New England Wind Forum

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New England Wind Forum Is a Clearinghouse for New England Wind Power Information

New England is the birthplace of the U.S. wind power industry and home to a number of wind industry firsts, including the first large-scale electricity-producing windmill and the world's first wind "farm." Today, wind power is the fastest-growing energy source in the country and the world. In New England, wind energy is poised to help diversify the region's electricity supply mix, reducing the energy dependence of a region that is traditionally a major energy importer. A new wave of development activity, including traditional wind farms, community-scale development, and efforts to tap the world-class winds off our shores, is underway throughout the region.

Yet wind energy development in a region with few wide-open spaces and a landscape highly valued for its beauty and recreational uses can place host communities in a difficult position when faced with siting requests. Information provided by project proponents may not be viewed as objective, and residents will naturally have concerns about the potential impacts of wind energy development on their communities. In these situations, objective and independent sources of information can aid communities in making good choices.

The New England Wind Forum (NEWF), funded by the U.S. Department of Energy's Wind Powering America Program, was launched in 2005 to provide a single, comprehensive source of up-to-date, Web-based information on a broad array of wind-energy-related issues pertaining to the New England region: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. NEWF consists of a Web site and periodic electronic newsletter. We hope this objective information resource, independent of project proponents and opponents, will prove valuable to:

- Individuals and organizations who are hosting existing or proposed wind projects in their communities, interested in putting a wind turbine on their property, or have a general interest in wind energy
- Federal, state, and local legislators, policymakers, and regulators
- Energy educators.

The NEWF electronic newsletters will be issued periodically, bringing you the latest in wind energy development activity, markets, education and policy, as well as Perspectives, interviews with key figures influencing New England's wind energy development.

We invite you to explore the comprehensive resources provided on the NEWF Web site (www.windpoweringamerica.gov/newengland.asp), which will be updated regularly and will feature:

- A history of wind power development in New England
- A state-by-state summary of wind development activity, policy, guidelines, incentives, and other information resources
- A map of wind projects installed and under development in the region, with profiles on each installation
- Resources on building wind energy, including information on wind resources, technology, economics, markets, siting considerations, policy, and public acceptance
- A calendar of wind-related events
- Wind energy resources
- Current and past NEWF newsletters.

In This Issue

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Energy Policy Act of 2005 Provides Support for Wind

On August 8, President Bush signed into law the Energy Policy Act (EPACT) of 2005, which contained several key provisions for wind energy. Perhaps the most important to New England was an extension of the federal production tax credit (PTC), now available to projects coming on line by December 31, 2007. The PTC, intended to "level the playing field" with support given to other energy sources, provides owners of wind and other eligible generators with 10 years of tax credits of 1.9 cents per kilowatt-hour, inflation adjusted.

The PTC has been allowed to expire before being reauthorized several times in the past, fueling a boom-bust cycle in wind development. This extension is the first to be enacted before the PTC expired, allowing the wind industry to move steadily forward without an every-other-year period of painful job cuts and stalled production. But the PTC extension is not all good news. The passage allows only two years of steady project development activity before the prospect for expiration after 2007 looms. The PTC-driven boom in development expected in 2006 and 2007 is one contributor to rising wind power equipment costs.

Several other items were included in the EPACT of 2005 that influence wind energy development in New England. The Renewable Energy Production Incentive (REPI) was extended through 2016. Through REPI, the Department of Energy provides payments comparable in value to the PTC to certain non-taxpaying entities, such as municipalities. Although this is a positive development, REPI is subject to annual congressional appropriation and has been underfunded in the past, making REPI an unreliable cash flow source. An alternative to REPI was also created in the form of a new category of tax credit bonds, called clean renewable energy bonds (CREBs). This financing instrument is available to entities such as units of government and municipal utilities.

The EPACT also increased research and development funding for wind research, established a renewable energy purchase requirement for Federal facilities, requires the Department of the Interior to study the renewable energy potential on Federal lands, and includes a "sense of congress" that renewable energy development is an appropriate use for public lands and that within 10 years from passage, Federal lands should support at least 10,000 megawatts of renewable energy generation. The Department of the Interior's Mineral Management Service (MMS) was given lead authority for permitting off-shore wind and other renewable energy projects in Federal waters, with regulations to be issued by May 2006. MMS will also establish leasing or royalty fees for such use of these resources and is required to share a portion of those revenues with coastal states for projects within 3 miles of state waters.

Perspectives: Brother Joseph of Portsmouth Abbey

The Portsmouth Abbey, a Benedictine monastery and prep school located in Portsmouth, RI, is about to install a commercial-scale Vestas V47 wind turbine on its property, with the assistance of a grant from the Rhode Island Renewable Energy Fund. This will be the first large-scale turbine located behind the customer meter in the region. We spoke to Brother Joseph Byron of Portsmouth Abbey, the champion of the project, about his experience.

Q. What was the Abbey's motivation for installing a commercial-scale wind turbine?

Our motivation was twofold, not only to save money but also as an example to students. Our immediate response was to our oil bills over the past year, knowing that electricity cost increases wouldn't be far behind. We also felt that somebody should do it, and why not us? The wind turbine fit nicely in terms of running a school and wanting to advocate and teach a responsible environmental issue. And we hoped that by taking the initiative, we could set an example for the town and the state. Once it's installed, people can see a real wind turbine in operation and hopefully realize that it is not a terrible blight.

Q. Could you describe the setting?

The Abbey's monastery and school are located on a beautiful 200-acre property. Everyone's biggest concern was, "What will this look like?" Everyone thought that wind as an alternative and

Sherman Grist Mill c. 1900 on the site of what is today Portsmouth Abbey School, Portsmouth, RI. (courtesy of the Portsmouth Abbey Archives)

Photo simulation of Vestas V47 viewed from the center of campus, Holy Lawn, Portsmouth Abbey School, Portsmouth, RI. (Courtesy of Portsmouth Abbey Archives. Created by Wind Power RI Project, School of Architecture, Roger Williams University)

renewable energy source was a good idea. It made sense economically. The questions were: How big? What does it look like? Where will we put it? It is a very big thing and will undoubtedly dominate the landscape. It will be set back about 1000 feet from the closest neighbors on Cory's Lane, almost directly behind the Monastery and the Church. Right from the very beginning we talked with our neighbors and others in the town to get their input. The response was overwhelmingly positive. We're putting it on a beautiful property, and we have an obvious sensitivity to aesthetics. Our hope is that if we are willing to put something this big on that property, it may quell the NIMBY arguments against wind power. We have a hockey rink on the campus, with a lot of people going in and out, so the turbine will be a real showcase. It will also be like a giant weather station, with interesting educational applications… we can tap into the data feed from the turbine 24 hours a day, and we can make that available to other schools as well.

Q. How did you put it all together?

Since we were real neophytes, we contacted the State Energy Office, which put us in touch with Henry duPont (Lorax Energy Systems) of Block Island. He was a tremendous resource. He researched site information (the wind resource, demand usage of the school) and then selected a turbine that would feed the school's load behind the meter, into the school's internal electric grid. We needed about a 600-kW machine, given wind speed and electric demands. Also, we wanted to minimize the turbine size and dominance of the landscape. We were lucky to get one of the last Vestas V47s available. The State Energy Office helped with financial modeling, understanding the market, payback period, etc. The town zoning ordinance allows for wind turbines, but we needed a special use permit and a zoning variance. Nobody has ever done something like this in Portsmouth, so it was new for everybody. I think that it went through unanimously because we did our homework and tried to quell concerns up front. Everyone thought we should try this. It was nice to have it all work out.

Q. How has your experience so far matched your expectations?

Good, so far. It is a daunting project and a real learning experience. I've never been involved in anything so big. We've already laid the conduit and put in the primary disconnect and are now installing a unique foundation design. Hopefully, that will be done by Thanksgiving. The turbine has been ordered and the parts made, but they are coming in various parts and pieces: the generator from a factory in Italy, and the blades from Denmark, should ship together to Boston and truck from there to here. The tower is coming from Fargo by truck. We wanted to do this before school let out, so we are waiting for the weather to be favorable. We'll put it all together in March, and we hope to get it up and running during a 1-week period.

Q. Has the community been supportive?

Not everybody is over the top on this, but most are strongly in favor. Somebody has to take the lead. The town has been terrific. We talked informally with the town folk about what they thought. The town is very concerned about overdevelopment and keeping the rural character of the place, and it has used a draconian height limit in the zoning code to achieve that. They are rightly very

reticent to vary this. This was expected to be the real stumbling block. Everyone knew what we were doing; we spoke to everyone. We hope that once it goes up, it will help the town and the state. Photosimulation was critical in getting community support. We could demonstrate dynamically what people would see. It was a big help.

Q. How important were recent changes to Rhode Island's backup-rate policy to making this project feasible?

This exemption from the backup rate was a huge help. Anything like that helps. The grant from the state, obviously, helped. Whatever can be done to make it more attractive for people to attempt renewable energy. This is a big investment.

Q. If a grant from the state's Renewable Energy Fund had not been available, what would have been needed to move forward with the installation?

The Fund was extremely generous to us as pioneers in this effort, and we are very grateful. We hope that was a good bet on their part, because I think it will be a very successful project. With wind there is a large expense upfront. Because this project is so novel, there was considerable nervousness about investing in it. Without that grant, the Abbey would have needed to seek outside grants or donors who wanted to support such a project. This is challenging, takes a lot of time, and competes against other demands for other school projects. Hopefully, this project will pave the way for others. In the future, installing a wind turbine may be less novel, a more obvious way to do things.

Q. What is your advice for others seeking to install a commercial-scale turbine at their institution?

You need somebody like Henry duPont who really knows all the ins and outs of the process, who can give you good advice about site, wind resource, available machines, and contacts. This is a specialized field; you need people who have been involved with other projects. Also, you have to talk to your neighbors, right from the get-go, so they are involved in the process. It makes people nervous when you install something so big in your neighborhood.

Regional Wind Policy Update

Offshore Wind: Beyond Cape Wind

When New Englanders hear "offshore wind," the headline-grabbing Cape Wind project in Nantucket Sound comes to mind. But beyond the prospects of Cape Wind, the greatest potential domestic energy source for the resource-poor New England states may be the strong winds blowing off our shores. There is a vast potential for electricity to be generated in deep waters off the New England coast, within the country's 200-mile territorial waters. Just tapping a small portion of this potential could contribute significantly to the region's supply portfolio. But before wind can contribute its share to the portfolio, many things must happen.

In September, the Offshore Wind Energy Collaborative (OWC), established by the U.S. Department of Energy, Massachusetts Technology Collaborative, and General Electric, issued *A Framework for Offshore Wind Energy Development in the United States* (available at www.masstech.org/offshore/final_09_20.pdf). This document, developed after extensive consultation with a wide range of stakeholders and in anticipation of growing interest in offshore wind energy, identifies the formidable engineering, environmental, economic, and policy challenges to tapping offshore wind energy potential and suggests a comprehensive approach to overcoming them.

An interview with Greg Watson of the Massachusetts Technology Collaborative, who manages the activities of the OWC during its planning phase, is available on the NEWF Web site at www.windpoweringamerica.gov/ne_interviews.asp

Stakeholders Meet to Discuss Avian and Bat Impacts

In 2003, the U.S. Fish & Wildlife Service (USFWS) issued *Interim Guidance on Avoiding and Minimizing Wildlife Impacts* from Wind Turbines to assist the wind industry in avoiding or minimizing impacts to wildlife and their habitats. The guidelines include the evaluation of prospective wind turbine sites, appropriate design of turbines and site layout, and monitoring of wildlife before and after construction to assess impacts. The recommendations, developed without input from industry stakeholders, include a protocol to evaluate potential and reference wind sites, including up to 3 years of pre-construction avian monitoring. Many of the recommendations have been perceived as unreasonable and onerous by wind developers, and the one-size-fits-all approach appears particularly daunting to smaller project economics.

Although the USFWS has no direct permitting authority, it does have jurisdiction to prosecute in the event of certain wildlife "takings" (for instance, under the Migratory Bird Treaty Act). Through the Clean Energy States Alliance (CESA), a number of regional stakeholders met throughout 2005 to discuss the implications and engage USFWS in a constructive dialogue on the issue. USFWS also received comments on these guidelines from the wind industry and others. The comment period officially closed in July. The USFWS recently stated its intent to participate in a national collaborative with CESA and other stakeholders. The goal of the collaborative is to modify how avian impacts from wind energy projects are assessed at the federal level. The collaborative will address wildlife protection laws, explore the use of adaptive management, and define a coordinated state/federal approach.

Renewable Energy Portfolio Standards

Several state policies throughout the northeast region are intended to drive demand for new renewable generation, including wind power. But for these policies to be effective, "the devil is in the details."

- In **Connecticut**, the "Class 1" Renewable Portfolio Standard (RPS) requires all electricity suppliers to provide a specified percentage of customer electricity sales from eligible resources, which include wind. Class 1 renewable energy credit (REC) prices in the current and forward markets recently plunged, an apparent market reaction to market entry by biomass facilities qualifying for the Class 1 market by installing emission control

equipment to meet the strict RPS emission limits. Such retrofits can be made at modest per-unit cost compared to the cost of building new wind generation. Under the state's RPS statute, new wind projects must compete against certain biomass resources, existing or new, provided they meet strict NO_x emission limits. While the Class 1 percentage requirement increases yearly from 1.5% this year to 7% of load in 2010, the prospect that a sufficient number of existing New England biomass facilities will implement similar retrofits and thereby meet several years of incremental RPS demand suggests that the Connecticut RPS may not drive new wind demand for several years.

- In **Massachusetts**, a major threat to the effectiveness of the RPS for "new" renewables was recently averted. The Massachusetts RPS statute clearly establishes an annually increasing percentage of new (post-1997) renewable energy in electricity supplier portfolios. However, over the past 2 years sequential Division of Energy Resource (DOER) rulings have allowed biomass facilities that were online before 1998 to make moderate retrofits and qualify their entire output as eligible for the "new" RPS. In July, DOER opened a notice of inquiry (NOI) to address and clarify biomass eligibility, raising the prospect that these rulings would be formalized in DOER's regulations. Under these proposed changes, existing regional biomass plants appeared capable of retrofitting to become eligible for the Massachusetts RPS — enough plants to fulfill the entire RPS demand for the next 5 years. These activities threatened the viability of the RPS as a driver for new wind. The demand uncertainty caused by these activities has "chilled" investment in wind power development efforts throughout the region.

DOER received comments from a wide range of stakeholders in response to the NOI challenging the previous biomass rulings allowing "vintage" pre-1998 generation to count as "new." On October 27, DOER issued a Policy Statement on the RPS Eligibility of Retooled Biomass Plants in which it reconsidered and reversed its prior rulings on statutory grounds. As a result, the removal of substantial market uncertainty regarding the potential RPS demand for new wind generation has returned the Massachusetts RPS to its expected role as a substantial boon for wind development throughout the region. Meanwhile, in the current legislative session, several bills have been offered that would open up the RPS to hydroelectric generation that is not currently RPS-eligible. It remains to be seen which language, if any, is adopted as law, but whether such legislation would create a major disruption to the RPS market for wind remains bears watching.

- The **Rhode Island** legislature passed an aggressive Renewable Energy Standard (RES) in June 2004. The Public Utilities Commission established a negotiated rulemaking proceeding early this year and accepted most of the negotiating committee's recommendations in issuing draft regulations for comment in September. Final implementing regulations were released on November 30. The RES requirement, starting in 2007, is expected to stimulate new wind, as all but 2% of the 16% target by 2019 must be from incremental renewable energy generation. These are the most aggressive percentage targets in the region for new renewables. Of interest to wind developers is a requirement for long-term contracts to be considered in procurements by National Grid, which currently serves most of the state's load.
- The **Vermont** legislature adopted a renewable portfolio goal in June, under which the state's utilities are encouraged to use renewable energy to offset all load growth through 2012, up to a maximum of 10%. In the near term, this law does not appear likely to drive additional wind power development above that demand created elsewhere in the region, as RECs from these sources may, in some cases, be sold off to meet other regional RPS requirements while still counting toward this goal. If this target is not met by 2012, the state will then implement a mandatory renewable portfolio standard.
- **Maine's** Eligible Resource Portfolio Requirement, despite requiring 30% of the load to come from eligible resources (including wind), is widely acknowledged to be ineffective at driving any demand for new wind due to broad eligibility and ample eligible supply. Because previous legislative proposals over the past several sessions to alter this requirement or implement an alternative have foundered, the legislature's joint utilities and energy committee requested that the Governor convene a group of stakeholders to determine if there is sufficient consensus on ways to encourage more renewable energy development in Maine. The Office of Energy Independence and Security is hosting a series of facilitated meetings involving legislators and stakeholders and will file a report in December with recommendations to the legislature on RPS changes as well as alternative measures.

Other State Policy Developments

In **Massachusetts**, the Massachusetts Technology Collaborative (MTC) supports wind power through several initiatives. In addition to the Community Wind program, which continues to provide support to community-driven, commercial-scale turbine installations throughout the state (see Wind Development Update), MTC provides project pre-development loans (www.masstech.org/Grants_and_Awards/CE/predev_overview.htm) and support to customer-sited projects via the Large On-Site Renewables Initiative (www.masstech.org/renewableenergy/large_renewables.htm), a new $3.5 million round of feasibility, design, and construction grants. The winners of the second round of contracts from the Green Power Partnership Program, under which MTC provides long-term purchase or option contracts for RECs to support project financing, are expected to be announced in early 2006. MTC recently sought to purchase three turbines for installations at two sites through a request for proposals, receiving only one bid (due to a global turbine shortage) that is still being evaluated.

In **Connecticut**, the legislature this summer amended a requirement for the state's utilities to enter long-term contracts with 100 MW of Class 1 renewable energy generators supported by the Connecticut Clean Energy Fund (CCEF), limiting future contracts to in-state facilities after the law's effective date. As a result,

CCEF's Project 100, under which projects are selected for CCEF funding and potential utility long-term contracts, will limit its future solicitations to in-state projects. Due to Connecticut's dearth of commercially attractive wind sites, Project 100 is unlikely to be a boon for wind in the future, as envisioned prior to this summer's modification. CCEF also released a draft of its new *On-Site Renewable DG Program for Commercial, Industrial and Institutional Users* (www.ctcleanenergy.com/investment/onsite_renewable_dg_program.html) and accepted public comment through November 2. Under the draft, the program would provide $20.5 million in grant funding to behind-the-meter renewable energy and fuel cell generation in excess of 10 kW, with applications considered on a rolling basis. Support is intended to be project-specific, and the draft identified a $2 million funding cap per project, a cap of $3.60/W on the incentive available to "small wind" sized to serve no more than 50% of a host's annual load, with a 1 cent/kWh premium available to southwest Connecticut installations.

On October 3, **Vermont's** Governor Douglas proclaimed October "Wind Energy Month," coincident with a ceremony unveiling a plaque commemorating the historic Grandpa's Knob wind turbine in Castleton. However, the Governor has recently been shading his support toward installations that are "Vermont scale" (around 10 kW) rather than commercial scale.

In **Maine**, a grant-funded effort undertaken by Maine Audubon has recently been initiated. Audubon has convened about 20 stakeholders, including state agencies, wind developers, U.S. Fish and Wildlife Service, environmental advocates, and bird enthusiasts to develop recommendations for wind siting and permitting focusing on wildlife impacts. Over the course of four planned meetings, Audubon hopes to develop recommendations, although who will receive those recommendations and to whom they will be made is not yet clear

In **Rhode Island**, the Renewable Energy Fund (www.riseo.state.ri.us/riref/) is preparing to release a new funding initiative for feasibility studies for customer-sited, commercial-scale renewable energy installations.

Regional Wind Development Update

For more information on regional development activity and operating projects, see the *Projects in New England* (www.windpoweringamerica.gov/ne_projects.asp) page of the New England Wind Forum Web site.

Maine

Earlier this year, UPC Wind received its permits for the approximately 40-MW Evergreen Wind Power project being developed at the ski area in Mars Hill in Northern Maine. Bird migration studies, a condition of permitting, commenced in September. The developers are still in negotiations for turbines and financing but expect to be operational in 2006.

After completing pre-application meetings to finalize permitting scope, Endless Energy is preparing to file joint permit applications with Maine's Department of Environmental Protection and Land Use Regulatory Commission (LURC) for its Redington Wind Farm. If successful, Redington would employ 30 Vestas V90 turbines for a total of 90 MW.

In August, TransCanada, an Alberta-based power generator developing several large wind farms in Quebec, announced plans to develop Kibby Mountain, a large wind farm in western Maine near the Quebec border. The site is in the same townships in which Kenetech successfully permitted a 600-turbine, 200-MW wind project during the early 1990s, prior to its bankruptcy that halted development. If the wind resources are sufficient to make the project commercially viable and if permits and a 28-mile transmission interconnection can be arranged, an estimated 100 to 200 MW of wind turbines could be erected on Kibby Mountain, Caribou Mountain, and Kibby Range, starting with a first phase of 100 MW. TransCanada purchased development rights from General Electric (GE), which GE acquired when it purchased Enron Wind, who had previously secured Kenetech's Boundary Mountain development rights out of bankruptcy. TransCanada's recently filed application with the LURC to install meteorological towers was approved in November.

An even larger wind farm was recently proposed for northern Maine. Developers of the 500-MW Linekin Bay Energy project have initiated the early, exploratory stages of development, recently filing with LURC for approval to site meteorological towers, applying to interconnect with Maine Public Service Company, and discussing land leases with farmers in the remote Aroostook County region. Horizon Wind Energy, a large Houston-based wind developer, is partnering in the project. Unlike most other New England wind projects, which seek to site on mountain ridges or shorelines, Linekin Bay seeks to develop a project among potato fields. In other parts of the country, wind and agriculture have proven to be very compatible land uses. Permitting is targeted for 2006, with the project scheduled to be built in three phases between 2007 and 2010. However, a major challenge is the lack of a direct transmission link to New England loads; Maine Public Service system is not part of ISO New England.

New Hampshire

Loranger Power Generation Corp. is installing four reconditioned wind turbines with a capacity of 1.4 MW at Jericho Mountain in Berlin. These turbines, expected to be interconnected to Public Service of New Hampshire (PSNH) and become operational during November, represent a pilot effort that may someday lead to a larger installation of up to 22 turbines on a 140-acre site.

In Lempster, Community Energy Inc. is moving ahead with the engineering design of the 24-MW CEI New Hampshire Wind, LLC wind farm, which will consist of twelve 2-MW turbines. The project, a recipient of a predevelopment loan from the Massachusetts Technology Collaborative, has secured building permits, and plans to file for state approvals by year-end. If successful, the developers hope that the plant will be operational by fall 2006.

UPC Wind initiated exploration of a wind farm in Lyman, but following community meetings, which revealed a mix of local support and opposition, this effort is currently dormant.

Due to the good wind resource and relatively pro-development philosophy of the state relative to the rest of New England, a few other developers are exploring sites for wind farms in New Hampshire, but none have yet evolved to formal development projects.

Vermont

The East Mountain Project, a 6-MW project on the site of an abandoned U.S. Air Force radar base from the Cold War era, moved to the final stage of Section 248 permitting as the Public Service Board (PSB) on October 4 issued an order closing the evidentiary phase and setting deadlines for the briefing phase of the proceeding. Following the parties' briefs, the hearing officer will issue a proposed order prior to the board's final order. The Agency of Natural Resources has so far withheld support without further study of wildlife impacts.

Meanwhile, in late September the PSB issued a Certificate of Public Good to the East Haven Wind Farm for two meteorological towers in a wood lot straddling the towns of Brighton and Ferdinand, while a third tower on East Haven Mountain was deferred.

Endless Energy's 9-MW Equinox Wind Farm, under development since the late 1990s, has given notice to local towns that it is preparing to file its state Section 248 permit in late fall of this year. Equinox would consist of five Vestas V80 turbines.

Deerfield Wind, LLC recently announced a significant step forward in the development of its 30- to 45-MW wind farm planned for Searsburg and Readsboro. The USDA Forest Service accepted Deerfield Wind's filing of a special use application for constructing the project, which if approved would be the first wind facility on National Forest lands. The scoping notice was issued, and public comment was accepted through August 16, kicking off the process of developing an environmental impact statement. The full National Environmental Policy Act (NEPA) review process is expected to last 18 months. Deerfield Wind, a wholly owned subsidiary of enXco, Inc., is a planned expansion of the existing project developed in Searsburg by Green Mountain Power Company in 1996.

UPC Wind Management filed its state Section 248 notice in early October, initiating the permitting process for its Sheffield Wind Farm project, a 40- to 50-MW installation slated for 2007 on Hardscrabble Mountain.

Catamount Energy's Glebe Mountain project, envisioned as a 27-turbine wind farm in Londonderry near Magic Mountain, has run into some snags. The Londonderry Select Board voted on October 17 to adopt the Londonderry Planning Commission's new Town Plan that prohibits large-scale wind generation facilities within the town's Resource Conservation Overlay District, which includes the proposed Glebe Mountain site. In a newspaper interview, Catamount Engineering's managing director indicated disappointment but vowed to pursue the project despite the vote.

PIX14303

Fuhrländer FL100 wind turbine at the IBEW Local 103 headquarters, Dorchester, MA (courtesy IBEW Local 103)

Massachusetts

Three wind farms are in different stages of development in the Berkshires. The Berkshire Wind project, a 15-MW project to be located near the Brodie Mountain ski area in Hancock, has received all of its permits and commenced surface work for foundations and roads. Construction plans for 2006 are in place, but as with many other projects around the country, the developer is actively seeking turbines in what has become a seller's market before proceeding with the final stages of construction.

The Hoosac Wind Project, a 30-MW project in Monroe and Florida planned for 2006 construction, has been granted nearly all of its permits. However, an appeal of its Superseding Order of Conditions from the Department of Environmental Protection is currently being heard, with a ruling anticipated for late fall.

The latest private-sector development to appear in Massachusetts is Minuteman Wind, a 10.5-MW wind project to be located in Savoy. Minuteman's developers completed a land lease in February and were awarded a predevelopment grant. They are commencing the detailed design phase and plan to commence permitting activities in spring 2006.

The Cape Wind Project, a 130-turbine, 450-MW offshore facility planned for Nantucket Sound, received approval in October for its interconnection to the ISO New England electric grid. This approval marks another major milestone in the project's efforts to win approval from 17 federal, state, and regional entities, despite well-publicized opposition from some of the state's elected officials and local opponents. Cape Wind received a favorable Draft Environmental Impact Statement (DEIS) in November 2004 from the Army Corps of Engineers and approval from the Massachusetts Energy Facilities Siting Board for its undersea ca-

ble interconnection in May. The expected EIS record of decision due date is January 2007. While Cape Wind also appears poised to benefit from provisions in the Energy Policy Act of 2005 (see EPACT 2005 update), the Minerals Management Service (MMS) announced in early November that it would conduct its own environmental review, effectively delaying the permitting process by about a year. MMS, which inherited permitting authority from the Army COE, plans to use all the information from the COE review but requires additional information to fulfill its new mandate. While the delay defers the likely online date, the new process under the MMS also offers both proponents and opponents the prospect of a more firm timetable for a final decision (expected next fall) under clearer jurisdiction.

While the Cape Wind project tends to dominate the news, there are many wind development acticities currently underway in Massachusetts, involving commercial-scale installations of individual turbines, small clusters, and land-based wind farms. In May, the International Brotherhood of Electrical Workers (IBEW) Local 103 installed Boston's first "urban turbine," a 100-kW Fuhrländer FL100, directly next to Local 103's headquarters. The installation, directly adjacent to the Rt. 93 Southeast Expressway in Dorchester, is one of the most visible in the country, seen by tens of thousands of commuters each day — a great billboard for wind power. IBEW expects wind to be a major source of jobs in the future and uses the installation to train its members to work on future wind installations in the region.

After a delay precipitated by a challenge to an initial plan in land court and zoning law changes, the Princeton Municipal Light Department received approval from the town's planning board in early October to move forward with development of a two-turbine installation to upgrade the department's 1980s eight-turbine wind farm. The department, along with private-sector partner CEI MassWind, LLC, will now file for building permits and plans to have the project operational as early as fall 2006.

The Hull Municipal Light Plant, a pioneer in commercial-scale wind energy generation in the Bay State, is moving ahead with a sequel. Hull 2, to be installed by spring 2006, will consist of a single 1.8-MW Vestas V80 turbine. The turbine has been ordered and all necessary approvals received. When installed, Hull 2 will be the largest wind turbine in New England. The site is unique in that the turbine will be the first installed on a closed landfill in the United States.

The Massachusetts Maritime Academy (MMA) has signed a contract with Big-Dig contractor Jay Cashman, Inc. of Quincy to build a 660-kW wind turbine on MMA's Buzzard's Bay campus. Final approval was sought at the November 17 meeting of the Bourne Conservation Commission, with construction expected to begin in spring 2006. The Vestas V47, which will be the first turbine in Massachusetts to be owned by the state, is expected to displace more than 25% of the Academy's electricity purchases. The project team also includes EMI, the developers of the Cape Wind project.

Meanwhile, an installation planned by the Massachusetts Technology Collaborative (MTC) for Cape Cod Community College in West Barnstable has run into a roadblock. The Federal Aviation Commission issued a determination of hazard, as the selected site intersects a holding pattern for the Hyannis Airport. Planners are looking for a feasible site to relocate the turbine that would avoid this problem.

In late October, the Jiminy Peak Mountain Resort announced plans to install a 1-MW turbine near its ski area's summit reservoir by winter 2006. The installation, supported by a $582,000 design and construction grant from the MTC, will meet 30% of the ski area's electricity consumption, with the turbine's winter-peaking production also offsetting the ski area's peak loads.

Two other projects moving forward include Gloucester-based Varian Semiconductor and M+M Realty Trust. Varian recently completed its feasibility study and is considering its next steps, while M+M Realty Trust received a design and construction grant for a wind installation to power an office building. Two Falmouth-based sites — the Falmouth Hospital and Webb Research — and Catamount Ski Area in Egremont are considering whether to proceed based on results of their recently completed feasibility studies.

Additional customer-sited locations recently receiving MTC funds to study the feasibility of 1-MW-class wind installations near the NBC-10 Tower in Rehoboth and the North Coast Seafood processing plant in New Bedford.

MTC's Community Wind Collaborative continues to stimulate wind development clusters across a wide range of communities. Orleans, the most active of these efforts, voted to go ahead with a project, although the ownership approach still isn't finalized. MTC sought turbine suppliers through a request for proposal and received only one response that is still being evaluated. The town held a meeting in November relating to a developer solicitation to own and build the project. MTC will assign a turbine if one is successfully procured.

In Lenox, an early Community Wind participant, the town voted not to allow a meteorological tower, probably spelling the end for this effort.

Lynn, Falmouth, and Fairhaven are each evaluating feasibility study results and considering whether to take the next steps toward developing individual turbines.

And through a volunteer committee, citizens in the Towns of Mattapoisett, Marion, and Rochester are collaborating to erect temporary meteorological towers to test whether winds are sufficient in any of the towns' selected sites of Brandt Island, Old Rochester Regional High School, and the Marion Wastewater Treatment Plant to support a commercial-scale wind power installation.

Rhode Island

The Rhode Island Renewable Energy Fund has supported the installation or exploration of several behind-the-meter commercial-scale wind installations. A 660-kW turbine will be installed by this spring at Portsmouth Abbey. See Perspectives for an interview with the project's "champion," Brother Joseph.

The University of Rhode Island is moving forward with an effort to install a commercial-scale wind turbine on its South Kingston campus. This project builds on the efforts of the Student Renewable Energy Club, the project proponent. Club members conducted research, made presentations to the University's administration, and got administration buy-in on the project. The University is concurrently undertaking energy efficiency measures through a performance contract with an energy services company, and the university may fold the wind installation into this effort. The Renewable Energy Fund has provided the university with the anemometer formerly employed at Portsmouth Abbey to measure the wind in support of this project.

The Raytheon Company is undertaking a feasibility study with funding from the state's Renewable Energy Fund for installation of a few wind turbines at its Portsmouth facility. The Raytheon Employees Wildlife Habitat Committee maintains a Web site detailing the project at www.rewhc.org/wind/windhome.shtml

And in August, the Renewable Energy Fund approved funding for an anemometer to assess the viability of a site at the Narragansett Indian Reservation in Charlestown for a commercial wind installation.

Small Wind Corner

Several New England states have programs supporting installation of small (<50 kW) wind turbines. For more information on each state's programs, see the New England Wind Forum Web site at www.windpoweringamerica.gov/newengland.asp

Vermont has actively encouraged small wind installations through two programs. The primary incentive for small wind is the Vermont Solar and Small Wind Incentive (http://rerc-vt.org/incentives/index.htm), which was fully subscribed in August 2004 but is again available with a second round of funding. In addition, the Vermont Department of Public Service recently established a Wind Demonstration Funding grant program (www.vermontwind.com/Wind_Fund.pdf).

Vermont Technical College now offers an Anemometer Loan Program (http://web.vtc.edu/users/jnk06190/VTALP) to allow those considering installations to evaluate the winds on their property.

During the spring, a 10-kW turbine was installed at the Alburg Welcome Center with the help of a federal matching grant. It is the first wind turbine to power a state-owned facility. In the early fall, another 10-kW turbine was installed as a result of the Department of Public Service (DPS) program at the University of Vermont Burlington campus (www.uvm.edu/theview/article.php?id=1763).

Massachusetts supports small wind through a Massachusetts Technology Collaborative small renewable energy initiative, as well as funding schools to assess their wind power potential through their green buildings programs. MTC's small renewables initiative made three awards this year for 10-kW or smaller turbines. The first, a 1.7-kW African Wind Power 3.6 turbine,

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A 10-kW Bergey wind turbine installed at the University of Vermont campus in Burlington. Photo credit: Brian Killkelley

was installed in June at the Cape Cod Regional Technical High School in Harwich, as the focus of a Small Wind Installers Workshop sponsored by Cape and Island's Self Reliance Corp. (Workshop photos are available at www.vma.cape.com/~relweb/photogallery/photo30343/real.htm).

Rhode Island's small wind installation policies became more attractive this summer with the passage of a state income tax credit for 25% of the cost of a wind system up to a $15,000 cap. This new incentive is available on top of the $2 per watt available for small wind installations under the Renewable Energy Fund's open incentive program (subject to available budget).

Hot Topics

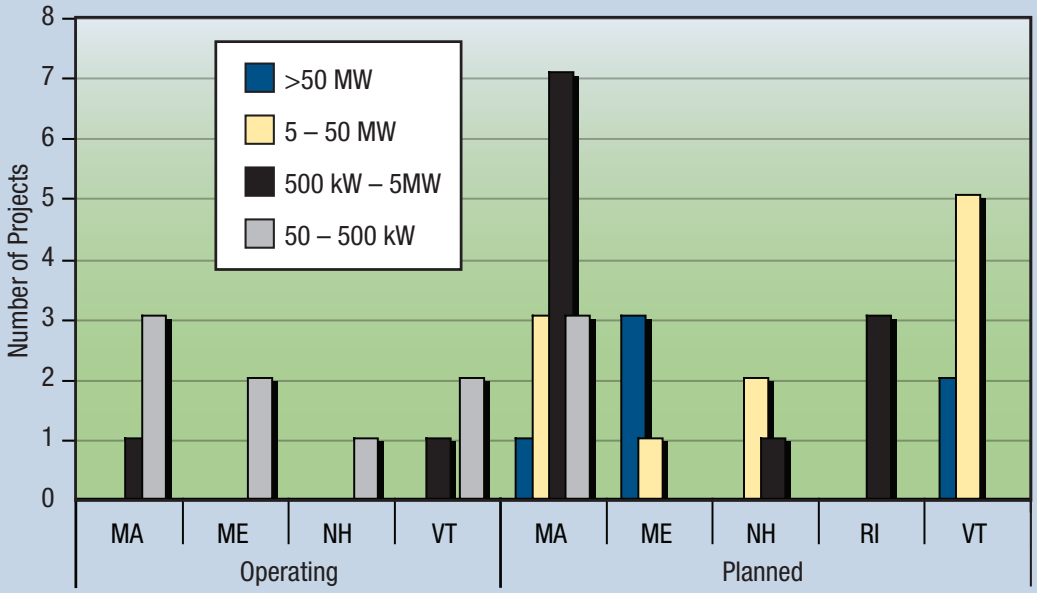
- **Wind equipment costs increase, availability dwindles.** Wind equipment prices skyrocketed just when high fossil fuel prices are driving an increase in demand and could drive more community receptiveness to siting projects. Factors include increases in worldwide steel prices, shifting exchange rates (most equipment is currently made overseas), and demand exceeding supply for turbines and other wind generation equipment in the world market. The boom-bust cycle driven by the intermittent Production Tax Credit exacerbates these equipment shortages as it undermines the confidence in the long-term market demand necessary to justify sufficient expenditures in domestic manufacturing capacity to keep up with near-term demand. Many wind projects nationwide, including several in New England, are struggling to find equipment, and smaller proj-

ects and developers appear to be at a disadvantage in securing available turbines. Manufacturers are reportedly telling project developers that their full production capability is committed through 2007 and are taking orders for 2008 delivery.

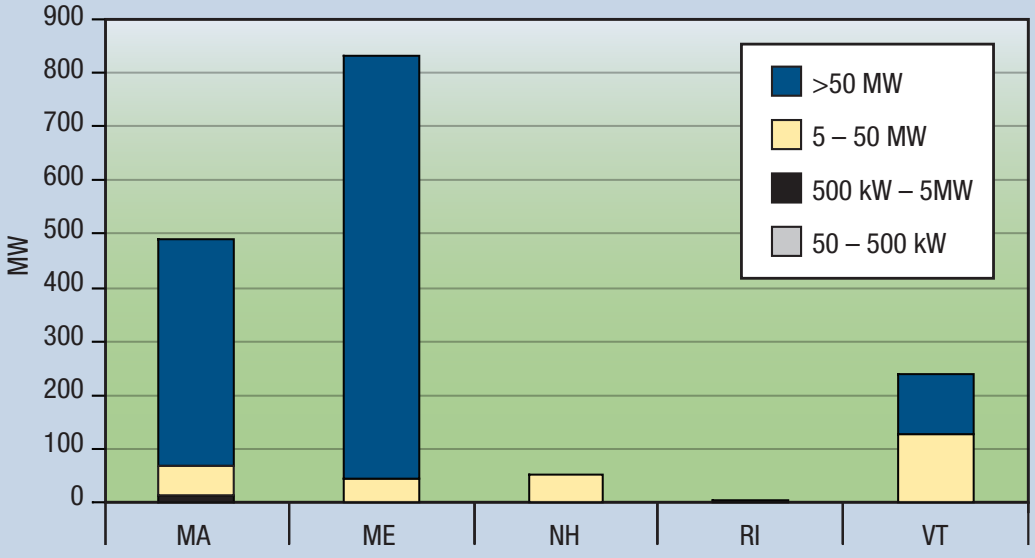
- **Wind power has job creation potential in New England.** Wind energy projects are generally quite capital-intensive and can keep more of the dollars spent on energy in the local economy (see the Union of Concerned Scientists Study, Renewing America's Economy at www.ucsusa.org/clean_energy/renewable_energy_basics/renewing-americas-economy.html). Even though today the commercial-scale wind turbines used in projects described in this newsletter are not manufactured locally, the wind industry is a growing source of high-tech jobs. For example, Northern Power Systems of Waitsfield, VT, makes wind turbines and drive trains. NRG systems of Hinesburg, VT, and Second Wind of Cambridge, MA, are leaders in wind assessment technology and software. TPI Composites of Warren, RI, manufactures blades. Composite Engineering of Concord, MA, is developing a new reaction-injection molded wind turbine blade for medium-scale turbines with DOE funding and plans to test prototype blades at the existing towers of the Princeton Wind Farm in Massachusetts. As larger projects move forward in the region, manufacturing appears set to follow. For example, many components of the proposed Cape Wind project are slated for local manufacture or assembly. In addition to manufacture, wind generator installations create jobs in the installation and service sectors. Several wind manufacturers have recently announced plans to open or expand wind equipment manufacture in the United States, including Gamesa (Pennsylvania), Clipper Windpower (Iowa), and Suzlon (Minnesota). The locations of these plants have been selected because of proximity to markets or transportation access to markets.
- **Energy education campaign attempts to brand clean energy into the mainstream.** An educational media campaign developed through the Clean Energy States Alliance, a collaboration of state clean energy funds including those in Massachusetts, Connecticut, and Rhode Island, attempts to bring renewable energy into the mainstream consciousness. The campaign (www.cleanenergyri.com), which was delivered via TV, radio, and print, was launched in Rhode Island in spring 2004 and continued through 2005. The message—Clean Energy. It's Real, It's Here, It's Working—responds to market research suggesting that the general public understands the environmental benefits of renewables but is skeptical about whether renewables are sufficiently powerful and available in sufficient quantities to make an impact in the mainstream. Lessons learned from the Rhode Island launch will be used to refine the renewable energy message and its delivery.
- **Wind is a hedge against high fossil fuel costs.** With fossil fuel prices pushing record highs and electricity prices following, the value of wind as a fuel-free price hedge is becoming broadly apparent for customers in competitive markets that comprise most of New England's loads. Tapping wind power as a hedge for customers is being examined. "Green" marketers are exploring how to convey this value to customers in the region's competitive markets. Customer aggregations such as the PowerOptions buying group of the Massachusetts Health and Education Facilities Authority and the Rhode Island Renewable Energy Customer Aggregation are exploring long-term hedge contracts with renewable energy generators or intermediaries. For more information, see www.windpoweringamerica.gov/ne_markets_motivations.asp .
- **Government and institutional purchases of wind or other renewables set an example.** A number of government entities have recently passed resolutions or executive orders to purchase 20% of their electricity from renewable sources by 2010, including 16 Connecticut municipalities and Worcester, MA. The State of Connecticut has taken these targets a step further, targeting 50% renewable energy by 2020 and 100% by 2050. In July, the Providence (RI) City Council took the nature of the commitment beyond policy statements by unanimously passing an ordinance that now requires 20% of the electricity used in municipal facilities to come from renewable resources by the year 2010. Meanwhile, in early 2005, Harvard's Kennedy School of Government committed to purchase 100% of its electricity needs from wind power, funded by a mandatory $5 per semester surcharge on each student's tuition bill.
- **Where can I buy wind?** Alternatives are available today to buy wind-powered electricity from electricity suppliers in Massachusetts, Rhode Island, Connecticut, and Maine. Links to options can be found at www.windpoweringamerica.gov/ne_markets_buying.asp

Wind Stats

Number of Projects by State
Operating and Planned



Wind Capacity Under Development
Planned MW by State



Market Prices for Wind Renewable Energy Credits

Price Applicable to Massachusetts RPS-eligible Wind RECs:

2005 Vintage: Bid $51.00/MWh, Ask $53.00/MWh

2006 Vintage: Bid $47.00/MWh, Ask $51.00/MWh

(Market information as of October 28, 2005 provided by Natsource LLC)

Events

- March 7-9, 2006: New England Sustainable Energy Association's Building Energy 2006, the Conference and Trade Show for Renewable Energy and Green Building Professionals at the Seaport World Trade Center in Boston. For more information: http://buildingenergy.nesea.org
- Massachusetts Wind Working Group meeting dates are posted at www.ceere.org/rerl/mwwg.html
- For a regularly updated calendar of other wind energy events in New England, visit the New England Wind Forum Web site at www.windpoweringamerica.gov/newengland.asp

Cool Links

In each issue, we'll feature links to a few cool Web sites. In the near future, additional links will be added to the New England Wind Forum Web Site.

- The New England Wind Forum: www.windpoweringamerica.gov/newengland.asp
- The KidWind Project: www.kidwind.org

  The KidWind Project is a team of teachers, students, engineers, and practitioners exploring the science behind wind energy in classrooms around the United States. Their goal is to introduce as many people as possible to the elegance of wind power through hands-on science activities, which are challenging and engaging and teach basic science principles. KidWind was founded in 2003 through a teacher fellowship at the Wright Center for Science Education, Tufts University. KidWind Workshops trained over 85 teachers throughout the northeast during 2004. They continue to host workshops in the region and have developed teaching kits.
- Watch a video clip of the first large-scale electricity-producing windmill (and the world's largest at the time), which was installed in 1941 at Grandpa's Knob, VT, at www.ceere.org/rerl/publications/movies/index.html
- Read an interview with Jim Manwell of University of Massachusetts, who was recently awarded the Wind Powering America Regional Wind Advocacy Award for the Northeast Region. Visit www.windpoweringamerica.gov/filter_detail.asp?itemid=1087

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