



[Rhode Island news](#)

Green power: R.I. coast rich with possibility for harnessing wind

11:27 AM EDT on Wednesday, August 15, 2007

By Michelle J. Lee

Journal Environment Writer



Seen from inside Portsmouth Abbey's wind turbine, Brother Joseph Byron talks about the efficiency of the device. The turbine provides an estimated 40 percent of the school's power.

The Providence Journal / Bob Thayer

PORTSMOUTH

The white, 164-foot-tall windmill at Portsmouth Abbey School can be seen for miles, its blades slowly turning in the breeze like a large pinwheel.

Closer up, the gentle swooshing hum can be heard in the school parking lot and open pasture surrounding the turbine.

Extra

The 660-kilowatt Vestas turbine, the state's only utility-sized windmill, has been up for a little over a year, said Brother Joseph Byron, who jokingly refers to his work as the turbine's caretaker as another full-time job. Brother Byron, also drama teacher at the school, answers 10 phone calls a week about the turbine and has given 50 tours to school groups and other visitors.



Your turn:

The Portsmouth Abbey turbine serves as a model at a time when public interest in wind energy seems to be gaining speed. In Rhode Island, 14 groups are in various stages of setting up wind-power committees and conducting feasibility studies.

[Would you use energy from alternative sources?](#)

The Rhode Island Wind Alliance, a coalition of 27 community groups, government agencies and businesses, was formed in December to promote wind energy and provide information on how to develop a large wind turbine, said Paul Sanroma, chairman of the alliance and Bristol Wind Power.

--- [Gallery: R.I. efforts to use energy from alternative sources](#)

And a study commissioned by Governor Carcieri has identified 10 offshore and one land site as ideal for future wind farms — part of Carcieri’s vision that the state generate 15 percent of its required electricity from renewable sources, mostly from wind.

[Demand for smaller turbines is in the wind](#)

The Portsmouth Abbey turbine cost about \$1.1 million to erect, but the state paid for \$450,000 of that through a renewable energy grant from the Office of Energy Resources. Despite being reliant on the sporadic winds, the turbine produces nearly 40 percent of the school’s electricity, in combination with energy-efficiency measures such as upgrading the school’s boiler and the lights in its dining hall, hockey rink, gym and auditorium.

More: [Read other stories in this 5-part series](#)

“This is a real workhorse machine. ... I think it’s beautiful,” Byron said during a recent tour.

The turbine is sturdy with a 30-foot-thick concrete foundation, he said. During storms and extremely high winds, the windmill’s blades turn at an angle and stop moving. The turbine also records the electricity it has made. During a recent tour, the counter read: 1,449,555 kilowatt hours — produced since March 2006. The school uses about 2 million kilowatt hours a year.

The turbine, which has won three environmental awards, starts producing energy when winds reach 5 meters per second, or 11.1 mph. It was most productive in January and February; during its best two weeks, it produced energy at 54-percent capacity.

The turbine has become a part of the campus community. Students use the energy data in class and cows graze in its shadow, Byron said. At Christmas, the turbine was decorated with a star made of electric lights.

THE STATE’S PLAN for wind power was encapsulated in a 132-page study, released in April, identifying the possible sites for wind farms — in waters off Block Island, Westerly, Charlestown, South Kingstown, Middletown, Newport and Little Compton. Little Compton would also be slated for a land-based turbine.

The cost for building these wind farms could range from \$900 million to \$1.9 billion, depending on location, cost of construction materials and other factors.

The wind study was done by Applied Technology & Management, a coastal, environmental, marine and water resources engineering firm headquartered in Florida. The report cost about \$380,000 and was paid for with money from a monthly utility charge and a \$150,000 grant from Florida Power & Light.

As a next step, the study recommends the creation of a group of residents, environmentalists and other community members to review the study and determine the best locations for the wind farms, said

Andrew Dzykewicz, commissioner of the state's Office of Energy Resources.

After that, the state would have to convince companies to build the farms.

"It's obvious we've got a great wind resource," Dzykewicz said in April. "We can easily accomplish that goal."

However, in June, the General Assembly turned down legislation to set up a state power authority, a quasi-state agency that would have issued long-term contracts and bonds to fund renewable-energy projects — making the state's wind plans uncertain. Dzykewicz said he plans to push for the power authority again in the next Assembly session.

While the study received positive reactions from several Rhode Island organizations, Henry duPont, a wind turbine installer from Block Island, said it might be difficult to lure wind companies to the state, given the high construction costs. He also said it could take a long time to gain the approvals and build the wind farms.

For now, duPont said, the state Office of Energy Resources should continue to offer grants for large wind turbines, similar to the one Portsmouth Abbey received.

"Instead of putting wind turbines in the ground we just study them," he said.

FOR CENTURIES, people have used the wind to grind wheat and other grains, power sailboats and ships, pump water from the ground.

In 1888, American inventor Charles F. Brush created one of the first large windmills to generate electricity and used it to power his Cleveland mansion. The turbine was 60 feet tall with 144 blades and produced up to 12 kilowatts for lights and three electric motors, according to the Web site of Green Energy Ohio, an environmental nonprofit group. The turbine lasted 20 years.

The demand for modern wind turbines, the ones used to generate electricity, started in the 1980s when the country's first commercial wind farms were built in Altamont Pass, Palm Springs and Tehachapi, in California, said Christine Real de Azua, a spokeswoman for the American Wind Energy Association, a trade organization based in Washington, D.C. By 1990, the wind farms produced 1,500 megawatts of electricity, Real de Azua said.

In the years since, the wind industry in the United States has grown from 1 megawatt in 1981 to 11,603 megawatts, enough to power 3 million homes, by the end of last year, according to the U.S. Department of Energy's Wind Energy Program and the American Wind Energy Association.

Despite the intense development, wind turbines still make up only about 0.8 percent of the total amount of energy consumed in the United States.

The top wind energy producing states last year were: Texas, with 2,768 megawatts, California, 2,361 megawatts, and Minnesota, 895 megawatts, according to a wind energy map on the U.S. Department of Energy Web site.

Internationally, the United States is the leader in new wind turbine installations and is the third-largest wind energy producer, behind Germany and Spain, according to the Global Wind Energy Council. Last year, more than 2,400 megawatts of new power generation, or \$4 billion worth, was installed in the

United States, according to the American Wind Energy Association.

Contributing to wind energy's growth has been a decrease in production costs from 80 cents per kilowatt hour in 1980 to 4 cents per kilowatt hour in 2002, according to the U.S. Department of Energy. Last year, the price of wind energy was about 5 cents per kilowatt hour. The cost of electricity from fossil fuels, in contrast, varied from 8 to 9 cents per kilowatt hour.

In Rhode Island, the places with good wind resources are along the coast and exposed hilltops. If 8 percent of the land is developed, it could produce 200,000 megawatts of electricity, enough for about 31 percent of the state's energy needs, according to a 2002 EPA fact sheet.

LOCALLY, THE desire to develop wind energy is strong, with 14 towns and other groups interested in setting up wind turbines to reduce municipal energy costs for schools, town halls and other buildings.

The Narragansett Bay Commission, which runs two wastewater treatment facilities that serve 40 percent of the state, is exploring the possibility of getting electricity from wind and methane gas.

At the Fields Point treatment facility in Providence, the Narragansett Bay Commission erected a 40-foot meteorological tower in March to measure the strength of the winds blowing from Narragansett Bay. The tower, which is on loan from Roger Williams University, has three anemometers — devices to record wind speeds.

The tower will monitor the winds until next year. If the data is good, with consistent wind speeds with a minimum of 12 mph, a 1.5-megawatt wind turbine, which would be 130 feet high, could be installed, said Tom Uva, director of planning, policy and regulations for the Narragansett Bay Commission.

While the tower is collecting wind information, a feasibility study is being done for three possible turbine sites. The price tag for the wind turbine is estimated to be about \$3.5 million, Uva said.

The wind turbine could provide 16 percent of the Fields Point facility's needs, according to a presentation by the Narragansett Bay Commission at the state's first wind energy conference at the University of Rhode Island in April.

"It all comes down to if it would be a good business decision that will help stabilize energy costs for us, which will go down to our users," Uva said.

At the Bucklin Point facility in East Providence, the commission plans to use methane gas from treated wastewater to produce electricity. The plant makes about 250,000 cubic feet of methane per day, which is currently burned to heat treatment tanks that contain bacteria, said Jim McCaughey, the Narragansett Bay Commission environmental manager. The new, more efficient way of using methane would be to put it in a micro turbine, which would reduce greenhouse gases and air pollution.

Both projects would be partly financed by \$2.6 million in Clean Renewable Energy Bonds from the Internal Revenue Service. About \$1.4 million would be used for the wind energy project and \$1.2 million for the biogas project, McCaughey said.

The IRS approved \$800 million in bonds for 610 renewable energy projects nationwide. The Narragansett Bay Commission and the town of Portsmouth, which also plans to set up wind turbines, were the only recipients in Rhode Island.

THREE OTHER GROUPS — the Town of Bristol, the Narragansett Indian tribe and URI — have also set up meteorological towers and anemometers to calculate wind speed. Those instruments are also on loan from Roger Williams University, which has been educating local communities and pushing the state's wind movement forward.

Lefteris Pavlides, director of the Wind Power Rhode Island Project and an architecture professor at RWU, has been helping to promote wind energy in Rhode Island. Some of Pavlides' work included a wind energy conference, various lectures and a public opinion survey in Bristol and Portsmouth, which showed strong support for building local turbines. His students have also created wind turbine simulations and helped with collecting data for local projects.

Pavlides, who has studied wind energy on his own since 2002, said the time is ripe for wind to play a strong role in developing energy. "Wind is established and you have serious production of electricity," he said.

Pavlides said the communities interested in setting up wind turbines should try to work together and share the costs of services such as engineering work, turbine shipping and installation.

Among the various municipalities looking into wind power, Portsmouth has made the most progress.

The town is working on a feasibility study for developing two 660-kilowatt turbines for the middle and high schools, and if approved by the town, a turbine could go up next year.

The project is estimated to cost \$2.6 million to \$3 million, said Gary Gump, chairman of the Portsmouth Economic Development Committee sustainable energy subcommittee. The feasibility study, which is being done by Applied Technology & Management, was financed by a \$25,000 grant from the state's renewable energy fund and should be completed this summer.

The turbines would help the schools save \$40,000 to \$80,000 annually in energy costs, Gump said. While the clean renewable energy bond would take 12 to 13 years to pay off, the turbines would be generating revenues from renewable energy certificates, which are sold to consumers, often through utilities such as National Grid, for energy produced.

"It looked and still looks like a positive move for the town to take," Gump said.

In Bristol, officials have identified six possible sites for an approximately 1.5-megawatt turbine, said Sanroma, chairman of Bristol Wind Power. A preliminary study by Pavlides and his students showed the town beach, landfill and the top of Mount Hope as potential sites for turbines. Sanroma said he is still collecting wind data and information about the town's electricity use to determine the best turbine size and location.

Local support for the Bristol wind proposal appears to be strong. Pavlides' phone survey, conducted last summer, showed that 84 percent of the 710 Bristol and Portsmouth residents contacted supported a wind turbine. Those results were reflected in Bristol's election last November when 76 percent of voters overwhelmingly approved a nonbinding referendum to build a wind turbine. Other communities, such as Warren and Middletown, are still whittling down the details of their proposals.

The Committee for Renewable Energy for Warren is looking to reduce the town's \$500,000 in annual energy costs, said Joseph DePasquale, a Town Council member and committee chairman.

“I like the physical tangible asset, being able to look at a windmill producing energy versus paying your energy bills,” DePasquale said. “The actual capital item seems to impress people.”

DePasquale said the committee needs more detailed wind data and is considering several sites, including the town waste transfer station, Hugh Cole Elementary School and Kickemuit Middle School.

The Middletown Wind Turbine Committee is researching the possibility of a 1.6-megawatt wind turbine to be less reliant on fossil fuels and offset the cost of municipal electricity, which is about \$502,000 per year, said Christine Weglowski Forster, the committee chairwoman.

An economic assessment by Middletown resident Peter Tarpgaard estimated the project could cost about \$1.8 million. The committee still must consider a site for the wind turbine and gather wind data. Sites under consideration include McAlister Point landfill, town and school properties and land trusts.

“I feel we are on the right track here,” Weglowski Forster said. “We looked at figures and locations. We’re ready to determine a location of the [meteorological] tower and to be able to present [a plan].”

AT PORTSMOUTH ABBEY, the wind turbine’s benefits have been substantial.

In its first year, the turbine made \$222,000 for the school through the sale of electricity into the electrical grid, selling renewable energy credits and reducing the school’s use of grid electricity. About half of that money came from lessening the dependence on National Grid.

There are times, such as at night, when the turbine produces more power than the school needs. That excess electricity is transferred to the grid.

Portsmouth Abbey initially looked at a wind turbine in the summer of 2004 after energy prices rose, Bryon said. The school worked with duPont, a Block Island wind turbine installer, who studied the school’s electricity use and advised them of the best model and site for the turbine. The school also worked with the state Office of Energy Resources to develop the financing model studying the economic benefits of putting up a wind turbine.

Byron said the school also did “extra homework,” by looking at the impact of wind turbines to the real estate market and having the Audubon Society of Rhode Island conduct a study to make sure the turbine would not harm birds.

During the process, Byron said school officials informed neighbors about the proposal. As a result, Byron said, several residents wrote letters of support to local newspapers.

“The really key thing is I went door to door and told them that we were going on it. ... If there were heroes in the story, it was the people in the town,” Byron said. “They took all the risk without the financial incentives. They did it because it was the right thing to do, eventually.”

The project got town approval for a special permit and zoning variance in March 2005. The wind turbine went up the following year.

“We lucked out and did it right the first time,” Byron said as he walked down the field away from the turbine. “It’s gone as well as it could have gone.”

mlee@pressofac.com

