

DENNIS WATER DISTRICT

Board of Water Commissioners

Minutes of Meeting held

August 10, 2010

A meeting, having been duly posted, was held this date at Dennis Town Hall, Selectmen's Hearing Room, Main Street, S Dennis. The meeting was called to order by Paul F. Prue, Chairman at 6:00 PM. Also in attendance was Commissioner Peter L. McDowell and the following District officials:

David Larkowski, Superintendent

Sheryl A. McMahon, Clerk & Treasurer

Water Commissioner Charles F. Crowell was absent.

Also attending was Tom Michelman, Principal, Boreal Renewable Energy Development.

Chairman Prue welcomed those in attendance and stated that the purpose of tonight's meeting was to hear a presentation on the Wind Power Feasibility Study conducted on behalf of the Dennis Water District. The purpose of this study is to determine the feasibility of erecting one or more wind turbines at a selected site. The selected site contains approximately 330 acres of watershed property owned by the District and is located in South Dennis north of Old Chatham Road, southeast of Airline Road and is adjacent to the Dennis-Brewster town line. The study examines the technical, environmental and economic feasibility of a wind turbine to offset the District's electrical costs necessary for providing water to the citizens of Dennis for fire protection and domestic use. The scope of work included a site evaluation, environmental impact analysis, recommendation of a wind turbine size, engineering and interconnection requirements and performing economic feasibility analysis. Chairman Prue reminded the audience that the Board would be meeting again on Thursday, August 26, at 6:00 PM at the Dennis Police Station at which time, the Board will consider acceptance of the final report, considers whether or not to construct a wind turbine and to receive public comment.

Mr. Larkowski opened the presentation with an explanation of why the District is interested in developing wind power. One of the largest budget items for the District is electricity which is used for providing water of good quantity and quality at an affordable price. What is being considered is a utility scale, "large" wind turbine. The goal is to determine if building a wind turbine of sufficient size can eliminate the District's electrical bills and sell enough surplus power to pay for the debt service to develop the asset.

The District's single largest track of essentially undeveloped land is a 330-acre parcel situated in a triangle lying between Airline Road and Old Chatham Road. Also lying in Brewster, adjacent to the Brewster-Dennis town line is approximately 150 acres of conservation land. How many turbines are possible? There is sufficient land according to zoning regulations to accommodate two turbines of approximately 1.5MW each. In addition, the site also has NSTAR's 100' easement for distribution power lines running right through it making it a prime location for an interconnection to put the power into the grid.

He went on further to say that the distance to the nearest residence is approximately 1,740 feet to a residence for a northerly sited turbine and 1,710 feet to a residence from the southerly turbine. Photo-simulations were done based on a turbine with a ground to blade tip of nearly 400'. Pictures of without the turbines and then with the turbines were displayed. The sites included the Dennis Police Station about one mile from the site; from the Ulrich farm looking straight down the power lines to the 330-acre parcel; from Willow Way at the end of Hemlock Lane where they appeared to just poke up from the top of a house; from Greenland Circle off of Airline Road which is about 1.5 miles from the site where the direction of the road faces to the development site; and from in front of Tedeski's on Rte 6A in East Dennis approximately 2 miles from the turbine where they could not be seen at all.

Mr. Larkowski reviewed the environmental concerns of this potential project. There are no wetlands that would be impacted by the development. United States Fish and Wildlife Service has stated that there are no rare and endangered species on the property but, they want to be included in future evaluations and receive updates on the progress of the project. An avian study was done for this spring's migration and there are no indications that the project would have an impact to the birds and bats in any significant way. The avian study will be continued in the fall to evaluate any potential impacts to the fall bird migration.

Mr. Larkowski acknowledged that one of the most noted concerns is the sound levels. A graph of average sound pressure levels/decibels was displayed. Thirty (30) decibels is the ambient noise level in the average living room. Office noise is around 60 decibels. An airport with jets coming and going is around 100 decibels. The model area was displayed with concentric lines indicating that the loudest noise of approximately 60 decibels would be at the wind turbine itself and then decreasing as the distance increased. Each ring represents two decibels. The Superintendent said that he conducted his own study by taking a meter out to the various sights and recorded the average ambient noise levels in the neighborhood which were found to be around 40-45 decibels. Even in so called "quiet" cul-de-sacs he was impressed with how much actual noise can be observed. He believed that, in some of the locations, one might be able to hear the wind turbine if the ambient noise in the immediate area is very quiet.

In terms of shadowing, also known as blade flickering, a diagram was displayed indicating the position of the sun at the equinox and the winter and summer solstices. It appeared that perhaps one subdivision might be affected during the solstice provided there were no trees in close proximity to the residence.

Permitting – What would be required? The local zoning requirements would require a special permit for this large scale project and a certificate of appropriateness would have to be obtained from Old Kings Highway Regional District Committee (OKH). He noted that Aquaculture Research Corporation is currently undergoing an application for approval from OKH. It was noted that an application for a determination by the Federal Aviation Administration has been submitted and other than installing a light at the top of the structure, the consultants do not anticipate any issues.

Another component of the study was to estimate the wind turbine's potential for generating electricity. The graph showed which models of turbines provide the various levels of power in

kilowatt hours over the course of the year. Conservatively, the calculations are based on P50 and P90 electrical power generation. The District needs to make sure that it can sell at least a minimum amount of power to cover the debt service and maintenance costs. The District uses 1.2 million kilowatt hours of power each year. The smaller turbines would not provide enough power to meet its needs as well as being able to provide sufficient surplus to meet the debt service. The economic analysis indicates that the turbine capacity would need to be at least 1.5 MW. A turbine of this scale would cost approximately \$4.1 million. Approximately 54% of the cost is the construction and bringing it to the site. There are also additional costs of interconnection to the grid and engineering. A cash flow chart with net metering was displayed. The red indicates the revenue from the sale of the power back to the grid (net metering) and the sale of Renewable Energy Credits (net of administrative costs). The estimated costs were displayed in blue. Mr. Larkowski pointed out that although the chart looks like it would not provide enough revenue to meet all of its costs, in actuality, the project would provide enough revenue to meet the costs and reduce the amount paid for electricity thereby saving the District money, even in the first few years. Based on the assumptions used, the revenue would eventually cover all of the costs. In the first year, there would be enough revenue to meet the debt service obligation and enough money to meet about $\frac{3}{4}$ of the current cost of electricity. For about 5-7 years the revenue will nearly make it. A graph indicating the revenue without net metering indicated that there simply would not be enough to make it a positive cash position. Under the normal scheme of things, the power sold back to the grid would be about 6 cents of kilowatt hour however, net metering allows those who can produce renewable energy to receive retail rate for generating the power back to the grid and at an average of 12.8 cents per kilowatt hour. It is the net metering that makes the development of wind power economically feasible.

In terms of milestones, the Board of Water Commissioners anticipates making a decision as to whether or not to pursue the project and what size would be appropriate to meet the District's needs.

In terms of deadlines, the next grant funding round for the design and construction of an alternative energy project such as this wind turbine is September 14. The potential amount of the grant is up to \$400,000.

The next step in constructing a wind turbine is for the District to obtain voter approvals for authorization and appropriation as well as filing the necessary permits. It will take approximately 18 months to 24 months from voter approval to actually turning on the switch.

When asked to provide additional comment and address any omissions, Mr. Michelman stated that Mr. Larkowski did not leave out very much because they had worked on the presentation together.

Chairman Prue asked for comments from the audience. Dr. Ingham, formerly a member of the Alternative Energy Committee, requested that the slide for the sound level contours include numbers. On the slide discussing wind turbine production, what wind database used for developing the estimates as he was aware that the land fill site needed at least one-year's worth of data. He also asked for the height of the turbine? Mr. Michelman responded by saying that Dr. Ingham was correct in saying that a year's worth of data was needed for the wind analysis. However, Boreal did have data available because of a private project that was done just 1.5 miles

away from the proposed site. Because the terrain was fairly consistent they were able to extrapolate the data with little modification. From ground to the tip of the blade is just under 400'. The public presentation of the ARC proposed turbine is about 240'.

Board of Selectmen Chairman Paul McCormick asked for further explanation of the request by USFWS for additional survey data. Mr. Michelman explained that within the scope of the feasibility study, letters were sent to environmental organizations explaining the project and asking if there were any threatened or endangered species in the proposed location. Although there are no on-site birds of concern, they are concerns about migratory birds. The USFWS would like to be on a consultative basis for a pre-construction survey to identify the potential for bird mortality. Susan Klein of the Alternative Energy Committee asked if the cost analysis included an inflation factor for the electric bills and the maintenance costs/sinking fund. Mr. Michelman responded that the benefits from the sale of power and the costs of maintenance included a 3.5% inflationary factor.

Mr. Bob Mezzadri of South Dennis asked if the \$4.1 million construction cost included a bond to dismantle the turbine should it be de-commissioned for whatever reason. Mr. McDowell responded that it would probably not be necessary as the District is the Town's public water supplier and wasn't going anywhere. He was assured that the fall zones are all within District property lines.

Town Administrator Rick White stated that the Town has been working on plans for stabilizing its energy costs however; the Town's schedule is long and protracted and may not yield the same benefits that the District is striving for. Mr. White asked if the Town could partner with the District to save money for both entities. He stated that based on the Town's interests it might be able to build its own turbine and be in a position to do the same thing as the District; cover the costs of its own electrical power needs and cover the costs of debt service by generating sufficient power to sell the excess back to the grid.

Mr. McDowell shared information he collected while in Oak Bluffs relevant to the sound levels that are generated by various wind turbines. He states that the turbine at the Massachusetts Maritime Academy is slightly less than 300 feet while the District's would be just under 400'. He said that he while on a trip to Oak Bluffs he observed at least five wind turbines visible from Buzzards Bay. In some views, the 300' turbines looked larger than the 400' foot turbines. Mr. McDowell believed that the development of wind power is important for the District to either reduce rates or at least keep the rates stable.

Chairman Prue thanked those in attendance and on a motion made by Peter L. McDowell, and duly seconded, the Board ***VOTED: 2-0-0 to adjourn the meeting at 7:04 PM.***

Respectfully submitted,

Sheryl A McMahon, Clerk