



## Blowin' in the wind turbine: farms assess wind power

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Published: June 24, 2010

Wind power is about to get bigger on Martha's Vineyard, both in the number of operating turbines, and the size of structures themselves. Allen Farm in Chilmark and Northern Pines Farm in Tisbury, two of the Island's most scenic properties, have embarked on projects to generate power with one or possibly multiple 900 kilowatt (kW) wind turbines reaching 300 feet above the ground.



*A meteorological tower measures wind speed, direction, and air temperature, to determine if wind power is feasible at Allen Farm in Chilmark. The Times slightly enhanced the contrast in this photo to show the tower more clearly.*

*Photo by Steve Myrick*

By comparison, those turbines would be twice as tall as the one recently installed and now operating at Morning Glory Farm in Edgartown, according to Brian Nelson. Mr.

Nelson's company, Nelson Mechanical Design, is leading the feasibility studies at both farms.

The two farms are in the process of gathering meteorological data from meteorological (MET) towers. While a year's worth of data is needed to make conclusive decisions about the feasibility of wind power, the data gathered so far indicates both sites have average winds more than ample to produce electricity, according to Mr. Nelson.

### **Wind shear**

The Allen Farm MET tower is a slender steel structure supported by guy wires. It rises 165 feet above a hill behind the farm buildings. It is one of the highest hills on the Island. The tower is about half way between South Road and Middle Road.

There are anemometers to measure wind speed spaced at 30 meters (98 feet), 40 meters (131 feet) and 50 meters (164 feet), the top of the tower. There are also instruments on the tower to measure wind direction and air temperature.

Farm owner Mitch Posin has been gathering data since the tower went up In November.

So far, he likes what he sees. He says an average monthly wind speed of 6 meters per second (13.4 miles per hour) is the threshold level where wind power begins to become practical. So far, his data ranges from a low monthly average of 7.3 meters per second (16.3 miles per hour) in January, to a high of 8.5 meters per second (19 miles per hour) in December 2009.

"It's amazing," Mr. Posin said. "That's good."



*A meteorological tower at Northern Pines Farm is clearly visible from Lake Tashmoo. A proposed 900 kW wind turbine would be nearly twice as high as the tower. The Times slightly enhanced the contrast in this photo to show the tower more clearly. Photo by Nelson Sigelman*

According to the state's Renewable Energy Trust, the MET tower is part of a study to determine the feasibility of erecting multiple 900 kW wind turbines at the hilltop location. But Mr. Posin says that, while he has plans in mind, no decisions have been made. He said all data has been positive, and he is leaning toward moving ahead with the wind energy plan.

"Right now this data is going to help me with understanding the financing and what size windmill I want," Mr. Posin said. "The economics of it, what would be good or bad. We are just moving around slowly."

Mr. Posin received a \$41,000 grant from the Massachusetts Renewable Energy Trust for the feasibility study. He says he also got a \$10,000 grant from the United States Department of Agriculture.

His dream is to generate enough power so that he can sell it to other area farms. Schools might be offered power at a discount rate, if they buy food from the farms. If he spends the profits at stores owned by local merchants, the money never leaves the Island. Economists say this powerful multiplier effect contributes heavily to a sustainable economy.

### **Pines power**

The Northern Pines project is also collecting a year's worth of data from a MET tower. The 42-acre farm on the west side of Lake Tashmoo is one of the Island's largest agricultural tracts.

Mr. Nelson said average wind measurements show a different pattern than Allen Farm. "It's broader, slightly lower speed, but longer duration," Mr. Nelson said. Over the first three months of this year, wind speed averaged 6.3 meters per second (14 miles per hour), with a low in January of 6.1 meters per second (13.6 miles per hour), and a high in March of 6.7 meters per second (15 miles per hour).

The farm's vision is to generate enough electricity to establish several community supported agriculture (CSA) initiatives. They would include cold meat lockers to store fresh meat and year-round greenhouses. A 900 kW turbine would produce enough

electricity to supply all of the farm's buildings with power and possibly leave some left over to sell to other farms at reduced rates.

Northern Pines Farm received \$39,250 for the feasibility study from the state's Renewable Energy Trust.

While it is not clear what kind of grants will be available if and when the two farms decide to move forward with wind energy, right now the government subsidies are substantial. Similar projects have received money from state and federal sources, as well as a 30 percent tax credit on the price of the project.

### **For and against**

Wind turbines generate more than power, they generate controversy. At Northern Pines Farm, the town of Tisbury challenged the farm's right to erect a MET tower, taking the position that it was not a farm structure, Mr. Nelson says.

"The commissioner of agriculture was extremely concerned," Mr. Nelson said. He said the commissioner assigned his top legal counsel to support Northern Pines Farm, and eventually, a building permit was issued. Mr. Nelson says both projects have strong backing at the state level. "The commissioner of agriculture has made it very clear that he is going to fight to protect a farmer's right to put up a wind turbine."

While exempt from local regulatory review because of their agricultural use, both projects will likely be reviewed by the Martha's Vineyard Commission (MVC). The commission has created a district of critical planning concern, covering any land structure above 150 feet high. There is a moratorium on any wind structure while the commission and Island towns formulate regulations. The farms would need an exemption from that moratorium if they want to begin construction before regulations are approved. The farms are already preparing for an MVC review.

"We're focusing on the second phase of the study, which will be noise, and visual impact, transportation (getting materials to the Island), and economic factors. It's kind of finding that sweet spot where everybody's comfortable and it makes economic and Vineyard sense," Mr. Nelson said.

To evaluate the noise, audio sensors will be placed strategically around the property to evaluate background noise. Using manufacturer's specifications and a computer model,

it will be possible to project the noise level at any distance from the base of the turbine tower.

"We've been made critically aware of the noise issue as a prime component of what the MVC will be looking at," Mr. Nelson said. "We'd rather know what the issues are before we go for permitting, rather than get in the middle of it and find out we need more information."