, the scope of work did not include a thorough assessment of the biological literature on the subject nor am I qualified to make a judgment as to the validity of the information contained in the biological reports.

2. Alternative Energy Sources – Definitions and Market Information

Renewable energy resources, including biomass, hydropower, geothermal, wind and solar energy, are naturally replenished in a relatively short period of time. In 2005, about 6% of all energy consumed and about 9% of total electricity produced was from renewable energy sources.”²³

This report is limited to two forms of renewable energy: wind and hydrokinetic. Hydrokinetic is further restricted to ocean energy from wave and tidal action and fresh water in-river flow.

2.1. Wind

Harnessing the wind for power is not a new concept. However, it has taken on a new level of interest because of the rise in energy prices from fossil fuels and market drivers such as legislative tax incentives and state portfolio standards for electrical providers and developers. Even though wind is an intermittent resource, it is still a viable source of energy at the utility level and in a residential setting. Vermont Agency of Natural Resources, in their Wind Power fact sheet, states that “every kilowatt-hour generated by a wind plant offsets generation from a fossil fuel burning plant . . . [which] means a corresponding reduction in air emissions including CO₂, sulfur oxides and nitrogen oxides.”²⁴

The most economical development for utility-scale energy generation is in wind farms (also called wind power plants), ranging in size from a few to hundreds of megawatts in capacity. Further, the farms are modular in that there are individual turbines that can be modified to be larger or smaller as needed. According to AWEA, a 50-MW wind farm can be constructed in about two years, with most of that time in research studies and permitting efforts, and only six months in actual construction.²⁵

The National Renewable Energy Laboratory’s (NREL) GIS team has analyzed wind (along with solar, biomass, geothermal, and other energy resources) and has prepared maps to show wind resource potential based on wind power density.²⁶ Map 2-1 shows the classes of wind at the 50-meter level. Wind is classified based on typical wind speeds: Class 1 (the lowest) to Class 7 (the highest). Classes 3 or greater are suitable for most utility-scale wind turbine applications.

As you can see from the map, the best wind resources are located offshore along the coastal states. The Midwestern states have the highest potential of inland wind resources. However, the best classes of winds can sometimes be the most extreme or volatile. Based on new turbine design, energy is generated between 10 mph and 55 mph, with speeds at 25 mph generating energy at a 1.5 MW turbines’ rated capacity. At speeds greater than 55 mph,

²³ DOE website http://www.eia.doe.gov/basics/renewalt_basics.html

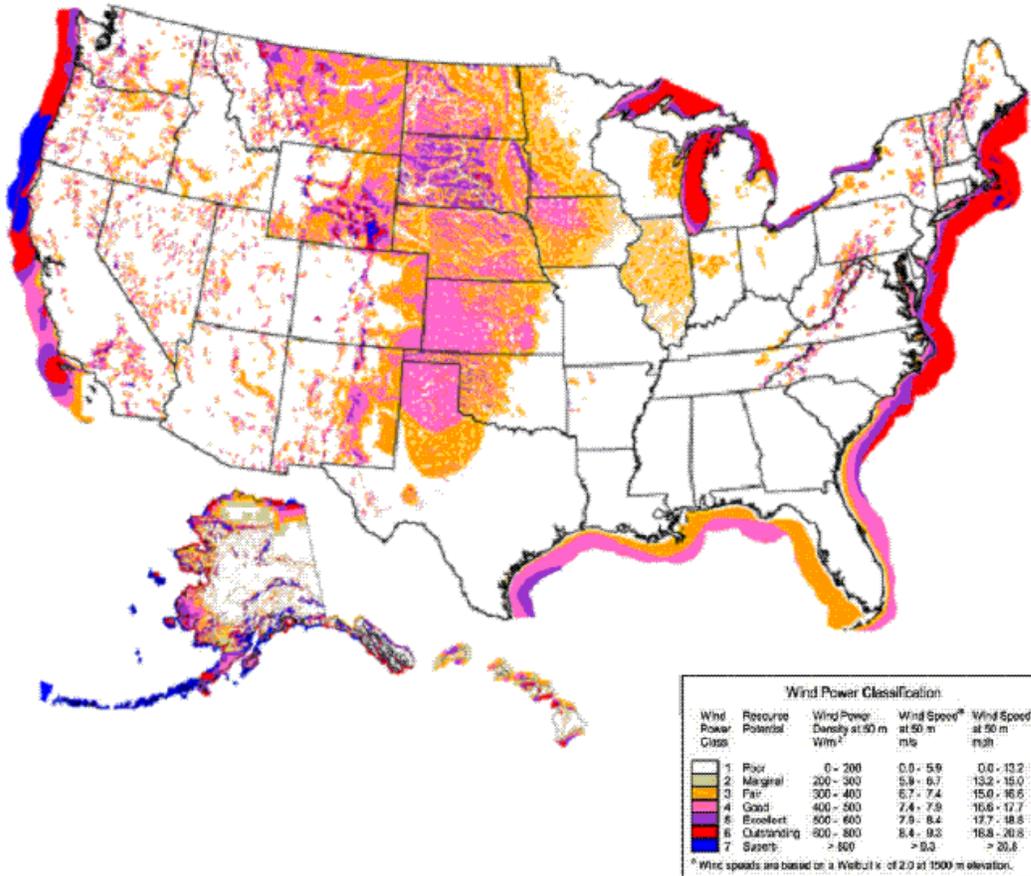
²⁴ VADNR Wind Power: Frequently Asked Questions found at <http://vermontwindpolicy.org/factsheets/FAQ1.pdf>

²⁵ AWEA Wind Energy Basics found at http://www.awea.org/faq/wwt_basics.html#What%20is%20wind%20energy

²⁶ For the maps and further information on the program, see NREL’s *Dynamic Maps, GIS Data, & Analysis Tools* website <http://www.nrel.gov/gis/wind.html>.

turbines shut down to protect the equipment.²⁷ Since turbines often run at less than full capacity, this translates into a capacity generally of 25% to 40%, even though turbines may operate 65% to 90% of the time. Higher capacity may be reached during windy periods or in certain seasons of the year.²⁸

Map 2-1 United States 50-Meter Wind Resource Map



Source: Dept of Energy Windpowering America website
http://www.eere.energy.gov/windandhydro/windpoweringamerica/wind_maps.asp²⁹

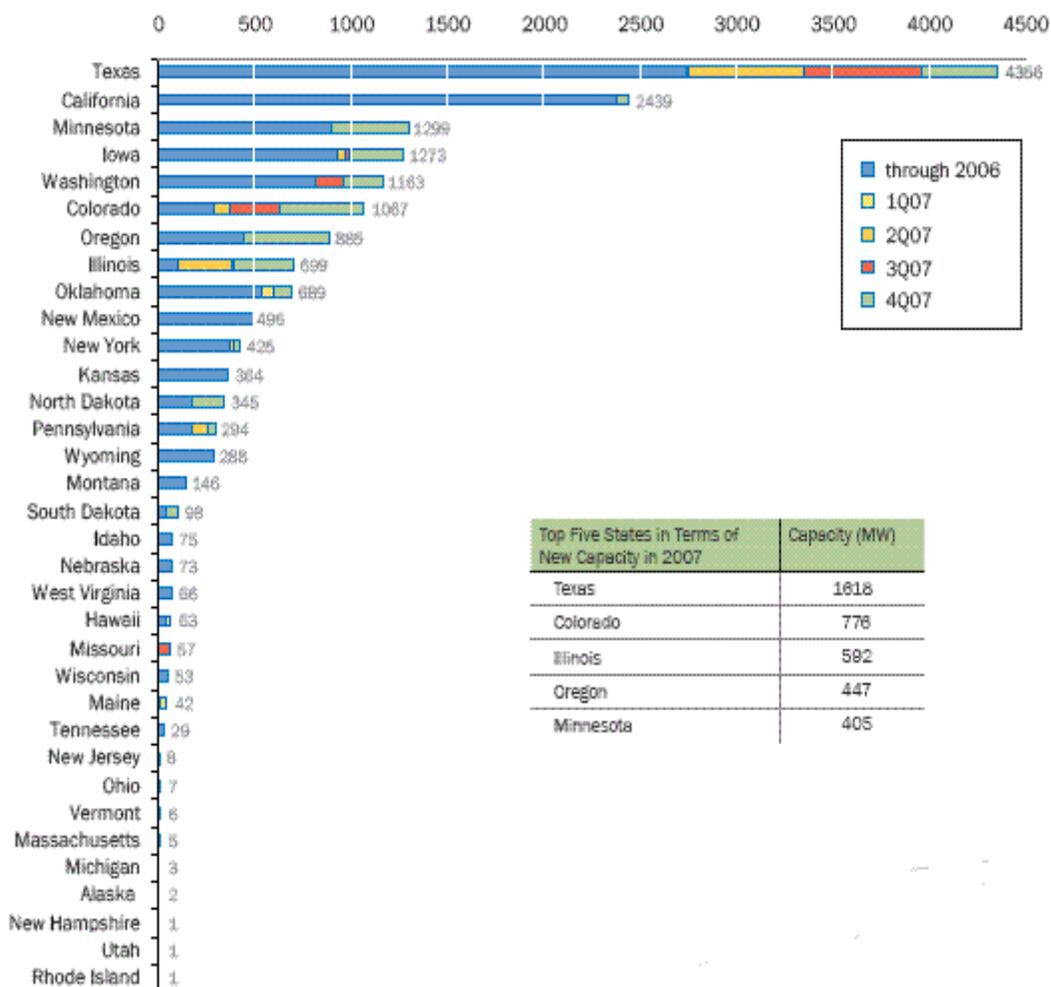
There is increasing interest in project development in the last five years on private land as well as state and federally managed lands. Table 2-1 shows the changes just in the last year for *installed* capacity.

²⁷ Tennessee Valley Authority *Wind Turbine Energy* website http://www.tva.gov/greenpowerswitch/wind_faq.htm

²⁸ AWEA *Wind Energy Basics* (see footnote 2).

²⁹ State-specific wind resource maps can be downloaded at the Department of Energy's *Wind Powering America* website http://www.eere.energy.gov/windandhydro/windpoweringamerica/where_is_wind.asp.

Table 2-1. Installed Wind Capacity by State (MW)

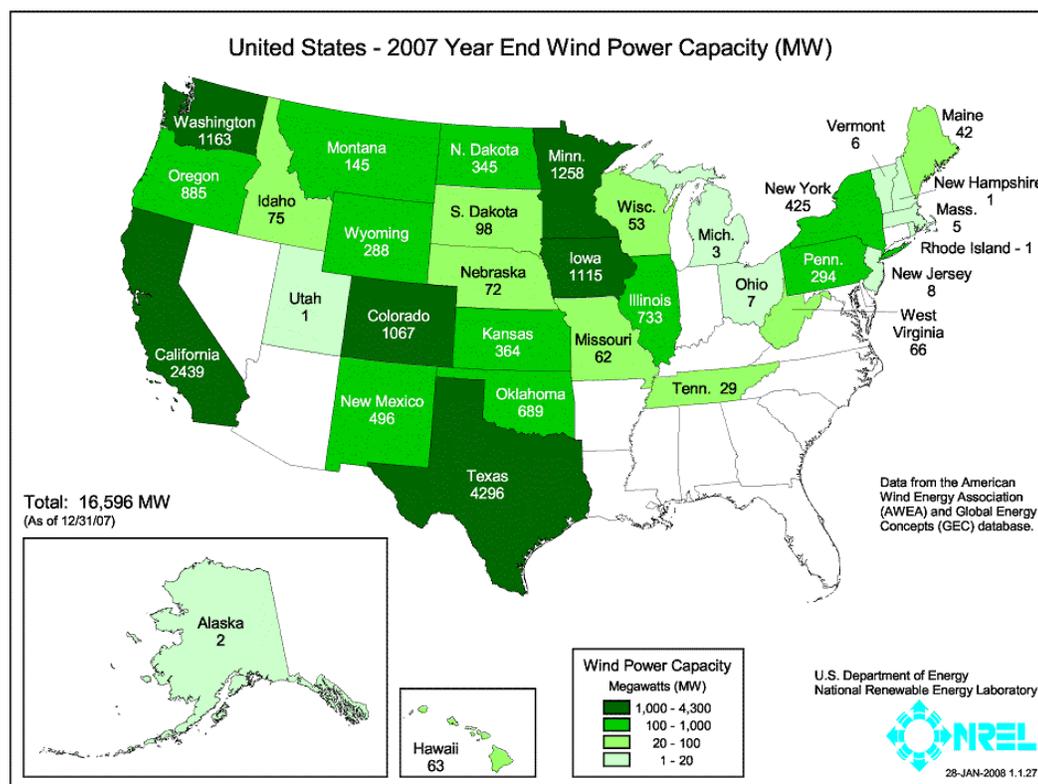


Source: AWEA Annual Market Report 2007 found at <http://www.awea.org/projects> ³⁰

Map 2-2 reflects total projects installed by state. These reported figures do not reflect the number under construction. When calculating lease terms, most states reported an economic life of around 35 years for installed wind farms without repowering.³¹

³⁰ The AWEA site is interactive; all 50 states are listed by installed and under construction. Tables and maps can be downloaded as well. <http://www.awea.org/projects/Default.aspx>

³¹ According to an article, *Repowering Can Wait*, written by David Wagman, Managing Editor of **Power Engineering International** magazine, wind resources could be used more efficiently if older wind turbines were replaced with newer ones, spaced farther apart, and taller. However, few incentives exist to “repower” since existing contracts are active, a major capital investment is required, and existing wind farms are “cash cows” to companies once installed. Further, repowering is almost as complex as a new site and the existing infrastructure would likely need to be replaced, including widening access roads to accommodate the larger machines. The boost in capacity may be moot if an equal amount of transmission capacity is unavailable. For the full article, see PEI’s website at http://pepei.pennnet.com/display_article/317864/6/ARTCL/none/none/1/Repowering-Can-Wait

Map 2-2. Installed Wind Energy MW by State as of December 2007

Source: Laurie Jodziewicz, Manager of Siting Policy, AWEA, presentation to WSLCA-ELRC Joint Conference, April 9, 2008³²

2.2. Hydrokinetic

FERC simply defines hydrokinetic power projects as those that “generate electricity from waves or directly from the flow of water in ocean currents, tides, or inland waterways.”³³ In addition, FERC estimates that “the new hydrokinetic technologies, if fully developed, could double the amount of hydropower production in the United States, bringing it from just under 10% to close to 20% of the national supply.”³⁴

Table 2-2 lists the categories of projects under review or issued by FERC and the capacity in megawatts. Table 2-3 is a list of example technologies;³⁵ some are also described in the following sections.

³² See also AWEA U.S. Wind Energy Projects <http://www.awea.org/projects/Default.aspx> for interactive map.

³³ FERC *Hydropower-- Industry Activities* website <http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp>

³⁴ FERC *The Proposed Licensing Process for Hydrokinetic Pilot Projects: A Framework for Discussion* found at <http://www.ferc.gov/eventcalendar/Files/20070904090801-white-paper.pdf>.

³⁵ DOE's website http://hydropower.inel.gov/hydrokinetic_wave/index.shtml provides links to the Workshop, which include detailed summaries and full versions of the presentations made as well as discussions that followed.

Table 2-2. FERC Hydrokinetic Proposed Capacity as of March 28, 2008

Source	Proposed Capacity (MW)	
	Issued	Pending
Wave	350-515	1,260-2,110
Ocean Current	0	40-80
Tidal	1,020-3,340	310-415
Inland	2,955	590-605
Total	4,325-6,810	2,200-3,210

Source: Ann F. Miles, Director, Division of Hydropower Licensing, FERC, presentation to WSLCA-ELRC Joint Conference April 9, 2008 (See Appendix D)

Table 2-3. Generalized List of Hydrokinetic and Ocean Wave Energy Technologies

General type	Example
Horizontal axis (reaction) turbine	Verdant horizontal axis turbine
Cross flow (helical) turbine	Gorlov turbine
Open center turbine	OpenHydro open center turbine
Ducted turbine	Rotech tidal turbine VA Tech Hydromatrix
Point absorber	Aqua Energy AquaBuoy Ocean Power Technology PowerBuOYy
Attenuator	Ocean Power Delivery Pelamis
Terminator	Energetech oscillating water column
Overtopping wave	Wave Dragon

Source: Fisheries • vol 32 no 4 • april 2007 • www.fisheries.org
http://hydropower.inel.gov/hydrokinetic_wave/pdfs/cada_fisheries_reprint.pdf

2.2.1. Wave/tidal

Beyond the conventional hydropower of dams and other impoundments, ocean currents, waves and tidal changes can be harnessed to generate electricity; however, these technologies are still in their infancy and are experiencing “growing pains” as companies attempt redesigns of land-based turbines or new designs.

“Ocean energy” is interchangeable with terms like “tidal” or “wave”. For purposes of this report, the words “wave/tidal” are used and the singular words “tidal” or “wave” are used, as appropriate, in project descriptions.

2.2.1.1. Wave Energy

Ocean waves are generated by the influence of the wind on the ocean surface. As waves reach shallower water near coasts, they lose energy and eventually break on the shore. This means that the greatest energy is available in deeper, well-exposed waters offshore; the energy stored in a wave is proportional to the wave height. The Electric

Power Research Institute (EPRI) predicts that energy produced by offshore waves is in the range of 250-260 terrawatt hours per year, if 15% is utilized.³⁶ BWEA lists several types of wave devices that convert waves to produced energy:

- Buoys (also called Point Absorbers): responds to the movement side-to-side or up-and-down;
- Terminators: a long line of floating structures move against each other when waves strike them;
- Overtopping: a floating pool forces the waves over a ramp into the pool and back out again through a turbine;
- Surface following: the motion of floating structures that are hinged together; and
- Oscillating water columns: a column of water is held in a tube; one end is open to the sea, the other to the air. Waves force the water column up and down and the air is forced through an air turbine.³⁷

NOAA National Data Buoy Center (NDBC) is a source of information for wave energy information. The NDBC designs, develops, operates, and maintains 90 buoys and 60 Coastal Marine Automated Network (C-MAN) stations that provide hourly observations. All buoy stations (and some C-MAN stations) measure sea surface temperature and wave height and occurrence, with selected stations providing conductivity and water current information.³⁸ In addition, the Oregon State University's *O.H. Hinsdale Wave Research Laboratory* conducts research in coastal engineering and nearshore science in its technically advanced laboratories.³⁹

2.2.1.2. Tidal Energy

The tides are very predictable – hundreds of years in advance. The amount of power generated depends on the current speed and the rotor diameter; tidal energy can be generated from either the rise and flow in the ocean or the tidal currents in rivers.⁴⁰

There are three main forms of capturing tidal energy:

- Cross-flow turbines: as water flows past, the turbine turns;
- Axial turbines: designed like a wind turbine; as water flows past, the turbine turns; and
- Reciprocating hydrofoils: by controlling the pitch of the foils, the water flow forces them to move up and down repeatedly.⁴¹

³⁶ Roger Bedard, Ocean Energy Leader, EPRI, *Overview of U.S. Ocean Wave and Current Energy: Resource, Technology, Environmental and Business Issues and Barriers*, September 11, 2007, found at

http://oceanenergy.epri.com/attachments/ocean/reports/EWTEC_Bedard_Sep_11.pdf

³⁷ BWEA *Why Marine* presentation found at <http://www.bwea.com/pdf/marine/FINAL%20WHY%20MARINE.pdf>

³⁸ NDBC *Virtual Tour* found at <http://www.ndbc.noaa.gov/tour/virtr1.shtml>

³⁹ For more information on the Lab and the OSU programs and research on wave energy, see http://wave.oregonstate.edu/About_Us/.

⁴⁰ EPRI *Ocean Energy* website <http://oceanenergy.epri.com/>.

⁴¹ BWEA.

2.2.2. In-River Flow

In-River Flow describes a type of hydrokinetic energy from the natural flow of fresh water, without the use of dams or diversion. DOE estimates that a wealth of potential exists for micro, low-head, kinetic and low-power hydropower development.⁴²

In October 2005, the DOE hosted a workshop to identify the hydrokinetic energy and wave technology devices, their stages of development, and the projected cost to bring each to market; where these technologies can best operate; the potential environmental issues associated with these technologies and possible mitigation measures; and develop a list of research needs and/or practical solutions to address unresolved environmental issues.⁴³

OSU's website provides an example of data needs and collection design to determine power capacity, flow rates, and critical month identification.⁴⁴

⁴² DOE website http://hydropower.inel.gov/hydrokinetic_wave/index.shtml.

⁴³ Proceedings of the workshop can be viewed at http://hydropower.inel.gov/hydrokinetic_wave/pdfs/hydro_workshop_proceedings_13feb06.pdf.

⁴⁴ See the study example for Chetco River at <http://water.oregonstate.edu/streamflow/examples/chetco/index.htm>.

3. Renewable Energy Policies

3.1. State Requirements to Develop Alternative Energy Sources

Legislative stimuli for developing projects include tax incentives, grants, loans, rebates, industry recruitment, bond programs, and production incentives. Probably the most effective stimulus is the *Renewable Portfolio Standards* (RPS), which is driving many of the utilities to seek alternative energy resources from state agencies as well as private landowners. State and agency-level renewable energy policies have advanced the pursuit of sustainable energy projects within their areas of responsibility. These policies become a driver for utilities and companies to invest in emerging technology that may not otherwise exist. Further, states have bound themselves together in regional cooperatives that not only provide strategic alliances, such as the Northeast regional climate change and energy efficiency program – the Regional Greenhouse Gas Initiative. Other programs allow “credits” to be used from one company to another or from state-to-state to meet RPS requirements.

Twenty-four states have adopted an RPS, which requires electricity providers to obtain a minimum percentage of their power from renewable energy resources by a certain date. (These renewable sources include wind, biomass, solar, etc.) Four other states, *Illinois*, *Missouri*, *Virginia*, and *Vermont*, have nonbinding goals for adoption of renewable energy instead of an RPS.⁴⁵ See Table 3-1 for a summary of current RPS by state. In addition, the *Database of State Incentives for Renewables & Energy’s* (DSIRE) website contains more detailed information on other state, local, utility, and federal incentives and is easily searchable.⁴⁶

Table 3-1. Summary of State Renewable Portfolio Standards

State	Amount ⁴⁷	Year	Organization Administering RPS
Arizona	15%	2025	Arizona Corporation Commission
California	20%	2010	California Energy Commission
Colorado	20%	2020	Colorado Public Utilities Commission
Connecticut	23%	2020	Dept of Public Utility Control
District of Columbia	11%	2022	DC Public Service Commission
Delaware	20%	2019	Delaware Energy Office
Hawaii	20%	2020	Hawaii Strategic Industries Division
Iowa	105 MW		Iowa Utilities Board
Illinois	25%	2025	Illinois Dept of Commerce
Massachusetts	4%	2009	Massachusetts Division of Energy Resources
Maryland	9.50%	2022	Maryland Public Service Commission
Maine	10%	2017	Maine Public Utilities Commission
Minnesota	25%	2025	Minnesota Dept of Commerce
Missouri	11%	2020	Missouri Public Service Commission

⁴⁵ USDOE EERE State Partnerships and Activities website

http://www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm

⁴⁶ See <http://www.dsireusa.org>.

⁴⁷ Percentages refer to a portion of electricity sales and MW to absolute capacity requirements.

State	Amount ⁴⁷	Year	Organization Administering RPS
Montana	15%	2015	Montana Public Service Commission
New Hampshire	16%	2025	New Hampshire Office of Energy and Planning
New Jersey	22.50%	2021	New Jersey Board of Public Utilities
New Mexico	20%	2020	New Mexico Public Regulation Commission
Nevada	20%	2015	Public Utilities Commission of Nevada
New York	24%	2013	New York Public Service Commission
North Carolina	12.50%	2021	North Carolina Utilities Commission
Oregon	25%	2025	Oregon Energy Office
Pennsylvania	18%	2020	Pennsylvania Public Utility Commission
Rhode Island	15%	2020	Rhode Island Public Utilities Commission
Texas	5,880 MW	2015	Public Utility Commission of Texas
Vermont	10%	2013	Vermont Dept of Public Service
Virginia	12%	2022	Virginia Dept of Mines, Minerals, and Energy
Washington	15%	2020	Washington Secretary of State
Wisconsin	10%	2015	Public Service Commission of Wisconsin

Source: US Dept of Energy http://www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm

In 2007, the Governor of *Maine* signed an Executive Order establishing a Task Force on Wind Power Development to examine regulatory processes, review criteria and financing options currently applicable to wind power projects, identify potential barriers to development, and make recommendations for changes to policies, regulations, and financial incentives necessary to facilitate wind projects in *Maine*.

3.2. State Land Management Legislation

Most states operate under their general land management statutory authority. Few states have enacted laws that deal directly with how the land agency manages alternative energy projects.

Hawaii's lawmakers have exempted renewable energy producers from public auction requirements. *Colorado* and *Louisiana* established laws allowing them to consider alternative energy projects where it did not previously exist. *South Dakota* legislation provides for a severance of wind energy as a property interest through an easement. *Idaho's* legislature recently passed a concurrent resolution encouraging the state Land Board to explore opportunities to develop alternative energy facilities on state endowment land. *Minnesota's* legislative body is considering a bill that would grant the DNR authority to enter into 30-year leases specifically for wind energy projects on state land. *Pennsylvania* is currently exploring whether to seek authority to lease state forest lands for commercial wind development. *New York* would require legislative action before a project could be constructed because DEC controlled lands cannot be used for commercial purposes (state submerged lands are authorized leases by NYS Office of General Services).

3.3. Agency-Level Regulations, Policies and Guidelines

As agencies endeavor to address these emerging industries, they find that land use planning efforts, policies, regulations, or statutes do not adequately provide guidance in using state lands for these purposes.

Oregon has adopted administrative rules governing the exploration for and development of wave energy and is in the process of developing rules for governing wind turbines and farms, solar energy installations, and biomass generating facilities. As a result of recent legislation, *Louisiana* adopted regulations detailing an RFP process for offshore wind projects.

Several states have developed policies in answer to queries for renewable energy projects on their land or the need to address a specific issue or land type. For instance, *Pennsylvania's* policy establishes areas where wind energy *cannot* occur (especially critical use areas); other states simply outline what procedures must be accomplished for an application to be considered. *Illinois'* policy outlines coordination and makes a statement that use of state land is for secondary facilities only. *Maine* adopted a guidance document to provide a summary of factors considered during state agency review and assist in identifying potential issues related to siting. *Oregon* has established its administrative policy through the Asset Management Plan. *Vermont's* policy provides guidance on use of state lands for development of renewable energy projects; however, no utility-scale projects are allowed. *Kansas'* policy outlines where facilities should be placed and what wildlife inventories must be made prior to development.

Maryland is developing its policy based on a series of public hearings held in January and an overwhelming negative response to using state uplands for alternative energy projects; the policy will likely require substantial environmental, economic and social impact analysis before entering into any lease in the future. *Alaska* is currently developing its policy and *Michigan* is developing criteria to evaluate wind energy proposals on state land.

For particular agency-level regulations, policies, and guidelines, see the state-specific summaries in Section 7 and copies of policies in Appendix B.

4. Benefits and Impacts

4.1. Benefits

4.1.1. Air Pollution Reduction

Perhaps the best advantage of alternative energy is its environmental benefits. As previously mentioned, each kWh produced by an alternative energy source offsets fossil fuels on a 1:1 basis, with the added benefit of reducing air emissions, including CO₂, sulfur oxides and nitrogen oxides. According to developer Cielo Wind Power, a one-megawatt wind turbine annually displaces 1,600 tons of carbon dioxide (equivalent to the CO₂ absorbed by 900,000 trees), nine tons of sulfur dioxide and four tons of nitrous oxide emissions that would result from burning fuels.⁴⁸

4.1.2. Energy Source in Outlying Areas

Alternative energy allows a reliable energy source in some remote areas, especially along the coast of *Alaska* and in more unpopulated areas of other western states. Installations can be smaller scale than that of highly populated areas and, in some cases, federal funding is available to offset start-up costs. Also, the need to connect to a larger grid is moot, since it would be more localized.

4.1.3. Utility Generation Forecasting

Because of wind assessment and forecasting technologies, wind energy can be planned into utility generating mixes.⁴⁹ Tides can be forecasted to 100 years; ocean currents can be predicted by watching patterns well beyond the project site. Thus, these energies, once generators are installed, can be easily folded into utility generating supply forecasting and planning.

4.1.4. Economy

Property owners benefit from potential income through land sales or leases to wind developers. Alternative energy generation also allows for secondary products and services, including equipment manufacture, distribution, installation, operation and maintenance.

4.2. Impacts

4.2.1. Impacts on Fish and Wildlife

Most concerns for wildlife center on bird mortality from collisions with wind turbines and transmission lines. Studies in Europe have also documented bird avoidance of wind power facilities. (See Appendix F for links to studies) Also of concern is the possibility of habitat abandonment or habitat fragmentation. Some states have siting guidelines for projects relative to habitat and wildlife issues, such as *Maine* and *Kansas*. (See Appendix B for state guidelines and policies)

⁴⁸ Cielo Wind Power's website at <http://www.cielowind.com/environmentalfacts.htm>.

⁴⁹ Iowa DNR *Iowa Renewable Energy Resource Guide* <http://www.iowadnr.gov/energy/renewable/files/renewableguide.pdf>

The Kansas Department of Wildlife Protection requires that:

- 1) facilities should be sited on previously altered landscapes and away from extensive areas of intact native prairie, important wildlife migration corridors, and migration staging areas; and
- 2) an inventory of plant and animal communities be made before wind development sites are selected, during construction, and after development is completed; and mitigation measures are appropriate only if significant ecological harm from wind power facilities cannot be adequately addressed through proper siting.⁵⁰

4.2.1.1. Avian

Avian strikes and mortality are the concerns of most fish and wildlife agencies. AWS Truewind, LLC, contracted Curry & Kerlinger, LLC, to assess the feasibility of constructing and operating a small demonstration wind farm as it relates to avian risk. The following is an excerpt of the report, which explains the impact of wind energy projects to bird populations and synthesizes some other studies:

Impacts to birds at wind-energy sites are: 1) disturbance and displacement as a result of the construction and operation of wind turbines and related infrastructure, and 2) fatalities resulting from collisions with turbines, meteorology towers, and other infrastructure. Some types of birds are disturbed and displaced more by wind turbine construction and operation than others. Disturbance and displacement effects have been documented in grassland and prairie birds and in some (not all) waterfowl. Some European studies have demonstrated displacement of shorebirds. Forest birds, on the other hand, do not appear to be disturbed or displaced in a significant way by wind turbine operation. Resident raptors may be displaced by construction activities during nesting season, but they appear to habituate to the turbines after the construction phase. In Spain, migrating raptors have been shown to avoid operating wind turbines more than resident raptors.⁵¹

Post-construction fatality studies, particularly those that have taken into account searcher efficiency in finding carcasses, as well as carcass removal by scavengers, have demonstrated that fatalities are relatively infrequent events at wind farms. In a recent review of the literature on U.S. wind farms, mortality estimates were similar among projects, averaging 2.51 birds per turbine per year and 3.19 birds per MW per year. Rates were higher in the eastern U.S. than in the west, because of the denser nocturnal migration of songbirds in eastern North America. No federally listed endangered or threatened species have been recorded, and only occasional raptor, waterfowl, or shorebird fatalities have been documented. In general, the documented level of fatalities has not been large in

⁵⁰ For the full text and all six position statements, see the KDWP website *Wind Power and Wildlife Issues in Kansas* found at http://www.kdwp.state.ks.us/news/kdwp_info/about_kdwp/department_position_on_issues/wind_power_and_wildlife_issues_in_kansas or the pdf version in Appendix B.

⁵¹ John Guarnaccia and Paul Kerlinger, Curry & Kerlinger, L.L.C. Feasibility Study of Potential Avian Risk from Wind Energy Development – Western Ohio Lakeshore Region, October 2007. (See Appendix F for a copy of the report.)

comparison with the source populations of these species, nor have the fatalities been suggestive of biologically significant impacts to these species.⁵²

4.2.1.2. Fish and Aquatic Mammals

In 2005, DOE held a workshop to “(1) identify the varieties of hydrokinetic energy and wave energy conversion devices and their stages of development, (2) identify where these technologies can best operate, (3) identify the potential environmental issues associated with these technologies and possible mitigation measures, and (4) develop a list of research needs and/or practical solutions to address unresolved environmental issues.”⁵³ Table 4-1 is an overview of the environmental issues identified during the workshop.

Table 4-1. Description of the aquatic environmental issues

Environmental issue	Brief description of the issue
Alteration of river/ocean bottom habitats	Bottom habitats will be altered by securing the device to the bottom and running power cables to the shoreline. Moving parts (rotors) and mooring systems could affect bottom habitat during operation. Device may create structural habitat in open waters. Structures may obstruct movements/migrations of aquatic animals.
Suspension of sediments and contaminants	Deployment and operation may disrupt sediments and buried contaminants and increase turbidity. Erosion and scour may occur around anchors, cables, and other structures.
Alteration of hydraulics and hydrologic regimes	Movement of the devices will cause localized shear stresses and turbulence that may be damaging to aquatic organisms. On larger scales, extraction of energy from the currents may reduce the ability of streams to transport sediment and debris, cause deposition of suspended sediments and thereby alter bottom habitats.
Strike	Fish and other aquatic organisms, diving birds, and mammals may be struck by moving parts of the devices (e.g., rotors). Large mobile animals may become entangled in submerged cables.
Impingement on screens	Screens used to protect the machine or to reduce strike could themselves injure aquatic animals.
Effects of electromagnetic fields	Electromagnetic fields associated with all of these devices may attract, deter, or injure aquatic animals.
Toxicity of paints and other chemicals	Paints, cleaners, hydraulic fluids and chemicals used to control biofouling may be toxic to aquatic plants and animals.
Noise	Noise during construction and operations may attract, deter, or injure aquatic animals.
Effects of multiple units	Effects on hydrologic regimes, sediment dynamics, and strike determined for single machines may be very different than a full deployment of dozens or hundreds of machines.

Source: G.Cada, et al. Potential Impacts of Hydrokinetic and Wave Energy Conversion Technologies on Aquatic Environments. Fisheries, 32:4, April 2007.⁵⁴

4.2.2. Impacts on People

Environmental concerns are one of the drivers for public opposition to wind developments, possibly from a belief that the project will harm a certain species or degrade a viewshed, among other reasons.⁵⁵ Land managers can capture and address or educate the public on some issues through pre-application informational meetings or by soliciting public input throughout the decision-making process.

⁵² Ibid.

⁵³ G.Cada, et al. Potential Impacts of Hydrokinetic and Wave Energy Conversion Technologies on Aquatic Environments. Fisheries, 32:4, April 2007. The full text of the article can be found in Appendix F.

⁵⁴ Ibid.

⁵⁵ Emily Berry, et al., *Overcoming Obstacles in Wind Power Development in Maine*, December 2005, <http://www.umaine.edu/nrc/Curriculum/2005%20Wind%20Paper.pdf>

A September 2006 *New Jersey Shore Opinion Study*⁵⁶ about offshore wind turbines found that:

- more residents and visitors were in favor of an offshore wind project than opposed by an almost 2 to 1 margin;
- distance from shore and familiarity with the technology were found to be key variables in respondents' viewpoints; and
- among people who visit the New Jersey Shore, the vast majority (72%) indicated the location of wind turbines offshore would not have an impact on future visits.

4.2.2.1. *Impacts on Urban Communities*

- Sound. While older turbines may have a hum or whine caused by moving parts, newer designs have addressed noise by 1) reducing turbine blade inefficiencies, insulating turbine housings, and making the towers more aerodynamic.⁵⁷ Any noise produced by the rotor blades will likely be masked by the noise produced by the wind itself in the surrounding environment. See also Section 5.4.
- Shadow Flicker. Some states have received comments that wind turbines caused impacts on private residences from shadow flicker – that is, when the sun shines behind an operating turbine it causes a change in light intensity. The National Research Council, in its 2007 *Environmental Impacts of Wind-Energy* project report, states that modeling software is available that allows for shadow flicker to be assessed and minimized in the design and layout of structures near developed areas.

4.2.2.2. *Impacts on Recreational Areas and Conflicts with Use*

In addition to conflicts in land management objectives or land ownership restrictions for recreational and conservation lands, conflicts with existing uses, such as fishing, boating, shipping, clamming, crabbing, hiking, camping and picnicking, have to be addressed. Public access and ice throw are two areas of concern mentioned by several state agencies:

- Ice Throw. Vermont ANR's fact sheet⁵⁸ states that ice chunks of up to 2.5 pounds have been thrown up to 820 feet from a wind turbine. It further states that ice throw can be minimized by turbine blade materials, shutting down the turbines during icy conditions, and posting warning signs in areas of potential ice throw (for instance, wind farms co-existing in mountainous ski areas may present a hazard in the winter due to ice throw; signs should warn skiers of the possibilities). Ice throw may also affect other recreational activities, such as hiking, hunting, fishing, and bird watching.
- Public Access. Construction of access roads could potentially increase public recreational access to areas not previously accessible, such as mountain tops.

⁵⁶ New Jersey Office of Clean Energy website *New Jersey Offshore Wind Simulations* <http://www.njcleanenergy.com/renewable-energy/technologies/wind/wind-working-group/nj-shore-wind-simulations/nj-shore-wind-simula>

⁵⁷ Vermont ANR Wind Power FAQs <http://vermontwindpolicy.org/factsheets/FAQ1.pdf>.

⁵⁸ Vermont ANR *Impacts of Wind Energy Development on Recreation, Wildlife, and Natural Resources* (Fact Sheet) <http://vermontwindpolicy.org/factsheets/Natural%20Resources%20and%20Development1.pdf>.

Vermont ANR fact sheet states that the potential could be both positive and negative. Regardless, access control methods have to be considered especially during the design and permitting processes. Also, vegetative clearing and special erosion control measures may be required to reduce impacts.⁵⁹

4.2.2.3. *Visual Resources*

Land managers should evaluate whether projects may have an adverse impact on scenic resources and any uses associated with those resources. The turbines, the connecting transmission lines, or any vegetative clearing required for access and facilities may impact scenic vistas. The Governor of *Maine*'s Task Force, in looking at scenic impacts, stated that while the projects and its components "may be a highly visible feature in the landscape does not by itself mean the visual impact is unreasonable, even if the scenic resource is a high value resource used by many members of the public."⁶⁰ Modeling software is available to show the impact on the viewshed so that the public and the land manager may make informed decisions about the location of the project.

4.2.2.4. *Other potential impacts*

Other issues that have been raised in federal and state processes include aviation safety, interference with radio and TV signals, electromagnetic fields, etc. These impacts are site specific and should be addressed if the issues are raised. Some of these issues are covered under federal rules, such as aviation safety, which may require lighting standards.⁶¹

⁵⁹ Vermont ANR Fact Sheet: *Impacts of Wind Energy Development on Recreation, Wildlife, and Natural Resources*. A copy of the fact sheet is in Appendix F.

⁶⁰ The briefing documents can be found at http://www.maine.gov/doc/mfs/windpower/briefing_material.shtml and includes a variety of web links and documents for informed decision making.

⁶¹ See FAA Report No. DOT/FAA/AR-TN05/50, *Development of Obstruction Lighting Standards for Wind Turbine Farms* November 2005 found at <http://www.airtech.tc.faa.gov/safety/downloads/TN05-50.pdf> for more information. The use of red flashing lights on the outer perimeter of the wind turbine farm (spacing around one-half mile) and one light per turbine were found sufficient for nighttime identification. No illumination in the daytime is required if the turbines are painted white.

5. Data and Supporting Information Requirements

The AWEA *Siting Handbook*⁶² is a good resource for studies and information requirements for wind developers. It also captures many of the issues outlined in Section 4.2 and discussed below. Also see Appendix J for other resources.

The following studies are examples submitted by state agencies as requirements for their authorizations, in addition to “standard” requirements, such as cultural, historical and archaeological surveys. It is not a comprehensive list, but it intended to assist land managers in understanding what may be available or should be made available as a part of the review and permitting process. Feasibility studies cover a wide range of topics that may not affect land management decisions, yet they are equally important in a business decision-making process to determine whether the project should proceed. Business decisions may be complex depending on the location and size of a proposed project and would include factors such as capitalization, land use authorizations and acquisition, marketability, and required mitigation measures and studies.

5.1. Wind Feasibility Analysis

Siting wind farms is limited to where the wind power can be exploited. In trying to be more attractive to alternative energy developers, some states, such as *Texas*, are supplying general wind data, such as with GIS layers, or by conducting feasibility studies.⁶³ If not provided by the state, then most states will require the data as a condition of the authorization. *Iowa* has developed guidelines for acquiring meteorological data.⁶⁴ (See also Section 2.1 for a discussion on capacity and wind classification.)

Meteorological (Met) Towers are typically constructed at the proposed project location to gather data and other meteorological data. While construction of the towers may require some clearing in order to erect and maintain the towers while acquiring data, it is not necessary to construct permanent facilities or access, thus minimizing impacts to the area should the project not be feasible.

5.2. Environmental Audit

Oklahoma requires that the grantee conduct a Phase One Environmental Audit to establish a baseline for post termination decommissioning.

5.3. Fish and Wildlife Studies

The Association of Fish & Wildlife Agencies has produced a compilation of existing state authorities and processes affecting wind power development in its report *Wind Power Siting*

⁶² For the full handbook or to view by sections, see <http://www.awea.org/sitinghandbook>

⁶³ The BLM and Forest Service have assessed the potential for renewable energy on public and national forest system lands. See http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/33530_public_lands.pdf and <http://www.nrel.gov/docs/fy05osti/36759.pdf> for more information.

⁶⁴ See guidelines at <http://www.iowadnr.gov/energy/renewable/files/windanalysis.pdf> and the Wind Energy Checklist <http://www.iowadnr.gov/energy/wind/files/checklist.pdf>

*Regulations and Wildlife Guidelines in the United States*⁶⁵ that states may find useful in permitting decisions.

5.3.1. Upland Sites

As either a condition of an authorization or as a part of the pre-application process, states are requiring studies to understand the impacts to biological resources. For instance, *Maine's* Departments of Environmental Protection and Inland Fisheries & Wildlife have produced guidelines for these studies, particularly in assessing avian and bat impacts, and some guidance on siting. A variety of survey methods have been developed to study night migration of birds and bats. Migration surveys can determine the numbers and flight directions of species at the site.⁶⁶ Generally, the guidance provides that developers should conduct:

Initial site screening for known data of populations and habitat in the general area, including nocturnal migrating species, and identification of endangered and threatened species located in the area.

Pre-construction study, for at least two migratory seasons. If high use by bird/bats or high-value habitat or species are identified, four migratory seasons may be necessary.

Post-construction bird and bat mortality. Mortality studies for birds and bats should be conducted for two to three migration seasons within five years of start-up. (See Appendix B for full version of the guidance document.)

Oklahoma requires an avian study in Phase 1 of the authorization to determine how birds and bats migrate, move, and fly across the property and the potential impacts of the activity. The study results are evaluated and if issues are noted they must be corrected prior to installation of turbines.

California's Department of Fish and Game and Energy Commission developed guidelines to provide "information and protocols for assessing, evaluating, and determining the level of project effects on bird and bat species, and to develop and recommend impact avoidance, minimization, and mitigation measures." The five basic project development steps are:

1. Gather preliminary information and conduct site screening.
2. Determine the California Environmental Quality Act, wildlife protection and permitting requirements.
3. Collect pre-permitting data using standardized monitoring protocol.
4. Identify potential impacts and mitigation for the permitting process.
5. Collect operations monitoring data using the standardized monitoring protocol.⁶⁷

⁶⁵ Association of Fish & Wildlife Agencies website

<http://www.fishwildlife.org/pdfs/WindPower/AFWAWindPowerFinalReport.pdf>.

⁶⁶ Emily Berry, et al., *Overcoming Obstacles in Wind Power Development in Maine*, December 2005,

<http://www.umaine.edu/nrc/Curriculum/2005%20Wind%20Paper.pdf>

⁶⁷ California Energy Commission and California Department of Fish and Game. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development. Commission Final Report*. 2007. (See Appendix F for full text of this document.)

5.3.2. Riverine and Offshore Sites

As in the case of *New Jersey's* pilot project solicitation, states with wave/tidal or in-river flow projects require some level of environmental and fish/mammal data collection prior to, during and following construction of any facilities – regardless of whether it is a demonstration project or the first phase in developing a project. This includes collecting data on the distribution, abundance and migratory patterns of avian, marine mammal, sea turtle, fish, shellfish and other species in the proposed area and may be expanded to include any “buffer” zones. Other data collected could include coral reefs, shoals, sand borrow areas, artificial reef sites, and similar natural resources.⁶⁸

In *New York's* tidal turbine area, Striped Bass and marine mammals are of interest, thus a sampling regime was initiated. Hydro-acoustic arrays around the turbines have been placed to see if the targeted species are moving around or being destroyed by the turbines; however, trawling is difficult because of the extreme current changes due to tidal flows. Fishery biologists at the Oak Ridge lab and the consulting firm of Devine Tarbell and Associates in Portland, Maine, designed the fish surveys in collaboration with fishery agencies.

5.4. Sound

State regulations or local ordinances may require that certain noise levels not be exceeded. Also, to address public concerns, states could require studies as a condition of development. The authorization (or pre-application data gathering) may require that studies be conducted pre-development, during construction, and post-development. Studies should include hiring a qualified consultant; the study, at a minimum, would determine if noise, such as the low-frequency noise made by turbine blades when they pass the towers, is within acceptable levels for the surrounding uses.

In addition, any vibrations or other noise generation from water-based turbines may need to be collected as part of a wildlife study to understand the affects on mammals, fish passage, and other fish and mammal impacts.

⁶⁸ For an example of data requirements, see New Jersey's Solicitation at p.6
<http://njcleanenergy.com/files/file/OSW%20Final%20Solicitation100507final.pdf>

6. Challenges in Authorizing Alternative Energy

While many states may not have alternative energy projects currently proposed or authorized on state-owned lands, most land managers anticipate that interest in those lands will increase as conventional energy prices continue to rise and the search for renewable and sustainable sources grows. Some states are trying to get ahead of this interest by initiating policy development for alternative energy projects or meeting with interested parties to develop a scenario to deal with these applications.

However, interest in state lands does not come without some barriers. The following list contains the most recurring themes for land managers.

6.1. Land Ownership Patterns

Fractured landownership patterns may require the state to take a secondary role in evaluating and managing projects. This is readily apparent in the checkerboard landownership pattern in the western states where BLM either competes or collaborates with states for alternative energy projects. When in a collaborative land management role, the states' processes, which typically allow the head of the agency to negotiate or have a streamlined permitting process, are hampered by or extended because of the federal NEPA requirements. (See Section 6.3 for more information on the federal role.) This is not always the case, however, since some states have their own "little NEPA" processes that mirror the requirements and timelines at the federal level. If states choose not to be a cooperating agency, they can issue their authorizations outside of the federal process, although developers are stymied until all authorizations are in place.

Methods to address alternative energy development is widely varied among states, primarily due to how much land they own, how the land grants were conditioned, and the type of riparian or submerged land rights obtained. For instance, with statehood, western states received an entitlement to allow them to become economically viable in comparison with the eastern states. Until the 1953 Submerged Lands Act, which attempted to correct the inequities with land ownership under the beds of navigable waterbodies, the western states were not equal with their eastern counterparts.

6.2. Land Management Priorities and Objectives

States have competing land management priorities and objectives. Most states have a trust responsibility to certain beneficiaries; more often than not that stewardship responsibility is to public schools and other public institutions. As an example, *Alaska* has a trust responsibility to the Mental Health Land Trust, University Land Trust, and School Land Trust. Through litigation and subsequent legislation, the University of Alaska Land Management and the Mental Health Trust Land Office were established as separate entities from DNR to manage those trust lands. Alaska DNR manages the balance of general grant lands and other acquired lands. *Utah* has a similar structure to Alaska.

Arizona's mission statement provides a succinct revenue goal that applies to most trust land management: "To manage State Trust lands and resources to enhance value and optimize economic

return for the Trust beneficiaries, consistent with sound stewardship, conservation, and business management principles supporting socioeconomic goals for citizens here today and generations to come.” [emphasis added]⁶⁹ In these fiduciary roles, the managing boards will sometimes establish revenue goals to be met in a particular fiscal year or within a certain time period, or through a statutory mandate to maximize the economic return. The states that have authorized wind energy projects have found them to be good sources of revenue. In fact, *Texas* has achieved and surpassed revenue goals by structuring its offshore wind energy projects to mimic its oil and gas program, even with the payment of bonuses at the time bids are received.

Alternatively, there are states that have a statutory mandate to provide for the best interests of the state while balancing management of state lands for multiple uses. Revenue is generally at market value, except when the state is encouraging development of an infrastructure or if it is for a non-profit/cooperative utility. In those cases, the state will receive less than market value, but the greater benefit to the public, such as a cheaper electric source being available, outweighs the revenue gain.

Lastly, with alternative energy projects, as with any lease, comes the risk of non-performing lessees tying up state lands for a long period of time. Many states have structured phases into their authorizations to prevent speculation.

6.3. Role of the Federal Government

Federal agencies have differing roles in the development of alternative energy: as land managers, or as regulators, or as an advocate. The roles become the drivers for the states’ relationships and response to these agencies, as described more fully below.

6.3.1. Land Management

There is a significant amount of federal land and, therefore, federal influence or control in decisions made regarding alternative energy. As mentioned previously, states sometimes move into a secondary role in evaluating and managing projects especially when their processes are subsumed by NEPA requirements and timelines. Moreover, the transportation corridors or selected sites for development by the federal agencies may conflict with contiguous state-owned lands and the management philosophies applied to those lands.

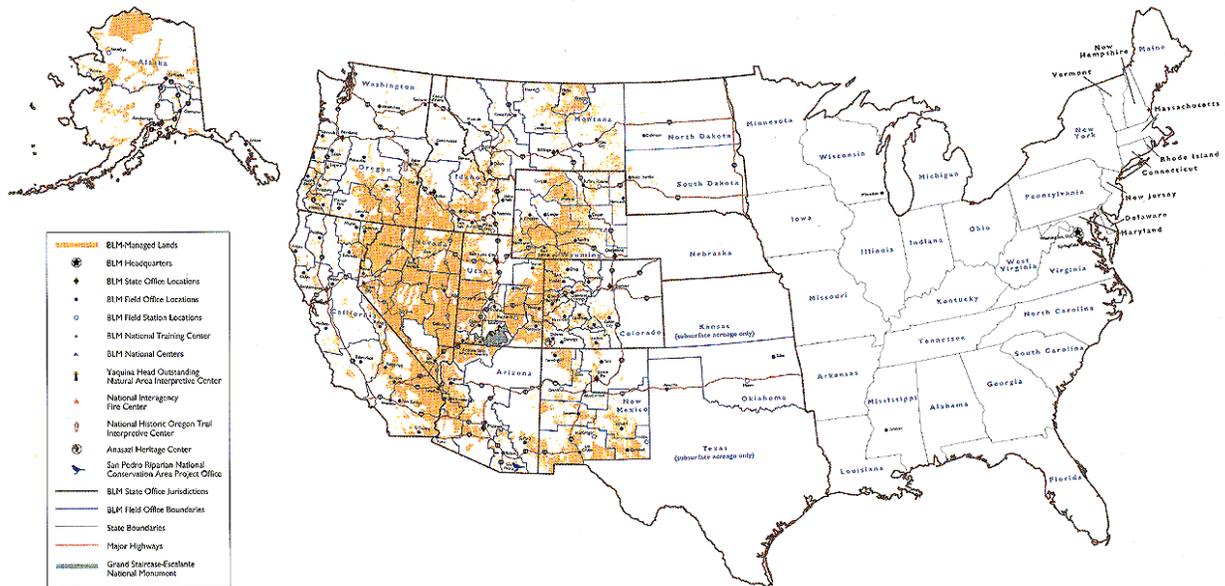
6.3.1.1. Onshore

BLM manages approximately 264 million acres of public lands, primarily in the western states. (See Map 6-1.) Of that total, 30,000 surface acres are in the eastern states. *Nevada* and *Utah* have the highest percentage of their lands administered by BLM; *Alaska* has the largest number of acres. BLM administers public lands within the framework of Federal Land Policy and Management Act of 1976 (which recognizes the need for public lands to remain in federal ownership and managed for multiple use)

⁶⁹ Arizona State Land Department website http://www.land.state.az.us/support/mission_goals.htm

and the National Environmental Policy Act (NEPA) of 1969, as amended, in addition to other laws.⁷⁰

Map 6-1. Public Lands Managed by the BLM



Source: BLM website <http://www.blm.gov/nhp/facts/index.htm>

The BLM Final Programmatic EIS and subsequent Record of Decision (issued December 2005) evaluates issues associated with wind energy development on western public lands (excluding *Alaska*) managed by BLM. The EIS not only sets program guidelines for managing wind energy on BLM, but also amended 52 land use plans as part of the process. The decision also sets policies and best management practices (BMPs) and minimum requirements for mitigation measures.⁷¹ BMPs were written for five categories: site monitoring and testing, plan of development preparation, construction, operation, and decommissioning.

BLM’s Wind Energy Development Policy issued December 2006,⁷² establishes use fees. For operations, the annual fees are \$2,365 per MW of installed capacity, and phased: Year 1 – 25% (\$591 per MW); Year 2 – 50% (\$1,182 per MW), and Year 3 – 100% (\$2,365 per MW). The full annual rental fee is due upon the start of commercial

⁷⁰ *BLM Facts* <http://www.blm.gov/nhp/facts/index.htm>.

⁷¹ For more information, see BLM’s *Wind Energy Development Programmatic EIS Information Center* website at <http://www.windeis.anl.gov>.

⁷² A copy of BLM’s Wind Energy Development Policy is available online at http://www.windeis.anl.gov/documents/docs/WindEnergyDevelopment_Instruction_Memo.pdf and in Appendix D.

operations of the project regardless of which year the authorization may be. BLM discourages the use of a separate turbine installation fee (an additional one time payment for each turbine installation), a production rental fee, or other fees, as part of the wind energy rental fee. Any separate rights-of-way issued for off-site facilities, such as electrical transmission lines, are subject to the linear right-of-way rental previously established.

The Forest Service manages 193 million acres of public lands in national forests and grasslands. In September 2007, the Forest Service proposed to amend its internal agency directives for special use authorizations and wildlife monitoring, which would provide direction and guidance specific to wind energy development on NFS lands. These amendments would “supplement, rather than supplant or duplicate, existing special use and wildlife directives to address issues specifically associated with siting, processing proposals and applications, and issuing special use permits for wind energy uses. The proposed directives would ensure consistent and adequate analyses for evaluating wind energy proposals and applications and issuing wind energy permits.”⁷³

6.3.1.2. *Offshore*

Section 388 of the Energy Policy Act of 2005 amended the Outer Continental Shelf Lands Act to grant the Department of the Interior Secretary discretionary authority to issue leases, easements, or rights-of-way for alternative energy activities on the Outer Continental Shelf. The DOI Secretary delegated this authority to the Minerals Management Service (MMS). MMS is currently developing regulations for the development of alternative energy resources and alternate use of facilities on the OCS. MMS expects to release these regulations by end of year 2008. MMS completed a Programmatic EIS in November 2007 and issued the Record of Decision in December 2007. The ROD includes the adoption of 52 Best Management Practices and policies that will be considered as part of the review for any project proposed under this new authority.⁷⁴

MMS is currently evaluating the Cape Wind project, offshore of *Massachusetts*. Even though these offshore projects originate on submerged lands managed by MMS, coastal states are involved because of their permitting or regulatory role in the energy transmission to upland distribution grids or management responsibilities for fish and wildlife.

6.3.2. **Regulatory**

FERC, in its role as the interstate energy regulator, issues preliminary permits for a term of up to three years under section 4(f) of the Federal Power Act, 18 U.S.C. § 797(f). The three-year permit gives the permittee a “priority” with respect to filing a license application, thus allowing the permittee to develop sufficient information to prepare a

⁷³ See the Federal Register at <http://www.thefederalregister.com/d/p/2007-09-24-E7-18715> .

⁷⁴ MMS *Alternative Energy Program: Program Review* found at <http://www.mms.gov/offshore/AlternativeEnergy/ProgramOverview.htm>

license application. The preliminary permit does not grant property rights in the project site nor any authority to conduct construction or other land-disturbing activity.⁷⁵

While FERC may agree that the approval for construction, transmission, or distribution facilities lie outside the scope of FERC's responsibilities,⁷⁶ there is a concern with the amount of time that FERC allows land to be set aside before a project enters into the application process for a FERC license as well as appropriate landowner authorizations. In addition, because the process that FERC follows is not competitive in nature, it may not be conducive to a state being able to receive either the best project (in terms of viability) or the best price (in terms of compensation). As an example, *Alaska* land managers were in pre-application discussions with one applicant while FERC issued a permit to another for the same area.

To address coordination issues, FERC and *Oregon* signed a Memorandum of Understanding on March 26, 2008, to "coordinate procedures and schedules for review of wave energy projects in state waters off the coast of Oregon." (See the main provisions of the MOU in the discussion at Section 7.37.5.)

6.3.3. Advocacy for Alternative Energy

Part of the Department of Energy's (DOE) mission is to advance the energy security of the United States through reliable, clean, and affordable energy and to promote scientific and technological innovation to support its missions. The DOE strengthens its mission through public-private partnerships.⁷⁷

6.4. Role of the Public

Many states reported that public perception about alternative energy requires more staff involvement, both in terms of public meetings and addressing concerns expressed as a result of public comment solicitations. Typically, more timely distribution of information to the public will facilitate the decision-making process. Information could include the benefits and impacts of alternative energy sources as well as environmental and biological issues associated with development, such as loss of scenic values, change in land use, and concerns for wildlife.

In a report to the AWEA conference in 1995, Paul Gipe presented a paper "*Design as if People Matter: Aesthetic Guidelines for the Wind Industry.*" In this paper, he recommends that the wind turbines and wind power plants become "good neighbors." He states that a way to do that is to incorporate aesthetic guidelines into design.⁷⁸

⁷⁵ FERC's Policy Statement on Conditioned Licenses for Hydrokinetic Projects issued 11-30-2007 <http://www.ferc.gov/EventCalendar/Files/20071130153255-PL08-1-000.pdf>

⁷⁶ See FERC website <http://www.ferc.gov/about/ferc-does.asp>

⁷⁷ *About DOE* <http://www.energy.gov/about/index.htm>. Also, see DOE's EERE website <http://www.eere.energy.gov/> for reports and further links to market reports, research, and technology information.

⁷⁸ For the full paper, see <http://www.wind-works.org/articles/design.html>. Mr. Gipe is also the author of several articles and books on wind energy; see <http://www.ilr.tu-berlin.de/WKA/personen/paul.html> for links.

6.5. Lack of Infrastructure

Where the wind or ocean energy sources are peak may not necessarily be in proximity to an existing electric transmission grid and power infrastructure. The lack of infrastructure, limited access to interconnect to grids, or having to construct new transmission lines entirely may be very difficult if not cost prohibitive for some projects. State tax incentives try to address some of these issues.

As an example, the major problem in *Oregon* is the remoteness to adequate transmission lines. Much of eastern Oregon is unpopulated and, consequently, the cost of constructing transmission lines may be prohibitive. Other major transmission lines are often regional interties that cannot be used in this manner.

Transmission grids remain a challenge for much of *Alaska* as well. A grid connects the center railbelt of Alaska, but the balance of the state has an assortment of smaller grids. The cost of fuel and its delivery to remote Alaskan villages is increasing attention on the potential of smaller scale wind and hydrokinetic energy projects.

6.6. Need for Environmental Baseline Information

Issues discussed in Sections 4.2 and 5 outline the need for environmental baseline information. This is especially true for areas that may have been undeveloped for a number of years (offering a “wilderness” experience) and for offshore and in-river development project areas where activities may not have occurred to this magnitude or for a longer term.

In addition, areas where activities have already occurred, either from previous ownership or leases, may require baseline information to be established to ensure that the energy developer is not made liable for other’s actions. Phase One Environmental Audits could be performed to establish a baseline for decommissioning, as is required by *Oklahoma*.

6.7. Understanding Impacts to Fish and Wildlife

Issues discussed in Sections 4.2 and 5 outline the need for background information and pre/during/post construction studies for birds, bats, fish and wildlife to accurately develop mitigation stipulations or to avoid the conflicts entirely. Further, many managers are taking an *adaptive management* approach, which means that specific provisions are included in the authorizations to allow changes to be made in operations, siting, and perhaps long-term use of the site based on information gathered in monitoring studies, over the life of the authorization.

6.8. Understanding Development Needs of an Emerging Industry

Land managers need to understand these emerging industries as well as the ever-changing designs, especially for wave/tidal and in-river flow projects. At the Roosevelt Island Project in *New York*, as an example, the turbines have had to undergo design changes due to structural integrity. All six turbines lost blades due to the strong tidal cycle. Once the blade design was changed, the hub broke under the stress of the current. At the time of this report,

two turbines are to be re-installed. Besides design risks, developers also have risk in timing, funding, environmental mitigation requirements, cooperation from power buyers and transmission sellers, availability of turbines, and continued renewal of the federal production tax credit, to name a few.

6.9. Staff Knowledge Base

Staff managing and authorizing the use of state land are not necessarily hired because of their energy experience. Typically, they are hired because of their environmental or natural resources background. These projects are often complex and delve into areas regarding energy markets, transmission grids, and an emerging industry fraught with design changes, biological concerns, and public informational/educational needs. There is a cost associated with training and developing a cadre of staff to understand the technology as well as to adequately evaluate, make informed decisions, and manage these projects.

7. State-Specific Review

The following state-specific information was provided, for the most part, by the key contacts listed for each state. The key contact has been identified as the primary staff member (or Commissioner, in some cases) responsible for or most knowledgeable about alternative energy projects and development in their respective states. Note that the key contact was given a draft for review and did not have the benefit of the final document before publication. Any errors or mischaracterization in the final are not attributable to the key contact.

All other sources have been footnoted for reference and, as much as possible, web links have been included for the reader's information.

In the electronic version, you can "click" on a state below and be directed to that state's summary. (Note that you can also make this leap from the Table of Contents.)

Alabama	Louisiana	North Dakota
Alaska	Maine	Ohio
Arizona	Maryland	Oklahoma
Arkansas	Massachusetts	Oregon
California	Michigan	Pennsylvania
Colorado	Minnesota	Rhode Island
Connecticut	Mississippi	South Carolina
Delaware	Missouri	South Dakota
Florida	Montana	Tennessee
Georgia	Nebraska	Texas
Hawaii	Nevada	Utah
Idaho	New Hampshire	Vermont
Illinois	New Jersey	Virginia
Indiana	New Mexico	Washington
Iowa	New York	West Virginia
Kansas	North Carolina	Wisconsin
Kentucky		Wyoming

7.1. Alabama

Department of Conservation and Natural Resources
Barnett Lawley, Commissioner

Key Contact: Gregory M. Lein, Assistant Director, State Lands, 334.242.3484, Greg.Lein@dcnr.alabama.gov

7.1.1. Jurisdiction and Land Base

The Department of Conservation and Natural Resources (DCNR) currently manages 645,000 acres of trust lands managed for the benefit of the Alabama Trust Fund, the general fund, and several state agencies. Most lands managed by the Division are trust lands managed for specific purposes. DCNR manages 22 state parks, 23 public fishing lakes, three freshwater fish hatcheries, 35 wildlife management areas, two waterfowl refuges, two wildlife sanctuaries, and a mariculture center with 35 ponds. In addition, DCNR manages 600,000 acres of submerged lands (inland and coastal).⁷⁹

7.1.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DCNR does not have alternative energy-specific land laws and regulations; it operates under its general land authority.

7.1.3. Administrative Process

7.1.3.1. Process-Driver

Submittal of an application to DCNR begins the review process.

7.1.3.2. Treatment of Applications

Not applicable.

7.1.3.3. Authorizations

Not applicable.

7.1.3.4. Terms and Conditions

Not applicable.

7.1.3.5. Use Fees

Not applicable.

7.1.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.1.5. Challenges

Alabama has low potential for wind development; it is ranked number 45 in potential capacity by the AWEA.

⁷⁹ DCNR Annual Report 2007, found at http://www.outdooralabama.com/about/ADCNR_06-07_Annual_Report.pdf

7.2. Alaska

Department of Natural Resources

Tom Irwin, Commissioner

Key Contact: Wyn Menefee, Chief of Operations, 907.269.8501 Wyn.Menefee@alaska.gov

Mental Health Trust Land Office

Harry Noah, Executive Director

Key Contact: Dennis Daigger, Trust Resource Manager, 907.269.8735 Dennis.Daigger@alaska.gov

7.2.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) manages about 103 million acres of state owned land (25% of the land area of Alaska) and another 60 million acres of tide and submerged lands received as a result of statehood (Equal Footing Doctrine). Of that 103 million acres:

- The Mental Health Trust Land Office (TLO) manages about one million acres of land for the trust. Trust land is managed independently of the other state land and is managed solely in the best interest of its beneficiaries.⁸⁰
- The University of Alaska currently manages approximately 150,000 acres of land, which includes 12,000 acres in three main campuses in Fairbanks, Anchorage and Juneau; several community campuses; and a number of administrative, academic and research sites located throughout Alaska. The University of Alaska Land Management office is responsible for managing, developing, acquiring and disposing of all University Real Property.⁸¹

7.2.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Alaska does not have specific alternative energy land laws and regulations. DNR uses standard permitting and leasing statutes and regulations⁸² for any authorizations involving alternative energy. Although there are no specific alternative energy policies, DNR is developing its policy at this time. The TLO is analyzing its land base for potential wind project siting and will concurrently develop compensation policies for wind energy development on its land.

7.2.3. Administrative Process

7.2.3.1. Process-Driver

DNR and TLO respond to pre-application queries or submittal of an application to begin the review process for use of state/trust land. The TLO is developing an asset management strategy that replaces a reactive approach with an ordered and planned management scheme for the trust land.

7.2.3.2. Treatment of Applications

Permits and short-term leases can be negotiated without competition. Long-term leases require competitive offerings, unless the applicant is a utility. Most DNR

⁸⁰ The Trust Land Office website <http://www.mhtrustland.org/>

⁸¹ University of Alaska Land Management website <http://www.ualand.com/index.cfm?fuseaction=Stewardship.Home>

⁸² See Alaska Statutes 38.05 and Title 11 of the Alaska Administrative Code http://www.dnr.state.ak.us/pic/stats_regs.htm

authorizations go through a public process defined in statute resulting in a best interest determination. Decisions can be appealed to Superior Court by the applicant and the public. While the TLO has more liberty in negotiating authorizations, it generally follows the same process.

7.2.3.3. *Authorizations*

DNR can issue a land use permit, a right-of-way, a negotiated lease or a competitive lease. By regulation, land use permits are limited to 5 years. By law, negotiated leases cannot exceed 10 years and competitive leases cannot exceed 55 years; statutes allow renewal for competitive leases for a period not to exceed the original term. Rights-of-way may be issued in perpetuity, depending on the use and at the discretion of the Director. Currently, energy projects would be authorized by a two-phased process – the first for data gathering authorized by a permit and the second for construction and operations authorized by a combination of lease and right-of-way.

The TLO can issue permits, leases, and licenses for activities on trust land and can negotiate compensation based on a market return to the Trust or by an established fee schedule.

7.2.3.4. *Terms and Conditions*

Only one in-river flow hydrokinetic project has been authorized under a right of way; however, this is not a model for future authorizations. The authorization is being reevaluated at this time. DNR and the TLO are considering other proposals at this time.

7.2.3.5. *Use Fees*

The current use fee for the pre-development stage of the Alaska Power & Telephone permit for an in-river turbine is \$200 per year.

Typically, DNR land use permit fees are \$500/acre, or if the director can use 2.5% of gross receipts attributable to the site or an estimate of the fair market value of the use (this can be challenged by the applicant with an appraisal.)

Negotiated leases are allowed, if the term does not exceed 10 years and the value does not exceed \$5,000. If the lease cannot meet these terms, then it must go competitive. DNR can also negotiate a lease at appraised market value with a licensed public utility. Regardless, if the director believes that it is in the best interests of the state, s/he may require the lease to be competitive.

Competitive lease fees are flexible and can be one of several options: Under DNR's general leasing statute (AS 38.05.073(m)), the fee is based upon:

- a percentage of the annual gross receipts;
- a guaranteed annual minimum rent or a percentage of gross receipts, whichever is greater;
- the fair market rental value;
- a fixed annual rent that is not less than the fair market rental value of the land;

- a fee for each user;
- other compensation acceptable to the commissioner; or
- a combination of the above.

Interest in wind generation is a new and developing area; the TLO fee schedule does not specifically address this type of use. Since the fee schedule is undergoing an update, wind generation will likely be incorporated as a new fee type.

7.2.4. Projects of Interest

7.2.4.1. Wind

DNR has one project on Kodiak Island pending completion of a best interest decision for a lease. Two projects in the southcentral part of the state and two projects in the northern area of the state are in a data gathering stage. Two of the projects are with utility companies and the others are private.

7.2.4.2. Wave/Tidal

Over the last two years, FERC has issued preliminary permits for seven projects. The two nearest to Anchorage are located in Cook Inlet, which is rated as one of the top three tidal energy resources in the world. In June 2007, FERC issued a preliminary permit to Chevron for a tidal power project in the Cook Inlet. The project is for a field of proposed axial free flow turbines producing a total of 80 MW. The turbines would be attached to existing offshore oil and gas rigs. The project also includes transmission lines and other facilities. It is unknown how much of the project area will fall on state tide and submerged lands. FERC has also issued ORPC a preliminary permit for horizontal axis OCGen modules. These modules are currently being tested in *Maine*.

7.2.4.3. In-River Flow

DNR issued a private, non-exclusive right-of-way to Alaska Power & Telephone (APT) on March 15, 2006, for an in-river turbine near Eagle. The single turbine in the Yukon River has not been put into place, awaiting funding. APT is allowed to withhold the performance bond until it initiates activity. APT pays a \$200 annual use fee for the in-river flow turbine at Eagle. The permittee can test the turbine for 3 years. If it works, the turbine can be left in place; if it doesn't, the turbine must be removed. The project is temporarily halted since another company received the FERC preliminary permit before APT applied.

7.2.5. Challenges

Much is yet to be determined about the impacts of tidal energy production on fish and sea mammals.

Twenty-two FERC permits have been applied for in Alaska: 17 have been approved and another five are pending. The scale of the FERC preliminary permits has essentially locked down large areas of Alaskan waters. In one case, it “locked out” a potential applicant that had been in consultation with DNR. DNR is waiting to see if any of the studies

materialize into projects. As of yet, none of these projects have obtained DNR authorizations for use of the state submerged lands.

Under the current legal regime, DNR is not able to guarantee that a company, having undergone extensive and expensive data gathering, will have a non-competitive right to the site. Alternatively, DNR also has to ensure that the use of the property is in the best interests of the state. This brings into question whether a small wind production project should be given exclusivity, especially when the site might support a larger scale project.

Transmission grids remain a challenge for much of Alaska. A grid connects the center railbelt of Alaska, but the balance of the state has an assortment of smaller grids. The cost of fuel and its delivery to remote Alaskan villages is increasing attention on the potential of smaller scale wind and hydrokinetic energy projects.

Alternative energy is still relatively new to Alaska, although some villages are taking advantage of federal funding by installing small wind turbines on native-owned lands. British Columbia is interested in collaborating with Alaska on the use of state, federal and international waters, as suggested in a recent Tidal Energy Conference held in Alaska. There are proposals to create an intertie project that would tie southeastern Alaska into the Canadian or the “Lower 48” power grid. This would increase the marketability of the tidal energy projects in southeastern Alaska.

7.3. Arizona

State Land Department

Mark Winkleman, Land Commissioner

Key Contact: Ben Alteneider, Legislative Liaison, Government Affairs, 602.542.3996 balteneider@land.az.gov

7.3.1. Jurisdiction and Land Base

The State Land Department (SLD) manages about 9.3 million surface acres and 10.5 million subsurface acres, in trust for common schools and public institutions. Arizona has one of the more restrictive trust laws.⁸³

7.3.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Arizona does not have specific alternative energy land laws and regulations. SLD uses standard permitting and leasing statutes and regulations for any authorizations involving alternative energy. The state legislature is currently considering legislation for a state-wide energy policy; however, the policy is primarily focused on state buildings and incentives, rather than state land use.⁸⁴

7.3.3. Administrative Process

7.3.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.3.3.2. Treatment of Applications

Short-term commercial leases (less than 10 years) can be issued without competition. Commercial long-term leases (up to 90 years) require competitive offerings. Arizona Revised Statute 37-215⁸⁵ requires all land sales and commercial leases to be approved by the Board of Appeals, which also serves as an Administrative Review Board. Applicants and lessees may appeal to the Board any final decision of the State Land Commissioner that relates to appraisals and classifications.⁸⁶

7.3.3.3. Authorizations

SLD can issue a use permit, a right-of-way or a lease.

7.3.3.4. Terms and Conditions

There are no alternative energy projects on state land at present. Authorizations typically carry stipulations to avoid or mitigate impacts to fish and wildlife, water quality, etc.

⁸³ Sonoran Institute, Lincoln Institute of Land Policy website <http://www.trustland.org/state/state-az.cfm>.

⁸⁴ For text of the legislation, see http://www.azleg.gov/DocumentsForBill.asp?Bill_Number=2766.

⁸⁵ For text of ARS 37-215, see

<http://www.azleg.gov/FormatDocument.asp?inDoc=/ars/37/00215.htm&Title=37&DocType=ARS>.

⁸⁶ Arizona State Land Department 2005-2006 Annual Report http://www.land.state.az.us/report/report2006_full.pdf.

7.3.3.5. *Use Fees*

Trust lands may only be leased “true value” based on a land appraisal before being offered; lands cannot be disposed for less than the appraised value.

7.3.4. Projects of Interest

There are no alternative energy projects proposed or authorized on state land, nor are any anticipated in the near future.

7.3.5. Challenges

There are no wind energy projects on the horizon. Currently several companies have expressed interest in bidding on trust land for the purposes of building photovoltaic/solar generating stations; no applications have been submitted to date.

7.4. Arkansas

State Land Office

Key Contact: Mark Wilcox, Commissioner.

7.4.1. Jurisdiction and Land Base

The State Land Office (SLO) is responsible for tax forfeitures and resales and does not have a general land base.

7.4.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

SLO does not have alternative energy-specific land laws and regulations. The State Land Office does not handle any requests for alternative energy projects.

7.4.3. Administrative Process

7.4.3.1. Process-Driver

Not applicable.

7.4.3.2. Treatment of Applications

Not applicable.

7.4.3.3. Authorizations

Not applicable.

7.4.3.4. Terms and Conditions

Not applicable.

7.4.3.5. Use Fees

Not applicable.

7.4.4. Projects of Interest

Not applicable.

7.4.5. Challenges

No information.

7.5. California

State Lands Commission

Paul D. Thayer, Executive Officer

Key Contact: Barbara Dugal, Chief, Land Management Division, 916.574.1940, dugalb@slc.ca.gov

7.5.1. Jurisdiction and Land Base

The State Lands Commission (SLC) currently manages approximately 469,000 acres of the original 5.5 million acres of school trust land grant in addition to the mineral rights on an additional 790,000 acres. These lands are held in trust for the betterment of the common schools of the state and the revenue, by statute, supports the State Teachers' Retirement System. Over half of the "school lands" are located in the California Desert. In addition, the SLC manages about 4 million acres of tide and submerged lands (three-miles seaward and under navigable rivers, lakes, sloughs and streams) that are considered public trust or "sovereign" lands; management of some of those lands has been granted to local governments. The major ports of Los Angeles, Long Beach, San Diego, San Francisco, Oakland, Richmond, Benicia and Eureka are all located on granted lands.⁸⁷

The SLC holds its sovereign interest in these lands subject to the Public Trust for commerce, navigation, fisheries, open space, and preservation of natural environments, among others. The Commission is concerned with the natural resources and public recreational opportunities of the lands under its jurisdiction. The lands managed by the SLC vary widely in character and utility.

7.5.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The SLC does not have alternative energy-specific land laws or regulations; authority to issue authorizations is under Division 6 of the California Public Resources Code.⁸⁸

7.5.3. Administrative Process

7.5.3.1. Process-Driver

A party who is interested in leasing state lands from the SLC must first submit an application.

7.5.3.2. Treatment of Applications

Applications would be processed under the SLC's general guidelines, as described in the application.⁸⁹ Applications must include an outline of the proposed project, supporting environmental data, and payment of appropriate processing and filing fees. Staff reviews the applications and makes recommendations to the Commission for action. The SLC maintains a multiple use management policy to assure the greatest possible public benefit is derived from these lands and considers numerous factors in determining whether a proposed use of the state's land is appropriate, including, but not

⁸⁷ SLC's website *About the California State Lands Commission*

http://www.slc.ca.gov/About_The_CSLC/About_The_CSLC_Home_Page.html

For full text of the Code, see <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=06001-07000&file=6001-6008>

⁸⁹ Application forms can be found at http://www.slc.ca.gov/Online_Forms/Surface_Leasing_Application_Home_Page.html

limited to, consistency with the Public Trust under which the SLC holds the state's sovereign lands, protection of natural resources and other environmental values, and preservation or enhancement of the public's access to state lands.

7.5.3.3. *Authorizations*

SLC issues leases for the use of state-owned lands. The term for any lease, including any optional renewal periods, is for a period that is no longer than necessary to accomplish the intended use or purpose with a maximum term of 49 years for General Leases. Each lease application is analyzed and processed on a case-by-case basis.

In regard to alternative energy projects, typically a lease to collect data would be authorized first. Under certain circumstances, a lease issued for data collection may include a provision for first right of refusal on a subsequent General Lease for the construction, use and maintenance of a energy production project if it was determined to be in the best interest of the state because there are no other likely competitors for the site.

7.5.3.4. *Terms and Conditions*

Terms and conditions of all leases and any mitigation and monitoring conditions are handled on a case-by-case basis. All leases require general commercial liability insurance and a surety to insure that all terms of a lease are complied with, including, but not limited to, payment of rent, site remediation and recovery after the conclusion of the project (i.e., at the end of the lease).

7.5.3.5. *Use Fees*

Because the SLC operates primarily as a landowner, the SLC charges annual rents rather than fees for the use of state-owned lands. For alternative energy leases, annual consideration may include installation fees, but would be determined on a case-by-case basis. Rent and escalation clauses have yet to be determined, but may be based on a percent of gross revenues using the BLM formula as a model. (See Section 6.3.1.1 for current rates.)

7.5.4. Projects of Interest

7.5.4.1. *Wind*

There are no pending applications for the placement of wind generation projects on state land.

7.5.4.2. *Wave/Tidal*

One application for a wave energy project is pending. The project, near Humboldt County in northern California, is a demonstration project. The application was submitted more than two years ago, but remains incomplete and has not been considered by the SLC nor has it proceeded to construction phase. The authorization for a lease near Catalina Island was issued for data collection only and has since expired. No other applications for future projects have been received.

7.5.5. Challenges

While California has been the pacesetter for the nation's wind energy production, the installed wind improvements have been primarily on lands not owned by the SLC. Even though the SLC is supportive of alternative energy projects (when all of the potential project impacts have been fully analyzed and the impacts mitigated), no projects have been placed on lands under the jurisdiction of the SLC.

Some wave/tidal projects are proposed or are in the demonstration phase on lands that have been legislatively granted and are under management of municipalities. This includes the Oceana project for which an application has been submitted to the SLC's grantee, the city of San Francisco, for a tidal demonstration project that would be located near the Golden Gate Bridge.

Offshore wave energy is an evolving technology and involves complex regulatory and environmental considerations, which is why SLC staff is following the progress of these proposed projects throughout the state and the nation. Jurisdiction issues, such as with FERC, MMS, or coastal municipalities, will need to be resolved in a timely manner in order to facilitate development.

As mentioned, the SLC has not received any applications for *installation* of any alternative energy projects on lands under the jurisdiction of the SLC; therefore, the SLC has not had opportunity to evaluate the potential impacts from these types of projects. However, because these types of projects are non-carbon emitting renewable energy projects, they must be seriously considered in light of the problems associated with climate change.

Other Renewable Energy Projects under consideration by SLC:

The Geysers field in Sonoma and Lake counties is the site of the world's largest *geothermal* development. The SLC has 6,862 acres of 100% reserved mineral interest school lands under lease, plus another 360 acres of 1/16th reserved mineral interest school lands that are productive. The SLC acreage provides about 25% of the steam used to generate nearly 1,000 MW of electricity. The balance of the steam is produced from Federal and private leases. Recently, the SLC staff has seen an increased interest in leasing state lands for geothermal production and has received several applications and formal nominations for geothermal prospecting permits in Sonoma, Lake and Imperial counties. SLC continues to process the applications and evaluate the nominations for suitability of competitive bidding.

The SLC is processing an application for a *solar* energy project that would be installed in two phases for approximately 4,300 acres of state school lands in San Bernardino County. The project, if approved, also includes lands administered by the Bureau of Land Management.

7.6. Colorado

State Board of Land Commissioners

Britt Weygandt, Director

Key Contact: Pete Milonas, Audit Manager, 303.866.4913 Pete.Milonas@state.co.us

7.6.1. Jurisdiction and Land Base

The State Board of Land Commissioners (SBLC) manages about 2.8 million surface acres and 4.8 million subsurface acres in trust pursuant to the state enabling act.⁹⁰

7.6.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

In 2007, the Colorado legislature passed HB 07-1145 concerning renewable energy resource development on state lands and enabling the SBLC to lease lands for renewable energy development. The law also requires that the SBLC “identify land suitable and appropriate for development of renewable energy resources.” The law also validated any existing leases as “though they had been issued pursuant to the authority of this section.” SBLC issues leases pursuant to statutory authority in a manner consistent with Article IX of the Colorado Constitution and relies to a great extent on the county permitting process.

7.6.3. Administrative Process

7.6.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.6.3.2. Treatment of Applications

The renewable energy leasing process is similar to and adapted from the solid mineral leasing process. Board approval is required for all actions. SBLC can directly negotiate, if there are no competing applications. In the case of competing applications, the SBLC would likely go to a sealed bid auction.

7.6.3.3. Authorizations

SBLC issues leases for up to a term of 40 years, with stipulations to protect the environment (i.e., wildlife habitat, air quality, ground and surface water quality, and land surface).

7.6.3.4. Terms and Conditions

Besides the standard terms and conditions provided in a lease, the wind energy lease provides that the lessee be responsible for operational controls (fencing, etc.); prior to any construction, lessee must provide an environmental analyses considering impacts to avian and raptor activity and operational impacts, and proposed mitigation measures;

⁹⁰ Sonoran Institute, Lincoln Institute of Land Policy website <http://www.trustland.org/state/state-co.cfm> states that the act “does not expressly indicate that these lands are to be held in “trust,” but does identify a series of restrictions on disposals of these lands and also requires the establishment of a permanent school fund.”

a \$25,000 bond and any additional bonds required prior to the installation of each turbine; and \$1 million general liability insurance.

7.6.3.5. *Use Fees*

Leases for wind energy are a minimum payment of \$2,000 to \$3,500 per installed MW. Leases are based on a \$3 per acre and production payment of 3-4% of gross annual revenues. Annual payment for meteorological tower site easements and tower access easements is \$1,200 per tower installed on the lease. Other renewable energy sources, such as geothermal and solar, are expected to be treated similarly.

7.6.4. **Projects of Interest**

7.6.4.1. *Wind*

SBLC has issued four leases for wind energy and has another nine lease applications pending. For the most part, SBLC attempts to mitigate any concerns that the Division of Wildlife may have for any given project. One recent wind lease, the 300 MW Cedar Creek Wind Energy project in northern Weld County, required that some of the turbines be located away from sensitive bird and rare plant habitats as well as a reduction in total number of turbines placed on state land. Construction activities were restricted during nesting season and overhead transmission lines were rerouted away from sensitive areas.

7.6.5. **Challenges**

The state is seeing an increased interest in *solar* energy and recently leased over 11,000 acres for solar energy feasibility studies and testing, however, no solar leases have been issued to date. There are also three *geothermal* lease applications in process. Wind energy continues to be the alternative energy resource of interest.

7.7. Connecticut

Department of Environmental Protection
Gina McCarthy, Commissioner

Key Contacts:

Lynn Stoddard, Climate Change & Energy Team, 860.424.3236, Lynn.Stoddard@ct.gov
David Fox, Senior Environmental Analyst, Office of Environmental Review, 860.424.4111, David.Fox@ct.gov

7.7.1. Jurisdiction and Land Base

The Department of Environmental Protection (DEP) currently manages about 165,000 acres of forest land, with a total of 261,886 acres managed by DEP.

7.7.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DEP does not have alternative energy-specific land laws and rules, but operates under general statutory authority to authorize land use and regulations, such as the Connecticut Environmental Policy Act.⁹¹

Effective October 1, 2007, Public Act 07-242 (House Bill 7432) was enacted.⁹² It increases the percentage Class I renewable power required to meet the state's Renewable Portfolio Standards. The law allows the DEP Commissioner to enter into lease agreements on state property for the production of hydropower if certain conditions are met. It requires the DEP to adopt regulations to implement the RGGI Initiative. The law creates a streamlined DEP general permitting process for distributed generation,

DEP has a policy that state land should be considered only as a last resort in the siting of cell towers if there is a compelling public safety need; it is expected that this policy would apply to any proposals for wind energy. State forest land is not available for leasing.

7.7.3. Administrative Process

7.7.3.1. Process-Driver

Submittal of an application to DEP begins the review process.

7.7.3.2. Treatment of Applications

A CEPA review is required for each action that could have a major impact on the state's land, water, air or other environmental resources. The CEPA process identifies and evaluates the impacts of proposed state actions that may significantly affect the environment, providing information necessary for deciding whether to proceed with a project. The process includes scoping, preparation of a draft decision, provides an opportunity for public review and comment, and an agency record of decision.⁹³

⁹¹ See DEP's website for a listing of regulations <http://www.ct.gov/dep/cwp/view.asp?a=2704&q=323518>. CEPA regulations were adopted by the department in 1972 to guide state agencies in Environmental Impact Evaluations (as required by Section 22a-1g of the Connecticut Environmental Policy Act). Because of changes made to the CEPA in 2002, the regulations need amending. Therefore, the regulations, while still in effect, do not reflect the changes made to the Act in 2002.

⁹² See the full text of the Public Act at <http://www.cga.ct.gov/2007/ACT/PA/2007PA-00242-R00HB-07432-PA.htm>.

⁹³ *CEPA Fact Sheet*, DEP website http://www.ct.gov/dep/cwp/view.asp?a=2709&q=324144&depNav_GID=1511

7.7.3.3. Authorizations

In-River Flow and Wave/Tidal alternative energy projects would require a .401 Water Quality Certification and a permit for structures in navigable waters. Leases have been issued for communication towers and utility rights-of-way; no energy uses or permits have been issued to date.

7.7.3.4. Terms and Conditions

No information available since no state land use authorizations have been issued for alternative energy.

7.7.3.5. Use Fees

Some of the leases issued included an annual fee; most of the easements were a one-time cost.

7.7.4. Projects of Interest

7.7.4.1. Wind

Currently, there are no wind projects under consideration.

7.7.4.2. In-River Flow

DEP recently submitted comments to FERC on preliminary permits for an in-river project in the Housatonic. This is a preliminary proposal that will require NEPA evaluation by FERC, with DEP review. The project requires a .401 Water Quality Certification and a permit for structures in navigable waters from DEP in addition to FERC license. However, this project is not on land managed by DEP.

7.7.4.3. Wave/Tidal

DEP submitted comments to FERC on two competing tidal projects in Long Island Sound at the Race. These are very preliminary proposals that will require NEPA evaluation by FERC, with DEP review. Any project would require a 401 Water Quality Certification and permits for structures in navigable waters from DEP in addition to FERC license. These projects, however, are not on DEP managed land.

7.7.5. Challenges

Connecticut has a moderate potential for wind energy; it is ranked number 33 in potential capacity (approximately 571 MW) by the AWEA.

Other alternative energy projects:

DEP has installed a fuel cell demonstration project at a state park. This was supported by funding from the CT Clean Energy Fund, which is funded through a surcharge on electric bills in CT.

7.8. Delaware

Department of Natural Resources and Environmental Control

John A. Hughes, Secretary

Key Contact: Phil Cherry, Director, Policy and Planning, 302.739.9000, Philip.Cherry@state.de.us

7.8.1. Jurisdiction and Land Base

The Department of Natural Resources and Environmental Control (DNREC) currently manages 14 state parks and related preserves and greenways throughout Delaware totaling more than 20,000 acres.⁹⁴ The 381 miles of Delaware coastline is managed by a combination of private, state and federal landholders

7.8.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DNREC does not have alternative energy-specific land laws and rules; activities are authorized under Titles 7 and 29 of the Delaware Code, Chapters 60 and 80, respectively.

7.8.3. Administrative Process

7.8.3.1. Process-Driver

Submittal of an application to DNREC begins the review process.

7.8.3.2. Treatment of Applications

There are no set processes for alternative energy projects; however, if a project were to impact wetlands, consume state property or subaqueous lands, or present hazards to wildlife or the environment, various DNREC statutes and requirements would apply.

7.8.3.3. Authorizations

No specific authorization is issued; however, environmental and other permits may be required as noted above.

7.8.3.4. Terms and Conditions

Specific terms and conditions, including those for monitoring and mitigation may be imposed on a project-by-project basis, depending on the issues involved and the resources impacted.

7.8.3.5. Use Fees

There are no established fees for alternative energy projects on state lands; however, fees may be levied by an act of the Legislature, as necessary.

7.8.4. Projects of Interest

There are currently no alternative energy proposals on state land.

⁹⁴ Divisions, DNREC website <http://www.dnrec.delaware.gov/Pages/Divisions.aspx>

7.8.5. Challenges

DNREC has had no experience siting alternative energy projects on state lands. Unlike the western states has a short supply of state land and are reserved for public recreation. Another limiting factor is the lack of wind resources; land based wind resources is relatively scarce.

Some projects have been studied for offshore Delaware, but those are in federal waters and are not far enough along to report.

One project was proposed for the Indian River Inlet, a tidal turbine project that was ultimately dropped due to public opposition. There were no permits applied for and no hearings or other actions taken.

7.9. Florida

Department of Environmental Protection
Michael W. Sole, Secretary

Key Contact: Jim Farr, Director, Acquisition and Restoration Council, [850-245-2784], Jim.Farr@dep.state.fl.us

7.9.1. Jurisdiction and Land Base

Florida's Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund (Board), holds title to most state-owned land. The Department of Environmental Protection (DEP), as the administrative arm for the Board, currently manages about 3.3 million acres,⁹⁵ including 698,000 acres in 161 state parks, 84,000 in greenways and trails, about 378,000 acres of conservation easements, and roughly 58,000 acquired acres for the Florida Everglades restoration program.⁹⁶

7.9.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Florida does not have alternative energy-specific land laws and regulations. Florida's Acquisition and Restoration Council (ARC) operates under Florida statutes Title XVIII, ch 259.035⁹⁷ and is responsible for the management and use of conservation lands. DEP's Office of Environmental Services provides staff to the council. The Bureau of Beaches and Coastal Systems (BBCS) manages activities affecting Florida's beach and coastal systems and sovereign submerged lands and operates under ch 235 of the same Title⁹⁸ and rules found in ch 18-21 of the Florida Administrative Code for sovereign lands.⁹⁹

7.9.3. Administrative Process

7.9.3.1. Process-Driver

Submittal of an application starts the review process. As part of the application, applicants must show that the use of the conservation land will be in the public interest, that the use is not incompatible with the major or primary purpose for which the lands were acquired, that the applicant has documentation demonstrating that it has exhausted all other alternatives, and that there will be a net positive benefit to the state. Initially, the application will be forwarded to the appropriate managing agency, if applicable, for their review and consideration.

7.9.3.2. Treatment of Applications

Private upland easements that are 5 acres or less, but more than 0.25 acre, require ten days advance notice to the Governor and Cabinet to determine whether the request should be submitted to the Board of Trustees for approval. Requests under 0.25 acre

⁹⁵ *State Land Management Review*, DEP website <http://www.dep.state.fl.us/lands/oes/landmgmt/default.htm>

⁹⁶ *Land Conservation Statistical Abstract*, DEP website <http://www.dep.state.fl.us/secretary/stats/land.htm>

⁹⁷ For full text of the statute, see

http://www.flsenate.gov/statutes/index.cfm?App_mode=Display_Statute&URL=Ch0259/titl0259.htm&StatuteYear=2007&Title=%2D%3E2007%2D%3EChapter%20259

⁹⁸ For full text of ch 253, see

http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=Ch0253/titl0253.htm&StatuteYear=2004&Title=%2D%3E2004%2D%3EChapter%20253

⁹⁹ See <http://www.dep.state.fl.us/legal/rules/shared/18-21.pdf> for a copy of the current code.

can be handled under delegation of authority, and requests over 5 acres require Board of Trustees review and approval. Public upland easements and public upland leases are handled under delegation of authority unless the term requested is over 50 years. Any request received over 50 years requires Board of Trustees review and approval. Also, private, for-profit upland subleases require Board of Trustees review and approval. The Board of Trustees would be involved in the approval if there were heightened public concerns on the proposed project.

The BPLA reviews the project for consistency, requests the managing agency, if applicable, to review and approve the project, and makes a staff recommendation to ARC. ARC is responsible for review of any proposals for use of state-owned conservation land and makes recommendations about the advisability of these proposals to the Board of Trustees. The proposal for a project must be approved by ARC. ARC must consider and evaluate the merits of a project proposed on conservation and recreation lands and whether it meets the criteria of either the (1) Incompatible Use of Natural Resource Lands Policy, or (2) Linear Facilities Policy.

BBCS reviews and approves any projects on sovereign submerged lands that affect the movement of sand along beaches fronting the Atlantic Ocean or the Gulf of Mexico. It requires a Joint Coastal Permit for those activities, and that permit constitutes a finding of consistency with Florida's Coastal Zone Management Program. Experimental projects require a reliable experimental test plan to determine the success or failure of the technology.¹⁰⁰

7.9.3.3. Authorizations

Either an easement or lease would be issued, depending on the use.

7.9.3.4. Terms and Conditions

Power easements are typically issued for 30 years (a maximum of 50 years can be issued, if there is a need, such as capital costs). Perpetual easements would only be issued for transportation facilities, such as roads.

7.9.3.5. Use Fees

Compensation is based on fair market value. Applicants must pay a one-time easement fee for private easements based on an appraisal. This easement fee is paid to the Board of Trustees of the Internal Improvement Trust Fund. Additionally, applicants may be required to pay replacement costs (to satisfy the net positive benefit for use of conservation land) or some other form of compensation with the approval of the manager).

For public easements, no fee is assessed, and for public leases, (i.e. to governmental entities) a \$300 annual administrative fee is assessed.

¹⁰⁰ <http://www.dep.state.fl.us/beaches/programs/envpermt.htm>

7.9.4. Projects of Interest

7.9.4.1. Wind

A request by Florida Power and Light (FP&L) was received for siting wind turbines, three of which would have been on state-owned conservation land. The proposal was withdrawn by FP&L because the county, as managing agency, denied the project.

7.9.5. Challenges

Florida has a low potential for onshore wind; it is ranked number 46 in potential capacity by the AWEA. However, tidal and wave currents are a likely source of renewable energy.

Florida, like many other states, is moving strategically to encourage development of alternative, renewable energy sources by providing incentives and establishing an RPS.¹⁰¹

¹⁰¹ For more information about energy initiatives, see <http://www.dep.state.fl.us/energy>

7.10. Georgia

Department of Natural Resources

Noel Holcomb, Commissioner

Key Contact: Steve Friedman, Chief, Real Estate Unit, 404.656.9173, SFriedman@dnr.state.ga.us

7.10.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages over one million acres of public land in state parks, natural areas, public fishing areas and wildlife management areas.¹⁰² DNR also manages or has title to the waters and marshland of the State.

7.10.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

An 18-member, governor-appointed Board of Natural Resources is responsible for setting rules and regulations and provides input to DNR on issues. The DNR does not have alternative energy-specific land laws and regulations; DNR uses standard permitting and leasing statutes¹⁰³ and regulations for any authorizations involving alternative energy.

7.10.3. Administrative Process

7.10.3.1. Process-Driver

Submittal of an application begins the review process.

7.10.3.2. Treatment of Applications

The Georgia Environmental Policy Act (GEPA) requires DNR (and other state agencies) to prepare an Environmental Impact Report as part of its decision-making process for all activities that may have an impact on the environment. Alternatives to the proposed project or activity must be considered as part of the report.¹⁰⁴

7.10.3.3. Authorizations

The department issues revocable licenses for use of state-owned water bottoms. An irrevocable easement can also be issued, but that requires approval of the DNR board and General Assembly.

7.10.3.4. Terms and Conditions

Any mitigation requirements as a result of the EIR would be stipulated in the authorization issued.

7.10.3.5. Use Fees

Use fees are determined by the State Property Commission and are based on a market assessment often determined by an appraisal.

¹⁰² *About Natural Resources in Georgia*, DNR website <http://www.gadnr.org/naturalresources.aspx>

¹⁰³ The full text of Georgia Code Title 12 can be found at <http://www.lexis-nexis.com/hottopics/gacode/default.asp>

¹⁰⁴ O.C.G.A. 12-16-1, <http://crd.dnr.state.ga.us/content/displaycontent.asp?txtDocument=100&txtPage=9>

7.10.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.10.5. Challenges

Not available.

7.11. Hawaii

Department of Land and Natural Resources

Laura H. Thielen, Chairperson, Board of Land and Natural Resources

Key Contact: Morris M. Atta, Administrator, Land Division, 808.587.0422 morris.m.atta@hawaii.gov

7.11.1. Jurisdiction and Land Base

The state has jurisdiction over approximately 1,353,000 acres of land. The Department of Land and Natural Resources (DLNR) currently manages about 1,315,000 acres of those public lands. Other agencies of the state (Department of Transportation, Department of Agriculture, Department of Hawaiian Home Lands, Office of Hawaiian Affairs, Hawaii Community Development Authority, Hawaii Health Systems Corporation, and the University of Hawaii) have jurisdiction over the remaining 38,000 acres of land. Of the 1,353,000 acres, approximately 1,302,000 acres (or 96%) are trust lands that are reserved for the following 5 purposes: 1) the support of the public schools and other public educational institutions; 2) the betterment of the conditions of native Hawaiians; 3) the development of farm and home ownership on as widespread a basis as possible; 4) the making of public improvements; and 5) the provision of lands for public use.

7.11.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DLNR and its Board conducts its business under the authority of Chapter 171, Hawaii Revised Statutes (HRS), as amended and Title 13 of Hawaii Administrative Rules.¹⁰⁵ Chapter 171, HRS mandates that leases of state land for agricultural, industrial and commercial purposes be awarded through a competitive bidding process (public auction). Renewable energy producers, however, are exempt from the competitive bidding process pursuant to Section 171-95, HRS, which allows the Board without public auction to directly lease to renewable energy producers public lands for terms up to 65 years and also grant licenses and easements for road, pipeline, utility, communication cable and other rights-of-way.

7.11.3. Administrative Process

7.11.3.1. Process-Driver

The permitting process begins with the submittal of an application.

7.11.3.2. Treatment of Applications

Each application may be directly negotiated, subject to Board approval. The approval by the Board with few exceptions occurs only after all other required governmental approvals have been obtained by the renewable energy producers, such as approval by the respective county government of any subdivision of the state land by the renewable energy producers. Obtaining necessary approvals must be accomplished prior to finalizing the land use agreement with the DLNR. Other permitting agencies, such as the Department of Health and the Office of Conservation and Coastal Lands, have their own set of rules affecting their permit processing procedures.¹⁰⁶

¹⁰⁵ HAR Title 13 can be found at <http://hawaii.gov/dlnr/rules>

¹⁰⁶ See <http://hawaii.gov/ltgov/office/adminrules> for other agency permitting requirements

7.11.3.3. Authorizations

As mentioned above, the Board without public auction, can directly lease to renewable energy producers public lands for terms up to 65 years and also grant licenses and easements for road, pipeline, utility, communication cable and other rights-of-way. (See Table 7-1 and Table 7-2 for further information.)

7.11.3.4. Terms and Conditions

Terms and conditions, such as monitoring, reporting, bonding, insurance, etc., or other mitigation measures are determined on a case-by-case basis depending on the specific requirements and impacts of the various alternative energy technologies that are proposed as uses on the public lands.

7.11.3.5. Use Fees

See the following tables for specific compensation requirements; DLNR requires a minimum of fair market rental for its authorizations.

7.11.4. Projects of Interest

7.11.4.1. Wind

Two projects exist on state land, both on the Island of Maui. The first project has been active since 2005; the second is approved in principle by the Board pending the outcome of the company's due diligence.

Table 7-1. Wind Energy Projects Issued by Hawaii DLNR, as of April 2008

Company	Term	Authoriz. Type	Acres	Annual Compensation	Status
Kaheawa Wind Power, LLC	20 yr w/option for 20 add'l yrs	Land Use Permit	200	Greater of \$150,000 or 2.5% gross revenues	Issued
Kaheawa Wind Power II, LLC	Long-term (period not set)	Lease	325	Fair market rental	Approved in principle

7.11.5. Challenges

As a result of specific legislation (§196-41 HRS), DLNR published a catalog of potential sites for the development of renewable energy by December 31, 2006, with updates every five years.¹⁰⁷ (The Department of Business, Economic Development, and Tourism assisted with the effort with additional funds as well as policy and technical expertise.) The renewable energy technologies catalogued were:

- wind energy,

¹⁰⁷ A Catalog of Potential Sites for Renewable Energy in Hawaii can be found at <http://hawaii.gov/dbedt/info/energy/publications/cpsre07.pdf>

- solar thermal,
- photovoltaic,
- biomass, biofuels, and biogas (produced from dedicated energy crops, agriculture and food processing waste, municipal solid waste, landfill gas, and other sources),
- geothermal,
- hydroelectricity, and
- ocean energy (including wave energy, energy from ocean currents, and ocean thermal energy conversion)

Table 7-2. Other Alternative Energy Projects Issued by Hawaii DLNR, as of April 2008

Company	Term	Authoriz. Type	Acres	Annual Compensation		Additional Compensation (based on kWh produced)
Puna Geothermal Venture	65 yr	Land Use Agreement	1,100 ac of subsurface state-owned minerals	10% gross proceeds + 5% gross proceeds from by-products		
Green Energy Team, LLC	Revocable	Land Use Permit, approved in principle	1,000 ac of timber ¹⁰⁸	Fair Market Rent		
Wailuku River Hydro-electric Limited Partnership	55 yr	Land Use Agreement for the right to divert, impound, transmit, use and return water	2.01 ac (land portion)	Base: \$8,600	Yrs 1-5	\$0.001/kWh <40GWh; \$0.0015/kWh 40-80GWh; \$0.002 >80 GWh ¹⁰⁹
				Base + 25%	Yrs 6-10	
				Y6-10 rate + 25%	Yrs 11-15	1.5 x Y1-10 rate
				Y11-15 rate + 25%	Yrs 16-20	
				Y16-20 rate + 25%	Yrs 21-25	2 x Y1-10 rate
				Y21-25 rate + 25%	Yrs 26-30	

¹⁰⁸ The revocable permit is to grow trees to be harvested, dried and converted into wood chips as a fuel source for a gasification facility that produces electricity. The revocable permit is intended as an interim measure pending passage of legislation amending the definition of a renewable energy producer to include growers and producers of organic materials used primarily for the production of biofuels or other fuels so that they will be eligible for direct leases of public land.

¹⁰⁹ Also includes a minimum annual rent of \$0.30 per million gallons of non-consumptive use of the surface water

Pending legislation that would affect the State of Hawaii's renewable energy policies include the following:

1. HB 3179, amends the definition of renewable energy producer to include growers and producers of organic materials used primarily for the production of *biofuels* or other fuels, so that they will be eligible for direct leases of public land.
2. HB 2863, establishes a renewable energy facility siting process to expedite the review and action process upon state and county permits necessary for the siting, development, construction, and operation of a renewable energy facility.
3. HB 3237, significantly increase Hawaii's energy self-sufficiency by:
 - a) Increasing public participation in public utility commission process while decreasing the use of paper;
 - b) Amending the renewable energy portfolio standards to mandate greater renewable energy penetration levels;
 - c) Establishing a photovoltaic feed-in tariff financed by a carbon fee;
 - d) Establishing a carbon fee for grid-based electricity;
 - e) Requiring solar water heaters for new and existing buildings under certain conditions;
 - f) Increasing renewable energy rebates; and
 - g) Establishing a carbon tax for vehicles to be collected and expended by the counties for transportation mitigation measures.

7.12. Idaho

Department of Lands

George Bacon, Director

Key Contact: Kathy Opp, Deputy Director, 208.334.0237 kopp@idl.idaho.gov

7.12.1. Jurisdiction and Land Base

The Department of Lands (IDL) manages nearly 2.5 million acres, including 780,000 acres of commercial timberland and about three million acres of minerals. In addition, the IDL serves as the host agency to the Idaho Board of Scaling Practices, the Clearwater-Potlatch Timber Protective Association and the Southern Idaho Timber Protective Association.¹¹⁰

7.12.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Article IX of the Idaho Constitution established the State Board of Land Commissioners.¹¹¹ The Idaho State Board of Land Commissioners and the IDL, as the board's administrative arm, possess the ability to lease endowment trust land for a variety of uses. Idaho Code Section 58-307¹¹² provides long-term leasing periods for certain uses deemed commercial purposes. Idaho does not have specific alternative energy land laws or regulations.

7.12.3. Administrative Process

7.12.3.1. Process-Driver

IDL statutes provide an ability to call for proposals (RFP), accept individual applications or conduct sealed bids as a means to award leases. IDL is currently developing an RFP process for wind energy projects.

7.12.3.2. Treatment of Applications

Any long-term lease (over 10 years in duration) requires a meeting with the county commissioners in the county where the lands are located prior to awarding a contract.

7.12.3.3. Authorizations

IDL issues long term leases (more than 10 years in duration) for commercial purposes. The office is currently developing a lease specific to wind energy projects. The Idaho Public Utilities Commission is the governing agency for facility/transmission line permitting and processing requirements.¹¹³ IDL is neither involved in that part of the process nor involved in promoting or crafting tax or development incentives.

7.12.3.4. Terms and Conditions

All necessary terms and conditions governing use of the land is included in the lease document. IDL leases include financial requirements such as business plans and

¹¹⁰ IDL website, *An Overview of the Idaho Department of Lands*, <http://www.idl.idaho.gov/overview.htm>

¹¹¹ Ibid.

¹¹² For statutes and administrative codes, follow the links at IDL's website <http://www.idl.idaho.gov/Overview/idahocode.htm>

¹¹³ See the PUC's website at <http://www.puc.idaho.gov/>. Another source of information is the Idaho Office of Energy Resources (www.idwr.idaho.gov/energy), a new organization housed within the Department of Water Resources.

financial statements as well as terms for bonding and insurance, monitoring, mitigation procedures, cancellation for nonperformance, etc. If the business proposal requires on-the-ground research to narrow the use area, such activity is typically allowed under a temporary permit for a limited duration and prior to using a long-term lease.

7.12.3.5. Use Fees

At the December 20, 2007 meeting of the Idaho State Board of Land Commissioners, the board approved the State Trust Lands Asset Management Plan¹¹⁴. This plan provides overarching policy and land management philosophy, including the articulation of performance standards and valuation methods for each type of asset. Lease terms can be structured in a variety of ways, provided fees produce a financial return commensurate with the use. Some examples include, fixed rent as a percent of land value, fixed rent with an index mechanism, percentage of gross receipts, minimum rent plus a percentage of gross receipts above a certain level earnings, etc.

7.12.4. Projects of Interest

No projects are currently proposed on IDL managed lands.

7.12.5. Challenges

The current legislative session passed a concurrent resolution, HCR 054¹¹⁵, that encourages the Idaho State Land Board to explore opportunities to develop alternative energy facilities on state endowment land. The resolution further encourages the legislature to promote such development and enable incentives. On April 1, the resolution was forward to the Governor for signature.

¹¹⁴ For the full text of the IDL's State Trust Lands Asset Management Plan see http://www.idl.idaho.gov/am/amfiles/final_AMP_%20Aprvd_Dec2007.pdf.

¹¹⁵ See current status and text at the legislative website <http://www3.idaho.gov/oasis/HCR054.html#sop>

7.13. Illinois

Department of Natural Resources
Sam Flood, Acting Director

Key Contact: Todd Rettig, Manager, Division of Ecosystems and Environment, 212-785-5500, todd.rettig@illinois.gov

7.13.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently owns or leases about 466,600 acres of land and water for a variety of special uses: state parks, fish and wildlife areas, conservation areas, etc.

7.13.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

While Illinois does not have specific land laws and regulations for alternative energy projects on state land, DNR has crafted a policy for wind energy generation facilities. The policy essentially states that DNR will consider placement of energy facilities on state land as long as the use is secondary or supports the public purposes for which acquisition was intended (i.e., park, recreation, habitat conservation, fish and wildlife).¹¹⁶

7.13.3. Administrative Process

7.13.3.1. *Process-Driver*

Any interest in leasing state lands must be submitted to the Office of Realty and Environmental Planning.

7.13.3.2. *Treatment of Applications*

All proposals to use state lands are subject to numerous evaluations, including a comprehensive internal environmental review that looks at potential impacts to threatened and endangered species, areas listed on the IL Natural Areas Inventory, wetlands, and cultural resources.

7.13.3.3. *Authorizations*

The one wind project allowed was issued on a standard lease form, with appropriate changes particular to that project.

7.13.3.4. *Terms and Conditions*

Not available.

7.13.3.5. *Use Fees*

Not available.

¹¹⁶ See Appendix B for the *Wind Energy Generation Facilities* policy.

7.13.4. Projects of Interest

7.13.4.1. Wind

The DNR issued a lease to a rural electric cooperative for one direct-drive turbine that could generate electricity for up to 400 typical homes. The site is a reclaimed coal-waste pile that was acquired by the DNR through its Abandoned Mined Land Reclamation Program and is managed for pheasant habitat and hunting. This use is expected to continue following construction of the turbine. The lease was issued before the wind policy was adopted by the Department.

7.13.5. Challenges

According to AWEA, Illinois is ranked number 8 in the nation based on existing capacity and 16th based on potential capacity. It has a number of projects on private land, with a total installed capacity of 699 MW. Another 108.3 MW is in projects under construction.¹¹⁷

¹¹⁷ See AWEA website for detailed project listing for Illinois and other states at <http://awea.org/projects>

7.14. Indiana

Department of Natural Resources

Robert Carter, Jr., Director

Key Contact: John Davis, Deputy Director, 317.232.4025 jdavis@dnr.in.gov

7.14.1. Jurisdiction and Land Base

The Department of Natural Resources manages about 500,000 acres of state land, including about 250,000 acres of land carrying purchase and revenue restrictions. The remaining 250,000 acres is managed in the state's interests, including state forests, parks, and nature preserves. DNR also manages the bed of navigable waterbodies, the bed of certain public waters, and the water column of public waters.

7.14.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Indiana does not have specific alternative energy land laws and regulations. The 12-member Natural Resource Commission, in coordination with the Director, develops policy for the management of the activities and facilities of the DNR¹¹⁸ and is the rulemaking body. The DNR Director has authority for day-to-day licensing decisions; the Commission must approve all other decisions prior to authorization by DNR. Permits and easements are issued under the authority of Indiana Code Title 14¹¹⁹ and Indiana Administrative Code Title 312.¹²⁰ Leases and sales are issued under the authority of Indiana Code Titles 4 and 14. A 12-member, governor appointed Advisory Council advises the NRC and DNR on policies and program administration.

7.14.3. Administrative Process

7.14.3.1. Process-Driver

Submittal of an application begins the review process.

7.14.3.2. Treatment of Applications

DNR reviews the application for completeness and compatibility with the management rules or title restrictions. A 12-member Advisory Council reviews DNR staff recommendations and forwards its recommendation to the NRC. The application becomes an agenda item on a regularly scheduled, quarterly meeting of the NRC, complete with public notice and review. If the NRC finds the use to be in the interest of the state, the DNR may proceed with the authorization.

7.14.3.3. Authorizations

DNR may issue a license or a lease, dependent on what use and capital needs there might be.

¹¹⁸ Natural Resource Commission Mission Statement, adopted September 18, 2007, http://www.in.gov/nrc/files/mission_statement.pdf.

¹¹⁹ Full text of IC 14 may be found at <http://www.in.gov/legislative/ic/code/title14>.

¹²⁰ Full text of 312 IAC may be found at <http://www.in.gov/legislative/iac/title312.html>.

7.14.3.4. Terms and Conditions

There are no alternative energy projects on state land at present. Authorizations typically carry stipulations to avoid or mitigate impacts to fish and wildlife, water quality, etc.

7.14.3.5. Use Fees

The DNR has a policy to charge market value for the use of state land. It is likely that the DNR would also look at usual and accepted practices for additional revenue, such as a percent of gross receipts. The value would be a negotiated term.

7.14.4. Projects of Interest

There are no alternative energy projects proposed or authorized on state land, nor are any anticipated in the near future.

7.14.5. Challenges

While there are no alternative energy projects on the horizon, DNR expects that interest in alternate energy projects in Indiana will grow. Two wind farms have recently been constructed on private land. It is unlikely that state land will be considered for utility-scale development because of title restrictions (such as on federal-funded parcels), restricted purposes (such as nature preserves), or simply the size (smaller, isolated) of parcels owned by the state.

7.15. Iowa

Department of Natural Resources

Richard Leopold, Director

Key Contact: Inga Foster, Environmental Specialist, 515.281.8967 Inga.Foster@dnr.iowa.gov

7.15.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages about 300,000 acres of public land, about 40,000 acres of forests, operates and maintains 84 parks and recreation areas in the state, and responsible for more than 90 state preserves set aside for their natural or cultural significance.¹²¹ Sovereign lands also include Wildlife Management Areas, dozens of lakes, and portions of 14 rivers.

7.15.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Governing policies and administrative rules are set by the DNR's governor-appointed director and two governor-appointed citizen commissions:

- the seven-member Natural Resource Commission, oversees fish, wildlife, parks and forestry issues; and
- the nine-member Environmental Protection Commission, oversees environmental issues.¹²²

Iowa does not have alternative energy-specific land laws and regulations; DNR operates under the general direction of the Code of Iowa, Title XI (see chapters 461A and 462A).¹²³

7.15.3. Administrative Process

7.15.3.1. Process-Driver

Submittal of an application starts the review process.

7.15.3.2. Treatment of Applications

Applications must be found to be in the best interest of the public to proceed to authorization.

7.15.3.3. Authorizations

Any project that is above, below, or on state-owned Sovereign Lands or Waters requires a Sovereign Lands Construction Permit from DNR.¹²⁴ DNR also issues 401 Water Quality Certifications as well as other air and water quality related permits.

7.15.3.4. Terms and Conditions

DNR also reviews any projects before the Iowa Utilities Board for wildlife concerns and recommends sites and pre-and post-construction studies on birds and bats.

¹²¹ Iowa DNR *About Us* website <http://www.iowadnr.com/files/aboutus.pdf>.

¹²² Ibid.

¹²³ For full text of these chapters and Title XI, see <http://www.legis.state.ia.us/Current/tablesandindex> (select "skeleton index" and then the "TOC" tab for a complete listing).

¹²⁴ Iowa DNR *Sovereign Lands Construction Permits* website <http://www.iowadnr.com/other/slands.html>.

7.15.3.5. Use Fees

Not applicable.

7.15.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.15.5. Challenges

DNR completed studies on wind hybrid technology to create solutions regarding the intermittency of wind, and on the potential of transmitting wind energy to high load centers in the Midwest.¹²⁵

¹²⁵ See <http://www.state.ia.us/dnr/energy/programs/wind>.

7.16. Kansas

Department of Wildlife and Parks

Mike Hayden, Secretary

Key Contact: Brad Simpson, Public Lands Statewide Coordinator, 620-672-0757 brads@wp.state.ks.us

7.16.1. Jurisdiction and Land Base

The Department of Wildlife and Parks (DWP) currently manages about 150,000 acres of state land, including 24 state parks, 63 wildlife management areas, state fishing lakes, and refuge systems. These lands are generally managed for wildlife management. Of that acreage, about 40,000 is under cropland leases, which returns revenue or crops in place to the DWP.¹²⁶

7.16.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DWP is a cabinet-level agency with a Secretary appointed by the Governor. A seven-member commission, appointed by the Governor, advises the Secretary and approves regulations governing outdoor recreation and fish and wildlife resources in Kansas.¹²⁷ DWP does not have alternative energy-specific laws and regulations; it operates under Kansas Statutes Chapter 32¹²⁸ and Kansas Administrative Regulations Chapter 115.¹²⁹

DWP has developed a policy on Wind Power in Kansas. Generally, DWP supports the concept of renewable energy and “recognizes that energy conservation and efficiency are the most environmentally benign means of freeing up energy availability for the future.”

Two of the six position statements are that

- 1) facilities should be sited on previously altered landscapes and away from extensive areas of intact native prairie, important wildlife migration corridors, and migration staging areas; and
- 2) an inventory of plant and animal communities be made before wind development sites are selected, during construction, and after development is completed; and mitigation measures are appropriate only if significant ecological harm from wind power facilities cannot be adequately addressed through proper siting.¹³⁰

7.16.3. Administrative Process

7.16.3.1. Process-Driver

Submittal of an application begins the review process.

7.16.3.2. Treatment of Applications

Applications are reviewed to ensure that the intended use of the property meets with current management objectives. If so, the DWP conducts a public auction.

¹²⁶ KDWP website, *Locations*, http://www.kdwp.state.ks.us/news/kdwp_info/locations.

¹²⁷ KDWP website, *About KDWP*, http://www.kdwp.state.ks.us/news/kdwp_info/about_kdwp.

¹²⁸ Full text of KSA 32-101, et seq, can be found at <http://www.kslegislature.org/legsrv-statutes/index.do>.

¹²⁹ Full text of KAC 115-1-1, et seq, can be found at <http://www.kslegislature.org/legsrv-kars/index.do>.

¹³⁰ For the full text and all six position statements, see the KDWP website *Wind Power and Wildlife Issues in Kansas* found at http://www.kdwp.state.ks.us/news/kdwp_info/about_kdwp/department_position_on_issues/wind_power_and_wildlife_issues_in_kansas or the pdf version in Appendix B.

7.16.3.3. *Authorizations*

Leases: Should a lease be issued for a wind power facility on DWP managed land, it would likely follow current oil and gas lease framework.

Habitat and Species of Concern: By statute, wind power projects are subject to KDWP oversight if they are publicly funded, state or federally assisted, or require a permit from another state or federal government agency. A special action permit is issued for activities that affect listed species before such activities may proceed.

7.16.3.4. *Terms and Conditions*

No authorization has been issued for a wind farm on state land.

7.16.3.5. *Use Fees*

Use fees are set by the high bid, based on market value.

7.16.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land. There are, however, several small wind turbines established on state land for power generation on site, such as at school buildings.

7.16.5. Challenges

Kansas has a high potential for wind energy; it is ranked 3rd in the nation for potential capacity (121,900 MW) and 12th in existing capacity by the AWEA.

In addition to wind power generation, ethanol plants are being established in the state.

7.17. Kentucky

No response.

7.18. Louisiana

Department of Natural Resources

Scott Angelle, Secretary

Key Contact: Mike French, Director, Technology Assessment Division, 225.342.1275 Mike.French@LA.GOV

Leasing Info: David Meloy, Geologist Supervisor, Office of Mineral Resources, 225-342-6119 David.Meloy@LA.GOV

7.18.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages about 1.9 million surfaces acres and 5.5 million acres of submerged lands (water bottoms).

7.18.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Act 481 of 2005 authorizes the State Mineral Board and the Secretary of DNR to lease state lands and water bottoms for the exploration, development, or production of wind energy.¹³¹ The administrative rules, *Leasing State Lands and Water Bottoms for the Exploration, Development and Production of Wind Energy*¹³², were adopted in February 2008.

7.18.3. Administrative Process

7.18.3.1. Process-Driver

Any party who wants to apply for a state wind lease must register on a one-time basis prior to submitting an application. After registering, any party can nominate areas based on criteria in regulation by scheduling a “pre-nomination meeting” with DNR and submitting proposals.

7.18.3.2. Treatment of Applications

If determined to be a valid submittal, the nominated area is removed from commerce for the purpose of wind leasing while the nomination is being evaluated, is given to the Department of Wildlife and Fisheries for review and then given to the DNR Secretary for evaluation based on Act 481 to determine whether the proposed wind lease is appropriate. If so, the secretary recommends to the State Mineral Board that it conduct a public bid process. Any appropriate sites are advertised for 60-120 days requesting bids. Bids must include a “bonus” bid (a minimum of half annual rental advertised in the request for bids).

7.18.3.3. Authorizations

Successful bidders are awarded a state wind lease contract; the DNR is currently drafting this contract.

7.18.3.4. Terms and Conditions

Lessees are anticipated to receive a primary term of five years to develop the site. Once energy production begins, it must be maintained. Any lapse of at least 180 days results in automatic termination of the lease. Also, five years after energy production

¹³¹ Full text of Act 481 can be seen at <http://www.legis.state.la.us/billdata/streamdocument.asp?did=319953>

¹³² LAC 43.I.Chapters 9, 10, 13 and V.Chapters 1, 3 can be viewed at <http://doa.louisiana.gov/osr/lac/lac43.htm>

takes place, any unused acreage must be returned to the state. Any wind data collected must be supplied to the DNR and is made available to the public at the end of the primary term. Prior to commencing construction, a performance surety and general liability insurance must be in place.

7.18.3.5. *Use Fees*

During the primary term of the lease, the use fee is based on the bid. Once in production, the lessee pays a royalty based on gross revenues. The state can receive the royalty in-kind or in-value.

7.18.4. **Projects of Interest**

7.18.4.1. *Wind*

Currently, there are no commercial wind projects under consideration by DNR.

7.18.5. **Challenges**

During 2005, the Louisiana Public Service Commission (LPSC) investigated the feasibility of implementing a renewable portfolio standard in Louisiana. In February 2006, the LPSC decided not to implement a renewable portfolio standard and voted instead to implement a voluntary Green Pricing Tariff program that would be implemented by electric utilities to allow individual customers to choose to have their electric service supplied from renewable resources, for which they would pay a premium.

Several years ago the DNR was approached by a company interested in the possibility of leasing offshore state water bottoms for a wind farm. In a February 2004 presentation, the company stated that a portfolio standard would guarantee a market for wind power generated offshore and motivate utilities to seek more of it. As a result of this interest, Act 481 was passed in 2005.

Offshore Louisiana may have significant potential for wind energy development; wind studies would need to be accomplished to delineate areas for development. There is a potential of using abandoned offshore oil and gas platforms for mounting wind turbines to generate electricity. There are unanswered questions, however, about the structural suitability of these platforms for mounting wind turbines – an application for which they were not designed.¹³³

Onshore Louisiana has a low potential for wind; it is ranked number 47 in potential capacity by the AWEA.

¹³³ Mike French, LDNR, *History and Recent Developments in Louisiana Wind Energy*, February 22, 2005 Update.

7.19. Maine

Department of Conservation

Patrick K. McGowan, Commissioner

Key Contacts: John Titus, Senior Planner, Bureau of Parks and Lands, 206.286.4916, John.Titus@maine.gov

Catherine M. Carroll, Director, Maine Land Use Regulation Commission, 207.287.4930,

Catherine.M.Carroll@maine.gov

7.19.1. Jurisdiction and Land Base

The Department of Conservation (MDC) manages 17 million acres of forestland, 10.4 million acres of unorganized territory and 47 parks and historic sites.¹³⁴ Of this total,

- The Bureau of Parks and Lands (BPL) manages 577,000 acres of Public Reserved Lands, 3,000 acres of Non-reserved Lands, 2.3 million acres of submerged lands, 1,316 coastal islands, and nearly 300,000 acres of conservation easements, and various public access easements totaling 600,000 acres. The state has acquired nearly 250,000 new acres within the last 5 years, mostly public access and conservation easements.¹³⁵
- The Land Use Regulation Commission (LURC) manages the unorganized territory.

7.19.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The Maine Wind Energy Act¹³⁶ encourages siting and development of wind power in the state. In 2005, MDC adopted *Guidance on Factors Considered During Agency Review of Wind Power Developments*¹³⁷. This guidance applies to proposals to develop grid scale wind power installations in Maine and provides a summary of factors considered during State agency review and assist in identifying potential issues related to siting. In 2007, the Governor signed an Executive Order establishing a Task Force on Wind Power Development to examine regulatory processes, review criteria and financing options currently applicable to wind power projects, identify potential barriers to development, and make recommendations for changes to policies, regulations, and financial incentives necessary to facilitate wind projects in Maine.¹³⁸

7.19.3. Administrative Process

7.19.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

¹³⁴ MDC Press release for *Land Conserved at Ferry Beach State Park*

<http://maine.gov/tools/whatsnew/index.php?topic=DOC+News&id=829&v=Article>

¹³⁵ MDC Bureau of Parks and Lands 2007 Annual Report found at <http://mainegov-images.informe.org/doc/parks/pdf/Microsoft%20Word%20-%20Annual%20Report%202007%20final.pdf>

¹³⁶ The full text of the Maine Energy Act can be found at <http://janus.state.me.us/legis/statutes/35-A/title35-Ach34sec0.html>

¹³⁷ The full text of the guidance document can be found at <http://mainegov-images.informe.org/dep/blwq/docstand/windpower.pdf> and in Appendix B.

¹³⁸ The briefing documents can be found at http://www.maine.gov/doc/mfs/windpower/briefing_material.shtml and includes a variety of weblinks and documents for informed decision making.

7.19.3.2. *Treatment of Applications*

Projects in the unorganized portion of Maine are subject to zoning and siting criteria and permitting through the LURC. Projects in state waters or on forest lands are subject to state leasing authority through the BPL.

7.19.3.3. *Authorizations*

MDC authorizes any surface and submerged land use under a lease. In addition, electric transmission lines and access across state land may be authorized through an easement.

7.19.3.4. *Terms and Conditions*

Unavailable.

7.19.3.5. *Use Fees*

Unavailable.

7.19.4. **Projects of Interest**

7.19.4.1. *Wind*

MDC issued an easement for electric transmission lines across two state-owned parcels to TransCanada Maine Wind Development, Inc. The parcels are in Wyman Township abutting existing utility corridors and proximate to or abutting State Route 27 and the Appalachian Trail Corridor.¹³⁹

7.19.5. **Challenges**

Onshore Wind. The Governor’s Task Force made their final report in February 2008. The Task Force stated that if Maine were to become a leader in wind power development, changes would need to be made in the regulatory process for wind power projects and to establish a planned approach to guide wind power projects to appropriate sites. The report also listed specific recommendations to streamline the permitting process to make it “more predictable and coherent for all interested parties.” It also recommended legislation be enacted to facilitate these changes.¹⁴⁰

Offshore Wind. Even though no projects have been proposed to date, the Task Force also recommended that MDC develop siting guidance as well as streamline permitting processes to encourage development.¹⁴¹

Other alternative energy sources under consideration by MDC:

The state’s forestlands currently provide biomass and wood pellet products, with efforts underway to increase forest products for wood pellet production.

¹³⁹ BPL 2007 annual report at p.18

¹⁴⁰ The Final Report can be found at http://mainegov-images.informe.org/doc/mfs/windpower/pubs/report/wind_power_task_force_rpt_final_021408.pdf and a summary of the report in Appendix B.

¹⁴¹ Ibid., at p.41.

7.20. Maryland

Department of Natural Resources

John R. Griffin, Secretary

Key Contact: Gene Piotrowski, Director, Public Lands Policy Office for a Sustainable Future, 410.260.8405

GPiotrowski@dnr.state.md.us

7.20.1. Jurisdiction and Land Base

The Department of Natural Resources manages about 451,000 acres of state land. In addition, DNR administers conservation law on Chesapeake Bay.

7.20.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DNR does not have specific alternative energy land laws and regulations. It operates under standard permitting and leasing statutes and regulations for any authorizations involving alternative energy.¹⁴² At the time of this report, DNR is developing a draft policy addressing the use of wind power generation on state land. (See Section 7.20.5) The secretary created the Office for a Sustainable Future in 2007 to guide and assist the DNR in “developing and implementing sustainable practices,” to analyze trends, work with units across the DNR, to coordinate action, and measure results under the Governor’s BayStat effort, StateStat and any new performance metrics.¹⁴³

7.20.3. Administrative Process

7.20.3.1. Process-Driver

DNR primarily responds to unsolicited requests for use of state land. In some situations, especially to implement planned activities, Requests for Proposals are solicited from the public.

7.20.3.2. Treatment of Applications

DNR reviews proposals to use DNR lands for that purpose as the landowning interest. Approval of projects, scope, assessment of impacts, etc., is accomplished by the Public Service Commission with the assistance of the Maryland Energy Administration and the Power Plant Research Program. Public notice and hearings are a part of that process.

An interdisciplinary team is brought together to view the area involved and then provide comments on potential impacts, environmental, fiscal, use conflicts, community needs or operational constraints. The DNR Planning Unit evaluates the comments and makes a recommendation to the Secretary. If the proposal will require a lease or license, there is a separate clearinghouse process required by law.

Administered by the Department of Planning, this Clearinghouse Review allows all other state agencies and local government to comment on the proposed activity. Subsequently, the Maryland Board of Public Works, made up of the Governor,

¹⁴² See <http://michie.lexisnexis.com/maryland/lpext.dll?f=templates&fn=main-h.htm&cp=mdrules>.

¹⁴³ A Greener DNR: Creating Maryland’s Sustainable Future newsletter found at http://www.dnr.state.md.us/naturalresource/winter2008/green_dnr.pdf.

Treasurer and Comptroller, reviews the proposal and approves or denies the lease or other agreement being sought.

Any decisions will consider impacts to birds and bats, terrestrial resources, environmentally sensitive areas, threatened and endangered species, water resources, air quality & climate. Other concerns, such as visual resources, cultural resources, socioeconomic impacts, noise, and public land uses will also be considered.¹⁴⁴

7.20.3.3. *Authorizations*

Since DNR has not approved any leases for wind energy, no term has been established. In the case of other leases for the use of state land, term is determined on a case-by-case basis. Generally, leases have been constructed with a 20-25 year range with an option to renew.

7.20.3.4. *Terms and Conditions*

There are no alternative energy projects authorized on state land at present. Authorizations typically carry stipulations to avoid or mitigate impacts to fish and wildlife, water quality, etc.

7.20.3.5. *Use Fees*

State law allows the Board of Public Works (comprised of the Governor, Treasurer and Comptroller) ultimate approval authority on all real property transactions, including leases. By administrative policy, the BPW looks at compensation issues and requires market value computation and equity, unless there are circumstances that warrant a reduced valuation (i.e., non-profit educational programming, etc.)

7.20.4. **Projects of Interest**

7.20.4.1. *Wind*

Currently, there are two projects proposed on state land. There are three licensed projects on private land and a fourth in process. No construction has begun to date.

DNR, in its environmental impact review role on Maryland Public Service Commission (PSC) actions, has recently been limited in scope as it relates to wind energy projects on *private* land. Previously, the PSC restricted one of the private land projects at the recommendation of DNR, primarily to minimize and protect endangered species impacts and avian mortality potential. The wind energy industry worked on legislation to exempt a project from obtaining a certificate of public convenience and necessity producing electricity from wind if the project is land-based, does not exceed 70 MW, is sold only on the wholesale market pursuant to an interconnection, operation and maintenance agreement with the local electric company and that the PSC will hold a public hearing for public comment. This legislation passed and as an effect DNR's environmental impact review has been severely curtailed.

¹⁴⁴ John Sherwell, MDNR presentation *Wind power in Maryland: an overview*
http://www.dnr.state.md.us/sustainability/wpm/windonpl_0130_final.pdf

Since then, DNR made the two proposals on state land available for review to the public so that a policy could be developed regarding the use of state lands for wind power generation. Public meetings were held in late January 2008; public opposition was over 80%. DNR is now evaluating the comments and preparing a draft policy for the Governor, with a decision and an announcement likely in mid-April. DNR expects that use on state land would undergo substantial environmental, economic and social impact analysis before entering into any lease in the future.

7.20.5. Challenges

In addition to the policy development mentioned above, DNR expects that interest in alternative energy will grow and encourages many sources at a homeowners level.¹⁴⁵

The Governor has committed Maryland's support of the Regional Greenhouse Gas Initiative (RGGI), becoming the 10th state to join the Northeast regional climate change and energy efficiency program. Governor O'Malley also signed an Executive Order that establishes a Climate Change Commission charged with collectively developing an action plan to address the drivers and causes of climate change, prepare for the likely consequences and impacts of climate change to Maryland and establish firm benchmarks and timetables for implementing the Commission's recommendations. As part of this initiative DNR will work together with the Maryland Department of the Environment, the Maryland Energy Administration and a broad set of stakeholders, including renewable and traditional energy providers and the business community, to develop a comprehensive greenhouse gas and carbon footprint reduction strategy.

Two pieces of legislation, supported by the Governor, were just passed in Maryland: Establishing a state goal of achieving a 15% reduction in per capita electricity consumption and peak demand by the end of 2015.
Global Warming Solutions - Reductions in Greenhouse Gases bill.

Achieving the goals of these legislative initiatives will require encouraging development of alternative energy sources within the state.

¹⁴⁵ *Renewable Energy Resources*, DNR website <http://www.dnr.state.md.us/ed/rer.html>

7.21. Massachusetts

No response.

7.22. Michigan

Department of Natural Resources
Rebecca A. Humphries, Director

Key Contact: Dennis Knapp, Acting Assistant Resource Management Deputy, 517.241.0330 knappdj@michigan.gov

Department of Environmental Quality
Steven E. Chester, Director

Key Contact: Amy Butler, Chief of Environmental Sciences and Services Division, 517-241-0490 ButlerAI@michigan.gov

7.22.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) manages about 4.5 million acres of land in Michigan. The Department of Environmental Quality (DEQ) manages 3,165 miles of Great Lakes shoreline and over 38,000 square miles of Great Lakes bottomlands, including some coastal marshes.

7.22.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The Natural Resources and Environmental Protection Act govern both departments.¹⁴⁶

DNR does not have alternative energy specific land laws and regulations. It uses standard easement, leasing and permitting statutes and regulations for any authorizations involving commercial uses of state land. The department has developed procedures for the review of applications for land, rights in land, and permission to use state lands.¹⁴⁷ Further, the department is developing criteria to evaluate wind energy proposals on state land.

7.22.3. Administrative Process

7.22.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.22.3.2. Treatment of Applications

Applications are considered by DNR using a standardized procedure, requiring review by local resource managers. The review manager determines whether the use is compatible with the management and purpose of the lands, consistent with the Department's mission and policies, and did not conflict with other users of the land, then the Department may issue an easement, or may draft a lease for approval by the Division Chief. A public notice is required for DNR actions involving granting of commercial easements and some leases, but not issuance of a use permit; DEQ requires a 20-day public notice/comment period.

¹⁴⁶ For the Great Lakes, see <http://legislature.mi.gov/doc.aspx?mcl-451-1994-iii-1-the-great-lakes-339> and <http://legislature.mi.gov/doc.aspx?mcl-451-1994-iii-1-the-great-lakes-325>;

for general leasing authority, see <http://legislature.mi.gov/doc.aspx?mcl-324-502>;

for lease rental authority, see <http://legislature.mi.gov/doc.aspx?mcl-451-1994-I-21-8>

¹⁴⁷ Use Of State-Owned Lands Administered By The Michigan Department of Natural Resources (issued 02/01/2006)

<http://www.midnr.com/Publications/pdfs/InsideDNR/publications/DNRPolProc/26.04.04.htm>

7.22.3.3. *Authorizations*

DNR may issue easements and leases for state land for a term appropriate for the use (no term restriction set by statute), with stipulations to protect the environment (i.e., wildlife habitat, air quality, ground and surface water quality, and land surface).

DEQ is responsible for bottomland permits, such as the use of submerged lands in the Great Lakes for turbines. The DNR takes on the role of a reviewing agency for these permits and ensures that appropriate stipulations are carried for fish protection.

7.22.3.4. *Terms and Conditions*

No easement, lease or permit has been issued to date for these uses.

7.22.3.5. *Use Fees*

Applications for leases for wind energy on DNR managed lands are a minimum payment of \$550¹⁴⁸ and require a market value determination and possibly replacement land. Permits for use of bottomlands range from \$50-\$2,000¹⁴⁹.

7.22.4. Projects of Interest

No projects are currently proposed or active on state land.

7.22.5. Challenges

DNR and DEQ are preparing for the eventual proposals of alternative energy on state land and they anticipate that increased interest in renewable energy will result in increased applications, especially if the state's proposed Renewable Portfolio Standard is adopted.

¹⁴⁸ DNR Use Fee Schedule

http://www.michigan.gov/documents/IC1141_State_Surface_Land_Use_Fee_ScheduleIII_126339_7.pdf

¹⁴⁹ Great Lakes Submerged Lands Permit <http://www.deq.state.mi.us/documents/deq-ess-permitguide-sec5-5-1GreatLakesSubmergedLandsPermit.pdf>

7.23. Minnesota

Department of Natural Resources
Mark Holsten, Commissioner

Key Contact: Paul Pojar, Geological Engineer, Lands & Minerals Analysis, Division of Lands and Minerals, 651.259.5413
Paul.Pojar@dnr.state.mn.us

7.23.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages about 5.5 million acres of land and water for a variety of special uses: school trust lands and acquired lands designated as state parks, state forest, etc. Another one million acres are minerals only. In addition, the DNR is responsible for about three million acres that become available through tax forfeiture decisions of county administrators, especially in terms of mineral leases and surface decisions. DNR also owns the bed of navigable waterbodies, which are available for mineral leasing.

7.23.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DNR may lease lands that are under the jurisdiction and control of the commissioner of natural resources, based on the general authority of Minnesota Statutes 92.50.¹⁵⁰ Currently, the DNR commissioner is generally limited to issuing leases for a term of 10 years; however, the term for commercial leases may be extended up to 40 years with the approval of the executive council (consisting of the governor, lieutenant governor, secretary of state, state auditor, and attorney general). At the request of a wind power generating company, there is a bill before the state legislature that would grant DNR the authority to enter into 30 year leases specifically for wind energy projects located on state lands (HF3032).¹⁵¹ The DNR expects the legislation to be in effect by June 2008.

7.23.3. Administrative Process

7.23.3.1. Process-Driver

An application must be submitted for any interest in leasing state lands.

7.23.3.2. Treatment of Applications

All proposals to use state lands are reviewed to determine if the proposed use conflicts with the resource management objectives of the land.

7.23.3.3. Authorizations

In addition to any necessary land leases for the construction of wind generators, a license from the DNR is necessary for the transmission of power over, under, or across state lands and public waters.

¹⁵⁰ See <https://www.revisor.leg.state.mn.us/statutes/?id=92.50> for the statutes and a link to the administrative code.

¹⁵¹ The current status of HF3032 can be found at https://www.revisor.leg.state.mn.us/bin/getbill.php?number=HF3032&session=ls85&version=list&session_number=0&session_year=2008 (see page 37 line 18 of the 2nd Engrossment of the bill)

7.23.3.4. *Terms and Conditions*

The DNR currently has no experience with the leasing of public land to produce wind energy. According to the general authority provided in Minnesota Statute 92.50, the commissioner shall offer a lease at public or private sale for an amount and under terms and conditions prescribed by the commissioner. The DNR has created a task force that will develop recommendations on any terms and conditions needed for wind energy projects developed on state lands.

7.23.3.5. *Use Fees*

Usually, a lease fee is charged based either on a fee schedule or a percentage of the appraised value of the land. For a license, a one-time crossing fee is charged, which is either based on a fee table or the appraised value of the land.¹⁵²

7.23.4. Projects of Interest

7.23.4.1. *Wind*

The DNR has received a request for an analysis/study phase of a wind energy project. The applicant has received approval to place an anemometer on a tower. If the site proves viable, the applicant will proceed with a request to construct generation units.

7.23.5. Challenges

During the next few months the DNR plans to review wind energy programs of other states and determine the type of regulations that Minnesota may need to regulate wind energy produced on state lands. If necessary the DNR will make recommendations to the 2009 state legislature on any additional statutory authority that may be needed.

¹⁵² See DNR's website *Leases, Licenses and Easements* http://www.dnr.state.mn.us/lands_minerals/leases.html

7.24. Mississippi

Office of the Secretary of State
Delbert Hosemann, Secretary of State

Key Contact: Gerald McWhorter, Assistant Secretary of State, Public Lands Division, 601-359-1350,
GmcWhorter@sos.state.ms.us

7.24.1. Jurisdiction and Land Base

The Secretary of State manages land in four categories:

Public Trust Tidelands and Submerged Lands are managed by the Public Lands Division (PLD). These lands are available for commercial leasing.

Sixteenth Section Land (school trust land) is held in trust for the support of public education. While the Secretary of State exercises general supervision, the local school districts' manage these properties on a day-to-day basis. These lands are available only under specific circumstances.

Agency Held Lands are lands under the direct management and use of departments and agencies within the State's executive branch. The Secretary of State maintains an inventory of these lands.

Tax Forfeited Lands are managed and disposed of by the Public Lands Division. These lands are received because of non-payment of property taxes. Individuals and state agencies can apply to the Secretary of State's Office for the acquisition of these lands; inventory is dynamic.¹⁵³

7.24.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Mississippi does not have alternative energy-specific land laws and rules nor any legislation offering incentives or standards for alternative energy. The PLD manages lands under its general leasing statutes and rules.

7.24.3. Administrative Process

7.24.3.1. Process-Driver

All parties interested in leasing state lands must submit an application. The PLD also receives bids, solicited through public notices published in the legal advertising section of newspapers.

7.24.3.2. Treatment of Applications

Not available.

7.24.3.3. Authorizations

Use of *Tide and submerged land* is through a lease. *School trust land* may be sold for industrial development, but the school district must purchase replacement land of like acreage and value.

¹⁵³ Public Land Division's website at <http://www.sos.state.ms.us/PublicLands/PublicLands.asp>.

7.24.3.4. Terms and Conditions

Not available.

7.24.3.5. Use Fees

Rents for leases are set by competitive bids or through an appraisal to determine fair market rental.

7.24.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.24.5. Challenges

Mississippi has a low potential for wind due to variability; it is ranked as 48th in potential capacity by the AWEA.¹⁵⁴

¹⁵⁴ For more information on ranking and projects, see AWEA's website <http://www.awea.org/projects>

7.25. Missouri

Department of Conservation
John Hoskins, Director,

Key Contact: Doyle Brown, Policy Coordinator, 573.522.4115, ext. 3355, Doyle.Brown@mdc.mo.gov

Department of Natural Resources
Doyle Childers, Director

Key Contact: Floyd Gilzow, Deputy Director for Policy, 573.751.3195, Floyd.Gilzow@dnr.mo.gov

7.25.1. Jurisdiction and Land Base

The Department of Conservation (MDC) currently manages about 900,000 acres of land and provides numerous access points on lakes and streams.

The Department of Natural Resources (DNR) currently manages about 203,202 acres comprising the state park system.

7.25.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Neither the MDC nor the DNR have alternative energy-specific laws and rules.

Missouri Constitution, Article IV, Sections 40-46¹⁵⁵ authorizes the four-member Missouri Conservation Commission, which governs the MDC. Missouri Revised Statutes Chapter 252¹⁵⁶ clarifies the Commission's authority and address related resource management needs. The current commission policy prohibits commercial use of lands managed by the MDC.

DNR oversees the environmental aspects of commercial power generation through its .401 Water Quality Certification authority, air emissions permitting, and hazardous waste management. DNR also operates the state's Energy Center, which works extensively with public and private entities on energy conservation, energy audits, wind power, bio-fuels and any other opportunities in the energy field.

7.25.3. Administrative Process

7.25.3.1. *Process-Driver*

All parties interested in leasing state lands must submit an application DNR to begin the review process.

7.25.3.2. *Treatment of Applications*

Policy decisions that affect management on MDC property are ultimately at the discretion of the Commission. This would include considering if alternative energy facilities could be located on the public lands MDC manages, without comprising resource management and intended public uses. MDC's strategic direction must also consider the challenges and opportunities outside of the core mission and authority.

¹⁵⁵ See <http://www.moga.mo.gov/const/A0404a.htm>.

¹⁵⁶ See <http://www.moga.mo.gov/STATUTES/C252.htm>.

MDC has found effective resource management must involve other government agencies, like the Department of Natural Resources and the public.

Any .401 Water Quality Certifications and air permits are reviewed by the public and allowed to comment on draft permits. Public comments are taken into consideration in any final permits issued by DNR.

7.25.3.3. Authorizations

No authorizations for alternative energy have been issued to date.

7.25.3.4. Terms and Conditions

Not applicable.

7.25.3.5. Use Fees

Not applicable.

7.25.4. Projects of Interest

7.25.4.1. In-River Flow

Several hydrokinetic projects are being proposed on the Mississippi River – none on state owned or managed land.

Free Flow Power LLC proposes to develop in-stream kinetic hydropower and transmission facilities in and adjacent to the Mississippi River in New Madrid County, Missouri and Fulton County, Kentucky. The proposed project is in the preliminary stage, and specific technical and location information are incomplete. Plans are to install up to 5,350 10-kW generating units in a series of matrices located approximately 50 feet apart; mooring cables, anchors and pilings; transmission lines; and supporting facilities. The requested permit area of river for this project is approximately 10.7 miles long and the proposed project would be placed somewhere within this reach. The purpose of the project is to generate approximately 469 GWh annually. This project would be privately financed and does not involve any state-managed or state-owned lands. DNR would issue any .401 water quality certifications and air quality permits and will participate in NEPA.

An additional 13 projects are proposed for the river along Missouri's boundary, with an approximate 74 mile (all 14 projects) area of potential impact. FERC is the authorizing agency. MDC has provided an initial letter to FERC outlining concerns to aquatic life, endangered species, commercial and recreational fishing, and conflicts to other navigational interests on the river.

7.25.5. Challenges

To date, no alternative energy facilities have been proposed on MDC property. Alternative energy sources (wind, bio-fuels, etc.) are currently being proposed on private lands within Missouri; no authorization or clearances are needed for these projects from MDC. The

first utility-scale wind generation installation of approximately 50 MW is now operating in far northwest Missouri; three more wind farms are under construction.

Other alternative energy projects:

A *landfill gas-to-energy* project is operating at the Algoa Correctional Center near Jefferson City, Missouri. A public-private partnership developed this project locating a 3.2 MW electricity generation facility at the state-owned Department of Corrections facility and piping the recovered landfill gas to fuel the electrical generation system more than three miles from a nearby privately-owned landfill.

7.26. Montana

Department of Natural Resources and Conservation
Mary Sexton, Director

Key Contact: Mike Sullivan, Property Management Section Supervisor, Trust Land Management Division, 406.444.6660
MiSullivan@mt.gov

7.26.1. Jurisdiction and Land Base

The Department of Natural Resources and Conservation (DNRC) currently manages 5.2 million surface acres and 6.2 million sub-surface (mineral) acres of trust lands granted to the state of Montana by the Enabling Act of 1889. In addition, the department manages about 40,000 acres of the beds of navigable waterways. Trust lands are managed for the benefit of the common schools and the other endowed institutions in Montana, under the direction of the State Board of Land Commissioners.¹⁵⁷

7.26.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

There are no specific land laws or regulations for the development of renewable energy, however, there are some incentives. Montana adopted a state renewable energy portfolio standard in 2005 requiring 15 percent renewable power by 2015. Other incentives, such as property tax exemptions, tax credits, and tax exemptions are also available. Although it does not have a specific policy related to wind, the DNRC has customized its RFP process for wind development. All state actions need to follow the Montana Environmental Policy Act (MEPA) under its obligations from Article II, section 3, and Article IX of the Montana constitution. The MEPA requirements are further described in Montana Code Annotated Title 75.

7.26.3. Administrative Process

7.26.3.1. Process-Driver

DNRC responds to interest for use of trust lands for wind energy development, then conducts a Request for Proposals for wind development at the site.

7.26.3.2. Treatment of Applications

A Land Use License is an agreement issued by the DNRC; no public bidding is required.

Once a wind site has been identified and there is sufficient interest in developing the site, the DNRC releases an RFP¹⁵⁸ for proposals for wind power development. The wind RFP is broken into three phases: Phase 1 – the successful applicant is chosen; Phases 2 and 3 – all other elements are brought together before the lease is negotiated and signed. These elements include an environmental assessment or environmental impact statement, power purchase agreement, and economic ability and feasibility. As

¹⁵⁷ Montana DNRC website http://www.dnrc.mt.gov/About_Us/history.asp

¹⁵⁸ See sample RFP at DNRC's website http://www.dnrc.mt.gov/trust/wind/05_23_2005_GENERIC_WIND_RFP.pdf and in Appendix I.

part of the RFP submittal, the applicant must outline the process to involve local residents in the planning/permit process.¹⁵⁹

MEPA requires state agencies to consider the environmental impacts of any major decision before making an irretrievable commitment of resources. While DNRC has the sole discretion to decide the level of environmental review required, wind projects typically require an EIS.¹⁶⁰ After issuing a favorable record of decision, a lease may be executed.

7.26.3.3. *Authorizations*

If the DNRC determines the proposal in RFP Phase 1 is responsive and meets minimum criteria, a land use license can be issued to allow the developer access and development rights to the parcel. Upon acceptable completion of all three phases, including a favorable DNRC Record of Decision, the DNRC will issue a lease to the developer.

7.26.3.4. *Terms and Conditions*

Through its license, DNRC allows wind developers to place one or more anemometers on the site to be developed and have at least one year of actual anemometer data. In some cases, however, a person or entity may secure a land use license for wind data collection independent of the RFP process. In such case the license does not provide that the entity has been approved by the department, going through the RFP process is still required. A land use license awarded as part of Phase 1 of the RFP process does indicate the entity is approved by the DNRC and the agency does anticipate consummating a lease at some point in the future once all conditions of the RFP are met.

In the environmental assessment process, the applicant must provide known environmental issues relative to the development and operation of the project, including avian issues and baseline noise levels, visual impacts, a listing of candidate, listed, and proposed endangered or threatened species habitat in the proximity of the project, copies of any wildlife or other environmental studies that have been performed or in progress and related the project. The applicant must describe any measures to be taken to minimize avian mortality, noise, and visual impacts of the facility. These measures as well as those that are derived from the MEPA become part of the lease document.¹⁶¹

7.26.3.5. *Use Fees*

For licenses, there is an administrative fee of \$25; annual use fees vary depending on use.

¹⁵⁹ Wind Energy Development on School Trust Lands, *Getting Started*, http://www.dnrc.mt.gov/trust/wind/getting_started.asp

¹⁶⁰ See Sample RFP at section 6.3.

¹⁶¹ *Ibid.*

For leases, the minimum use fees are listed in the RFP. In the sample, the minimum fees are \$2.00 per acre per year for exploration, with a minimum of 160 acres secured per section or the entirety, if smaller than 160 acres; a minimum one time installation fee equal to \$1,500 per MW of installed capacity; and the greater of 3% of gross annual revenues or \$3,000 for each MW of installed capacity annually.

7.26.4. Projects of Interest

7.26.4.1. Wind

The Judith Gap Energy Center is located jointly on state land and private land. The project consists of 90 1.5 MW wind turbines, 13 of which are on school trust lands. The project will contribute nearly \$20,000 to the school trust for a one-time installation fee and future revenues range from about \$50,000 to \$60,000 annually depending on the volume of power produced.¹⁶²

The Springdale Wind Energy Project is in the beginning stages. Located about half way between Livingston and Big Timber, the project will have 45 towers, six of which will be located on school trust land. Construction of the 67.5 MW project may begin as early as this year.

The Martinsdale Wind Power Project is also in the beginning stages and is located in central Montana. Initially there will be 36 wind turbine generators with the potential to expand to 100 turbines, for a capacity of 300 MW. Scoping meetings were held in January 2008; a MEPA document is currently being developed.

GreenHunter Energy has decided not to pursue its initial proposed wind development projects roughly 30 miles north of Glasgow. GreenHunter Energy is now looking at lands adjacent to the initial project area to determine if a new 50MW project is feasible.

7.26.5. Challenges

Ranked 4th by the American Wind Energy Association, the DNRC believes that there is unlimited potential for wind energy projects to be located on trust lands. However, with wind projects comes the risk of non-performing lessees tying up trust lands for a period of time. Conversion of existing land uses has not been an issue: typically the two uses (grazing and energy generation) are compatible, not mutually exclusive. The state also benefits from the two revenue sources, with the energy production being of great value to the trust.

The developers have risks as well, such as timing, funding, environmental mitigation, cooperation from power buyers and transmission sellers, availability of turbines, and continued renewal of the production tax credit.

There are several dams on Montana navigable waterways. Recently, the state has pursued payment where there wasn't a requirement for compensation previously. In late 2007,

¹⁶² The projects are found on DNRC's website <http://www.dnrc.mt.gov/trust/wind/default.asp>

court rulings in favor of the state validated the need to have the sites under lease and collect rentals. Avista will pay \$4 million annually, with an escalation clause for rent; PacifiCorp is anticipated to pay about \$50,000 annually. The third dam owner and the largest, PPL, has not settled and plans to continue fighting in court.

7.27. Nebraska

Board of Educational Lands and Funds

Key Contact: Jay Gildersleeve, General Counsel, 402.471.2014, Jay.Gildersleeve@belf.ne.gov

7.27.1. Jurisdiction and Land Base

The Board of Educational Lands and Funds (BELF) currently manages more than 1.3 million acres held in trust for public schools.¹⁶³

7.27.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The Trust nature, conditions and obligations are reflected in Article VII, Sections 6, 7, 8 and 9 of the Nebraska Constitution. The Trust is managed by the BELF, a five-member, governor-appointed board. The BELF does not have alternative energy-specific land laws and regulations. It operates under general statutory authority for surface leases (72-201, et seq), oil and gas leases (72-901, et seq), and other surface leases (72-301, et seq).¹⁶⁴

7.27.3. Administrative Process

7.27.3.1. *Process-Driver*

All parties interested in leasing trust lands must submit an application. Nebraska is in a unique role in that the state is 100% public power. The conflict occurs when the power district receives bids in response to its solicitation, while the Trust's competitive, high bid process would naturally occur later. BELF is trying to work with any developers to allow the lease to be in place so that they may submit proposals to the respective power district. At a pre-application meeting, BELF would look at the value of the project (to see if the value is worth the effort), the number of acres impacted and occupied, and the term of the lease.

7.27.3.2. *Treatment of Applications*

BELF reviews applications to ensure that it meets with the Trust's objectives for revenue generation and long-term management goals. All applications are ultimately offered at a high-bid auction.

7.27.3.3. *Authorizations*

The Board issues and services both surface leases, primarily for agricultural uses, and subsurface leases permitting exploration for and extraction of oil and gas, minerals and other natural resources.

7.27.3.4. *Terms and Conditions*

No leases have been issued for alternative energy to date.

¹⁶³ BELF website <http://www.belf.state.ne.us>

¹⁶⁴ The full text of these statutes can be found at http://uniweb.legislature.ne.gov/OS/laws.php?mode=view_full_chap&chap=72.

7.27.3.5. *Use Fees*

The BELF maximizes the income to the trust fund. Any compensation would be based upon the high bid terms.

7.27.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.27.5. Challenges

Nebraska has a high potential for wind; it is ranked number 6 in potential capacity (99,100 MW) by the AWEA.

As mentioned, the conflict for a potential developer to use BELF managed land comes with the public power district's solicitation for proposals. Developers must have a commitment from the landowner that the project can be developed and put in production on that land. Not all developers' proposals are selected to move forward by the district. As an example, a recent wind farm solicitation by a power district received ten wind farm proposals from six developers; only three projects were selected. Also, the competitive nature of BELF properties may not always be a strategic business decision by the developer.

7.28. Nevada

Department of Conservation and Natural Resources

Allen Biaggi, Director

Key Contact: Pam Wilcox, Administrator, Division of State Lands, 775.684.2720 pwilcox@lands.nv.gov

Jim Lawrence, Deputy Administrator, Division of State Lands, 775.684.2726, lawrence@lands.nv.gov

7.28.1. Jurisdiction and Land Base

The Department of Conservation and Natural Resources, Division of State Lands (DSL) currently manages about 2,500 acres of original school trust lands managed for the Permanent School Fund, and 250 acres of sensitive land in the Tahoe basin that are protected and not available for development or disposal, in addition to its sovereign lands, which are submerged beneath navigable bodies of water (Lake Tahoe, Walker Lake, Washoe Lake, Truckee River, Carson River, Colorado River, and Virgin River).

In addition, the DSL serves as the "real estate" agency and holds title to state lands and interests in land for all agencies except the Legislature, the University system, and the Department of Transportation.¹⁶⁵

7.28.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DSL does not have alternative energy-specific laws and rules, but operates under its general authority found in NRS Title 26, Chapters 321 and 322.¹⁶⁶

7.28.3. Administrative Process

7.28.3.1. *Process-Driver*

All parties interested in leasing state lands must submit an application to indicate interest.

7.28.3.2. *Treatment of Applications*

Upon receiving an application, the agency would make a determination whether it was willing to offer the land for lease. Although the state does not require environmental assessments for all uses of state land, the agency has the discretion to require the submittal of any information it needs to make this decision. If the agency determines that it is willing to offer the land for lease, it would determine the minimum bid (rentals and royalties) and other required terms and conditions, and offer the lease competitively (sealed bids followed by oral bids) after appropriate public notice. Leases cannot be negotiated directly.

7.28.3.3. *Authorizations*

The agency issues leases, easements, permits and other authorizations for the use of state land.

¹⁶⁵ Nevada DCNR website *State Land Office* <http://lands.nv.gov/program/landoffice.htm>

¹⁶⁶ Chapter 321 can be found at <http://www.leg.state.nv.us/nrs/nrs-321.html> and Chapter 322 at <http://www.leg.state.nv.us/nrs/nrs-322.html>.

7.28.3.4. *Terms and Conditions*

Terms and conditions are determined individually for each lease. Typically bonding and insurance would be required.

7.28.3.5. *Use Fees*

All uses of state land must be for at least fair market value.

7.28.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.28.5. Challenges

Nevada has a mid-range potential for wind; it is ranked 21st in potential capacity (5,740 MW) by the AWEA.¹⁶⁷

¹⁶⁷ For more information on ranking and projects, see AWEA's website <http://www.awea.org/projects>

7.29. New Hampshire

Department Resources and Economic Development

George M. Bald, Commissioner

Key Contact: Phil Bryce, Director, Division of Forests and Lands, 603.271.2214, pbryce@dred.nh.us

7.29.1. Jurisdiction and Land Base

The Department of Resources and Economic Development (DRED) is responsible for all forestry matters under the jurisdiction of the state and manages directly over 400,000 acres of fee and conservation easement interest lands for multiple use.

7.29.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DRED does not have alternative energy-specific land laws and regulations; it operates under the general authority provided by RSA Title XIX-A, Ch. 227-G:3.¹⁶⁸ Currently, the only commercial activities authorized on state lands managed by the agency are for recreation and timber programs.

DRED also sits on the Energy Facility Site Evaluation Committee for siting energy facilities. (See RSA Title XII, Ch 162-H).¹⁶⁹

7.29.3. Administrative Process

7.29.3.1. *Process-Driver*

Not applicable.

7.29.3.2. *Treatment of Applications*

Not applicable.

7.29.3.3. *Authorizations*

Not applicable.

7.29.3.4. *Terms and Conditions*

Not applicable.

7.29.3.5. *Use Fees*

Not applicable.

7.29.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.29.5. Challenges

New Hampshire has a low potential for wind; it is ranked 35th in capacity (502 MW) by the AWEA.

¹⁶⁸ For full text of ch.227-G, see <http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XIX-A-227-G.htm>.

¹⁶⁹ For full text of ch.162-H, see <http://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-XII-162-H.htm>

Compatibility of wind projects with Forest Legacy projects would have to be addressed per federal rules as wind projects are not permitted on lands covered by Forest Legacy conservation easements. Regarding lands held in fee by the state, no additional legislation is needed. However, the DNR would have to go through the Council on Resources and Development (made up of state agencies); the Long Range Capital, Planning and Utilization legislative committee; and the Governor. The developer would have to follow 162-H.

The state has permitted one project in Lempster, NH on private lands. There is interest in another wind project in the northern portion of the state, also on private lands.

Other alternative energy projects:

The DRED harvests wood biomass on state lands to supply electric generation plants.

7.30. New Jersey

No information provided.

7.31. New Mexico

State Land Office

Patrick H. Lyons, Commissioner of Public Lands

Key Contact: Brian Bingham, Commercial Resource Director, 505.827.1252 Bbingham@slo.state.nm.us

7.31.1. Jurisdiction and Land Base

The State Land Office (SLO) currently manages 9 million surface acres and about 13 million subsurface acres in trust for public schools. The Ferguson Act of 1898 made additional land grants to the territory and broadened the purposes for which income from trust lands could be used, including hospitals, correctional facilities, public buildings and water projects.¹⁷⁰

7.31.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Under Article XIII, Section 2, of the New Mexico State Constitution, and New Mexico State Statutes, Article 9, Chapter 7¹⁷¹, the commissioner has jurisdiction over all lands and related resources granted under the New Mexico Enabling Act. The SLO does not have alternative energy-specific land laws and regulations; it issues leases under the New Mexico Administrative Code 19.2.9 (also known as Rule 9).¹⁷²

7.31.3. Administrative Process

7.31.3.1. Process-Driver

The SLO responds to first-in applications for use of state land.

7.31.3.2. Treatment of Applications

The surface estate of any trust land may be leased under a business lease at the discretion of the commissioner, either by bid or non-bid. The commissioner executes a “bid lease” after public advertisement and public auction required by statute; a “non-bid lease” does not require public advertisement and is negotiated, for a term not to exceed five years.¹⁷³ The commissioner establishes criteria for participating in a bid lease auction, the bidder must: 1) comply with applicable lease requirements, 2) demonstrate at least a certain number of years experience successfully managing generating units, 3) be creditworthy and with a certain net worth, 4) be authorized to conduct business in New Mexico, and 5) be willing to comply with lease terms.

7.31.3.3. Authorizations

The SLO issues a series of authorizations for companies to develop wind energy on trust lands:

¹⁷⁰ New Mexico SLO website <http://www.nmstatelands.org>

¹⁷¹ See <http://www.conwaygreene.com/nmsu/lpext.dll?f=templates&fn=main-hit-h.htm&2.0> for applicable statutes.

¹⁷² See Information Packet for a business lease application at

http://www.nmstatelands.org/uploads/Documents/crd_leasepacket.pdf; the packet also includes a copy of Rule 9.

¹⁷³ Rule 9 at 19.2.9.7, Definitions.

- *Option (to lease) with a Right of Entry Permit.* During the term of the option, the commissioner agrees “not to offer or convey any new or additional interest in the Trust Land to any other person or entity.”¹⁷⁴
- *Short Term Non-Bid Leases.* The SLO uses these leases to allow the lessee to enter the premises for planning, development, or both. These leases are negotiated for a term not to exceed 5 years.¹⁷⁵
- *Long Term Bid Leases.* Power can only be generated under a long-term lease, which is issued after public advertisement and after public auction. Long-term leases are typically issued for a term of 35 years and are used for planning, development, operation, or a combination of the three.¹⁷⁶ Should the short-term lessee not be the high bidder for a long-term bid lease, the previous short-term lessee is compensated for any improvements authorized on site.

7.31.3.4. *Terms and Conditions*

For the life of the permit/lease, the lessee must provide commercial liability insurance with the state named as additional insured. The SLO must review and approve plans at major milestones throughout the life of the project. SLO requires wind farm power plant developers to provide professionally-produced avian, habitat impact, riparian, geothermal, and archaeological analyses for any project, and deliver the results of those efforts prior to our issuance of any ground disturbance permit. Avian studies, conducted by an avian specialist, must be conducted for a period of one calendar year, usually during the project-planning phase of the project.

7.31.3.5. *Use Fees*

The *Option/Right of Entry Permit* combination agreement is currently priced at \$2/acre/year for the option portion, and \$500/six-month time block for each block of six months during the option term (either one year or two year terms are available) as a use fee, payable every six months.

For *Non-Bid Planning Only Leases*, lessees are charged a base rent per acre, subject to annual adjustment.

For *Bid Leases and Non-Bid Planning and Development Leases*, lessees are charged a base rent per acre subject to annual adjustment and per generating unit (capable of operation) installed on site. (Once operational, the SLO will charge a per generating unit fee/year and an SLO share of gross power sales revenues beginning at 3.5% and escalating in one percent increases for each five year time block during the course of the long term lease.) Further, the SLO charges a one-time Ground Disturbance Fee of \$10,000 to place a non-turbine structure on site, a one-time Ground Disturbance Fee of \$5,000 for each turbine constructed on the project site, and an annual fee per square foot of developed floor space once any project-related non-turbine structure is completed. For overhead transmission lines and roads installations, the lessee pays a

¹⁷⁴ See sample Option with Right of Entry Permit in Appendix H

¹⁷⁵ See sample short-term, non-bid leases Type A (all planning and development) and Type B (planning only) in Appendix H.

¹⁷⁶ See sample long-term bid leases Type A (operation only), Type B (development and operation), and Type C (planning, development and operation) in Appendix H.

one-time fee of \$7.50/linear rod, discounted to \$5.00/linear rod when transmission lines and roads are co-aligned.

7.31.4. Projects of Interest

7.31.4.1. Wind

Since January 2003, the SLO has concluded five lease agreements and three option agreements that will result in the development of eight wind farm power plants – two in Quay County, one on the border between Chaves & Roosevelt Counties, one in Colfax County, and the most recently executed lease in Union County. The potential combined earning power of just the five wind farms currently under lease will surpass \$42 million in the course of their 35-year terms.

In January 2007, SLO signed:

- an option agreement encumbering trust land for wind farm power plant development on 57,000 acres in parts of Union, Guadalupe, Quay, Otero, Eddy, Torrance, San Miguel, and Hidalgo Counties
- an option agreement encumbering 4,979 acres in Lincoln County in October 2007 with California-based enXco Development Corp. – Power Partners Southwest; and
- an option agreement for wind farm power plant development with Albuquerque-based Karbon Zero Energy for 16,960 acres in Union County.

The CPL is scheduled to sign a long-term lease with Babcock & Brown for the completion of its Aragonne Mesa II wind farm on 20 acres of state trust land estimated to generate \$12.8 million for the beneficiaries over the course of its 35-year term.

Table 7-3. Wind Leases Under Review by New Mexico SLO, as of April 2008

Company	Lease Term	Acreage	No. Turbines
Aragonne Wind II LLC Babcock & Brown	35 yrs, bid lse	20	14
Foresight Wind Energy LLC	5 yrs, non-bid	14,122	TBD
UPC Wind Management LLC	5 yrs, non-bid	363,757	TBD
Penn Energy Trust, LLC	5 yrs, non-bid	22,800.86	TBD

Table 7-4. Wind Leases Issued by New Mexico SLO, as of April 2008

Company	Lease Term	Acreage	No. Turbines		Performance (each)
			Min	Max	
Florida Power & Light/ New Mexico Wind	35 yrs	1,159.4	15	22	1.3 MW
Cielo Land & Cattle/ Caprock Wind LLC	2.5 yrs devel	1,840	8	20	1.0 MW
	35 yrs bid lease				
San Juan Mesa Wind Project	35 yrs	3,757.01	53		1.0 MW
Windforce Inc	5 yrs	2,880	30		660 kW
	convert to bid lease later date				
New Mexico Renewables LLC	Option	57,000	TBD		TBD
Third Planet Windpower LLC	S/T Lease	49,042.59	TBD		TBD
Karbon Zero Energy LLC	2 yr option	16,960	TBD		TBD
enXco Development Corp – Power Partners Southwest	2 yr option	4,979.56	TBD		TBD

7.31.5. Challenges

There is increasing interest in New Mexico state lands for wind energy, as is shown by the information above.

Other alternative energy projects under consideration by New Mexico:

SLO is in the discussion stages for approximately 1,500 MW of electric power from *solar* energy projects.

SLO is developing *biomass* energy projects: a 35 MW project from the thinning of overgrown forests on more than 43,000 acres in Torrance County and another project for burning wood chips from over 11,000 acres to generate heat for the schools in the Angelfire area of Colfax County.¹⁷⁷

¹⁷⁷ Ibid.

7.32. New York

Department of Environmental Conservation
Alexander B. “Pete” Grannis, Commissioner

Key Contact: Jack Nasca, Chief, Energy Projects and Management, Division of Environmental Permits, 518.402.9172
janasca@gw.dec.state.ny.us

7.32.1. Jurisdiction and Land Base

The Department of Environmental Conservation (DEC) manages about four million acres of state owned land (13% of the land area of New York State).¹⁷⁸

7.32.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DEC does not have alternative energy-specific land laws or regulations. The New York Environmental Conservation Law (ECL) established DEC and authorizes its programs. Article 70 of the ECL provides time frames and procedures for filing and reviewing applications, providing public notice, holding public hearings, and reaching final decisions.¹⁷⁹

The Uniform Permit Act, authorized by Part 621¹⁸⁰ of the New York Code of Rules and Regulations (NYCRR), provides for the processing of applications and the recourse of a hearing when an application is denied.

7.32.3. Administrative Process

7.32.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.32.3.2. Treatment of Applications

DEC follows the Uniform Permit Act for applications, regardless of the commercial purpose. All applications (unless it is considered a “minor” project) require a public notice.

7.32.3.3. Authorizations

Any alternative energy project that would disturb a regulated wetland, protected stream, threatened and endangered species or its habitat or involve the disturbance of more than one acre of land would require a permit from DEC. A project may also require a 401 Water Quality Certification. DEC has not developed an Alternative Energy-Specific authorization.

7.32.3.4. Terms and Conditions

Currently, DEC has no wind projects on state-managed uplands. Only one permit has been issued for a hydrokinetic demonstration project (see description below); thus,

¹⁷⁸ NYDEC website <http://www.dec.ny.gov/about/650.html>.

¹⁷⁹ The full text of New York's ECL is found at <http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS>

¹⁸⁰ For full text of Part 621, see NYDEC website <http://www.dec.ny.gov/regs/4486.html>

terms and conditions particular to the long-term authorization of an energy project has not been developed.

7.32.3.5. *Use Fees*

New York State does not have use fees. If a lease or an easement is required for the use of underwater lands a payment will be negotiated between the NYS Office of General Services and the company.

7.32.4. Projects of Interest

7.32.4.1. *Wave/Tidal*

The Roosevelt Island Tidal Energy Project¹⁸¹ is on the east channel of New York City's East River, where tidal flows can reach up to four knots. A permit under ECL Article 15 authorizes the demonstration project.¹⁸² The placement of six tidal energy turbines by Verdant, Inc., was allowed over a span of two years: two in 2006 and four in 2007. An array of axial-flow turbines (similar to an upland wind turbine) is mounted on the bed of the East River to harness the kinetic energy of the tidal stream.

Verdant is seeking a license from the Federal Energy Regulatory Commission to construct up to 200 turbines located in the East River along the east shore of Roosevelt Island. The Project could generate up to 10 MW of distributed electricity, which will be available to residents and businesses throughout New York City.¹⁸³ The full project will require a 401 Water Quality Certification from DEC.

Striped Bass and marine mammals are of interest, thus a sampling regime was initiated. Hydro acoustic arrays around the turbines have been placed to see if the targeted species are moving around or being decimated by the turbines; however, trawling is difficult because of the currents (extreme current changes due to tidal flows). Fishery biologists at the Oak Ridge lab and the consulting firm of Devine Tarbell and Associates in Portland, Maine, designed the fish surveys in collaboration with fishery agencies.

The turbines have had to undergo design changes due to structural integrity. All six turbines lost blades due to the strong tidal cycle. Once the blade design was changed, the hub broke under the stress of the current. At the time of this report, two turbines are to be re-installed.

7.32.5. Challenges

The use of state lands under the control of DEC will likely require legislative action before a project can be constructed due to the fact that most DEC controlled lands cannot be used for commercial purposes. Lands under the control of other state agencies may not have the

¹⁸¹ An online article in *enerG Magazine* by Vicky Boyd, *Tidal Power in the Big Apple*, provides a good overview of the project, see <http://www.altenerg.com/issue03art03.htm>.

¹⁸² See Appendix H for a copy of the permit.

¹⁸³ Devine Tarbell Inc. *Alternative Energy: Wave & Tidal -- Roosevelt Island Tidal Energy Project Lead Consultant FERC Licensing/Environmental Studies* website http://www.devinetarbell.com/alternative_energy/ren_profiles/tidal_1.htm.

same constraint. For the use of state lands underwater, a lease is required from the New York State Office of General Services.

Until Verdant has completed its studies on the potential for impact to marine resources and the design flaws have been resolved, a 401 Water Quality Certificate for the full buildout of the Roosevelt Island project will not be issued.

MMS is currently evaluating an offshore wind project, the Long Island Power Authority and Florida Power and Light Energy, to build and operate a wind park consisting of 40 3.6 MW wind turbine generators covering eight square miles in federal waters, approximately 3.6 miles south of Jones Beach Island, Long Island, New York.¹⁸⁴

¹⁸⁴ For more information on the Long Island project, see <http://www.mms.gov/offshore/AlternativeEnergy/LIOWP.htm>

7.33. North Carolina

No response.

7.34. North Dakota

State Land Department

Gary Preszler, Commissioner

Key Contact: Jeff Engleson, Director, Investment Division, 701.328.2800, jengleso@nd.gov

7.34.1. Jurisdiction and Land Base

The Office of the Commissioner of University and School Lands, commonly called the State Land Department (SLD), currently manages about 708,000 surface acres and more than 2.5 million mineral acres. Trust lands are managed for the benefit of public schools, including universities, and public institutions.¹⁸⁵ State lands are nearly 100% leased.¹⁸⁶

7.34.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The North Dakota Constitution established the Board of University of School Lands' authority over trust lands. Under the direction of the Board, day-to-day management of school trust lands is given to the SLD. The SLD does not have alternative energy-specific laws and rules; leasing authority is provided by North Dakota Century Code 15-01 through 15-08.¹⁸⁷

7.34.3. Administrative Process

7.34.3.1. *Process-Driver*

Submittal of an application begins the review process.

7.34.3.2. *Treatment of Applications*

A notice of the lease is published in a local newspaper.

7.34.3.3. *Authorizations*

Lands are leased at public auctions with maximum lease terms of 5 years. SLD also processes easements for pipelines, electrical transmission lines, county roads and highways and leases for gravel and aggregate mining.¹⁸⁸

7.34.3.4. *Terms and Conditions*

No authorizations for alternative energy projects have been issued.

7.34.3.5. *Use Fees*

The Trust obtains a fair market return from surface lands, while improving their condition and value.

7.34.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

¹⁸⁵ 57th Biennial Report to the Governor and Secretary of State, 2005-2007, <http://www.land.nd.gov/main/biennial/report.pdf>

¹⁸⁶ SLD Surface Management website <http://www.land.nd.gov>

¹⁸⁷ Full text of these chapters may be found at <http://www.legis.nd.gov/cencode/t15.html>.

¹⁸⁸ SLD Surface Management website.

7.34.5. Challenges

North Dakota is number one in the nation for potential capacity (138,400 MW) in wind energy as estimated by AWEA.¹⁸⁹ It is number 13 in terms of existing capacity, proposed and installed projects, although none of these projects are on state land. SLD has had several companies indicate an interest, but not follow through because SLD will not use the developers' standard lease agreements.

¹⁸⁹ Texas runs a close second to North Dakota in potential capacity and is number one in existing capacity.

7.35. Ohio

Department of Natural Resources

Sean D. Logan, Director

Key Contact: Tony Logan, Chief Legal Counsel, Office of Legal Services, 614.265.7062 Tony.Logan@dnr.state.oh.us

7.35.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages about 590,000 acres of land, including state parks, state forests, state nature preserves, and wildlife areas. The DNR also has jurisdiction over more than 120,000 acres of inland waters, 7,000 miles of streams, 481 miles of Ohio River, and 2.25 million acres of Lake Erie.¹⁹⁰

7.35.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DNR operates under the general authority of the Ohio Administrative Code. The DNR does not have statutory authority to issue licenses or permits for wind projects. The Division of Wildlife requires restitution or criminal penalties for bird mortality.

7.35.3. Administrative Process

7.35.3.1. *Process-Driver*

None for alternative energy leasing.

7.35.3.2. *Treatment of Applications*

None.

7.35.3.3. *Authorizations*

No DNR license or permit. The Division of Wildlife, through Cooperative Agreements, authorizes one-year pre-construction bird studies for developers on non-state land.

7.35.3.4. *Terms and Conditions*

Not applicable.

7.35.3.5. *Use Fees*

Not applicable.

7.35.4. Projects of Interest

7.35.4.1. *Wind - Uplands*

The DNR has a 0.5 MW turbine at its Malabar Farm State Park. No other wind projects exist on state land.

¹⁹⁰ DNR website <http://www.dnr.state.oh.us/aboutus/tabid/10748/Default.aspx>

7.35.5. Challenges

To allow any wind farms on state-owned land would require a statutory change. Thus far, all commercial wind turbines have been constructed on privately owned or leased lands. No offshore turbines exist at present, although DNR is currently in discussions with potential offshore developers.

The expected highest commercial value and strongest winds are in Lake Erie, just 23 miles northwest of Cleveland. The Cuyahoga County Energy Task Force, formed in 2006, studied whether offshore wind farms in Lake Erie were feasible and released a report in January 2007 to county commissioners with recommendations on policy, site evaluation, finance, technology and legal/regulatory issues.

7.36. Oklahoma

Commissioners of the Land Office

Clifton Scott, Secretary

Key Contact: Keith Kuhlman, Director, Real Estate Management Division, 405.604.8140 Keith.Kuhlman@clo.state.ok.us

7.36.1. Jurisdiction and Land Base

The Commissioners of the Land Office (CLO) manage about 700,000 surface acres and more than one million subsurface acres.¹⁹¹ The primary purpose of the CLO is to “administer the school land trust funds for the production of income for the support and maintenance of the common schools and the schools of higher education.”¹⁹²

7.36.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The CLO does not have any energy-specific land laws, regulations or policies. Lands available for wind energy are managed under the rules and regulations for Surface Leasing for Agricultural and Commercial Purposes.¹⁹³

7.36.3. Administrative Process

7.36.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.36.3.2. Treatment of Applications

The CLO responds to applications as they are received. The CLO devises the terms of the agreement with the proposed user and then advertises the proposed agreement for a period of four weeks. At the conclusion of the notice period, an auction is conducted and the easement/lease is awarded to the high bidder.

7.36.3.3. Authorizations

Short-term commercial leases are for a term not to exceed three years, must be at least for market value, and do not have to be publicly bid. There are provisions for long-term leases for up to 55-years. The CLO can use either easements or long-term leases to allow long-term use of state land for wind energy. It is really more the company’s decision on calling for an easement or lease. An easement is less intensively advertised than a long-term lease – which many wind energy companies desire.

7.36.3.4. Terms and Conditions

Easements/leases are issued for a specified term and with two phases: Phase 1 is for research and analysis; Phase 2 is for development and production. In Phase 1, the grantee must conduct environmental impact studies, specifically a Phase 1 environmental study to establish a baseline for post termination and an avian study to determine how birds and bats migrate, move, and fly across the property and the

¹⁹¹ Oklahoma Commissioners of the Land Office website <http://www.clo.state.ok.us/>

¹⁹² Ibid.

¹⁹³ <http://www.clo.state.ok.us/Legal/CLOREMRules2005.pdf>

potential impacts of the activity. The study results are evaluated and if issues are noted they must be corrected prior to installation of turbines.

7.36.3.5. *Use Fees*

The CLO is required to “maximize the income to the Trust beneficiaries while taking necessary care to conserve and preserve the trust estate, reserving the right to refuse any or all bids.”¹⁹⁴ The easement/lease agreement outlines the annual use fees based on the two phases. During Phase 1 and the construction period of Phase 2, the grantee is required to pay a set fee – (usually a nominal \$4 -\$5/acre). Expected revenue for each turbine site is between \$10,000 and \$12,000 per year once the wind farm is in production. During the production phase, the grantee pays a minimum of 4% gross revenues for the first 10 years and then 4.25% of gross revenues for the balance of the term or a set minimum fee per installed megawatt (usually between \$2,500 and \$3,000 per MW). The agreement also has a provision that “should Oklahoma’s market become unregulated in the future, the minimum Production Royalty shall be a minimum of 6% of Gross Revenues.”¹⁹⁵

7.36.4. **Projects of Interest**

7.36.4.1. *Wind*

The CLO has four applications for wind energy projects that it is currently processing. The current easement/lease that is close to finalization is still in the development phase with no set number of turbines known until the company finishes acquisition of all land needed for the wind farm. It is expected to be at least another two years before construction is started.

7.36.5. **Challenges**

The CLO has received a steady stream of applications and inquiries for wind energy and expects the future to be the same. Many organizations and landowners want the CLO to develop a standard lease contract for all contingencies so these same groups could use the standard contract.

¹⁹⁴ Ibid., at OAC 385:25-1-3. Surface lease policy

¹⁹⁵ Sample *Wind Turbine Power Production Easement* at Section 6.2.1. [See Appendix H for sample agreement]

7.37. Oregon

Department of State Lands
Louise Solliday, Director

Key Contact: Jeff Kroft, Senior Policy Specialist, Land Management Division, 503-986.5280, Jeff.Kroft@state.or.us

7.37.1. Jurisdiction and Land Base

The Department of State Lands (DSL) manages about 753,000 acres of state lands, another 2.1 million acres of subsurface only, and almost 800,000 acres of submerged and submersible lands (Equal Footing Doctrine).¹⁹⁶

7.37.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

DSL has adopted administrative rules governing the exploration for, and development of hydrokinetic (wave energy).¹⁹⁷ DSL is currently in the process of developing administrative rules (as a part of its Special Uses Rules), specifically governing wind turbines and wind farms, solar energy installations, and biomass generating facilities.¹⁹⁸ A number of Oregon state agencies, boards and offices are involved in developing and implementing policies concerning, and planning for and encouraging the development of renewable energy resources in Oregon. Among these are the Department of State Lands, the Governor's Natural Resources Office, the Oregon Department of Energy, and the Ocean Policy Advisory Council. Further, the Asset Management Plan contains policies specifically directed at developing solar, geothermal, hydropower, ocean, and wind energy.¹⁹⁹

7.37.3. Administrative Process

7.37.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.37.3.2. Treatment of Applications

DSL follows the same process for applications using state-owned land administered by the agency. Generally, if more than one application for an authorized area is received by the DSL for the same or conflicting uses, the Department may determine which proposed use best fulfills the policies (specified in OAR 141-140-0030), accept it and deny the others. The DSL can also deny an application if the applicant's financial status or past business or management practices indicate that the applicant may not fully meet the terms and conditions of the authorization or lease. Once accepted, various local, state and federal agencies, other interested persons including, tribal governments, port districts, business and community organizations, and fisher, recreationist and conservation groups, and the holders of DSL-issued authorizations within or immediately adjacent may review and comment limited to the scope outlined in

¹⁹⁶ Oregon Department of State Lands, Asset Management Plan 2006-2016, http://www.oregon.gov/DSL/LW/docs/amp_2006_plan.pdf

¹⁹⁷ http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_140.html

¹⁹⁸ The State of Oregon has adopted rules governing other alternative energy sources, specifically OAR 141-087 (Hydroelectric Projects) and OAR 141-075 (Geothermal Lease Regulations).

¹⁹⁹ Asset Management Plan at pp. 57-59.

OAR 141-140-0010. The DSL may find it necessary to conduct environmental or other studies (such as pre-construction surveys and baseline data) necessary to assist in evaluating the proposal at the applicant's expense. In addition, when considering wave energy projects, the DSL must consider and work within the Oregon Ocean Management Plan and Statewide Planning Goals (goal 19) when reviewing requests for state-owned land within the Territorial Sea.

7.37.3.3. Authorizations

DSL has issued two authorizations for wave energy projects (see below) and working with an applicant for placement of test meteorological towers on a parcel of state-owned land in eastern Oregon.

7.37.3.4. Terms and Conditions

In addition to the use fees, applicants must provide financial assurance required for the cost of closure and post-closure maintenance and the cost of any actions required at the site as well as general liability insurance and a surety bond. Specific mitigation measures are included in the authorization in addition to other general conditions listed in OAR 141-140-0010.

7.37.3.5. Use Fees

For a temporary permit (such as data gathering, etc.), the annual rental is the greater amount of \$500 or \$5.00 per acre of land within the authorized area. For leases, compensation is yet to be determined, but is expected to be based on market value.

7.37.4. Projects of Interest

7.37.4.1. Wind

To date, no commercial wind projects have been placed on state-owned land administered by DSL. DSL is in discussions with one company for placement of testing equipment on state land for site characterization.

Projects have been located primarily in northcentral Oregon within a 100-mile southern limit of the Columbia River on private lands. Numerous expansions to these projects as well as new sites for new wind farms are being processed. Of these, there are no projects on state land.

Aside from concerns about the impact of wind farms on wildlife, the major problem is the remoteness to adequate transmission lines. Much of eastern Oregon is unpopulated and, consequently, the cost of constructing transmission lines may be prohibitive. Other major transmission lines are often regional interties that cannot be used in this manner.

7.37.4.2. Wave/Tidal

Currently, much of the effort in Oregon with regard to renewable energy is focused on wave energy. There are at least six projects, which are either under consideration for

development along the Oregon coastline or are in the process of obtaining the required federal and state permits to conduct small-scale in-water feasibility tests.²⁰⁰

To date, DSL has issued two authorizations for wave energy projects: one to Oregon State University for a test buoy, and the other to Finevera for a test buoy and monitoring buoy -- all three of which are located off of the mouth of Newport Bay.

There are numerous concerns regarding the impact of these projects on marine habitat, animals and plants and the traditional activities of fishermen and other users of the Territorial Sea. Some discussion has occurred about developing, in time, what will essentially be a zoning map of the Territorial Sea indicating where various activities are most appropriately located. However, this may be some time in the future. Some projects suggested for construction (such as one in the Columbia River) may not be possible given the shallow depth of the river at the proposed location and the need to ensure that there are no possible hindrances to the use of the navigation channel.

7.37.5. Challenges

There is a major effort in Oregon to develop additional renewable energy resources.²⁰¹

Other renewable energy projects are being considered:

There is a continued interest in developing the state's *geothermal* resources, which are largely centered along the east and west flanks of the Cascade Range.

There are no major *solar* energy projects being considered at this time; however, there is a major new industry developing in Oregon to provide solar energy equipment.²⁰²

Because of environmental concerns, it is unlikely that any major new dams will be constructed in Oregon. However, there continues to be a serious effort to develop the state's *small-scale hydro* potential.

On March 26, 2008, FERC and the state of Oregon (including DSL) signed a Memorandum of Understanding (MOU) to "coordinate procedures and schedules for review of wave energy projects in state waters off the coast of Oregon." According to the FERC press release, the MOU establishes procedures for pilot project licenses:

Each will notify the other when one becomes aware of a potential applicant for a preliminary permit, pilot project license or license. This will allow for the start of coordinated efforts to review the project.

They will agree upon a schedule for processing applications as early as possible. The schedule will include specific milestones for FERC and Oregon to complete their respective processes. They also will encourage other federal agencies and stakeholders to comply with the schedules.

They, along with the prospective applicant and other participants, will work together to identify potential issues, and to determine what information is needed and what studies

²⁰⁰ A list of these companies/projects can be found on FERC's website at <http://www.ferc.gov/industries/hydropower/industry/hydrokinetics/permits.asp>.

²⁰¹ See http://governor.oregon.gov/Gov/P2007/press_060607.shtml and <http://governor.oregon.gov/Gov/sos2006/energy.shtml>

²⁰² See <http://www.oregonseia.org>

must be conducted to permit the Commission and Oregon to undertake required reviews of proposed projects.

Oregon intends to prepare a comprehensive plan for the siting of wave energy projects in state waters off the coast of Oregon. FERC agrees to consider, to what extent, proposed projects are consistent with the plan.

Any pilot project license or other license issued by FERC must include conditions to protect and mitigate potential damage to fish and wildlife resources.²⁰³

²⁰³ FERC news release *FERC, Oregon sign Memorandum of Understanding for Wave Energy Projects* March 26, 2008, found at <http://www.ferc.gov/news/news-releases/2008/2008-1/03-27-08.asp>. Copy of MOU in Appendix B and also on the web at <http://www.ferc.gov/legal/maj-ord-reg/mou/mou-or-final.pdf>.

7.38. Pennsylvania

Department of Conservation and Natural Resources

Michael DiBerardinis, Secretary

Key Contact: John Quigley, Chief of Staff, 717.787.9632 jquigley@state.pa.us

Pennsylvania Game Commission

Carl Roe, Executive Director

Key Contact: Bill Capouillez, Director, Bureau of Wildlife Habitat Management, 717-787-6818, ext. 3600,

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7.38.1. Jurisdiction and Land Base

The Department of Conservation and Natural Resources (DCNR) currently manages 2.4 million acres of state forest land and state parks. The Pennsylvania Game Commission (PGC) manages the State Game Lands system, currently containing more than 1.4 million acres.

7.38.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Neither DCNR or PGC have alternative energy-specific land laws or regulations.

The Conservation and Natural Resources Act (also called Act 18) of 1995 provides DCNR the authority to manage state forest lands “to assure their long-term health, sustainability and economic use” and allows it to lease state forest lands for specific purposes.²⁰⁴ The DCNR does not have legislative authority to lease state forest lands for commercial wind development. DCNR is currently evaluating whether to seek authority to do so and has developed a draft policy outlining a framework for selection of sites and draft administrative procedures.²⁰⁵

The PGC operates under Title 34 Game and Wildlife Code,²⁰⁶ which allows the PGC to negotiate a land exchange. The PGC adopted the *Wind Energy Review Guidelines for State Game Lands* policy that outlines the process by which an applicant can proceed with gathering data and the criteria which must be met prior to entertaining a potential land exchange process.²⁰⁷

7.38.3. Administrative Process

7.38.3.1. Process-Driver

All parties interested in leasing PGC lands must submit an application to the PGC. If DCNR were to go forward and obtain permission to lease state forest lands, it would follow the same process currently employed for natural gas exploration; i.e., a

²⁰⁴ See

<http://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=PDF&sessYr=1995&sessInd=0&billBody=H&billTyp=B&billNbr=1400&pn=2091>

²⁰⁵ See Appendix B for the draft policy or on DCNR’s website at

http://www.dcnr.state.pa.us/info/wind/documents/draft_policy_wind_power_on_sfl_0522073.pdf; also, see DCNR’s website *Wind Power on State Forests?* <http://www.dcnr.state.pa.us/info/wind/wp-documents.aspx>.

²⁰⁶ See PGC’s website at <http://www.pgc.state.pa.us/pgc/cwp/browse.asp?a=478&bc=0&c=70015> for Title 34.

²⁰⁷ See Appendix B for the adopted policy or on PGC’s website at

<http://www.pgc.state.pa.us/pgc/lib/pgc/programs/guidelines4sgl.pdf>

nomination process, followed by environmental review, followed by a competitive bid for leasing of tracts. Wind data collection is currently allowed under a separate research permit.

7.38.3.2. *Treatment of Applications*

The draft DCNR wind power development policy indicates that any nomination of tracts for wind energy production would require an Environmental Review Process, similar to the process undertaken in considering nominations for oil and gas extraction. The environmental review must justify the project's need and consider the project's probable impact on each factor and whether it is beneficial or adverse and any corrective measures that will be taken or justification why none are planned. The factors to be considered include, but are not limited to, any wetlands encroachment, in-stream alterations, disturbance activities in a natural area including insect and disease control, impacts on recreational resources including viewsheds, timber management in a wild area, right-of-way expansions or new construction (pipelines or major powerlines), surface mining, oil and gas leases (excluding gas storage), large-scale stone removals, subsurface disturbance to caves, addition of public-use roads to the state forest road system, land acquisitions/exchanges, new trail construction, large blocks of artificial regeneration, i.e., monocultures (>10 acres), or other projects as determined by the state forester.²⁰⁸ After environmental review, DCNR would determine whether to allow nominated tracts to be included in a competitive bid lease sale.

After submitting a project proposal on Game Lands to the PGC, the PGC completes an internal review process of the proposed area of Game Lands to determine the potential impact that would occur to the wildlife resources and overall management objectives of the game lands, should the project be approved. Internal reviews include whether the intended use of the game lands is compatible to the proposed project and take into account what existing impacts are already occurring to the local Game Land area by way of privately held lands. If the PGC determines that a loss of intended use on the Game Land has occurred, potential adverse impacts to wildlife resources is low *and* the PGC's site selection criteria have been met, then PGC will allow an applicant to conduct preliminary data collection.²⁰⁹ Whether the preliminary data collection occurs, PGC must determine the overall feasibility of the project on Game Lands and if the project is justifiable to pursue more formal negotiations. After this determination, PGC proceeds with the land exchange process.

7.38.3.3. *Authorizations*

If legislative authority is sought and granted, DCNR would conduct bids and issue leases for the use of forest lands. PGC would require a land exchange for wind energy development.

²⁰⁸ See DCNR's Bureau of Forestry Environmental Review Guidelines (Draft) in Appendix B or at DCNR's website http://www.dcnr.state.pa.us/info/wind/documents/sf_enviro_review_policy2.pdf

²⁰⁹ See PGC's *Initial Site Selection Criteria Guidelines for Wind Energy Projects on Game Lands* in Appendix B.

7.38.3.4. *Terms and Conditions*

The DCNR draft policy for wind power development states that “leases will be subject to competitive lease sale process and administrative procedures and guidelines as applied to oil and gas leases on state lands.” This includes “ecosystem and multiple resource management, recreation and public safety, communications and record-keeping, exploration and administration, site approval and administration, road and transmission approval and administration, site restoration and wildlife habitat, and conducting field inspections. Post construction monitoring is also required.”

Both agencies require bird, bat, and other species of concern monitoring protocols developed by the PGC (Protocols to Monitor Bird Populations at Industrial Wind Turbine Sites, PGC 2007) , with minor exceptions by the DCNR (more restrictive).²¹⁰

7.38.3.5. *Use Fees*

No leases have been issued or exchanges have occurred to date for alternative energy projects of interest.

7.38.4. Projects of Interest

There are currently no utility-scale alternative energy proposals or projects on state land.

7.38.5. Challenges

DCNR manages the state forest for sustainability so as to maintain its certification as “well-managed” according to the principles of the Forest Stewardship Council (FSC). It allows timber sales, oil and gas lease sales, and communication towers within the forest. Because of the state’s increased interest in alternative energy sources, the DCNR is considering whether to allow windmills on a small portion of state forests as mentioned above. It is currently working with the Pennsylvania Wind and Wildlife Collaborative, gathering input from its Advisory Committees, other stakeholder groups, and the general public, then will incorporate those into the 2008 State Forest Resource Management Plan Update.

DCNR is also exploring possibilities for hydropower projects, including in-river flow energy systems; no determination has been made.

²¹⁰ See *Wildlife Monitoring Protocols for Potential Industrial Wind Turbine Sites on DCNR Lands* at http://www.dcnr.state.pa.us/info/wind/documents/draft_wildlife_monitoring_on_sfl_052207.pdf

7.39. Rhode Island

Department of Environmental Management
W. Michael Sullivan, Director

Key Contact: Tom Getz, Assistant to the Director, Strategic Planning & Policy, 401.222.4700 thomas.getz@dem.ri.gov

7.39.1. Jurisdiction and Land Base

The Department of Environmental Management (DEM) currently manages about 227,500 acres for public use or farm purposes: 40,000 acres of forest land, 45,000 acres of wildlife areas, 7,500 acres of parks, and another 135,000 in partnerships with local municipalities, land trust and farmers for land conservation purposes. This total represents about one-third of the state.

7.39.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Rhode Island does not have alternative energy-specific land use laws and regulations. The DEM operates under the general authority of RI General Laws: Section 46-12 deals with water pollution; Title 20 deals with Fish & Wildlife.²¹¹

7.39.3. Administrative Process

7.39.3.1. *Process-Driver*

Pre-application queries or submittal of an application begins the review process.

7.39.3.2. *Treatment of Applications*

The permitting process will be shared with a number of entities, including a 401 Water Quality Certification from DEM. In addition, DEM is the Natural Resources Trustees for the state and evaluates impacts to the fisheries, marine mammals and avian resources. It is anticipated these impacts will be outlined an EIS-like document produced by the Rhode Island Office of Energy Resources (OER). Other entities involved in project review are the RI Coastal Resources Management Council, the Public Utilities Commission and the Energy Siting Board.

DEM's 401 Water Quality Certification and the PUC and Energy Siting Board's processes are fairly well defined. CRMC is developing a Special Area Management Plan within coastal waters of Rhode Island that will determine potential siting areas for power projects along with critical resource areas that will be set aside for the particular resource being protected, i.e., fisheries, avian etc.

7.39.3.3. *Authorizations*

DEM issues a 401 Water Quality Certification for any coastal wind projects as well as an NPDES permit. The Coastal Resources Management Council (CRMC) issues Category B Assents, Concurrence with Federal Consistency Certification Statements, Permits for Altering Wetlands in the Vicinity of the Coast. Additional permits may be

²¹¹ See <http://www.rilin.state.ri.us/Statutes/Statutes.html> for link to the RI Statutes.

required from the Department of Transportation (Permit to Access State Highway Right-of-Way) and the Energy Facility Siting Board (Facility Siting Approval).

7.39.3.4. *Terms and Conditions*

Terms and conditions will be derived from the EIS and yet to be had public participation process.

7.39.3.5. *Use Fees*

Permitting fees have not been established for a project. The CRMC is developing regulations at the time of this report.

7.39.4. **Projects of Interest**

7.39.4.1. *Wind - Offshore*

Currently, there are two offshore wind energy proposals. One is a proposal by OER. The proposal, whose objective is to meet 15% of the state's annualized average electrical demand (i.e., 150 MW), would necessitate building a generating capacity of 450 MW.²¹² (Also see discussion in *Challenges* below.)

Another proposal from a private investment company is a duplicate of OER's proposal and uses the report generated by the RI Energy Resources Office as a placeholder for an application of a yet-to-be-defined application process.

7.39.5. **Challenges**

RIWINDS program was established in 2006 as an advocate for wind energy in the state. An initial report, *Final Report RIWINDS Phase 1 Energy Siting Study*, was produced in April 2007 that found over 95 percent of the wind energy opportunity is offshore, with 10 areas totaling 98 square miles producing over 6 million MW of wind energy annually. Of that, approximately 75 percent is in state waters.²¹³ A follow up report prepared in September 2007 summarized a ranking of the sites.²¹⁴

²¹² OER has a website that highlights its final stakeholder report and project location information of the proposal see <http://www.energy.ri.gov/index.php>

²¹³ The complete report can be found online at <http://www.energy.ri.gov/documents/independence1/RIWINDSReport.pdf>

²¹⁴ See summary at http://www.energy.ri.gov/documents/renewable/RIWINDS_RANKING.pdf

7.40. South Carolina

Department Natural Resources

John Frampton, Director

Key Contact: Ken Prosser, Heritage Trust Program, 803.734.3914, ProsserK@dnr.sc.gov

7.40.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages land for conservation and habitat protection, including the protection, enhancement and conservation of South Carolina's inland aquatic resources and the state's marine and estuarine resources.²¹⁵

7.40.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

South Carolina does not have alternative energy-specific laws and rules nor does DNR expect to address alternative energy projects in the future. The DNR is governed by a seven-member Board with one member representing each of the six Congressional Districts and one member at large.²¹⁶ It operates under the SC Coastal Zone Management Act and the S.C. Code of Law Title 49 (Land & Water).²¹⁷

7.40.3. Administrative Process

7.40.3.1. Process-Driver

Not applicable.

7.40.3.2. Treatment of Applications

Not applicable.

7.40.3.3. Authorizations

Not applicable.

7.40.3.4. Terms and Conditions

Not applicable.

7.40.3.5. Use Fees

Not applicable.

7.40.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land or anticipated that any will occur.

7.40.5. Challenges

DNR is one of many state agencies in South Carolina that own and manage land. Other than traditional hydro-electric projects, DNR has not been involved in alternative energy

²¹⁵ DNR 2005-2006 annual report found at <http://www.dnr.sc.gov/pubs/AccountabilityReport091506.pdf>.

²¹⁶ DNR FAQs website at <http://www.dnr.sc.gov/admin/execfaqs.html>.

²¹⁷ Annual report at p.8.

projects nor does it foresee any occurring the in the future. DNR and Duke Power Company signed an Agreement in Principal (AIP) relative to environmental, land management and access issues related to FERC relicensing of all Duke owned hydroelectric dams on the Catawba-Wateree River system in 2006.²¹⁸

²¹⁸ Ibid., at p.3.

7.41. South Dakota

Office of School and Public Lands

Jarrold R. Johnson, Commissioner, Jarrod.Johnson@state.sd.us

7.41.1. Jurisdiction and Land Base

The Office of School and Public Lands (OSPL) currently manages about 760,000 surface acres and 5.2 million mineral acres in trust for public schools. Lands are managed primarily for the benefit of common schools and other state institutions through the Common School Permanent Fund.²¹⁹

7.41.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Under Article VIII, Section 2, of the South Dakota State Constitution, and South Dakota Codified Law, Title 5,²²⁰ the commissioner has jurisdiction over all lands and related resources for common school and indemnity lands. South Dakota state law provides for a severance of wind energy through an easement; the commissioner may grant an easement for wind development contingent on the approval by the Governor.²²¹

7.41.3. Administrative Process

7.41.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.41.3.2. Treatment of Applications

The commissioner may negotiate directly with the applicant.

7.41.3.3. Authorizations

The commissioner may grant an easement for wind development contingent on the approval by the Governor, term not to exceed 50 years.

7.41.3.4. Terms and Conditions

No wind development easement has been issued to date; however, cultural and biological considerations for any projects on state-owned property are required under both state and federal law.

7.41.3.5. Use Fees

No wind development easement has been issued to date.

7.41.4. Projects of Interest

No proposals are being considered at this time.

²¹⁹ South Dakota OSPL website <http://www.sdpubliclands.com/history/index.shtm>

²²⁰ See <http://legis.state.sd.us/statutes/index.aspx> for the constitution and applicable statutes.

²²¹ Ibid, at SDCL 5.2.11.

7.41.5. Challenges

At the present time, no wind easements have been granted on South Dakota trust land. Despite this, the OSPL anticipates that geographical location of holdings will most dictate the rate of future project expansions. Any interest would be considered on a case-by-case basis for development or expansion of any wind or alternative energy projects on trust lands.

7.42. Tennessee

Department of Environment and Conservation
Jim Fyke, Commissioner

Key Contact: Larry Hillis, Grants Analyst, Division of Recreation and Educational Services, 615.532.0051,
Larry1.Hillis@state.tn.us

7.42.1. Jurisdiction and Land Base

The Department of Environment and Conservation (TDEC) currently manages a total of 157,439 acres, comprised of submerged lands, 54 state parks and 77 state natural areas.²²² TDEC's Division of Natural Areas manages about 25,000 acres of private land designated as State Natural Areas.

7.42.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The TDEC does not have alternative energy-specific land laws and rules; the Tennessee Water Quality Control Act of 1977 provides statutory authority for managing the state's submerged lands.

7.42.3. Administrative Process

7.42.3.1. Process-Driver

Submittal of an application begins the review process.

7.42.3.2. Treatment of Applications

After submittal of an application package, public notice is issued. If a public hearing is requested, the TDEC will conduct it after another 30-day notice. After public review and final supervisory review, a permit is issued or denied. The division must take action to issue or deny a permit within 90 days after receipt of a completed application.²²³

7.42.3.3. Authorizations

To construct in a waterway, an applicant needs an Aquatic Resource Alteration Permit. Permits are valid for a maximum of up to five years.

7.42.3.4. Terms and Conditions

Terms and conditions are specific to the activity and may include periodic monitoring and inspections by the permittee. In addition, the permittee is responsible for obtaining any associated federal permits such as U.S. Army Corps of Engineers Sections 404 and 10 permits as well as Tennessee Valley Authority Section 26a permits.

7.42.3.5. Use Fees

The TDEC has a schedule of fees for 5-year permits, based on activity and duration.

²²² TDEC website <http://www.tennessee.gov/environment>

²²³ *Environmental Permits Handbook: Aquatic Resources Alteration Permit*, TDEC website
<http://www.tennessee.gov/environment/permits/arap.shtml>

7.42.4. Projects of Interest

There are currently no alternative energy proposals or projects on state land.

7.42.5. Challenges

TDEC is primarily involved with managing Tennessee's resources for conservation and acquiring lands for purposes of recreation. Any energy projects are under the purview of the Tennessee Valley Authority (TVA). As power provider for seven southern states, the TVA has one wind generation site at Buffalo Mountain as part of the Green Power Switch program. Sixteen *solar* generation sites are located in service areas of participating public power companies and a *methane waste by-product* from the City of Memphis' wastewater treatment plant is used for co-firing.²²⁴

²²⁴ TVA: Greenswitch website http://www.tva.com/greenpowerswitch/green_mainfaq.htm

7.43. Texas

General Land Office

Jerry Patterson, Commissioner

Key Contact: Dwain Rogers, Deputy Commissioner, Renewable Energy, 512.936.1962 Dwain.Rogers@glo.state.tx.us

7.43.1. Jurisdiction and Land Base

The General Land Office (GLO) manages state lands and mineral-right properties totaling 20.4 million acres. This includes about 800,000 surface acres as well as all submerged lands out to 10.3 miles in the Gulf of Mexico. The Permanent School Fund, which helps support K-12 education in Texas, is the beneficiary of any revenues and royalties that the GLO receives.²²⁵

7.43.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The GLO does not have alternative energy-specific land laws and regulations; it operates under statutory authority found in Chapter 51 of the Texas Natural Resources Code²²⁶ and Title 31 under the administrative rules.²²⁷ The GLO has formed a new division to focus solely on renewable/sustainable energy development.

The Sustainable Energy Development Council, a state ad-hoc council co-chaired by the GLO commissioner, created the *Sustainable Energy Strategy for a New Century* in 1995. The document is a “practical, commonsense plan to regain energy independence” from exclusively fossil fuels and imported coal and is a comprehensive evaluation of renewable energy potential.²²⁸ The commissioner also serves on the Texas Energy Planning Council, which not only recommended the Renewable Portfolio Standard, but also identified other ways to increase renewable energy production and transmission in the state.

7.43.3. Administrative Process

7.43.3.1. Process-Driver

The GLO actively seeks applications for development interest in its properties by identifying lands with potential for wind power development, including specific upland sites and offshore tracts. Since 1991, wind power data has been collected and analyzed and illustrated through digitized GIS layers (wind and solar energy classifications, electric transmission networks, service area boundaries, etc.).

In October 2007, the GLO offered wind lease sales through a competitive bid process based on its oil and gas lease sales, including identification of tracts offered and receiving bonus bids.²²⁹ The GLO is developing a process for nominating state tracts for future lease sales.

²²⁵ Texas General Land Office, *State Lands*, website <http://www.glo.state.tx.us/statelands.html>

²²⁶ See <http://tlo2.tlc.state.tx.us/statutes/nr.toc.htm>

²²⁷ See http://www.glo.state.tx.us/about/rule_review.html for links to the administrative rules

²²⁸ Texas GLO website <http://www.glo.state.tx.us/energy/sustain/sustainable.html>

²²⁹ See Appendix I for a sample bid packet.

7.43.3.2. *Treatment of Applications*

Other than the competitive offshore lease sale, the GLO treats applications as they are received, although the decision to grant any surface lease is in the commissioner's discretion. No public notice is required for the decisions made by the GLO; the commissioner has authority to directly negotiate with the applicant or put the lease out for competitive bid as long as the action is found to be in the interest of the Permanent School Fund.

Before developing the offshore leases, however, the lessee must submit a development plan, consistent with the state's Coastal Zone Management Act, and receive approvals from various state and federal agencies – similar to an oil and gas lease sale process. Once these approvals are received, the GLO allows production to begin.

7.43.3.3. *Authorizations*

The GLO issues a two-phase lease, terms dependent on the location of the lease. For *offshore leases*, Phase 1 is for research and development and is for two to four years from execution of the lease; Phase 2 is the Construction and Production Phase, which allows three to five years for construction and another 30 years production.²³⁰ For *onshore leases*, Phase I is for research, development and construction and is generally for three to four years; Phase 2 is once production commences.

7.43.3.4. *Terms and Conditions*

The lessee is required to post cash, bond, or letter of credit at the beginning of each phase. The GLO is entitled to all wind measurement data collected by the lessee. Avian studies, conducted by an avian specialist, must be conducted for at least two years. Post-construction monitoring and reporting is required. The GLO must review and approve plans at major milestones throughout the life of the project.

7.43.3.5. *Use Fees*

The Delaware Mountains lease is anticipated to produce about \$3 million over the life of the lease (25 years).

The four offshore leases sold in the October 2007 offering receive \$91,000 annually for the right to develop the lease (phase one of the lease, about four years). The lessee's dollar commitment is approximately \$258 million over the 30 year period. Once developed, the lessee pays a percentage of all electricity produced from the four tracts: 3.5% for the first eight years; 4.5 to 4.75% for years nine through 16, and 5.5 to 6.5% for years 17 through 30. The GLO expects to receive \$433 million in total revenue, based on the projected MW.

²³⁰ Lease applications and bidding instructions are included in Appendix I. Sample authorizations for the offshore sale are included in Appendix H. All are also available at http://www.glo.state.tx.us/news/archive/2007/events/windlease_100207.html.

7.43.4. Projects of Interest

7.43.4.1. Wind - Onshore

Since 1995, the GLO is leasing land in the Delaware Mountains (far west Texas area) to the Lower Colorado River Authority for 112 80-foot-tall wind turbines, producing about 35 MW of electricity at 4.7 cents per kWh. The site has room for expansion as the need arises.

To encourage development, the GLO has identified an additional 11,400 acres in six areas of the state that have good potential for wind power development.²³¹

7.43.4.2. Wind - Offshore

Since 2005, six leases have been executed:

- In September 2005, a lease was issued in the Galveston area. Although there have been some delays, a \$2 million, 260-foot meteorological testing tower was installed Spring 2007 and is currently collecting data. This lease is still in the Research Phase.
- Also in 2005, a lease was issued near Padre Island for a proposed 250 MW project. No developments occurred within the first year, the company was bought out, and the lease was eventually terminated in 2007.
- Four offshore tracts were offered and leased to Wind Energy Systems Technology for wind development as part of the regular oil and gas lease sale held in October 2007. The four tracts total 73,098 acres, ranging in size from 12,240 to 23,040 acres. The leases allow the construction of meteorological towers on each of the four tracts. The Research and Development Phase will last approximately four years and the Production term will be 30 years for each lease. The sites are expected to produce 250MW to 300MW per lease.

7.43.4.3. Wave/Tidal

The department has issued an easement for one experimental wave power project in state submerged lands in the Gulf of Mexico off of Galveston. The applicant is currently seeking a Corps of Engineers permit for an expanded testing facility.

7.43.5. Challenges

As of 2007, Texas has 4,356 MW installed on upland tracts with another 4,000 MW in signed interconnection agreements planned for 2008. In addition, there were interconnection study agreements looking at the feasibility for an additional 40,000 MW of wind power projects in Texas.

Offshore lands in the Gulf of Mexico show strong promise for wind power development: it is a peak power resource, it is close to population centers, and it is a clean, abundant source of power. The submerged lands are fairly shallow and the offshore developers only

²³¹ See *State Lands for Wind Power Development*, <http://www.glo.state.tx.us/energy/sustain/wind.html>

need to deal with one landowner, the GLO, to obtain permits for infrastructure. However, offshore wind generation is twice as expensive to install and is a lengthy process.²³²

²³² Michelle Warren, GLO Deputy Commissioner, Renewable Energy, *Texas General Land Office Offshore Wind Leasing Program*, presentation to WSLCA Winter Conference, January 2008.

7.44. Utah

School and Institutional Trust Lands Administration
Kevin Carter, Director

Key Contact: John Andrews, Associate Director/Chief Legal Counsel, 801.538.5180, jandrews@utah.gov

Division of Forest, Fire and State Lands

Key Contact: Dick Buehler, State Forester/Director, 801.538.5389 dickbuehler@utah.gov

7.44.1. Jurisdiction and Land Base

The School and Institutional Trust Lands Administration (SITLA) manages about 3.5 million acres and another 1.0 million mineral-only acres of trust land. Trust lands are managed for the benefit of 12 trust beneficiaries, of which the common (public) school trust owns 95 percent.²³³

The Division of Forest, Fire and State Lands (DFFSL) manages nearly 1.5 million acres of sovereign and other lands on behalf of the state under the Public Trust Doctrine. These sovereign lands include the bed of the Great Salt Lake, Utah Lake, Bear Lake and the riverbeds of Jordan River and parts of the Green, Colorado and Bear Rivers.

7.44.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Utah has no specific alternative energy land laws and regulations. SITLA operates under standard permitting and leasing statutes²³⁴ and regulations for any authorizations involving alternative energy. Wind and solar leasing is administered by SITLA's surface management group, while geothermal leasing is managed by SITLA's minerals management group. DFFSL also uses general leasing categories subject to the plans, policies, regulations and statutes that govern its land management.

7.44.3. Administrative Process

7.44.3.1. Process-Driver

SITLA responds to applications as they are received for use of trust land and may also offer lands under an RFP or competitive sealed bid process, if the director determines it is in the interests of the trust.

DFFSL is guided by Comprehensive Land Management Plans and resource management plans for development of state lands. Typically, those lands are nominated for a use and the process of plan compliance, agency scrutiny, and competitive bids (if appropriate) begins.

7.44.3.2. Treatment of Applications

SITLA conducts a rule-based advertising program for issuing surface Special Use Leases – essentially to ensure that any competing interests for the property (not the specific use) are revealed. The director can determine criteria to evaluate proposals,

²³³ Utah SITLA website <http://trustlands.utah.gov/about/index.dot>

²³⁴ See Utah Code, Title 53 <http://le.utah.gov/~code/TITLE53C/TITLE53C.htm>

such as income potential, ability of proposed use to enhance adjacent trust lands, timetable for development, ability of applicant to perform satisfactorily, and desirability of proposed use. The availability of the land must be advertised once a week for three consecutive weeks.²³⁵

SITLA *geothermal* leases in areas outside Known Geothermal Resource Areas (KGRAs) are typically issued through competitive sealed bid lease auctions with defined terms. SITLA lands within KGRAs may be issued by sealed bid or through negotiation.

DFFSL issues a decision document before any leases are executed. In some cases, a site-specific plan is completed if there is no management plan in place for the nominated lands. DFFSL conducts a simultaneous bid to allow competing applications for those lands nominated for bids. Some minor uses or “no-impact” uses can be permitted without competing applications, but they are normally non-exclusive uses.

7.44.3.3. *Authorizations*

At the end of the advertising period mentioned above for surface leases, SITLA can either 1) negotiate directly with an applicant, or 2) offer at sealed bid auction a special use lease for a term up to 51 years.²³⁶ The agency is developing a lease specific to wind energy projects.

Following the simultaneous bid process, the DFFSL awards the bid to the highest bidder, provided the bidder meets certain criteria. The decision document is then signed (either a Record of Decision or a Director’s Agenda) and the leases are executed.

7.44.3.4. *Terms and Conditions*

SITLA is considering initial wind proposals on six sections of trust lands at this time. No terms and conditions have been set as of the date of this report.

DFFSL will use terms and conditions that follow the rules and standard lease language. There may be a bond required if there is rehabilitation, performance, or other issues related to the proposed use. The term of the lease varies on use from ten years for mineral leasing to 50 years for military use.

7.44.3.5. *Use Fees*

SITLA’s Special Use Leases are based on market value and income producing capability. In addition, lease rentals may be based on a value other than the market value of the subject property or require the payment of percentage rents.²³⁷

DFFSL’s special use lease fees include an annual rental of land and a royalty or value-based fee paid quarterly. The royalties can be partially offset by rental payments. There

²³⁵ See Utah Administrative Code R850-30-310 <http://www.rules.utah.gov/publicat/code/r850/r850-030.htm>

²³⁶ Ibid., at R850-30-510

²³⁷ Ibid., at R850-30-400.

are application fees to process the application, which are based on the complexity of the application

7.44.4. Projects of Interest

7.44.4.1. Wind

SITLA has received applications for wind energy projects on six parcels of trust lands in northeast and southwest Utah. Additionally, BLM is considering a project in Central Utah where the state will issue rights-of-way for transmission lines.

DFFSL has received no applications for wind energy projects to date.

7.44.4.2. In-River Flow

DFFSL has received no applications for in-river flow projects on sovereign lands to date.

7.44.5. Challenges

Utah does not have a Renewable Portfolio Standard, so there is a limited driver for electric companies to move toward renewable energy sources. This is somewhat offset by the availability of electrical transmission capacity that may permit sales to power customers in other states, particularly California, which do have Renewable Portfolio Standards. In addition, wind resources in Utah are less attractive than some nearby states – not a competitive advantage to utility-scale projects. Lastly, land ownership patterns are such that Utah's state land management agencies are sometimes secondary to another agency's lead, such as in the case in Central Utah with the BLM as the lead agency. When the project is jointly on federal land, the processing time increases due to NEPA requirements.

Other renewable energy sources:

There is increasing interest in *solar* farms, although no applications have been received to date on state trust lands.

Two significant *geothermal* facilities are operational and multiple leases are yet to be developed. New *binary power generation* technologies, which allow use of lower temperature geothermal resources, are expected to lead to significant additional development in coming years.

DFFSL is expecting to receive an application that partially supports a *pump-storage* project at Bear Lake that will be designed to accommodate peak energy consumption. There is a lengthy FERC EIS process before the permits and leases are in place for this project. The project includes SITLA lands.

7.45. Vermont

Agency of Natural Resources
George Crombie, Secretary

Key Contact: Mike Fraysier, Lands Director, Dept. of Forests, Parks and Recreation, 802.241.3682,
Mike.Fraysier@state.vt.us

7.45.1. Jurisdiction and Land Base

The Agency of Natural Resources (ANR) currently manages about 344,000 acres.

7.45.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The ANR does not have alternative energy-specific land laws and regulations. However, in 2004, ANR went through an involved and often contentious process to develop its policy on the use of state lands for renewable energy projects, which essentially states that appropriately sited small-scale renewable energy projects on state lands that are primarily intended to serve Agency facilities may be considered; *large utility-scale alternative energy projects on ANR lands are not allowed.* (See discussion in Section 7.45.5.) This effort was driven by requests from developers to use state lands for commercial wind energy development and was clearly focused on this use, but was broadened to include other renewable energy development.²³⁸ ANR is also involved in the review process for all renewable energy development projects in Vermont, regardless of whether the projects are on state land.

7.45.3. Administrative Process

7.45.3.1. Process-Driver

Not applicable.

7.45.3.2. Treatment of Applications

Not applicable.

7.45.3.3. Authorizations

Not applicable.

7.45.3.4. Terms and Conditions

Not applicable.

7.45.3.5. Use Fees

Not applicable.

7.45.4. Projects of Interest

There are currently no commercial-scale alternative energy proposals or projects on state land.

²³⁸ The resulting policy and related information can be found at <http://www.vermontwindpolicy.org> and in Appendix B.

7.45.5. Challenges

Vermont has a moderate potential for wind; it is ranked number 34 in potential capacity (537 MW) by the AWEA.

As mentioned, utility-scale renewable energy projects are not an “allowable use” of ANR lands, per the 2004 policy. Further, the ANR policy clearly articulates the limited possibility of developing state land for commercial renewable energy projects:

With regard to commercial wind energy potential, only a very small portion of ANR lands (less than 1% of its current total holdings of 346,000 acres) presently contains a commercially viable wind resource and is not encumbered with legal restrictions prohibiting such development. Large-scale wind energy development in Vermont at this time is clearly not dependent on this small amount of state-owned acreage becoming available. There are ample private lands presently available for such purposes which should be thoroughly investigated before considering such use of ANR lands.

Finally, development of large-scale, commercial renewable energy projects on ANR lands falls outside the Agency’s primary area of responsibility and may potentially conflict with the Agency’s (and its departments’) responsibility to hold land as a trustee for the benefit of all people of the state. State forests and state parks are held in trust by the Department of Forests, Parks and Recreation for public outdoor recreation and multiple use forest management purposes. Wildlife Management Areas and other Department of Fish and Wildlife lands are held in public trust for fish and wildlife habitat and public use. Neither department’s statutory authority makes mention of encouraging or enabling the use of state lands for commercial development or for large-scale energy production.²³⁹

²³⁹ Ibid., at p.5

7.46. Virginia

L. Preston Bryant, Jr., Secretary of Natural Resources

Marine Resource Commission

Steve Bowman, Commissioner

Key Contact: Bob Grabb, Chief, Habitat Management Division, 757.247.2250 Bob.Grabb@mrc.virginia.gov

Department of Conservation and Recreation

Joseph H. Maroon, Director, 804.786.2123, joseph.maroon@dcr.virginia.gov

7.46.1. Jurisdiction and Land Base

Jurisdiction of state-owned land does not fall to any one agency.

The Secretary of Natural Resources advises the Governor on natural resources issues and oversees six agencies to uphold the provisions of Article XI of the Virginia Constitution.²⁴⁰ Of those agencies, the Department of Conservation and Recreation (DCR) is responsible for 34 state parks and an additional 51 natural area preserves totaling 42,383 acres (DCR owns 36 and has stewardship responsibilities for an additional 15 dedicated preserves);²⁴¹ and the Marine Resources Commission (MRC) has jurisdiction over 5,242 miles of tidal shoreline encompassing 2,300 square miles of water surface covering 1,472,000 acres of state-owned bottomlands as well as submerged lands and streams of the Commonwealth above the fall line.²⁴² The Commission also has direct management authority over 28,000 acres of ungranted State marsh and meadowlands lying on Virginia's Eastern Shore.

Other state land managers are:

- Virginia Port Authority – responsible for state-owned ports;
- Department of Forestry – responsible for 19 state forests and other state lands purchased, leased or otherwise acquired as state forests, totaling 55,142 acres;²⁴³ and
- Department of Mines, Minerals and Energy – oversees the State Minerals Management Plan addressing mineral extraction on state owned land.

7.46.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Virginia does not have alternative energy-specific land laws and regulations. Virginia Code Title 10 outlines the state's environmental policy act which all state agencies must follow in considering the use of state land for facilities and design decisions. An encroachment permit on submerged lands is authorized under Title 28.2 of the Code of Virginia²⁴⁴ and the Virginia Administrative Code Title 4.²⁴⁵ DCR leases are governed by Title 10.1²⁴⁶ of the Code of Virginia and Title 4 of the Virginia Administrative Code.

²⁴⁰ Secretary of Natural Resources' website, *What We Do*, <http://www.naturalresources.virginia.gov>.

²⁴¹ DCR Strategic Planning Report, <http://www.vaperforms.virginia.gov/agencylevel/stratplan/ReportMenu.cfm?AgencyCode=199>

²⁴² MRC website, *Agency Overview*, <http://www.mrc.state.va.us/mrcoverview.shtm>.

²⁴³ DOF website, *Virginia State Forests*, <http://www.dof.virginia.gov/stforest/index.shtml>.

²⁴⁴ Full text of Title 28.2 may be found at <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC2802000>.

²⁴⁵ Full text of 4 VAC 20-120-10, et seq, may be found at <http://www.mrc.state.va.us/regulations/fr120.shtm>.

²⁴⁶ Full text of Title 10.1 may be found at <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC1001000>

7.46.3. Administrative Process

7.46.3.1. *Process-Driver*

Submittal of an application begins the review process. In the case of MRC, a joint local/state/federal permit application is completed.

7.46.3.2. *Treatment of Applications*

For submerged lands, the review process considers various local state and federal statutes governing the disturbance or alteration of environmental resources. The MRC is the clearinghouse for all three levels of review. Applications receive independent yet concurrent review by local wetland boards, the MRC, the Department of Environmental Quality (DEQ), and the Corps of Engineers, as well as a public notice. The MRC Habitat Management Division then prepares a recommendation to the Commissioner for a decision.²⁴⁷

Any activity in the coastal areas must also be consistent with Virginia's Coastal Zone Management Program, operated by DEQ.

7.46.3.3. *Authorizations*

Should a private developer desire to develop a power project on state-owned lands with the intent to sell power on the wholesale market, they would go through the same review process as if the project were on private lands: The Virginia State Corporation Commission would be responsible for issuing the Certificate of Convenience and public Necessity based on the input and recommendations of all relevant agencies (with the Department of Environmental Quality taking the lead in compiling and making recommendations to the SCC).

DCR may lease state lands and grant easements to governmental agencies and public service corporations for renewable periods of not more than 10 years and may enter into leases and contracts with an initial term of up to 30 years for the operation and development of revenue-producing capital improvement projects in Virginia state parks.²⁴⁸

7.46.3.4. *Terms and Conditions*

Each agency that owns lands has jurisdiction over the use of those lands subject to review by state oversight agencies for consistency with erosion and sediment control, stormwater, mineral extraction, and other uses. Leases for alternate uses of state lands are typically subject to review and approval by the Governor and Attorney General.

²⁴⁷ MRC website, *Habitat Management*, <http://www.mrc.state.va.us/hmac/hmoverview.shtm>.

²⁴⁸ DCR Strategic Planning Report, <http://www.vaperforms.virginia.gov/agencylevel/stratplan/ReportMenu.cfm?AgencyCode=199>

7.46.3.5. Use Fees

Not applicable.

7.46.4. Projects of Interest

No alternative energy projects have been considered for state lands beyond small-scale projects, i.e. roof-mounted solar equipment or small wind turbines.

7.46.5. Challenges

Virginia has a moderate potential for wind energy and is ranked number 28 by the AWEA.

7.47. Washington

Department of Natural Resources

Doug Sutherland, Commissioner of Public Lands

Key Contact: Tony Ifie, Senior Policy Analyst, 360-902-1019, Anthony.Ifie@dnr.wa.gov

7.47.1. Jurisdiction and Land Base

The Department of Natural Resources (DNR) currently manages about 5.6 million acres of forest, range, agricultural, aquatic, and commercial lands. These lands generate more than \$200 million a year, much of it to support public schools, state institutions, and county services.²⁴⁹

7.47.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The DNR does not have alternative energy-specific land laws and regulations. DNR issues wind energy leases under its general land leasing authority and procedures found in RCW 79.13²⁵⁰ and issues wave energy easements under its general authority and procedures for state-owned aquatic lands found in RCW 79.105.²⁵¹

7.47.3. Administrative Process

7.47.3.1. Process-Driver

Pre-application queries or submittal of an application begins the review process.

7.47.3.2. Treatment of Applications

For wind leases, the DNR directly negotiates with applicants after the lease application is advertised.

For wave energy easements, the DNR may directly negotiate with an applicant. However, DNR treats wave and tidal projects as it does hydroelectric projects and participates in the licensing coordinated by FERC; in that respect, DNR is typically co-lead for any NEPA review.

7.47.3.3. Authorizations

The law requires land lease term not to exceed 55 years; typically, leases are issued between 35 and 40 years. The term on aquatic easements usually does not exceed 30 years by policy.

7.47.3.4. Terms and Conditions

The DNR requires a bond and \$1,000,000/\$2,000,000 general liability insurance for all authorizations. In addition, if an area is within a Habitat Conservation Plan,²⁵² an

²⁴⁹ Washington State DNR website <http://www.dnr.wa.gov/AboutDNR/Pages/Home.aspx>

²⁵⁰ For RCW 79.13, see <http://apps.leg.wa.gov/RCW/default.aspx?cite=79.13>

²⁵¹ For RCW 79.105, see <http://apps.leg.wa.gov/RCW/default.aspx?cite=79.105>

²⁵² An HCP is a land management plan authorized under the Endangered Species Act to conserve threatened and endangered species. For the Washington State DNR, it means a comprehensive plan for state trust lands that allows

avian, fish or wildlife study is required. These areas are typically on the west side of the state. Monitoring is required to the extent that it is required by local jurisdictions. Project proponents are required to follow all state and local requirements.

7.47.3.5. *Use Fees*

Land leases are charged annual use fees based on the phase of development:

- Phase 1, Pre-development, \$1,000-\$5,000
- Phase 2, Construction, \$5,000 - \$10,000
- Phase 3, Operations, \$5,000 + % of gross revenue
- Phase 4, Re-powering, \$5,000 + % of gross revenue

For easements, use fees charged the grantee depends on the appraised value of the easement, ranging from \$550 to \$5 million, depending on the location.

7.47.4. **Projects of Interest**

7.47.4.1. *Wind*

The DNR currently has 17 wind energy projects on state land. Of that, three are operational, two are being constructed, and two are being opposed by the local county. See Table 7-5 for a list of projects.

7.47.4.2. *Wave/Tidal*

The Makah Bay project²⁵³ being proposed by Finavera Renewables is a 1 MW pilot wave energy installation that will be located in the Pacific Ocean in Makah Bay near the city of Neah Bay. The land portion part of the project is the property of the Makah Indian Nation. The aquatic portion of the project is within Washington State waters, the federal Olympic Coast National Marine Sanctuary, and the Washington State Flattery Rocks National Wildlife Refuge. In addition, DNR is a NEPA/SEPA co-lead and is part of a working group providing input into the project development. Finavera Renewables has obtained most of the needed permits for this pilot project; however, it was difficult to balance the interests of the various regulatory agencies involved in the FERC Permit process.

These projects are at preliminary stages and could lie within DNR managed aquatic lands, depending on the locations eventually chosen:

- In Puget Sound there are currently 8 additional projects proposed by 2 different proponents. Tacoma Power is proposing to develop tidal energy at the Tacoma Narrows. Public Utility District Number 1 of Snohomish County (SnoPUD) has proposed projects for Admiralty Inlet, Agate Pass, Deception Pass, Guemes Channel, Rich Pass, San Juan Channel and Spieden Channel.
- Tacoma Power has a three-year study permit issued by the Federal Energy Regulatory Commission (FERC). SnoPUD also has Study permits issued for all of their projects.

timber harvesting and other management activities while emphasizing species conservation and ecosystem health. This plan has been approved by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

²⁵³ The permitting information for the Makah Bay project can be found at http://www.finavera.com/en/wave/makah_bay.

Table 7-5. Wind Leases Issued/Under Review by Washington DNR, as of April 2008

Potential Lessee/ Project Name	Lease Signed	Status	Performance
Stateline Project	10/04/04	Operating	7.92 MW (12 Towers @ 0.67) on state land. Entire project in WA and OR will produce 300 MW..
Kittitas Valley Wind Power Project	06/30/03	Project approved by governor, appealed in court by Kittitas County	Proposed 12 turbines 36 MW on state land; 120 MW in whole project.
Wild Horse Wind Power Project	12/24/03	Operating as of 1/2007	61.2 MW on state land; 228 MW in whole project;
Hopkins Ridge Wind Project	02/24/05	Operating	16.2 mw (9 Towers @ 1.8 mw) on state land (w/in this lease).
Blue Sky Wind Project	12/29/06		Currently 3.6 mw (2 Towers @ 1.8 mw).
Desert Claim Wind Power Project	8/14/06	Project was denied approval by Kittitas County	Proposed 29 turbines (87 MW) on state land.
Rattle Snake Ridge Project	Pending signatures		14 mw (7 – 2.0 mw turbines) proposed on state land. 150 mw in total project.
Windy Point Wind Farms	9/22/06	Construction begins in 2008	10 MW on state land, 242 MW in total project..
White Creek Project	08/21/07	Ph. 1 & 2 permitted; negotiations completed for portion of Ph. 3	
Windy Point Wind Farms	9/22/06	Construction begins in 2008.	10 MW on state land, 242 MW in total project..
Orion Energy Project	03/30/07		17.5 mw on state land, 105.7 mw in total project.
Windy Point Wind Farms	03/21/07		18 mw on state land, 150 mw in total project.
Vantage Wind Power Project	06/12/07		
Nine Canyon Wind Project	01/08/07	Construction starts in 2007.	Energy Northwest proposes 10 mw on state land.
Juniper Canyon Wind Project	Pending signatures		Pacific Wind proposes up to 15 mw on state land, 150 mw in total project.
Juniper Canyon Wind Project	Pending signatures	Pre Development	Pacific Wind proposes up to 15 mw on state land, 150 mw in total project.
Juniper Canyon Wind Project	Pending signatures	Negotiations nearing completion	.

7.47.5. Challenges

Constitutionality Issue: The opposition to the Kittitas Valley Wind Project is based on the belief by the Kittitas County that the project location is out of place – as in too close to residents. The state’s siting body, Energy Facilities Site Evaluation Council (EFSEC), has jurisdiction over the project approval. EFSEC is required to consider the state’s interests as well as local concerns. EFSEC considered all the pro and con testimonies and made a ruling in favor of project approval. EFSEC believed that the mitigation measures imposed

on the project applicant sufficiently addressed the concerns expressed by the county. The Governor then approved the project. The county is challenging the approval process on constitutional grounds. The matter is now before the State Supreme Court.

Fish & Wildlife Studies Requirements: There are conflicts about the amount of studies that must be completed before a pilot or commercial project is allowed. A lot of unknowns about the effects of tidal energy development on marine resources exist. Studies have not been conducted to identify the effects of these energy projects on marine life.

Development of tidal energy in Puget Sound has the additional problems of being proposed at a time when millions of dollars are being spent on the recovery of species listed under the Endangered Species Act. How would development of tidal energy affect the recovery efforts of Puget Sound Chinook Salmon, Hood Canal Chum Salmon, or the Southern Resident Orca Whales? How would they affect bottom fish recovery plans? How may the proposed projects affect sediment deposition by potentially slowing the currents through the project areas? These and other questions will need to be answered as the project proposals move forward.

Other renewable energy projects that DNR is initiating:²⁵⁴

Potential for marketing forest *biomass* for energy and bio-fuel. DNR is currently exploring a pilot partnership with a private party to utilize logging slash and other surplus forest residue from state forest lands for production of a compressed bio-energy product. Through funding from DNR, the College of Forest Resources at the University of Washington is conducting a study to estimate *biomass* availability from logging slash from a sampling of eastern Washington forest lands. The study will help refine estimates of total availability of forest biomass for energy uses.

DNR is also exploring opportunities for feasibility studies and pilot projects using forest *biomass* for heat and power production, as well as for conversion to *cellulose-based ethanol*.

In the future, state trust lands in eastern Washington could see significant development of *solar* energy facilities; the largest current project in the state is next door to state trust lands.

²⁵⁴ DNR Current and Proposed Activities Relating to Climate Change and Renewable Energy, February 2008.
http://www.dnr.wa.gov/Publications/em_climatechange.pdf

7.48. West Virginia

Department of Commerce

Kelley M. Goes, Cabinet Secretary

Frank Jezioro, Director, Division of Natural Resources

Key Contact: Curtis Taylor, Chief, Wildlife Resources, 304.558.2771 curtistaylor@wvdnr.gov

7.48.1. Jurisdiction and Land Base

The Department of Commerce, Division of Natural Resources (DNR) is responsible for all lands owned or leased by the department and the Public Land Corporation. The department owns or long-term leases and operates 508,811 acres²⁵⁵ of land with partial mineral rights. This acreage accounts for 342 separate areas: wildlife management areas, public access sites, wetlands, state park and forest lands. The Public Land Corporation (PLC) holds title to the beds of the State's rivers, creeks and streams totaling some 34,000 miles or some 5,000 named waterways.²⁵⁶

7.48.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

West Virginia does not have alternative energy-specific land laws and regulations. The DNR operates under general statutory authority, Chapter 20 of the West Virginia Code.²⁵⁷ The Public Service Commission regulates development; local government has zoning enforcement.

7.48.3. Administrative Process

7.48.3.1. Process-Driver

Submittal of an application to the Public Service Commission begins the review process. Applicants are required to file copies of any mitigation studies and risk assessments conducted for bats and migratory birds.

7.48.3.2. Treatment of Applications

Not applicable.

7.48.3.3. Authorizations

Not applicable.

7.48.3.4. Terms and Conditions

DNR can require mitigation measures in its review of applications before the Public Service Commission; the DNR submits comments as any other member of the public.²⁵⁸

²⁵⁵ DNR lands are broken down into 295,979 acres owned and 212,832 acres leased.

²⁵⁶ Division of Natural Resources 2006-07 annual report, found at http://www.wvdnr.gov/admin/PDF/annual_report_2006-2007.pdf

²⁵⁷ Full text of Chapter 20 can be found at <http://www.legis.state.wv.us/WVCODE/code.cfm?chap=20&art=1>.

²⁵⁸ AFWA and USFWS. 2007 Wind Power Siting, Incentives and Wildlife Guidelines in the United States http://www.fws.gov/midwest/Eco_Serv/wind/guidance/AFWASitingSummaries.pdf.

7.48.3.5. *Use Fees*

Not applicable.

7.48.4. Projects of Interest

There are no alternative energy projects on state managed land nor are any proposed.

7.48.5. Challenges

Wildlife Resources Section (WRS) staff has been involved with the development of the wind power industry. Presently there are 11 proposed projects located in eight counties. If these projects are developed, West Virginia will have approximately 1,200 wind turbines producing power in the state.²⁵⁹

WRS staff, through federal funding support for the Atlantic Joint Venture initiative, is studying the relationship of migratory bats to windpower generation as well as a multi-state study of the cerulean warbler response to various timber harvest regimes.²⁶⁰

²⁵⁹ Annual report at p.64.

²⁶⁰ Annual report at p.58

7.49. Wisconsin

Board of Commissioners of Public Lands

Key Contact: Tia Nelson, Executive Secretary, 608.266.8369, tia.nelson@wisconsin.gov

7.49.1. Jurisdiction and Land Base

The Board of Commissioners of Public Lands (BCPL) currently manages about 77,000 surface acres of Trust Lands and mineral rights on approximately 200,000 acres. Through sustainable timber management, the Trust Lands provide additional principal for the Common School Fund that benefits public school libraries. The Trust Lands also provide public access for recreation. BCPL is also the leasing agent for the State of Wisconsin for submerged lands for certain limited purposes.

7.49.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

The Board was created in 1848 by Article X, Section 7 of the Wisconsin Constitution. An Executive Secretary administers the operating agency for the Board.²⁶¹ BCPL does not have alternative energy-specific laws and rules; it operates under the general authority provided by Chapter 24 of the Wisconsin Statutes.²⁶² Currently, the only commercial activities authorized on BCPL Trust Lands are for timber programs. Further, any offshore alternative energy projects would require a change in law to allow the BCPL to lease submerged land for alternative energy generation purposes.

7.49.3. Administrative Process

7.49.3.1. *Process-Driver*

Not applicable.

7.49.3.2. *Treatment of Applications*

Not applicable.

7.49.3.3. *Authorizations*

Not applicable.

7.49.3.4. *Terms and Conditions*

Not applicable.

7.49.3.5. *Use Fees*

Not applicable.

²⁶¹Agency Information, BCPL website <http://bcpl.state.wi.us/asx/Index.asp?target=AGENCY>

²⁶²For full text of the statute, see

<http://nxt.legis.state.wi.us/nxt/gateway.dll?f=templates&fn=default.htm&vid=WI:Default&d=stats>

7.49.4. Projects of Interest*7.49.4.1. Wind*

There are currently no alternative energy proposals or projects on state land. A proposal for a lakebed wind farm was tabled when the company went bankrupt.

7.49.5. Challenges

Wisconsin has a capacity rating of number 18 (6,400 MW) in the nation, according to AWEA.

The legislature is considering developing uniform siting guidelines, although nothing has been enacted to date. The wind siting law is also expected to address the disparity of how applications are currently handled by local ordinances, for less than 100 MW, and by the Public Service Commission, for anything above 100 MW.

7.50. Wyoming

Office of State Lands and Investments

Lynne Boomgaarden, Director

Key Contact: Jim Arnold, Assistant Director, Real Estate Management and Farm Loans Division, 307.777.6639

jarnol@state.wy.us

7.50.1. Jurisdiction and Land Base

The Office of State Lands and Investments (OSLI) currently manages about 3.6 million surface acres and 4.2 million mineral acres. The State Land Trust consists of three assets: State Trust Land, State Trust Minerals and the State Permanent Land Fund. Approximately 86% of the surface acres and 84% of the mineral acres are managed for the benefit of the public schools. Income generated from the remaining acreage is allocated to various state agencies that benefit specific institutions and the public.²⁶³

7.50.2. Alternative Energy-Specific Land Use Laws, Rules, and Policies

Governed by Article 18 of the Wyoming Constitution, the OSLI is the administrative arm of the state Boards overseeing the trust lands and the Permanent Land Funds; OSLI carries out the policy directives and decisions of the Boards.²⁶⁴

The OSLI does not have alternative energy-specific land laws and regulations; relative to the wind lease program, it operates under authority provided by Wyoming Statutes 36-5-114 through 116²⁶⁵ and issues leases under the Board of Land Commissioners Rules and Regulations, Chapter 5 - Special Use Leasing.²⁶⁶

7.50.3. Administrative Process

7.50.3.1. Process-Driver

All parties interested in leasing state lands for activities related to Chapter 5 of the Board of Land Commissioners Rules and Regulations, Special Use leasing, must submit a completed application, lessee comment form and applicable filing fees prior to Board consideration. Annual rental fees are established based upon fees charged for similar land use or, if none are available, 5.5 percent of the appraised value of the land. For those applications related to wind energy development, a review is conducted to determine any competitive interest. Should no competitive interest be evident or likely, negotiations are conducted for the lease relevant to current market value. In most cases, parcels exhibiting competitive interest among two or more companies will be subject to an RFP bidding process.

²⁶³ Wyoming OSLI website <http://slf-web.state.wy.us/>

²⁶⁴ Ibid.

²⁶⁵ WS 36 can be downloaded at <http://legisweb.state.wy.us/statutes/dlstatutes.htm> or viewed at <http://legisweb.state.wy.us/statutes/statutes.aspx?file=titles/Title36/Title36.htm>

²⁶⁶ Chapter 5 may be viewed at <http://soswy.state.wy.us/RULES/6566.pdf>

7.50.3.2. *Treatment of Applications*

The director negotiates terms with the applicant and makes a recommendation to the Board of Land Commissioners for consideration at a regularly scheduled Board meeting. No public notice is required for the decision, other than the public notice of the Board's meeting. The Board's decision is the final administrative decision and can be appealed in District Court.

If the land in consideration is already covered by a lease for another use (such as a grazing lease), applicants must receive consent from the existing lessee and are required to negotiate a surface impact payment. If an applicant is unable to receive consent, the Board must make a determination whether the action would substantively impair the existing lease(s). The OSLI must notify the existing lessee(s) at least 20 days before the proposed special use lease is to be considered by the Board. Similarly, if an agreement on the surface impact payment cannot be reached, the Director issues an order and recommends the decision to the Board for final approval. The final Board decision may be appealed in District Court.²⁶⁷ Note that the surface impact payment received is split between the existing lessee and the State of Wyoming.

7.50.3.3. *Authorizations*

The OSLI issues Special Use Leases to authorize wind farms and for a term of up to 75 years (the expected economic life of the lease). The lease is based on three phases: first is for research and development and is from execution of the lease until the commencement of construction; then the Commencement of Construction phase; and finally the Operations phase²⁶⁸.

7.50.3.4. *Terms and Conditions*

At the beginning of the Construction Phase of the lease, the lessee is required to post a reclamation bond: cash, surety bond, or letter of credit to address reclamation requirements at project termination. For the life of the lease, the lessee must provide liability and property damage insurance at \$500,000/\$1,000,000 with the state named as additional insured. Generally, meteorological data collected by a current or potential lessee is only available in summary format. Although the state lease does not address potential avian or other wildlife related impacts, the project is required to be in compliance with all state, federal and local regulations related to wind energy development. Currently, county regulations are at various stages of development that require reasonable efforts be made to reduce wildlife impacts. Development plans are reviewed by the office prior to issuance of the Special Use Lease. The lease is subject to inspection by OSLI staff at anytime throughout the lease term.

Reporting requirements are primarily related to those items associated with calculation of compensation to the state. Other notification requirements are also addressed as they relate to the operations, hazardous material permitting, subleasing, etc.

²⁶⁷ Ibid., at Secs. 4 and 13

²⁶⁸ Special Use Lease applications are available online at <http://slf-web.state.wy.us/estate/adobe/specialapp.pdf>; sample Wind Energy Lease Agreement is included in Appendix H. Note that this lease form is currently under revision by the OSLI.

7.50.3.5. *Use Fees*

Under Wyoming law, rental for special use leases is either the high bid or is based upon an economic analysis of the fair market value as well as market demand and industry viability²⁶⁹. In the instance where the annual rental cannot be established based upon fair market value for the same or similar use, the minimum rental cannot be less than \$250.00 or 5½% of the appraised land value and any improvements owned by the state.

The OSLI Wind Energy Lease Agreement stipulates three use payments based on the three phases: Phase 1, the initial phase, is negotiated on a per acre per year basis, payable monthly; Phase 2, construction phase, includes a one-time installation fee negotiated on a per MW of installed capacity basis – 50% when construction begins and the balance at the Operations Date; and Phase 3, operational phase, pays the greater of 1) a Gross Revenue Operating Fee based on a percent of gross annual revenues at graduating intervals for the first 10 years, years 11-15, years 16-20, and the balance of the term or 2) a Base Operating Fee which is a fixed rate for each MW of installed capacity.

7.50.4. **Projects of Interest**

7.50.4.1. *Wind*

There are currently eight Special Use Lease issuances for wind energy development in Wyoming. To date, 3 have constructed wind turbine generators. The leases comprise approximately 14,027 acres. Lease terms range from 25-35 years with an option to renew (maximum term 75 years). Payments during the initial phase are generally \$2.25 per acre. Compensation for installation ranges from \$1,000 to \$2,025 per MW of installed capacity. Operating fees have been negotiated based upon MWs of installed capacity paid annually and adjusted by a CPI or a stair-stepped percentage of Gross Annual Revenues.

7.50.5. **Challenges**

Wyoming has a high potential for wind; it is ranked number 15 by the AWEA. As of 2007, approximately 288 MWs installed statewide with another 61 MWs planned for 2008. Of this total, 70.35MWs are on state trust lands. As interest in wind energy increases, the OSLI will have to balance the use of lands against other existing uses (such as grazing, coal, coalbed methane, conventional oil and gas, uranium). For instance, oil and gas leases have the right to develop which includes the use of the surface. Balancing this \$180 million revenue source (about 90% of the state's revenue base) against the wind energy use will require skilled management. Currently, most of the areas of interest are not in the prime subsurface use areas so this has not been an issue to date.

Most of the lands owned by the state are in a mixed ownership pattern (private, state, federal); thus, it has very few large landholdings with wind-energy potential that can be marketed as a “stand alone” project. Instead, the OSLI finds itself in a collaborative role,

²⁶⁹ WS 36-5-101.

typically with private landowners or associations comprised of numerous private landowners that have previously negotiated wind lease agreements.

APPENDICES

APPENDIX A: STATE AGENCY CONTACTS

The following individuals provided information for the WSLCA Alternative Energy report

State	Name	Email	Phone	Agency
AK	Wyn Menefee	Wyn.Menefee@alaska.gov	907-269-8501	ADNR Division of Mining, Land & Water ADNR Mental Health Trust Land Office
	Dennis Daigger	Dennis.Daigger@alaska.gov	907-269-8735	
AL	Gregory Lein	Greg.Lein@dcnr.alabama.gov	334-242-3484	ASL - ADCNR
AR	Mark Wilcox	mwilcox@cosl.org	501-324-9422	ALCO
AZ	Benjamin Alteneader	balteneader@land.az.gov	602-542-3996	ASLD
CA	Barbara Dugal	DUGALB@slc.ca.gov	916- 574-1940	CSLC Land Management Division
CT	Lynn Stoddard	Lynn.Stoddard@ct.gov	860-424-3236	CDEP Climate Change & Energy Team CDEP Office of Environmental Review CDEP CDEP Land Acquisition & Management Division
	David Fox	David.Fox@ct.gov	860-424-4111	
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State	Name	Email	Phone	Agency
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MD	Gene Piotrowski	gpiotrowski@dnr.state.md.us	410-260-8405	MDNR Office for a Sustainable Future
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NJ				
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	Jim Lawrence	lawrence@lands.nv.gov	775-684-2726	
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OH	Tony Logan	Tony.Logan@dnr.state.oh.us	614-265-7062	ODNR Office of Legal Services ODNR Division of Geological Survey
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	Jim Arnold	jarnol@state.wy.us	307-777-6639	WOSLI Real Estate Management and Farm Loans Division

APPENDIX B: STATE AGENCY RENEWABLE ENERGY POLICIES

The following documents are contained in the electronic folder for Appendix B:

State	Policy Title	Purpose
IL	Wind Energy Generation Facilities	Outlines coordination; statement that use of state land is for secondary facilities
KS	Wind Power Position	Position of the Kansas Department of Wildlife and Parks Regarding Wind Power and Wildlife Issues in Kansas
ME	Guidance on Factors Considered During Agency Review of Wind Power Developments	Summary of factors considered during State agency review for wind Proposals; identifies potential siting issues
ME	Report of the Governor's Task Force on Wind Power Development in Maine (Summary)	13 recommendations, including streamlined permitting, development goals, expedited permitting areas, offshore wind projects, and bird and bat studies guidance
OR	MOU between FERC and State of Oregon	Coordinating wave energy pilot projects
PA	DCNR Bureau of Forestry Environmental Review Guidelines	23 project review items for Environmental Reviews (written decisions)
PA	DCNR Wind Power on State Forest Lands in the Pennsylvania Wilds	Policy statement on select state forest lands considered inappropriate for commercial wind power development
PA	Wind Power Development on DCNR Managed Lands (Draft)	Siting Analysis and Project Administration; where wind power development cannot occur
VT	Wind Energy and Other Renewable Energy Development on ANR Lands	Provide guidance on use of state lands for development of renewable energy projects (no utility-scale projects allowed)

APPENDIX C: STATE RENEWABLE ENERGY POLICIES AND STANDARDS

Links to Websites of Interest

AWEA

State-Level Renewable Energy Portfolio Standards

Lists 20 states with RPS and notes

http://www.awea.org/legislative/pdf/RPS_Fact_Sheet.pdf

National Governors Association's Center for Best Practices

Recent State Actions Promoting Alternative Energy, May 2007

A review of state energy programs to identify how states promote, administer, finance and implement state energy efficiency and renewable energy policies

<http://www.nga.org/Files/pdf/0705ALTENERGY.PDF>

APPENDIX D: FEDERAL ENERGY POLICIES AND SAMPLE AUTHORIZATIONS

The following documents are contained in the electronic folder for Appendix D:

Entity	Document Title	Purpose
FERC	FERC's Role in Hydrokinetics	Presentation to WSLCA-ELRC Joint Conference April 2008
Forest Service	Special Use Permit	Template used for wind projects

Links to Websites of Interest

American Wind Energy Association

National Renewables Energy Portfolio Standards (Proposed Legislation)

Fact Sheet: on H.R. 969 – Proposed legislation to create a national RPS

http://www.awea.org/legislative/pdf/Federal_RPS_Factsheet.pdf

Bureau of Land Management

Wind Energy Development Policy, IM 2006-216

Guidance on implementing the ROD for Programmatic EIS on Wind Energy

Development; guidance on processing right-of-way applications for wind energy projects BLM land

http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2006/2006-216_.html

Federal Energy Regulatory Commission

Policy Statement on Conditioned Licenses for Hydrokinetic Projects, Docket No. PL08-1-000, issued 11-30-2007

Policy states that if FERC has completed processing license applications for hydrokinetic projects where other federal authorizations have not yet been received, it will issue conditioned licenses for hydrokinetic projects; no construction allowed until all authorizations received

<http://www.ferc.gov/eventcalendar/Files/20071130153255-PL08-1-000.pdf>

The Proposed Licensing Process for Hydrokinetic Pilot Projects: A Framework for Discussion, issued 8-31-07

White Paper for public consideration: a new licensing process that allows pilot projects to be tested, without the need for the full licensing process

<http://www.ferc.gov/eventcalendar/Files/20070904090801-white-paper.pdf>

Licensing Hydrokinetic Pilot Projects

White Paper Guidance Document and Response to Comments on 8-31-07 white paper; also provides criteria for using pilot project licensing procedures, step-by-step licensing guidance, application information needs, and standard license articles.

http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/pdf/white_paper.pdf

Nadel, S. American Council for an Energy-Efficient Economy

The Federal Energy Policy Act of 2005 and its Implications for Energy Efficiency Program Efforts

Reviews tax incentives, standards set, and other efficiency provisions in the Energy Act; includes what's not in the bill and future legislation suggestions (report funded in part by DOE)

<http://www.aceee.org/pubs/e053.pdf>

United States Congress

Energy Policy Act of 2005, PL 109-58

http://www.epa.gov/oust/fedlaws/publ_109-058.pdf (Full Text)

APPENDIX E: INTERNATIONAL POLICIES AND PRACTICES

Links to Websites of Interest

Dept of Trade and Industry: Sustainable Energy Programmes (UK)

Why wind power in the UK? Wind Energy Fact Sheet 2

Fact sheet describes wind power as energy source and overview of UK Government policy

<http://www.berr.gov.uk/files/file17775.pdf>

Wind power: environmental and safety issues Wind Energy Fact Sheet 4

Fact sheet addresses some of the major issues and public perceptions

<http://www.berr.gov.uk/files/file17777.pdf>

Project development Wind Energy Fact Sheet 12

Fact sheet provides an overview of key steps and issues

<http://www.berr.gov.uk/files/file17814.pdf>

Energy Policy Act of 2005

Full Version http://www.mms.gov/offshore/PDFs/hr6_textconfrept.pdf

Sec 388: Alternative Energy-Related Uses Outer Continental Shelf

<http://www.mms.gov/offshore/RenewableEnergy/EPAAct2005Sec388.pdf>

MMS Establishes an OCS Alternative Energy and Alternate Use Program

Record of Decision: http://ocsenergy.anl.gov/documents/docs/OCS_PEIS_ROD.PDF

EIS: <http://www.ocsenergy.anl.gov/>

Press Release: <http://www.mms.gov/ooc/press/2007/pressdoi1105.htm>

APPENDIX F: FISH AND WILDLIFE STUDIES AND WEBSITES OF INTEREST

Links to Websites of Interest

Birds and Bats

- American Wind Energy Association and American Bird Conservatory. 2004. *Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts*. <http://www.awea.org/pubs/documents/WEBBProceedings9.14.04%5BFinal%5D.pdf>
- Arnett, E., et al. 2006. Patterns of Bat Fatalities at Wind Energy Facilities in North America. *Journal Of Wildlife Management*: 72(1):61-78. 2006. http://www.tva.gov/environment/bmw_report/patterns_bat_fatalities_wind_facilities.pdf
- California Energy Commission and Department of Fish & Game. 2007. *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development – Final Report*. <http://www.energy.ca.gov/2007publications/CEC-700-2007-008/CEC-700-2007-008-CMF.PDF>
- Fiedler, J. et al. 2007. Results of bat and bird mortality monitoring at the expanded Buffalo Mountain Windfarm, 2005. Tennessee Valley Authority, Knoxville. http://www.tva.gov/environment/bmw_report/results.pdf
- Fiedler, J. 2004. Assessment of bat mortality and activity at Buffalo Mountain Windfarm, eastern Tennessee. M.S. Thesis, University of Tennessee, Knoxville. http://www.tva.gov/environment/bmw_report/bat_mortality_bmw.pdf
- Guarnaccia, J. and P. Kerlinger. 2007. *Feasibility Study of Potential Avian Risk from Wind Energy Development – Western Ohio Lakeshore Region*. http://www.nwowind.org/Ohio%20Feasibility%20Study_Potential%20Avian%20Risk_10.17.2007_Final.pdf
- Nicholson, C. P., R. D. Tankersley, J. K. Fiedler, and N. S. Nicholas. 2005. Assessment and prediction of bird and bat mortality at wind energy facilities in the southeastern United States, Final Report. Tennessee Valley Authority, Knoxville. http://www.tva.gov/environment/bmw_report/bird_bat_mortality.pdf
- Pennsylvania Department of Conservation and Natural Resources. *A review: Bird and Bat Studies Conducted at Proposed or Existing Windpower Facilities (Focused on the Northeastern/Mid-Atlantic States)* http://www.dcnr.state.pa.us/info/wind/documents/task3_2_.pdf
- Percival, S. 2001. *Assessment of the Effects of Offshore Wind Farms on Birds*. <http://www.berr.gov.uk/files/file20258.pdf>
- Plissner, J.H., T. J. Mabee, B.A. Cooper, P. H. Kerlinger. Radar results from mid-Atlantic wind development sites: do nocturnal migrants follow mountain ridges? http://www.dcnr.state.pa.us/info/wind/documents/pwwc_workshop_1-23_24-07/presentations/plissner-final.ppt
- Sinclair, M. Clean Energy States Alliance. 2007. *Summary of National Research Council Report on Environmental Impacts of Wind-Energy Projects*. http://www.cleanenergystates.org/JointProjects/wind-siting/CESA_Memo-NRC_Report-Environmental_Impacts_of_Wind_May07.pdf.

United Kingdom, Department for Business Enterprise and Regulatory Reform. *Aerial Surveys of Waterbirds in Strategic Wind Farm Areas 2005/06 Final Report*
<http://www.berr.gov.uk/files/file32485.pdf>.

Fish and Other Marine Life

Cada, G. et al. 2007. *Potential Impacts of Hydrokinetic and Wave Energy Conversion Technologies on Aquatic Environments*

http://hydropower.inel.gov/hydrokinetic_wave/pdfs/cada_fisheries_reprint.pdf

Hagos, K. 2007. *Impact of Offshore Wind Energy on Marine Fisheries in Rhode Island*. Prepared for Rhode Island Department of Environmental Management.

<http://www.ci.uri.edu/ciip/WhitePaper/2007/Final/Kifile.pdf>

Turnpenny, A. et al. 2000. *Risk Assessment for Fish Passage through Small, Low-Head Turbines*

<http://www.berr.gov.uk/files/file18027.pdf>.

United Kingdom, Department for Business Enterprise and Regulatory Reform. 2007. *Review of Reef Effects of Offshore Wind Farm Structures and Potential for Enhancement and Mitigation* <http://www.berr.gov.uk/files/file43528.pdf>

Vella, G., et al. 2001. *Assessment of the Effects of Noise and vibration from Offshore wind Farms on Marine Wildlife*. <http://www.berr.gov.uk/files/file20261.pdf>

General Information

The National Academies. 2007. *Report in Brief: Environmental Impacts of Wind-Energy Projects*. http://dels.nas.edu/dels/rpt_briefs/wind_energy_final.pdf

Pennsylvania DCNR website links to resources for siting, impacts, and post-construction mitigation: <http://www.dcnr.state.pa.us/info/wind/resource4.aspx>

Vermont Agency of Natural Resources. 2004. *Impacts of Wind Energy Development on Recreation, Wildlife, and Natural Resources (Fact Sheet)*

<http://vermontwindpolicy.org/factsheets/Natural%20Resources%20and%20Development1.pdf>

APPENDIX G: ALTERNATIVE ENERGY PROJECT INFORMATION

The following document is contained in the electronic folder for Appendix G:

Entity	Document	Renewable Energy Source
Verdant Power	Overview Marine Renewable Energy Technologies a/k/a Ocean Energy and Kinetic Hydropower (presentation to WSLCA-ELRC Joint Conference, April 2008)	Ocean energy

Links to Websites of Interest

State:

An extensive list (no links to individual projects) of pending and existing projects is available on American Wind Energy Association's website: <http://www.awea.org/projects/>

Select state projects are listed below:

Buffalo Mountain Wind Park (TN)

Environmental Assessment documents:

<http://www.tva.gov/environment/reports/windfarm/index.htm>

Two-year operations review: <http://www.epriweb.com/public/000000000001008031.pdf>

Bat and Bird Mortality Studies: http://www.tva.gov/environment/bmw_report/index.htm:

Judith Gap Energy Center

Springdale Wind Energy Project

Martinsdale Wind Power Project

Montana DNRC's website <http://www.dnrc.mt.gov/trust/wind/default.asp>

Roosevelt Island Tidal Energy Project

http://www.devinetarbell.com/alternative_energy/ren_profiles/tidal_1.htm

Texas State Lands for Wind Power Development

<http://www.glo.state.tx.us/energy/sustain/wind.html>

Federal:

Cape Wind Energy Project (MMS) – Offshore of Massachusetts
<http://www.mms.gov/offshore/RenewableEnergy/CapeWind.htm>
<http://www.capewind.org/index.php>

Long Island Offshore Wind Park (MMS) – Offshore New York
<http://www.mms.gov/offshore/RenewableEnergy/LIOWP.htm>
<http://www.lipower.org/cei/offshore.html>

Finavera Renewables Ocean Energy (FERC) – Offshore Washington State
FERC Order Docket No. P-12751-000
<http://www.ferc.gov/whats-new/comm-meet/2007/122007/H-1.pdf>
Press Release:
<http://www.ferc.gov/eventcalendar/Files/20080320120802-H-2-Media-alert.pdf>
Finavera's website: http://www.finavera.com/en/wave/makah_bay

FERC Hydrokinetic Projects (Pending and Authorized):
<http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp>

International:

Middelgrunden Offshore Wind Farm – largest cooperatively owned wind development.
http://www.middelgrunden.dk/MG_UK/project_info/mg_pjece.htm

Selected ocean energy projects of interest to European Commission
http://ec.europa.eu/research/energy/nn/nn_rt/nn_rt_oes/article_1132_en.htm

APPENDIX H: SAMPLE STATE AGENCY AUTHORIZATIONS

The following states submitted examples of alternate-energy-specific authorizations issued in their states; these documents are contained in the electronic folder for Appendix H:

State	Type of Authorization	Purpose	Type of Document	Electronic Format
CO	Lease	Wind Energy Development	Template	.doc
HI	Lease	Wind Power	Existing authorization to Kaheawa Wind Power LLC	.pdf
NM	Option	2-yr Option to Lease	Template	.doc
NM	Option with Right-of-Entry Permit	2-yr Option to Lease with right to enter for specific purposes	Template	.doc
NM	Lease	Bid-Lease: Operation Only	Template	.doc
NM	Lease	Bid Lease: Development & Operation	Template	.doc
NM	Lease	Bid Lease: Planning, Development and Operations	Template	.doc
NM	Lease	Non-bid: Planning Only	Template	.doc
NM	Lease	Non-bid Windfarm: Planning & Development	Template	.doc
NY	Permit	Excavation & Fill in Navigable Waters and .401 Water Quality Certification	Existing authorization to Verdant Power, LLC	.pdf
OK	Easement	Wind Turbine Power Production	Template	.doc
TX	Lease	Wind Lease	Template	.doc
WA	Easement	Utility transmission	Template w/ choices	.doc
WA	Lease	Wind Power Development	Template w/ choices	.doc
WY	Lease	Wind Energy Lease Agreement	Template	.doc

APPENDIX I: SAMPLE RFPS AND BID DOCUMENTS

The following are examples of alternative-energy-specific Request-for-Proposals and are available online:

State	Name of Document	Type of Document, Weblink
MT	Request for Proposals for a Wind Energy Project	Template http://dnrc.mt.gov/trust/wind/05_23_2005_generic_wind_rfp.pdf
NJ	Solicitation for Proposals to Develop Off-Shore Wind Renewable Energy Facilities Supplying Electricity to the Distribution System Serving New Jersey	RFP http://www.njcleanenergy.com/files/file/OSW%20Final%20Solicitation100507final.pdf
TX	Sample Bid Packet General Land Office Sealed Bid Windpower Lease Sale:	Bid Lease Sale conducted 10-2-2007 http://www.glo.state.tx.us/news/archive/2007/events/windlease_100207.html
	▪ Bidding Instructions	
	▪ Bid Application	
	▪ Wind Resource Map	
	▪ Lease Tract Map (Tract A, included in report, Tracts B-D available online at GLO website)	

APPENDIX J: OTHER INFORMATION AND WEBSITES OF INTEREST

The following documents are contained in the electronic folder for Appendix J:

Entity	Document	Focus
Atlantic Renewable Energy Corporation and AWS Scientific Inc.	New Jersey Offshore Wind Energy: Feasibility Study Final Version (Nov 2004)	Feasibility of utility-scale wind energy development offshore New Jersey, about 2,465 sq.mi.
AWEA	Wind Energy Today	WSLCA-ELRC Joint Conference presentation
B.Crouch LA DNR	History and Recent Developments in Louisiana Wind Energy (Feb 2005 Update)	Background information and current status of Offshore Wind Energy in Louisiana
National Conference of State Legislatures	State Siting and Permitting of Wind Energy Facilities	Guidelines fact sheets for 9 states: CT, IA, KS, MA, MN, OR, VT, WA, WI

Links to Websites of Interest By Renewables Category

IN-RIVER FLOW

Caledonian Energy Management Ltd (UK). 2000. *Monitoring of successful renewables obligation small hydro projects.*

<http://www.berr.gov.uk/files/file15359.pdf>

Summary of review of 38% successful projects for “lessons learned

Hanson, K. et al (UK). 2000. Hydraulic design and optimization of new and existing intakes.

<http://www.berr.gov.uk/files/file20898.pdf>

Guide on design and computer modeling

United Kingdom, Department of TI. 2004. *Hydropak: Concept design and analysis of a packaged cross-flow turbine*

<http://www.berr.gov.uk/files/file15977.pdf>

Concept design, installation, operation, and maintenance assessment of HydroPak

TIDE AND WAVE

Bedard, R., et al *EPRI Ocean Wave Energy Conversion Technology*

http://oceanenergy.epri.com/attachments/ocean/reports/WGA_Ocean_Energy_White_Paper_12-15-05.pdf

White Paper submitted to the Western Governors Association Clean and Diversified Energy Advisory Committee

Bedard, R. et al. *EPRI Economic Assessment Methodology for Tidal In-Stream Power Plants (Rev.2)*

http://oceanenergy.epri.com/attachments/streamenergy/reports/002_TP_Econ_Methodology_06-10-06.pdf

North American Tidal Flow Power Feasibility Demonstration Project

BWEA (UK) *Why marine?*

<http://www.bwea.com/pdf/marine/FINAL%20WHY%20MARINE.pdf>

BWEA presentation regarding ocean energy

California Energy Commission. 2005. *Small Hydro and Ocean Wave Resources*

http://www.energy.ca.gov/2005_energypolicy/documents/2005-05-09_workshop/presentations/Michael_Kane_Small_Hydro_Ocean_Energy_2005-05-09.PDF

Presentation to 2005 Integrated Energy Policy Report Workshop

CJ Day Associates for DTI (UK). 2001. *Tidal turbine installation at fixed navigation marks.*

<http://www.berr.gov.uk/files/file18031.pdf>

Studies relative merits tethered turbine buoys to piled foundation designs; summarizes costs

DTI (UK). *Near Shore Oscillating Wave Column – Prototype Development and Evaluation*

<http://www.berr.gov.uk/files/file17347.pdf>

Studied three different buoys, cost to build, efficiency, and operating economics

DTI (UK). 2004. *Cycloidal Tidal Power Generation – Summary.*

<http://www.berr.gov.uk/files/file16415.pdf>

Combined summary for Phase 1 and 2 reports: specific performance information

DTI (UK). 2007. *Economic viability of a simple tidal stream energy capture device.*

<http://www.berr.gov.uk/files/file37093.pdf>

Analysis of life cycle costs and competitiveness of two horizontal axis devices

Hawaii Department of Business, Economic Development, and Tourism. 2002. *Feasibility of Developing Wave Power as a Renewable Energy Resource for Hawaii.*

<http://hawaii.gov/dbedt/main/about/annual/2002-wave.pdf>

A review of constraints and costs associated with developing Hawaii's wave energy resources

JA Consult Ltd. for DTI (UK). 2004. *The monitoring, operation and assessment of a semi-submersible tidal stream prototype*. <http://www.berr.gov.uk/files/file15376.pdf>
Turbine tested in a pool, commissioned in the Thames, modified to improve behavior and operated in both tidal flow directions over a 15 month period; results: more detailed conceptual and feasibility work needed

Oreada for DTI (UK). 2005. *Potential applications for Flettner Rotors and Turbosails in Tidal Stream Turbines* <http://www.berr.gov.uk/files/file17770.pdf>
Compares vertical and horizontal axis machines

QinetiQ Ltd for DTI (UK). 2004. *Cycloidal Tidal Power Generation – Phase 1* <http://www.berr.gov.uk/files/file15353.pdf>
Performance prediction model for six designs off coast of Scotland

QinetiQ Ltd for DTI (UK). 2004. *Cycloidal tidal power generation – phase 2* <http://www.berr.gov.uk/files/file15352.pdf>
Analytical and physical modeling studies for cycloidal tidal project to understand fluid flows

Thake, J. IT Power for DTI (UK). 2005. *Development installation and testing of a large-scale tidal current turbine*. <http://www.berr.gov.uk/files/file18130.pdf>
Cradle-to-grave look at a pilot project – horizontal axis machine

WIND

AFWA and USFWS. 2007 *Wind Power Siting, Incentives and Wildlife Guidelines in the United States* http://www.fws.gov/midwest/Eco_Serv/wind/guidance/AFWASitingSummaries.pdf
Each state is summarized by voluntary and zoning guidelines

Applied Technology & Management and Loria Emerging Energy Consulting. 2007. *Summary Report RIWINDS (Rhode Island Energy Independence 1) Phase I Siting Study* http://www.energy.ri.gov/documents/renewable/RIWINDS_RANKING.pdf
Synopsis of full report; site ranking based on specific factors

AWEA, *Wind Power Outlook 2007*. http://www.awea.org/pubs/documents/Outlook_2007.pdf

Bollinger, M. 2004. *Case studies of State Support for Renewable Energy: A Survey of State Support for Community Wind Power Development* Berkeley Lab and CESA http://www.cleanenergystates.org/CaseStudies/LBL_community_wind_final.pdf
State policy maker support for community projects (based on European design)

Bureau of Land Management (2003) *Assessing the Potential on Public Lands* http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/33530_public_lands.pdf

CESA. *Best Practice Recommendation: A Visual Impacts Assessment Process for Evaluating Wind Energy Projects*. http://www.cleanenergystates.org/JointProjects/wind-siting/CESA_Recommendation_Visual_Impacts_Assessment_WindEnergy_Aug07.pdf
Practical recommendations for assessing visual impacts

Clean Energy Group. 2001. *CEFN Case Study #1 – Madison (NY) Windpower Project*. http://www.cleanenergystates.org/CaseStudies/Madison_Wind-final.pdf
“Lessons learned” report on first wind facility in East to receive Clean Energy Funds and decision-process for funding

DOE EERE. *Wind Energy Multi-Year Program Plan for 2007 to 2012*
<http://www1.eere.energy.gov/windandhydro/pdfs/40593.pdf>
Distribution, systems integration, large wind technology and technology acceptance

DOE EERE. 2007. *Annual Report on US Wind Power Installation, Cost, and Performance Trends: 2006* <http://www1.eere.energy.gov/windandhydro/pdfs/41435.pdf>
2006 Market report

DOE EERE. 2006. *Wind Energy Guide for County Commissioners*
http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/county_commissioners.pdf
Guidebook addressing 13 topics, including economics, public outreach, permitting, and siting

DOE EERE. *State Wind Working Group Handbook*
http://www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/34600_wind_handbook.pdf
Addresses basic and technical issues (wind assessment, siting, transmission, economics, utility integration, and process; includes powerpoint presentations on topics

DTI (UK). 2007. *Delivering community benefits from wind energy development: A Toolkit*.
<http://www.berr.gov.uk/files/file38710.pdf>
Options for negotiation and benefits for local communities

DTI (UK). 1996. *The Assessment and Rating of Noise from Wind Farms – Executive Summary*.
<http://www.berr.gov.uk/files/file20433.pdf>
Measuring wind farm noise and suggested limits (Exec summary and Table of Contents only -- Part 1 of 17) Balance of the report can be found at the following website:
(<http://www.berr.gov.uk/energy/sources/renewables/explained/wind/onshore/page21743.html>)

French, M. for LA DNR (1981) *Evaluating Wind Energy Potential in Louisiana*.
http://dnr.louisiana.gov/sec/execdiv/techasmt/energy_sources/wind/windreport1981.html
Methods to assess onshore potential of wind in Louisiana

- Global Energy Concepts, LLC. *Indiana Energy Group Tall Towers Wind Study Final Project*
<http://www.state.in.us/energy/technologies/Indiana%20Final%20Project%20Report.pdf>
 Description of monitoring sites, results of data collection and map validation, and final Indiana wind maps
- Kansas Energy Council. 2005. *Wind Siting Handbook: Guideline Options for Kansas Cities and Counties* http://www.kansasenergy.org/KEC/documents/wind_siting_handbook.pdf
 Voluntary guidelines for cities and counties with wind development; addresses impacts and process
- National Wind Coordinating Committee Siting Subcommittee. 2002. *Permitting of Wind Energy Facilities: a handbook Rev.* <http://www.nationalwind.org/publications/siting/permitting2002.pdf>
 Overview, guidelines for permitting processes, and permitting considerations with three case studies (OR, MN, and WI)
- NEXRAD Program. 2007. *Actions and Siting Suggestions for Wind Farms* .
<http://www.roc.noaa.gov/windfarm/Actions%20and%20Siting%20Suggestions.pdf>
 Radar operations avoidance
- Palmer, B. and B. Isom. 2007. *Update of Wind Turbine Clutter Study at the University of Oklahoma*
http://www.roc.noaa.gov/app/TAC/TAC_mtg_2007/presentations/Palmer_TAC_March2707.pdf
 Presentation to NEXRAD PMC Meeting April 2007
- Sherwell, J. Maryland Department of Natural Resources *Wind power in Maryland: an overview*
http://www.dnr.state.md.us/sustainability/wpm/windonpl_03130_final.pdf
- Vermont Agency of Natural Resources. 2004. *Wind Power Project Construction and Operations Requirements – Fact Sheet*
<http://www.vermontwindpolicy.org/factsheets/Project%20Construction%20Requirements1.pdf>
 Addresses size, spacing, Met Towers, access, lighting, operations, and life span
- VT ANR. 2004. *Wind Power FAQs – Fact Sheet*
<http://vermontwindpolicy.org/factsheets/FAQ1.pdf>
 Addresses noise, Met Towers, ice throw, small vs. utility scale, power generation
- Wind Energy Section, ETSU (UK). 1999. *Assessing the Potential of Wind Energy Projects – Notes for Developers, Rev.* <http://www.berr.gov.uk/files/file17833.pdf>
 Costs, environmental considerations, economic assessment
- WIND - OFFSHORE**
- Crouch, B. 2004. (LA DNR) *Offshore Louisiana Wind Power, Louisiana Energy Topic*
http://dnr.louisiana.gov/sec/execdiv/techasmt/newsletters/2001_2005/2004-12_topic.pdf
 Assessment of offshore wind program in Louisiana

Dhanju, A. et al. 2005. *Assessment of Delaware Offshore Wind Power*. College of Marine Studies. University of Delaware.

<http://www.ocean.udel.edu/windpower/docs/BurDhanWhit05-MAST667-FINAL.pdf>

Harland and Wolff Licences Ltd (UK). 2001. *Base design and foundation installation design feasibility* <http://www.berr.gov.uk/files/file20291.pdf>

Study of current concepts and installation methods; feasibility study

Sprehe B. and B.Crouch. 2005. *Economics of Offshore Wind Power*

http://dnr.louisiana.gov/sec/execdiv/techasmt/newsletters/2001_2005/2005-02_topic.pdf

Economics of offshore wind energy -- Louisiana

ALL RENEWABLES

Hawaii Department of Land and Natural Resources. *A Catalog of Potential Sites for Renewable Energy in Hawaii* <http://hawaii.gov/dbedt/info/energypublications/cpsre07.pdf>

State-wide listings of prospective sites and information on the major resources

GENERAL INFORMATION

ORGANIZATIONS

American Council on Renewable Energy (ACORE) is a non-profit organization based in Washington, D.C. Members are industry, government and trade associations. Focus is on wind, solar, geothermal, biomass and biofuels, hydropower tidal/current energy and waste energy.

<http://www.acore.org/about/>

American Wind Energy Association (AWEA). An advocacy group for the promotion of wind energy. Members are consultants, trade associations, and academic/scientific professionals. The website contains fact sheets on energy, siting, wildlife issues, and resource information. AWEA has the most extensive website for wind energy projects – existing and proposed. Most other websites link to this organization's market report and project-specific listing.

<http://www.awea.org/>

British Wind Energy Association (BWEA). An advocacy group for trade and professionals in the UK. BWEA is the leading renewable energy trade association in the UK.

<http://www.bwea.com>

Clean Energy States Alliance (CESA) is a nonprofit organization with members from 16 clean energy funds and two state agencies; it provides information and technical services to its members and works with them to build and expand clean energy markets in the United States. State agency members (Alaska, Arizona, California, Colorado, Connecticut, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Vermont, and Wisconsin). with established clean energy funds or programs have

banded together to promote clean energy technologies. The website has a list of CESA projects and publications as well as helpful links. <http://www.cleanenergystates.org/index.html>

Electric Power Research Institute (EPRI). A non-profit organization that conducts research and development on technology, operations and the environment for the global electric power sector. Members are domestic and international electric providers. Website links for reports on alternative energy research and projects. <http://epri.com/>

Global Wind Energy Council (GWEC). An advocacy group for the promotion of wind energy internationally. The site has publications for global wind projects, market reports, and policy statements. <http://www.gwec.net>

Ocean Renewable Energy Coalition (OREC) A national trade association for the marine renewable energy industry in the United States. Represent more than forty members. <http://www.oceanrenewable.com>

Ocean Renewable Energy Group (OREG) A Canadian organization involving industry, academia and government in ocean energy solutions. Members are Canadian and international. Site has links for ocean energy reports. <http://www.oreg.ca/>

Renewable Energy Association (REA) Represents British renewable energy producers and promote the use of sustainable energy in the UK. <http://www.r-e-a.net/home.fcm>

Scottish Renewables. The forum for Scotland's Renewable Energy Industry. <http://www.scottishrenewables.com/>

US DOE Office of Energy Efficiency and Renewable Energy. EERE's mission is to strengthen America's energy security, environmental quality, and economic vitality in public-private partnerships. Site has reports and links for market reports, research, and technology information. <http://www.eere.energy.gov/>

World Energy Council (WEC) A multi-energy organization in the world today. Membership in nearly 100 countries. Covers coal, oil, natural gas, nuclear, hydro, and renewables. Publications include energy policies for different world regions. <http://www.worldenergy.org/>

MISCELLANEOUS STUDIES, REPORTS AND TECHNICAL INFORMATION

Lunar Energy <http://www.lunarenergy.co.uk/>

Marine Current Turbines Ltd <http://www.marineturbines.com>

Pulamis Wave Power <http://www.pelamiswave.com/>

Powering the South. 2001. Renewable Energy Policy Project
http://www.crest.org/articles/static/1/binaries/pts_repp_book.pdf