

New England Wind Forum

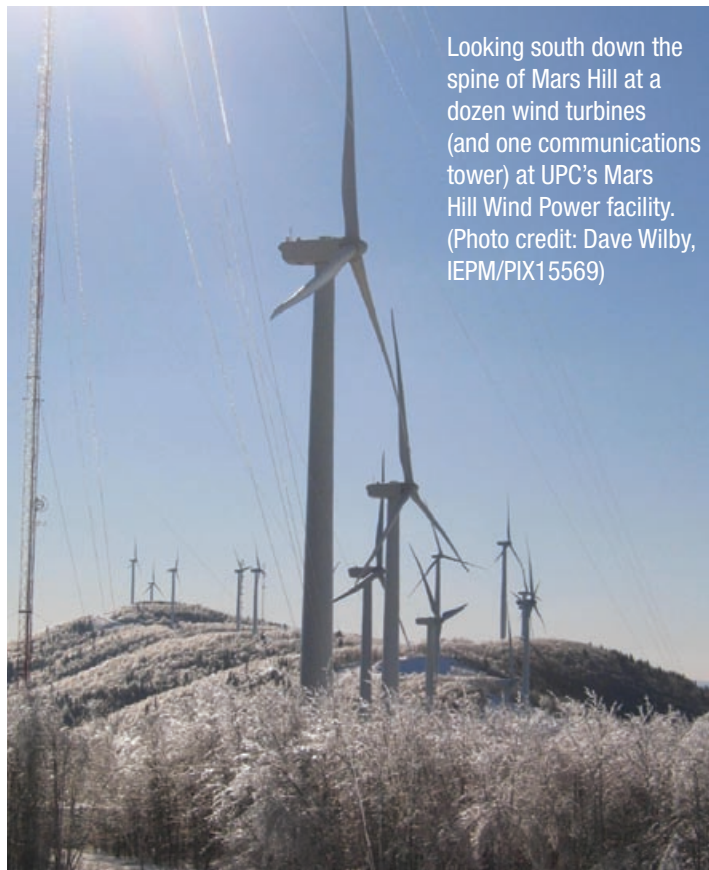
A Wind Powering America Project Volume 1, Issue 4 — May 2008

New England Wind Takes a Wild Ride

The past several months have been full of news on the regional wind power development front. The Stetson Ridge and Kibby Mountain Wind Projects in Maine received approvals from the Land Use Regulation Commission (these projects would constitute the two largest wind farms in New England). Under development since 1989, the Maine Mountain wind project was denied the same approval despite substantially downsizing the proposed project in an attempt to address objections. While the Lempster (New Hampshire) Wind Project weathered an appeal and construction has begun, key permits granted are now under appeal for the Sheffield (Vermont) and Hoosac (Massachusetts) wind projects. The Berkshire Wind project (under development since 1998) got a breath of fresh life as the project was purchased by a local utility group and two pending lawsuits are expected to be resolved. The Minerals Management Service issued its long-awaited draft Environmental Impact Statement for the Cape Wind project, and a flurry of community-scale and customer-sited wind turbine projects took significant steps.

Yet just when New England wind development activity is taking off, a range of external influences, some of which plague the entire electric power sector, present a continuing source of friction. Cost increases (driven by global increases in raw materials and labor costs, and worsening exchange rates) and wind turbine scarcity (due to skyrocketing global demand) are overtaking long-term technical progress and cost decline trends, derailing some projects and slowing others while developers scour the globe for equipment to move forward. These challenges are compounded by the uncertainty over whether expiring tax credits will be extended, freezing turbine orders in the face of uncertain project economics.

Regional demands for wind power continue to increase. Maine, New Hampshire, and Connecticut have adopted new or expanded Renewable Portfolio Standards (RPSs), and Massachusetts is considering enhancing its RPS. Regional greenhouse gas regulations that rely on substantial quantities of wind power development in setting their targets are being adopted. To meet the growing demand, state government and stakeholder initiatives — including wind power task forces, commissions, and working



Looking south down the spine of Mars Hill at a dozen wind turbines (and one communications tower) at UPC's Mars Hill Wind Power facility. (Photo credit: Dave Wilby, IEPM/PIX15569)

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groups — are developing effective processes and infrastructure for enabling wind development while minimizing undue adverse effects on communities and other natural resources' values and uses. In northern New Hampshire and Maine, plans are being considered to expand the transmission system to enable access to much of the region's wind power potential. Yet to enable such expansions, changes to transmission policies may be required to accommodate generation projects that do not have the luxury of choosing to locate where adequate transmission exists. Meanwhile, ISO-New England, the operator of the regional electric grid, is initiating a series of studies to understand and prepare for the potential for rapid wind power expansion throughout the region.

Many issues affect wind turbine siting, and public acceptance is central among them. In some cases, issues must be addressed as the region gains more experience. Some locations are appropriate for wind turbines, others are not. When wind projects are proposed in communities, it is not uncommon for conflicting and sometimes misleading information to be circulated. The New England Wind Forum is continually attempting to identify issues for which an objective source of information would assist communities in making good decisions. As we do, NEWF will (subject to available funding) seek to fill the gap by developing Web site content summarizing objective and balanced information on such topics and highlight new content in NEWF newsletters. In this issue, we begin to address misplaced concerns that wind power's variability will eradicate any expected benefit. In the Technical Challenges section, we highlight a recent interview with the head of the largest electric grid operator in the country, addressing wind farms and their role on the electric grid.

This newsletter will bring readers up to date on all of these activities.

Wind Policy Update

Update on Federal Incentives and Policies for Wind

Production Tax Credit (PTC): The federal PTC is scheduled to expire on December 31, 2008. While a 1-year PTC extension worth \$5.5 billion was proposed in the Senate's economic stimulus package in mid-February, it did not gather the necessary votes for passage. With expiration looming, uncertainty among investors and manufacturers translates immediately into development delays for projects scheduled for construction in 2009 and beyond. This dramatic slow-down will threaten thousands of jobs, and the boom-bust cycle caused by short-term policy-making for renewable energy will continue to limit healthy, sustainable growth in the industry.

Federal RPS: While the U.S. House of Representatives passed energy legislation in 2007 that included a 15% by 2020 national Renewable Energy Standard (RES), the Senate failed to follow suit — despite its passage of RES bills in previous years and majority support for the proposed 15% RES. RES proposals may meet further delays this year as supporters encounter the traditional slow-down leading up to the presidential election.

State Policy Updates

Massachusetts

Major energy legislation under development: The Massachusetts legislature is considering major energy legislation, which could have significant implications for wind energy in New England. The Massachusetts House of Representatives unanimously passed HB 4373, An Act Relative to Green Communities in November 2007, and the Senate passed a different version of the bill (SB 2468, An Act to Generate Renewable Energy and Efficiency Now) in January 2008. As of February 2008, the bill is in joint conference committee, and while both legislative leaders and the Governor have underscored the importance of passing a comprehensive energy bill in 2008, it is not clear when the consolidated legislation will be released. Key provisions that are similar in both bills include: (1) increasing the Renewable Portfolio Standard (RPS) target by 1% per year after 2009 (indefinitely), (2) directing the utilities to establish a pilot program for long-term contracts with renewable energy facilities, (3) increasing the net metering thresholds and allowing aggregate net metering, and (4) creating a Class 2 RPS requirement. The bills differ with respect to: (A) which types of hydroelectric facilities are eligible for the Class 1 RPS, (B) whether the importation of RPS-qualifying Renewable Energy Certificates (RECs) from adjacent control areas should be severely limited, and (C) the extent to which electricity generation and transmission should be a permitted use in Ocean Sanctuaries. In addition, the Senate bill would require a portion of the Class 1 RPS requirement to come from on-site generation and would allow the utilities to own up to 50 MW of renewable generation by 2010.

Changes proposed to state waterways laws in support of offshore wind: On December 10, 2007, Governor Patrick's administration proposed changes to the Chapter 91 waterways protection laws, including declaring as "water dependent" the underwater transmission cables used by offshore renewable energy projects to connect to the wholesale electric grid. This designation could afford offshore wind projects more favorable and timely consideration at the Department of Environmental Protection.

New wind energy cooperative established: A new entity called the Massachusetts Municipal Light Department Wind Energy Cooperative has been established to assist Massachusetts municipal utilities with the development and financing of wind energy projects. The cooperative was created by the Massachusetts Municipal Wholesale Electric Co. (MMWEC) and the Princeton Municipal Light Department. The cooperative's initial success was obtaining \$7 million in financing for an upgrade of the Princeton utility's 23-year-old wind farm in central Massachusetts. It is also in the process of acquiring the Berkshire Wind Project (see the Project Updates section).

Connecticut

Long-term REC contracts under development: In September 2007, the Department of Public Utility Control (DPUC) invited interested parties to file for status in its examination of electric

distribution company contracts for RECs (Docket No. 07-06-61). The DPUC has initiated a multi-step process, commencing with hearings in early February, to address the requirements established by the legislature's creation of this contested case. The DPUC expects the evaluation of the potential for long-term REC contracts to be an extended and iterative process. As the first step in this process, the DPUC received written comments on issues including the method and timing of the procurement for RECs to be used to meet renewable portfolio standards, terms and conditions to be imposed on REC suppliers, and the impact of long-term REC contracts on price stability, fuel diversity, and electric costs. Comments were filed by interested parties in late November 2007, with the utilities and the Office of Consumer Counsel opposing entry into long-term REC contracts, and wind developers supporting them. Subsequently, in response to legislation requiring Connecticut utilities to jointly prepare 10-year integrated resource plans (IRPs), the state's investor-owned utilities submitted an IRP to the Connecticut Energy Advisory Board, which acknowledged the potential role of long-term contracts with renewables in reducing uncertainty and lowering rates.

Rhode Island

National Grid opens discussion on long-term contracts for renewable energy: The Rhode Island Public Utilities Commission (RIPUC) has directed the formation of a stakeholder working group and the development of a new approach for National Grid to acquire RECs for the new standard offer period commencing January 1, 2010. At its January 22, 2008 meeting, the working group discussed draft legislative language that would direct National Grid to establish a long-term contracting program for renewable energy that is similar to a proposal currently under discussion in the Massachusetts legislative process. Contracts would be financed using National Grid's balance sheet.

Offshore wind stakeholder process concludes: During summer 2007, Governor Carcieri initiated invitation-only stakeholder discussions on development of wind farms off the shore of Rhode Island. The stakeholder process consisted of four meetings between August and October, with attendees including town and city representatives, environmental organizations, local economic development organizations, and commercial fishing interests, as well as other entities contributing technical information to the process (state government agencies, U.S. Coast Guard, university representatives, National Grid, consultants to the Rhode Island Office of Energy Resources). While none of the potential offshore sites were eliminated from further consideration by the stakeholders group, the process resulted in identifying some differentiating issues among the sites being considered. At the conclusion of the process, all areas still appeared viable if site-specific issues and concerns could be effectively managed. Recommended next steps include a thorough alternative site impact analysis, ongoing public participation, and the initiation of a scoping process for an Environmental Impact Report. The stakeholders have indicated their intent to continue collaborating on an ad hoc basis. For more information, see www.eere.energy.

[gov/windandhydro/windpoweringamerica/ne_astate_template.asp?stateab=ri#initiatives](http://gov.windandhydro/windpoweringamerica/ne_astate_template.asp?stateab=ri#initiatives)

Net metering law implemented: The PUC has opened Docket 3904 to implement the new net metering law passed in 2007. R.I.G.L. §39-26-6(g) mandates an increase in the maximum allowable generation capacity for eligible net-metered energy system from 25 kW to 1 MW (and to 1.65 MW for eligible net metered renewable energy systems owned by cities and towns of Rhode Island and the Narragansett Bay Commission). In addition, the new law increases the aggregate amount of net metering allowed on the system to a minimum of 5 MW and provides that at least 1 MW be reserved for projects less than 25 kW.

New Hampshire

PUC issues final RPS rules: On April 23, 2008, the New Hampshire Public Utilities Commission (NHPUC) issued final rules <http://www.seadvantage.com/Documents/Eyes_and_ears_Library/NH/NH%20RPS%20Rules%20-%20final.pdf> implementing the New Hampshire Electric Renewable Portfolio Standard (NHPUC DRM 07-089) adopted by the legislature in 2007. The PUC took comments and held public hearings and technical sessions during January.

NHPUC advocates for transmission study: The NHPUC is advocating for ISO-New England to conduct a study to integrate new renewable electric generation (particularly for northern New Hampshire) and is seeking the support of other New England regulators. The overall purpose would be to develop a framework to analyze potential transmission upgrades to integrate new renewable electric generation resources, including the possibility of increased imports from no- or low-carbon emission generation resources from outside New England, particularly Québec and the provinces of Atlantic Canada.

Maine

Wind task force delivers final report to governor: In 2007, Governor Baldacci created a task force on wind power development in Maine, tasked to recommend any regulatory changes necessary to ensure that Maine has a balanced, efficient, and appropriate framework for evaluating proposed developments. After conducting meetings over the past several months, the task force delivered a final report to Governor Baldacci on February 14, 2008, recommending streamlining of wind regulatory review in specified locations comprising two-thirds of the state. The task force also established wind development goals of 2000 MW by 2015 and 3000 MW by 2020. The final report includes maps depicting areas of the state proposed for expedited state agency review to encourage more wind development. In these locations, visual impacts would only be considered under limited circumstances. In other areas, wind development may still be possible but will not be eligible for expedited review. The task force report is a consensus document, with support from environmental organizations, wind power developers, a bipartisan group of legislators, and representatives from all key state agencies. In April, the major recommendations were passed unanimously by the legislature and signed into law. For more information, see www.eere.energy.

gov/windandhydro/windpoweringamerica/ne_astate_template.asp?stateab=me#initiatives.

As part of its work, the task force utilized a community wind subcommittee, comprised of several task force members interested in spending additional time to consider issues related to community- and individual-scale wind projects. Initial topics of conversation included developing a model ordinance, establishing a small wind rebate, and assisting communities in conducting feasibility studies for community-scale projects.

New RPS tier becomes effective January 2008: Prior to the end of the 2007 session, state legislators passed and the Governor signed Bill LD 1920, an Act to Stimulate Demand for Renewable Energy, which established a requirement for a New Renewable Resource Portfolio Requirement, adding an additional “tier” to the state’s Eligible Resources Portfolio Standard, in effect since 2000. The New Renewable Resource Portfolio Requirement requires each competitive electricity provider (including standard offer providers) to supply 10% of their retail electricity sales from new renewable resources by 2017. The RPS takes effect with a 1% requirement in 2008, increasing 1% annually to 10% of retail electricity sales by 2017. Subsequently, the PUC opened a rulemaking to implement the new RPS tier. In October 2007, the Maine PUC issued a Final RPS Rule and Order Adopting Rule.

Vermont

Legislative efforts resume: In the 2008 session, the legislature has resumed discussion of several issues included in the energy bill that was vetoed at the end of the last session. During a special session in summer 2007, the Senate passed S.209, which includes a statewide property tax of \$0.003/kWh for wind generation plants over 5 MW (town taxes will be negotiated separately), a streamlined permitting process for meteorological towers, and increased state renewable energy goals. It gives the Public Service Board authority to set prices that utilities must take in contracts with renewable and high-efficiency CHP generators, increases the net metering limit to 250 kW for small wind, and allows for group net metering. The bill passed the House and Senate in February and was signed by Governor Douglas on March 19, 2008.

Regional Wind Development Update

Maine

On January 3, 2008, Maine’s Land Use Regulation Commission (LURC) voted unanimously to give final approval to UPC’s second Maine wind project: a proposed 57-MW installation on **Stetson Ridge** in Washington County.

On January 14, 2008, LURC unanimously approved rezoning for the 132-MW

Kibby Mountain Wind Project, proposed by TransCanada for Kibby Township in the Boundary Mountains. LURC indicated that the project’s developers had addressed the commission’s concerns regarding road construction and the project’s potential impacts on birds and bats. Once operational, Kibby Mountain will become the largest wind project in New England. Earlier that day, however, the LURC voted to reject the application of Maine Mountain Power for its **Black Nubble Wind Project** (54 MW), citing the project’s potential visual impacts as its leading reason. The **Aroostook County Wind Project**, proposed for several northern Maine potato farming communities, recently increased the total potential capacity under consideration from 500 MW to 800 MW. Project developers Horizon Wind Energy and Linekin Bay Energy have erected numerous met towers to collect wind data but have not yet filed for permits to construct the project. Project proponents are also studying the cost and timing associated with the construction of a new transmission line to connect the project directly to the bulk power system operated by ISO New England. Permitting is expected to begin in 2008, with construction planned over four phases commencing in 2010.

During fall 2007, newly formed Independence Wind announced its first development, the **Record Hill Wind Project**, proposed for Byron and Roxbury. The proposal includes 25 turbines for an installed capacity of up to 50 MW. Two met towers are in place as of September 2007. Independence expects to conduct permitting in 2008 and hopes to begin construction in 2009. Separately, LURC has also approved met tower applications for a second Independence Wind project called **Highland Plantation**, as well as a Noble Environmental Power project located at **Passadumkeag Mountain**.



Blades and towers for the Stetson Ridge Wind Project await installation. (Photo credit: Dave Wilby, IEPM/PIX15571 at left, and PIX15572 above)

Community-scaled wind energy development is also gaining traction in Maine. In September 2007, the Freedom, Maine Board of Appeals voted unanimously to deny an appeal of the building permit issued to **Beaver Ridge Wind Project** developer Competitive Energy Services. In addition to its local building permit, the 4.5-MW project has also received a determination of no hazard from the Federal Aviation Administration (FAA) and is planning construction for fall 2008 or summer 2009, depending on turbine availability. The **Swan's Island Electric Cooperative** is seeking a statutory change that would allow it to construct 1 to 3 megawatts on this small island, where electric rates are three times those on the mainland.

Massachusetts

The 468-MW **Cape Wind Project** proposed for Nantucket Sound has been seeking permits since 2001. Most recently, the Minerals Management Service (MMS) released its long-anticipated draft Environmental Impact Statement (EIS), concluding that the Cape Wind project was expected to create only "minor" impacts on wildlife, fish, and tourism. The altered ocean view from boats was the only "major" impact cited in the analysis. The Alliance to Protect Nantucket Sound said the report "missed the mark" and has now turned its attention toward air navigation and public safety as a potential means to further delay the project. A link to the draft EIS can be found on the Cape Wind page [www.eere.energy.gov/windandhydro/windpoweringamerica/ne_project_detail.asp?id=15] of the NEWF Web site.

Jay Cashman Inc. subsidiary Patriot Renewables continues to pursue the 300-MW **South Coast Offshore Wind Project** located in Buzzard's Bay. While the project intersects an area designated as marine sanctuary, energy legislation passed in November by the Massachusetts House of Representatives would clarify the ocean sanctuary statute by designating generation and transmission facilities for energy production via renewable resources as a permitted use in any of the commonwealth's ocean sanctuaries other than the Cape Cod ocean sanctuary. The Senate version of the bill, passed in January, does not include such provisions. Legislative leaders have vowed to hold hearings on the topic as the bill goes through conference committee. The project will need to navigate both state and federal permitting processes. The federal permitting process will not likely begin until after the MMS develops a formal process for reviewing proposed offshore wind projects.

Despite receiving its wetland permit in May 2004 and having that permit re-affirmed in 2007, the **Hoosac Wind Project** remains the subject of legal appeal. The citizen group that challenged the Department of Environment Protection (DEP) permit has filed a lawsuit in Massachusetts Superior Court against the developer and the DEP. Work continues with local utilities to approve the transmission and interconnection plan. The project developer, recently merged PPM Energy and Iberdrola USA, is not expecting trouble with securing turbines and currently targets commercial operation in 2009.

Distributed Generation Systems Inc. has negotiated a purchase and sale agreement for the sale of the **Berkshire Wind Project** (in Hancock) to the Massachusetts Municipal Wholesale Electric

Company (MMWEC). Financial closing is expected to occur by June 2008. Leading up to this sale, developer DisGen and wind project neighbor Silverleaf Resorts settled a trespassing lawsuit in 2007, and Silverleaf also asked the U.S. District Court in Springfield to dismiss its public nuisance lawsuit against the project. MMWEC is expected to complete permitting and construction by the end of 2009 and install 10 GE 1.5-MW turbines, for a total capacity of 15 MW.

In Wareham, local cranberry growers have partnered with Beaufort Windpower to develop the **Bog Wind Power Project**. By erecting one or two turbines scattered about several of the region's oldest cranberry bogs, Beaufort Windpower and the cranberry growers hope to install a total of 10 to 16 megawatts of wind turbines as well as generate additional income for the farmers. The project developer is currently collecting wind data. Commercial operation is not expected before 2010.

On January 3, the town of Savoy passed a bylaw permitting wind power projects, removing the largest hurdle to the 12.5-MW project proposed by **Minuteman Wind, LLC**. Minuteman is starting to move forward on securing a special permit from the town, meeting requirements of the new bylaws, and has entered discussions with investors and power purchasers. The project has 3 years of wind data and has conducted numerous environmental assessments. Access road design and turbine availability will affect project timing.

The Hull Municipal Light Plant is developing its third wind project. The **Hull Offshore Wind Project**, a planned four-turbine project with an expected capacity of 12 to 15 MW, has filed its Environmental Notification Form (ENF) with the Massachusetts Environmental Policy Act Office (MEPA). The Secretary of Energy and Environmental Affairs issued a MEPA Certificate in February 2007. The Certificate establishes the range of needed environmental studies and calls for a Technical Working Group to guide the study process. The project is targeting 2009 installation and operation. However, the recent boom in onshore wind development has caused most wind turbine manufacturers to postpone development of their offshore turbine models. This development, combined with continuing increases in the estimated cost of constructing and maintaining offshore wind, could result in delays for the Hull project.

The Princeton Municipal Light Department is redeveloping its 1984 wind farm and replacing eight 40-kW machines with two Fuhrlander 1.5-MW turbines. The 3-MW **PMLD Wind Farm** is expected to produce approximately 40% of the town's annual electricity requirements. The town received final project approvals in July 2006, and while an official groundbreaking ceremony was held in late August 2007 and site preparation has commenced, limited turbine availability has delayed commercial operation until 2009. PMLD continues to make progress, however, having worked through the newly formed Massachusetts Municipal Light Department Wind Energy Cooperative (PMLD and MMWEC are the founding members) to secure debt financing from PeoplesBank in Holyoke, MA. The nearly \$7 million in financing includes a \$1.5 million down payment to reserve the two turbines (ensuring an April 2009 delivery date).

A number of Massachusetts businesses and communities are actively developing wind power projects consisting of one or two commercial-scale wind turbine generators. **Varian Semiconductor Equipment Associates** received a favorable vote from the Gloucester City Council regarding its special permit for the installation of two megawatt-scale turbines at the company's Gloucester headquarters. Varian subsequently received its Watershed Overlay District Protection permit and a building permit from the Town Planning Board. Now that final approvals are in place, Varian will enter into a turbine supply arrangement for installation most likely in late 2009 (if turbine availability permits). After running into complications with the FAA over the height of a proposed 1.5-MW turbine, **Cape Cod Community College** is now evaluating bids received in October 2007 in response to the college's RFP for the installation of a single 250-kW to 900-kW turbine. A number of other businesses are either in the advanced stages of permitting and design or are preparing to begin construction. **Holy Name Catholic High School** in Worcester and **Williams' Stone Co.** in East Otis each hopes to install a 600-kW Vestas RRB turbine in 2008. **Forbes Park**, a mixed residential and commercial use property in Chelsea, installed a 600-kW wind turbine in March 2008 but is still finalizing the electrical interconnection to the grid. The **Massachusetts Military Reservation (Otis Air Force Base)** has obtained all major permits and is seeking a 1.5- or 1.65-MW turbine. And **Country Garden** of Hyannis (100 kW), the **City of Medford** (100 kW), the **Town of Hanover** (100 kW), **Saint Mary's Abbey** (100 kW) and **Big Apple Farm** (100 kW) in Wrentham, and both **Woods Hole Oceanographic Institute** (3 MW) and **Woods Hole Research Center** (100 kW) in Falmouth are pursuing wind energy projects with funding from the Massachusetts Technology Collaborative. The **Town of Chester Municipal Light Plant**, which received a Clean Renewable Energy Bond (CREB) authorization from the U.S. Department of the Treasury, is planning to install one or two 1.5-MW wind turbines on town-owned land. Expanding on its initial plans to install a weather station and small wind turbine demonstration project at a local school, the **Templeton Municipal Light & Water Co.** has now completed a feasibility study and received a \$2.16 million CREBs allocation. The municipal utility plans to install (on district school property) and own a 1.5-MW turbine by the end of 2009. The turbine will provide electricity to the municipal utility system, as opposed to being connected behind the school's meter.

The MTC has received proposals and made recommendations for funding under its fourth round of the Large On-Site Renewables Initiative (LORI). Ten wind projects totaling 7.7 MW applied for design and construction grants and an additional 13 wind projects applied for feasibility study grants. Funding was recommended for nine out of the ten design and construction grant applicants (totaling 6.2 MW). Ten out of the 13 feasibility study applications were recommended for funding. At the time this newsletter went to press, not all awardees had been announced. Those projects that have made public announcements are listed above. Round 5 LORI applications were due to MTC in late February 2008. For more

information on the LORI program and past wind project awardees, see www.eere.energy.gov/windandhydro/windpoweringamerica/ne_projects_customer_sited.asp

A number of local community-sponsored projects are in various stages of feasibility analysis and planning for the construction of one or more wind turbines on municipal land. Most are participating in the Massachusetts Renewable Energy Trust Community Wind Collaborative (CWC), in which MRET pairs each community with technical consultants and funds technical, environmental, and economic feasibility analyses. The majority of participating municipalities are on Cape Cod. **Eastham, Falmouth, Fairhaven, Lynn, and Orleans** have completed their respective feasibility studies, including the temporary installation of meteorological towers to measure the wind resource characteristics. In **Eastham**, the Board of Selectmen has appointed a committee to develop a wind bylaw. The project is on hold until the bylaw can be completed and integrated into the remaining process. The town is considering a four-turbine installation, although the net metering portion of the pending energy bill currently may cause the town to rethink the size and location of the project. The **Town of Falmouth** has obtained the special legislation necessary to own and finance a 1.5-MW wind turbine proposed for its wastewater treatment facility. The town is in the process of obtaining several permits and completing additional studies in anticipation of releasing an RFP for project engineering, procurement, and construction in spring 2008.

In the **City of Lynn**, the FAA turned down an initial attempt to install a 1.5-MW turbine at the wastewater treatment plant due to height issues. The city is now reviewing the economics of a 500- to 600-kW installation, as well as potential transmission limitations. After more than 4 years of study and deliberation, the commissioners of the **Town of Orleans** Water Board decided not to proceed with a 3.3-MW wind project installation, citing insufficient financial benefits in the deal structure to justify their involvement. The town had studied project feasibility supported by funding from the Massachusetts Technology Collaborative, which had also purchased two Vestas 1.65-MW V-82 turbines for the project. This outcome gives MTC very little to show for several years of involvement and more than \$5 million in capital encumbrances, which will ultimately be redirected to other efforts. Orleans' decision to forego the project is good news for the **Town of Fairhaven**, which is looking at installing a 3-MW, two-turbine installation at the town's wastewater treatment facility. MTC has agreed to redirect the two turbines previously dedicated to Orleans, subject to the project developer CCI Energy securing financial commitments.

In addition, several CWC communities, including **Brewster, Kingston, New Bedford, Plymouth, Rockport, Scituate, Wellfleet, Worcester, and Yarmouth** currently have technical and economic feasibility studies under way. Additional information on the communities participating in the Community Wind Collaborative is available at http://masstech.org/project_List.cfm?init=44.

New Hampshire

An appeal of the **Lempster Wind Project** Certificate of Public Good, issued on June 28, was denied by the Site Evaluation Committee. All timeframes for appeal have now passed, and the 24-MW project is poised to move forward as New Hampshire's first modern commercial-scale wind farm. Project owner Iberdrola hopes to complete the project prior to the end of 2008. In New Hampshire's northern Coos County, Noble Environmental Power has up to 250 MW of prospective projects under study, including the **Granite Reliable Power Windpark**, which is expected to host approximately 100 MW. This project is currently collecting wind data. Noble's other early-stage projects, as well as the early stage efforts of other wind and biomass developers in the New Hampshire North Country, appear to be heavily dependent on major enhancements to the network transmission system. Project developers, local economic development entities, state permitting agencies, the PUC, the legislature, and local utilities are involved in studying the technical and economic feasibility of expanding the transmission network in Coos County enough to accommodate an additional 400 MW of renewable generation.



Road construction begins on the Lempster Wind Project. (Photo credit: Iberdrola Renewable Energies USA/PIX15574)

Rhode Island

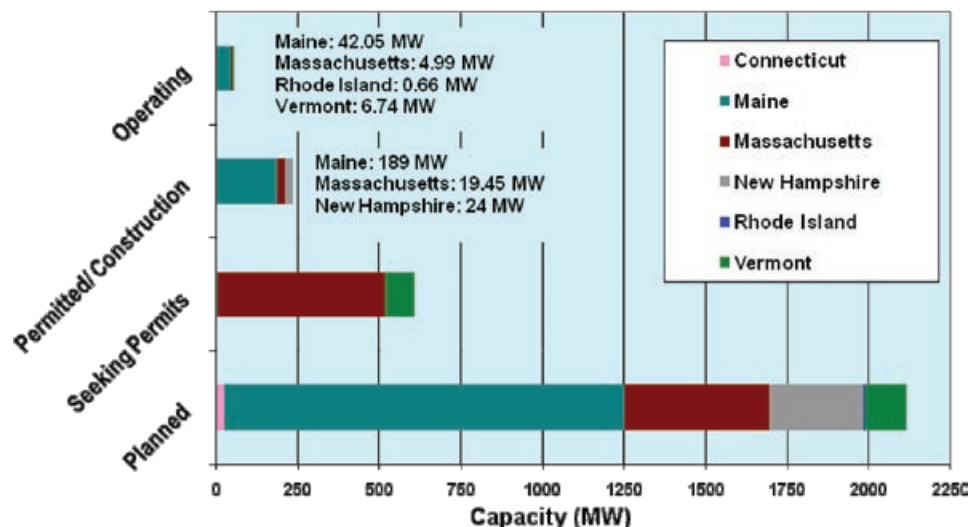
The **Town of Portsmouth** has completed a state-funded feasibility study and plans to install a 1.5-MW wind turbine generator at the Portsmouth high school. If all approvals and permits are obtained, project construction costs will be funded in part from the Town's Clean Renewable Energy Bond (CREB) authorizations from the U.S. Treasury. The \$2.6 million in funds associated with the town's CREBs authorization must be consumed within 5 years. In addition, the RI Renewable Energy Development Fund (REDF) Board of Trustees has approved a \$400,000 low-interest loan for the Portsmouth project.

The loan is expected to be re-paid within 11 years. The REDF Board also approved a wind feasibility study grant request from the **Town of Westerly**. The **Narragansett Bay Commission** – another CREBs awardee – is proceeding with the technical evaluation of a single megawatt-scale turbine. **Portsmouth Abbey School** is preparing to celebrate the second anniversary of its operating 660-kW Vestas wind turbine on March 31, 2008. In its first operating year, the turbine generated 1,300,000 kWhs (a net capacity factor of approximately 22.5%) – supplying 40% of the school's electricity needs. During this period, the turbine displaced almost \$130,000 in retail electricity costs for the school and provided additional revenues from sales of renewable energy credit and wholesale electricity back to the grid in excess of \$93,000. Meanwhile, paralleling the state's Rhode Island Energy Independence initiative to meet 15% of the state's energy from wind power, **Allco Renewable Energy Limited LLC** has filed preliminary applications with the Rhode Island Coastal Resources Management Council for permits for four meteorological towers and four offshore wind projects totaling up to 338 turbines (one south of Block Island, two south of Little Compton, and one east of Fishers Island).

Vermont

On August 8, 2007, the Vermont Public Service Board (PSB) granted a Certificate of Public Good (CPG) to UPC Wind's 40-MW **Sheffield Wind Project**. In October, a local opposition group called Ridge Protectors filed an appeal of the CPG with the Vermont Supreme Court, arguing that the PSB's approval was based on a misapplication of Vermont law and otherwise strayed from findings of fact in the hearing record. The appeal is still pending. In addition, in late August, the Army Corps of Engineers initiated a project review. Due to the Corps' jurisdiction over wetland areas (associated with the access road and electrical interconnection), UPC requires the Corps' written authorization prior to commencing construction. Pending

Capacity of New England Wind Projects by Development Status and State



Status and capacity of New England wind projects by state. (Source: Sustainable Energy Advantage, LLC)

resolution of the appeal, UPC plans to commence project construction, consisting of 16 2.5-MW Clipper Liberty turbines, in 2009. The **Deerfield Wind Energy Project** — a proposed expansion of the existing Searsburg Wind Farm into the Green Mountain National Forest — is being developed through an extensive collaborative process between PPM Energy (now Iberdrola USA) and the U.S. Forest Service. Deerfield Wind submitted a permit application to the Vermont PSB in accordance with Section 248 this past summer. The evaluation of a special use authorization (permit) from the U.S. Forest Service is being conducted under the National Environmental Policy Act (NEPA) and, as a result, an Environmental Impact Statement is being prepared. Final decisions on both processes are expected by fall 2008. The project's targeted online date is late in 2009. In December 2007, Noble Environmental Power received approval from the Public Service Board to install meteorological towers to measure the wind resource at a site on the border between West Rutland and Castleton, where Noble plans to develop up to 50 MW near Grandpa's Knob.

Connecticut

In late 2007, the Connecticut Clean Energy Fund (CCEF) announced the award of a \$49,000 grant to study the technical and economic feasibility of installing a small wind turbine generator at the **Hartford Hospital** facility in Newington. The grant will contribute to the cost of site and wind resource evaluations, permitting, and community impact and economic analyses. In January 2008, the CCEF issued a Small Wind Turbine Demonstration Program request for proposal (# CCEF-SWTDP-001). The CCEF is seeking an experienced applicant with in-depth knowledge of commercially available small wind technologies and project evaluation and monitoring experience to establish a Small Wind Turbine Demonstration Program. The RFP can be reviewed at http://www.ctinnovations.com/funding/ccef/smallwinddemo_RFP.php.

Perspectives: Brian Fairbank, President and CEO, Jiminy Peak Mountain Resort

For his entire career, Brian Fairbank has developed and managed the Jiminy Peak Mountain Resort with great enthusiasm and environmental commitment. During his nearly 40 years at Jiminy, Brian has grown the mid-sized ski area into a successful, year-round resort that accommodates more than 1,800 guests with top-notch customer service. The high water mark of Fairbank's environmental initiatives came in July 2007 with the installation of a 1.5-MW GE wind turbine generator (christened "Zephyr") on the western slope of this Berkshires ski area. We spoke with Brian shortly after Zephyr's public dedication, an interview revealing the determination and sense of purpose required to complete this project and make Jiminy Peak Mountain Resort the nation's first ski area to install a wind turbine.

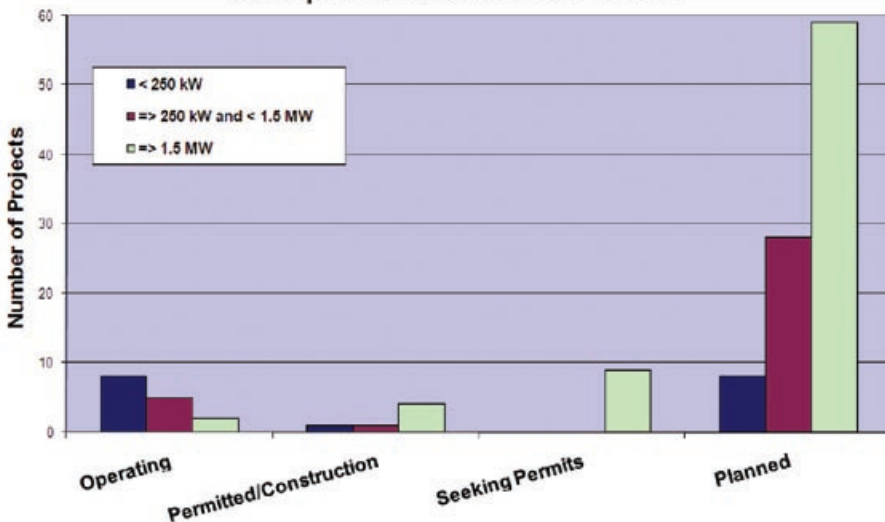


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Q. Why did you consider a wind turbine project at Jiminy Peak, as opposed to other potential sustainability projects?

A. Sustainability initiatives are not new to Jiminy. We've been working hard to reduce our electricity consumption over the past 15 years. It started with energy efficiency. Over the past 10 years, the resort was able to reduce its annualized electricity consumption by 25%, from 9.4 to 7.0 million kWhs. Most of this savings came from advances and efficiencies in our snow-making operation; further savings came from the resort-wide installation of compact fluorescent light bulbs and other energy-saving devices. We've also saved on fuel consumption via programmable thermostats and the capture of waste heat to warm our facilities. After completing these initiatives, we've captured all the "low-hanging fruit." We thought the next appropriate step was to consider on-site renewable energy. As we began to educate ourselves on the options, we quickly learned that wind-generated electricity production would be at its greatest during the November to March period — corresponding exactly to our season of peak electricity demand. Since our greatest economic benefits will come from avoiding purchases from the grid, this convergence of production and consumption made a wind turbine the right choice.

**Number of New England Wind Projects by
Development Status and Turbine Size**



Distribution of wind turbine sizes in New England projects. (Source: Sustainable Energy Advantage, LLC)

Q. Unlike most mountaintop wind farms, which build access roads, Jiminy used the existing infrastructure. Tell us about some of the unique challenges that resulted from this decision.

A. We used an existing ski trail as the access road to the turbine location. This was attractive from an environmental perspective because far less clearing was required than for a new road. But the steep grade of the route – reaching an intimidating 27% pitch at its maximum – combined with the unpaved trail presented a formidable challenge to the equipment used to haul the turbine components, compared to the 10% or 12% grade more typically associated with wind turbine project access roads. The tower base was the first heavy component to attempt the ascent. When the truck pulling it began to slip, we stopped. A bulldozer was added for additional power and traction, and then another, and another on subsequent attempts, until two D8 bulldozers and two D6 bulldozers were assisting the tower base in its climb. The nacelle provided no less of a challenge – the frame of the trailer we had originally intended to use to haul it up the mountain bent on our first attempt, requiring us to build a custom trailer better capable of handling the weight. Once the ascent began, the team of bulldozers prevailed. The decision to use a ski trail as the sole route to the turbine also means that access may be limited by the weather in general (and equipment cannot access the turbine at all in the winter). Now that the turbine is installed and operating, we hope the most difficult logistics are behind us and that time will support our decision to use existing infrastructure.

Q. Did you encounter any other unexpected challenges?

A. Looking back over the entire project, two additional challenges included procuring and delivering the turbine components and interconnecting to the local utility grid. Turbine procurement and delivery posed some interesting challenges. Originally, Jiminy put a 750-kW turbine out to bid. This original solicitation failed due to lack of turbine availability in this size category. Following this initial attempt, we were fortunate to capture the interest of General Electric. Since GE only produced a 1.5-MW turbine, we had to double the project capacity as compared to our original plan. Keeping up with the logistics of the turbine components was fascinating – the tower came from Quebec, the blades from Brazil, electronics from Tehachapi (California), and the nacelle from Europe. With respect to interconnection, the challenges came in three parts. First, we spent approximately \$500,000 reconfiguring the resort's internal electrical systems to capture the maximum benefit from turbine production in offsetting on-site electric usage. Second, we had to bear the cost of several upgrades to the utility transmission system in order to maintain safety and reliability requirements.

Q. How was the public involved in the project, and how did they react?

A. People often ask us why we did not encounter more local resistance. I'd like to think that the answer is in part because we sought the input of local community leaders and residents before the project research and planning ever made it to the press. The

first thing we did was host a coffee hour to discuss our plans and objectives and ask for our community's feedback. I've lived in this community for 30 years, and I live within one mile of the turbine. All of the community's questions were my questions, and so this part of the process was very important. As a result of this initial meeting the conversation about Zephyr took the tone of a local business proposing a project to protect local jobs, be an environmental leader, and send a positive message to the region. While public comments ranged from concern to the characterization of the turbine as a "gorgeous piece of art," the announcement to our community went more smoothly than we thought it would.

Q. How did your commitment to sustainability impact your review of the turbine's expected environmental and aesthetic impact?

A. At Jiminy, we've been looking at environmentally preferable alternatives for 30 years. This history of conservation, recycling, and efficiency measures made it easier for us to consider the broad benefits of installing a wind turbine as compared to the specific site and local impacts. However, this perspective did little to quell months of anxiety over how the community would react. Shortly before we invited the community to talk about our plans, hurricane Katrina hit and global warming became consistent front-page news. In general, the community responded by supporting our wind project. The regional media response was far more extensive than we expected, but we are happy to tell our story if it helps others consider their environmental responsibilities and learn from our experience.

Q. What led the resort to decide to own the project, and would you make the same decision again?

A. The value of producing the electricity on-site and offsetting grid purchases was enough to entice us to want to own the project. We would not have been able to capture nearly this value if a third party owned the turbine and sold us the power. For the power we sell back to the wholesale grid (approximately 50% of the project's total output of 4.6 million kWhs) we are also able to make use of the federal Production Tax Credit, which is typically one of the drivers for third-party ownership. However, convincing ourselves that we wanted to own the project was easier than convincing our lenders. I can't overstate the importance of doing the research necessary to gain the comfort of your banker. From our bank's perspective (and ours for that matter), Jiminy Peak is not in the energy business, we are in the tourism business, and we cannot risk over-leveraging that businesses with an energy project. Our bank required us to roll this project into our long-term capital expenditures plan and demonstrate that the resort as a whole was not taking on more debt than it could reasonably repay. The financial support we received from the Massachusetts Technology Collaborative was critical in gaining our lender's support – particularly as it related to providing assurance of long-term Renewable Energy Credit value. All in all, we would look to own the project again if we had it to do over.

Q. What advice would you give to other ski areas and resorts considering wind power?

A. First, make sure you get the right consultant to be your advocate and guide you through the process. This person should be able to perform some initial environmental assessments and understand the grid interconnection issues and project economics in order to get your financiers on board early in the process. Next, determine whether you have internal support from your resort's management team. Assuming you have critical mass, identify a project champion to shepherd the project, not only during the development and construction phases but throughout the turbine's operating life. Finally, don't plan your access route up a 27% grade. We did it, but we also got more than we bargained for.

Q. With this initial success behind you, would you consider constructing another turbine at Jiminy?

A. Jiminy doubled its long-term debt obligations installing this turbine. As we pay down this debt over time, we may consider installing another turbine. Changes in net metering rules over time could accelerate this process, but in either case, I think we need to take the next 4 to 5 years to fully integrate and optimize this initial undertaking. We are extremely proud of our turbine and have no regrets. While we spend most of our time talking about the project's environmental merits, it is important to realize that the decision to construct was based first on the economics. This is a financially sound investment and overall one of the best things Jiminy has done in its history.

For more information, please see <http://green.jiminypeak.com/page.php?PageID=295>

Technical Challenges

Wind power is by its nature variable, and as a result, it differs from the majority of generation supplying the electric grid. Aspects of this variability are often cited as shortcomings. For instance, the fact that wind power will not be as regularly and reliably available at system peak times as most other generators is sometimes used to argue that wind power requires additional backup resources by other generation on a one-to-one basis. And wind's relatively moderate capacity factor (a ratio of the total energy output relative to the theoretical sustained peak output) is sometimes used to characterize wind generators as inefficient. It's been stated that other generation will have to be operated in such an inefficient manner to react to wind that it will not reduce fossil fuel usage or emissions. Here we address concerns that wind power's variability will eradicate any expected benefit.

It is critical to understand two aspects of the electricity grid and the generation mix connected to it. First, the grid operates on a basis of shared reserves. The quantity of capacity or operating reserves needed is determined by the grid operators on an aggregate basis, based on the variability of load and the scale and characteristics of resources on the grid. Rules for operating the electricity market compensate generators for the benefits they bring and ensure that enough reserves exist to keep the lights on.

Second, the electric generation resources in the region contribute in different ways to cost minimization and reliability, as well as resource diversity and environmental factors. They also have a wide range of capacity factors. Baseload generators (coal, nuclear) have capacity factors of more than 80%; at the opposite extreme, peaking generators (diesel generators and gas turbines) throughout the region are prepared to support the rest of the grid, but at an extremely high cost. Some of these may operate only a few hours per year (capacity factors from 0%-10%). Other "intermediate" generators provide spinning operating reserves, ramping up and down quickly to balance load and generation, reacting to the variability of load and stepping up in the event of unscheduled generation outages. In fact, the average capacity factor of all generation in the New England Power Pool in 2006 was approximately 43%¹. In comparison, wind generators' average capacity factor falls in the 20% to 40% range depending primarily on their location. Every generator connected to the New England Power Pool grid receives a different combination of revenues for contributing energy, capacity, and "ancillary services" (which includes operating reserves). Baseload generators will receive substantial revenues for energy and capacity, but many provide no operating reserves. Peaking generators may receive most of their revenues in capacity and ancillary service markets and little for energy generated.

Seen in this light, wind generation is not inefficient, as sometimes argued, just because it has a lower capacity factor than baseload generators. By that standard, the grid as a whole would be deemed inefficient. Rather, like other resource-limited generation (such as the run-of-river hydroelectric generators that have contributed to the regional supply mix for nearly a century), wind contributes less to meeting peak demand. The critical question as to the economic efficiency of any generation plant is how much value it contributes relative to what it costs. Wind is primarily an energy resource, getting paid for the energy it contributes to the grid which does not need to be generated by fossil fuel combustion; wind also receives modest capacity value recognizing its statistical contribution to reliability. In practice, wind displaces fossil fuel usage whenever the wind blows in exchange for a very small increase in system operating costs. Studies of the actual or potential impact of wind at high penetrations have shown that this increase in system operating costs – which may include a slight increase in quantity of generation "idling" in the system at less than its optimal efficiency – constitute a very small fraction of fossil fuel displaced. Greater use of wind forecasting will allow system operators to have greater confidence about when wind will generate and will further minimize generating "idling."

A recent interview with Karl Pfirrmann of the PJM Interconnection (the entity charged with operating the largest electric operating system in the country) provides an excellent, detailed, objective, and accurate point-by-point explanation of the role of wind on the electric grid. The description provided

¹ Calculated from data in the NEPOOL 2007-2016 Forecast Report of Capacity, Energy, Loads and Transmission (April 2007).

in the interview is applicable in general to the New England grid, although the fossil generation displaced by wind will vary depending on where a wind plant is located (in PJM it is mostly coal that is displaced; in New England, it's mostly natural gas). The interview addresses many of the most common topics of inaccurate information regarding wind power's contribution to the electric system. Click here to read the interview: www.windpoweringamerica.gov/ne_technical_challenges.asp

More information on systems integration:

IEEE Power and Energy Magazine, November/December 2005. Vol. 3 No. 6. www.ieee.org/organizations/pes/public/2005/nov/index.html

IEEE Power and Energy Magazine, November/December 2007. Vol. 5 No. 6. www.ieee.org/organizations/pes/public/2007/nov/index.html

Small Wind Corner

Studies underway for wind turbines at six Boston schools:

Boston Mayor Thomas Menino announced in January that six city schools are studying the installation of wind turbines for both electricity-generating and educational purposes. The mayor stressed that there will be extensive community meetings before any turbine installations are approved. Government and school officials hope the turbines can demonstrate the opportunities available for students who pursue careers related to developing and implementing renewable energy technologies.

Saco, Maine adds another turbine: The Town of Saco recently installed its second municipally owned wind turbine, a 50-kW turbine at the local train station. This first turbine (1.8 kW) is installed at the waste treatment facility.

Wind for Schools resources now available: The Wind for Schools Program, a Wind Powering America Project, has released the following list of resources for teachers, administrators, students, parents, and communities interested in exploring wind power for their schools.

Wind for Schools: A Wind Powering America Project
www.nrel.gov/docs/fy08osti/41966.pdf

Wind for Schools: Power Systems Brief
www.eere.energy.gov/windandhydro/windpoweringamerica/pdfs/wpa/schools_wind_brief.pdf

Wind for Schools: State by State Activities
www.eere.energy.gov/windandhydro/windpoweringamerica/schools_projects.asp

Hot Topics

- Expanding network transmission:** Due to the location of windy land, land use patterns, and population density of the region, many new renewable energy projects (wind and biomass) have been proposed for the northern portions of New Hampshire and Maine, areas lacking transmission infrastructure. This trend has created a need to enhance the network transmission system in these areas. Yet to enable such expansions, policy changes may be required for allocating the cost of new transmission upgrades to interconnect future generation projects that wish to come online at similar grid locations. These policies also preclude building transmission in anticipation of projects, a process that leads to delay because wind projects take less time to build than the required transmission. As a result, the permitting process and cost allocation for new transmission is a topic of conversation in both New Hampshire and Maine. ISO New England will be working with the New England states and industry stakeholders to implement new provisions of its Open Access Transmission Tariff (OATT) that call for economic needs studies that will help to assess the value of adding remote renewable resources to the region's electricity supply mix. The ISO expects the New England states to request studies of this nature for Maine and New Hampshire as well as offshore wind capability in New England.
- ISO New England gears up for anticipated regional wind power boom:** ISO New England, the operator of the regional electric grid, is initiating a series of steps to understand and prepare for the potential for rapid expansion of wind power throughout the region. In spring 2007, the New ISO's Power Supply Planning Committee (PSPC) commissioned Levitan & Associates to conduct a Phase I Wind Study. This study identified a maximum theoretical potential for New England wind resources (approximately 60,000 MW onshore, 33,000 MW offshore). In fall 2007, the PSPC reviewed Levitan's proposed scope for Phase II study. The proposed Phase II Wind Study would concentrate on specific locations with the greatest wind energy potential in order to identify the highest energy-producing 15,000 MW of onshore resources and the highest energy-producing 15,000 MW of offshore resources. This analysis is intended primarily to better inform ISO-NE planning staff of wind potential locations to support a more informed assessment of where and how the transmission system might be expanded to integrate a significant quantity of wind generation.

The ISO also recently announced the hiring of a new manager of renewable resource integration, whose job will include ensuring that the substantial volume of wind power under development can be smoothly accommodated in the control room. The ISO is planning to initiate a wind integration study, similar to studies done in other regions, in the late 2008/early 2009 time frame.

- **Proposed wind power siting guidelines posted to New Hampshire Public Utilities Commission Web site:** For more information, see www.eere.energy.gov/windandhydro/windpoweringamerica/ne_astate_template.asp?stateab=nh#siting.
- **New Connecticut Wind Working Groups Kicks Into Action; Maine plans to launch WWG and anemometer loan program in 2008:** State Wind Working Groups (WWGs) provide a forum where government, academic institutions, utilities, energy marketers, developers, and community stakeholders can collaborate to promote smart and successful wind energy development in the state; identify barriers and opportunities related to wind development; develops plans to overcome barriers to siting good wind projects; promote public understanding of wind power, its benefits, and impacts; and foster job creation and economic development. The University of Massachusetts Renewable Energy Research Lab has successfully organized the Massachusetts WWG since March 2005. The Connecticut Clean Energy Fund and Yale University held the inaugural meeting of the new Connecticut Wind Working Group (www.windct.org) on December 10, 2007, at Yale. The 25 attendees representing a broad range of stakeholders established three working groups focusing on wind resource, infrastructure, and community interests to serve as a catalyst for understanding and utilizing wind resources and developing a balanced renewable energy infrastructure for the state. In response to significant stakeholder interest in concert with Governor Baldacci's Wind Power Task Force, Efficiency Maine, a Program of the Maine Public Utilities Commission, plans to begin a WWG as soon as funding is arranged and will also launch an anemometer loan program in March. For more information, visit the New England Wind forum at www.eere.energy.gov/windandhydro/windpoweringamerica/newengland.asp and click on Quick Links to your state.
- **Members named to FACA committee to address wildlife impacts of wind turbines.** The Secretary of the Interior has named 22 individuals to a special Wind Turbine Guidelines Advisory Committee, formed under the Federal Advisory Committee Act. Committee members include representatives from several federal and state government agencies, wildlife conservation groups, and wind energy developers. The members will advise the Secretary and the U.S. Fish and Wildlife Service on measures to avoid or minimize impacts to wildlife and their habitats from land-based wind energy facilities. To learn more about the Interior Department's wind initiatives, please see www.doi.gov/initiatives/wind.html.
- **Wind economics pages updated.** As noted in the lead article, a range of factors – including raw materials costs, shifting exchange rates, and high demand – has led to increasing costs for installing wind turbines and other power generation equipment worldwide. As a result, we've updated the content of the NEWF Web site's Economics page at www.eere.energy.gov/windandhydro/windpoweringamerica/ne_economics.asp.
- **Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2007 to be released at WINDPOWER:** This report, the second of an annual series funded by the U.S. Department of Energy's Wind Power Program, focuses on key trends in the U.S. wind power market and presents a wealth of data, some of which has not historically been mined by wind power analysts. The report will be released in time for the annual WINDPOWER conference (to be held this year in Houston on June 1-4).



A panoramic view of the nacelle for a 600-kW wind turbine being lifted atop the tower at Forbes Park in Chelsea, Massachusetts. Inset: The installation is complete! (Photo credit: Boreal Renewable Energy Development/PIX15573)

Cool Links

- **Jiminy Peak Mountain Resort (featured in this issue's Perspectives interview):** <http://green.jiminypeak.com/page.php?PageID=295>.
- **Wind Activity in Vermont:** www.fairwindvermont.org.
- Wind Energy Curriculum (K-12) for Educators: www.need.org.
- **Forbes Park Wind Installation Slide Show:** This former industrial site is being redeveloped with a sustainable-design focus and a new wind turbine as its “prominent symbol of our commitment to the environment.” See the wind turbine installation slide show at www.forbeslofts.com/gallery.htm#home.

Wind Events

The New England Wind Forum Web site maintains an up-to-date calendar of wind-related events, from conferences and workshops to siting hearings, in all six New England states. Check the calendar frequently for the latest opportunities to attend industry and community forums and be involved in the wind energy dialogue. Check the NEWF Events Web site at www.windpoweringamerica.gov/ne_calendar.asp for more information as it becomes available.

Upcoming Events include:

- **Connecticut's newly formed WWG** will hold its next meeting on May 21 (see www.windct.org for announcements).
- **Maine is also forming a WWG**, and – subject to funding – will announce an inaugural meeting soon.
- **Vermont Renewable Energy Conference and Trade Show:** October 15, 2008, Burlington, VT
- **Vermont Distributed Energy Conference:** May 15, 2008, Stratton, VT

New England Wind Forum — The Newsletter

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Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.