Maine Policy Review

Volume 17
Issue 2 *Climate Change and Energy*

2008

Maine's Wind Resource: A Source of Energy and Economic Engine

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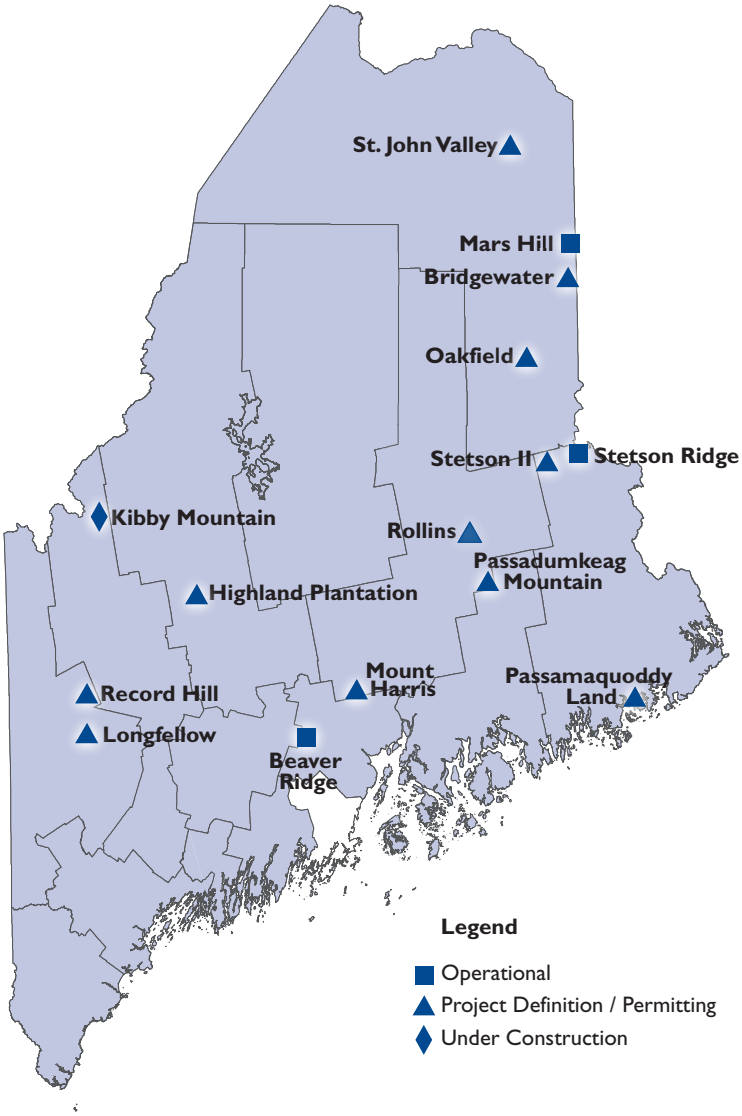
by Jackson A. Parker

INTRODUCTION

Today Maine's abundant, renewable wind resource is generating power and economic growth. Commercial-scale wind power has come to the mountains of Maine in a big way. Proponents tout a clean, renewable energy source that will improve air quality and reduce the impact on the earth's climate system. Some know of the economic benefits associated with wind power. Certainly, this source of power responds well to the urgency to reduce our dependence on foreign oil. Opponents, however, are most concerned about the changes large turbines bring to scenic landscapes and worry that there will be significant impacts on noise levels and on wildlife.

As the public continues to discuss the benefits and challenges associated with wind power, develope rs are moving forward. The industry is responding to the fact that Maine, due to an abundance of high-elevation terrain, has the most wind potential in New England. Furthermore, Maine is located in a region with a growing demand for electricity and has environmentally focused policies that make it economically possible to produce renewable power. Table 1 (page 102) describes wind power projects in Maine: nearly 1,200 megawatts (MW) that have been proposed or are in some stage of development. The map (Figure 1) indicates the location of existing and planned projects.

FIGURE 1: **Wind Power Project Locations**



ECONOMIC CONTRIBUTIONS OF WIND POWER IN MAINE

In its short history, the wind power industry in Maine has proven itself to be a model of sustainable economic growth. Jobs are being created in the midst of these difficult economic times because of the industry's long-term investment in homegrown, renewable energy. To date, Maine has granted permits

TABLE 1: **Current and Proposed Large-Scale Wind Power Projects in Maine**

Name/Location	Developer	Owner/Operator	Project Status	Nameplate Capacity (megawatts)	Equivalent No. of Homes Supplied	No. Turbines
Mars Hill, Aroostook County	UPC/First Wind	UPC/First Wind	Operational	42 MW	19,000	28
Kibby Mountain and Kibby Range, Kibby and Skinner Townships, Franklin County	TransCanada	TransCanada	Under Construction	132 MW	50,000	44
Stetson Ridge, Danforth, Washington County	First Wind	First Wind	Operational	57 MW	23,500	38
Stetson II, T8 R4 Washington County	First Wind	First Wind	Project Definition/ Permitting	25 MW	Unknown	17
Beaver Ridge, Freedom, Waldo County	Competitive Energy Services	Competitive Energy Services	Operational	4.5 MW	Unknown	3
Various locations, St. John Valley, and Bridgewater, Aroostook County	Linekin Bay Energy and Horizon Wind Energy	Aroostook County Wind	Project Definition/ Permitting	500–600 MW (potential)	Unknown	Unknown
Passadumkeag Mountain, Grand Falls Township, Penobscot County	Noble Environmental Power	Unknown	Project Definition/ Permitting	Unknown	Unknown	Unknown
Passamaquoddy land, Prentiss Township, Washington County	Disgen Inc., Tribal Energy Visions LLC	Unknown	Project Definition/ Permitting	Unknown	Unknown	Unknown
Record Hill, Roxbury, Oxford County	Independence Wind	Unknown	Project Definition/ Permitting	50 MW	Unknown	25
Reddington & Black Nubble Mountain, Franklin County	Maine Mountain Power	n/a	Permit Application Denied by LURC	90 MW, then scaled back to 54MW	n/a	30, then scaled back to18
Mount Harris, Dixmont, Penobscot County	Competitive Energy Services	Competitive Energy Services	Project Definition/ Permitting	Unknown	Unknown	Unknown
Rollins, Penobscot County	First Wind	First Wind	Project Definition/ Permitting	60 MW	Unknown	Unknown
Oakfield, Aroostook County	First Wind	First Wind	Project Definition/ Permitting	49 MW	Unknown	Unknown
Longfellow Rumford, Oxford County	First Wind	First Wind	Project Definition/ Permitting	40 MW	Unknown	Unknown
Down East	First Wind	First Wind	Project Definition/ Permitting	150 MW	Unknown	Unknown
Maine I	First Wind	First Wind	Project Definition Permitting/	80 MW	Unknown	Unknown
Highland Plantation, Somerset County	Independence Wind	Unknown	Project Definition/ Permitting	Unknown	Unknown	Unknown

Sources: Natural Resources Council of Maine (www.nrcm.org/wind_projects_in_maine.asp); FirstWind (www.firstwind.com/projects/#me); Competitive Energy Services (www.energymaine.com/renewables/index.htm); Dunham (2008).

to four projects totaling more than 200 MW, which translates into an investment in excess of $500 million. These projects are all in rural areas where the need for jobs and new sources of economic growth is the greatest. The Governor's Task Force on Wind Power Development estimated that construction wages are more than $125,000 per installed megawatt. This means that the permitted projects in Maine have already or will soon contribute more than $30 million directly to the state's economy in the form of paychecks to construction workers and engineers. Should the task force's goal for Maine be realized—to host between 2,000 and 3,000 MW of wind by 2020—this total could rise to as much as $450 million in construction wages (Governor's Task Force on Wind Power Development 2008: 13). And in addition to the wages and benefits paid to craft workers, these projects are managed by some of Maine's finest engineers, many of whom are University of Maine graduates, putting their skills to work without having to leave the state.

During construction, the economic impact extends to numerous Maine companies that provide services and equipment. The economic ripple effect reaches to every corner of Maine as these funds circulate in our local economies instead of being sent overseas to pay for imported fuels.

In addition to the jobs and services, billions of dollars of capital investment will come with an eight- to twelve-fold increase in permitted wind power projects. Such investment will translate into more than $25 million in annual property tax revenues to local communities and Maine's Unorganized Territory Fund. Tax increment financing arrangements have already and may continue to shift some of these revenues into local economic development projects that will attract additional investment and create new jobs.

Other economic benefits are more difficult to quantify. Turbine component manufacturing and other spin-offs related to grid-scale energy storage have the potential to generate new industries. Existing industries should see a stabilization of electricity costs as the overall percentage of wind generation entering the grid increases, especially if they are able to negotiate long-term contracts. This is due to the zero cost of fuel in comparison to the increasing scarcity of fossil fuel.

THE STATE'S ROLE IN SUPPORTING AND REGULATING WIND POWER

Wind power has the potential to change Maine's economic landscape. Yet some worry about its impact on our scenic vistas along with the ecological impact to land where projects are proposed. Policy development that had been lagging behind the industry on these issues has begun to catch up in recent months.

Governor Baldacci issued an executive order in May 2007 establishing the Task Force on Wind Power Development with three underlying objectives: (1) to make Maine a leader in wind power development; (2) to protect Maine's quality of place and natural resources; and (3) to maximize the tangible benefits Maine people receive from wind power development.

The task force's final report provided recommendations in February 2008, which the legislature largely enacted into law in April. The official goals are to reach 2,000 MW of installed wind power by 2015 and 3,000 MW by 2020 with at least 300 MW to be developed in coastal waters. Industry now has a clear path to follow with a streamlined regulatory approach to permitting that was also enacted, which will be helpful in reaching these ambitious goals. For instance, wind power has become a permitted use in the fringe areas of Maine's Land Use Regulation Commission (LURC) jurisdiction. The Maine Department of Environmental Protection (DEP) can now assume sole regulatory authority over any project that is even partly in its jurisdiction (including transmission lines, which typically terminate in an organized community). The legislation also limits the review period to 185 days for projects within the new expedited zone, which includes all organized communities and much of the fringe areas of the unorganized townships.

Additionally, the major issues raised by the concerned public have been identified and are being addressed through this legislation and during the initial permitting processes. Visual impact assessments are now directly linked to distance from scenic resources of state or national significance. Noise regulations have been carefully crafted by Maine's Board of Environmental Protection to minimize disruption. Bird and bat mortality has been the focus of scientific study

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at all the permitted projects in the state and will continue to be monitored in post-construction studies.

RECOMMENDATIONS

How we tax wind power projects, how we pay for needed upgrades to transmission infrastructure, and how we ensure that the public receives ongoing benefit from the abundant wind resource are all open questions that will generate considerable discussion in the coming years. However we resolve them, it is critical that the final answers include input from the industry that must invest significantly to make each project viable. While Maine has the strongest winds in New England, other regions close by could also provide us with wind power. In a time of limited access to capital, developers are sure to be examining every detail of Maine's policy, keenly interested in the contributing factor of public sentiment.

We must also keep an eye on Washington. The production tax credit (PTC), which helps to finance all wind power in the U.S., was recently reauthorized for just one year. Longer-term authorization would ensure more robust project development. The development of a national renewable portfolio standard and methods to regulate greenhouse gasses are likely to be topics of continued discussion. Maine and the rest of New England already lead the country in the percentage of renewable energy required to be offered to the grid and also in the development of the Regional Greenhouse Gas Initiative. So, we must remain vigilant about how new national policies will affect the attractive economics of wind power that our forward-thinking policies have helped to create in this region.

Assuming a continued favorable landscape, the next seven years are likely to be robust for wind power development. We are roughly 10 percent of the way towards meeting the 2015 goal of 2,000 MW with projects in the works. The major developments in the pipeline easily account for another 40 percent to 50 percent of that goal. The first utility-scale project on the Maine coast has yet to be proposed, but it is only a matter of time. Research efforts continue regarding technology required to access the exceptional offshore wind resource, where the deep waters of the Gulf of Maine pose a challenge.

Uncertainty is the enemy of investment and providing a stable, predictable regulatory environment for wind power is crucial. Using a conservative figure of $2 million per megawatt, Maine hopes to attract some $6 billion in investment capital for wind projects by 2020. Maine must embrace wind investment and encourage more of it. Implementation of the task force's recommendations is a good first step. LURC and DEP should further streamline the permitting process to help to attract additional wind investments and reduce the front-end costs and risks of permitting. The power grid upgrade proposed by Central Maine Power and Maine Public Service Company must be approved and implemented so that electricity generated by wind projects can be poured into the grid. We should consider an additional state tax incentive to mirror the federal PTC. This would send a strong signal that we are serious about attracting renewable energy investments.

Maine's natural resources have always been a source of economic growth. The state stands on the threshold of yet another generation of economic growth, which again will be fueled by an abundant, renewable natural resource—the power of wind.

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