



Renewable Energy – NBC Wind Energy Project

The Narragansett Bay Commission (NBC) owns and operates Rhode Island's two largest wastewater treatment facilities – the Field's Point WWTF in Providence and the Bucklin Point WWTF in East Providence.

The NBC's Mission Statement is:

To maintain a leadership role in the protection and enhancement of water quality in Narragansett Bay and its tributaries by providing safe and reliable wastewater collection and treatment services to its customers at a reasonable cost.

Wastewater treatment is inherently energy use intensive and in an effort to help attain the goals of our Mission Statement NBC has embarked upon an aggressive sustainable energy management program focusing on both energy conservation and the use of available sources of renewable energy.

This series of NBC Sustainable Energy Use fact sheets has been developed to help educate and inform the general public and other wastewater treatment facilities on NBC's energy conservation and renewable energy use efforts.

Questions regarding NBC Energy Projects may be directed to 401-461-8848

(ext 352 or 329)

NBC Renewable Wind Energy

Municipal wastewater treatment operations utilize large amounts of energy. With current rising energy costs, safety and environmental concerns over the storage and use of conventional fuels such as liquefied natural gas, petroleum derived fuels and nuclear energy, it is essential that wastewater treatment facilities fully utilize available energy conservation techniques and alternative renewable energy resources.

Project Background & Funding

NBC began investigating the use wind energy in 2006 as part of a \$35,000 EPA grant funded project to identify energy conservation and alternative energy opportunities for wastewater treatment facilities (WWTF). This work resulted in NBC applying for and receiving an additional \$25,000 in grant funds, this time from the State of Rhode Island's Office of Energy Resources, to conduct a detailed Wind Energy Feasibility Study at the Field's Point WWTF.

Wind Resources

As part of the Wind Energy Feasibility Study NBC collected 24 months of on-site wind resource data using meteorological equipment loaned to NBC by Roger Williams University, investigated permitting issues and potential environmental impacts (visual, wildlife, and noise), conducted a cost benefit analysis, and researched wind turbine design, availability and cost. The overall study concluded that the Field's Point WWTF site has sufficient wind resources and an appropriate infrastructure to support up to three 1,500 kW utility scale wind turbines.

Federal Aviation Administration

In March of 2008 NBC notified the Federal Aviation Administration (FAA), which regulates the construction/installation of tall structures in the vicinity of airports (the Field's Point WWTF is approximately 4.5 miles north of the T.F. Green Airport) of the Field's Point Wind Energy Project. In January 2010 after much discussion with the FAA and with assistance from the Rhode Island Airport Corporation and an aviation consultant, NBC received FAA approval to install three wind turbines with maximum heights of 360 feet each at the Field's Point WWTF.

Public Support

In July 2009 NBC held two public meetings with neighbors of the Field's Point facility to discuss NBC's plans for utilizing wind energy. During these meetings attendees received information on the outcome of the NBC Wind Energy Feasibility Study and were shown a video simulating several

views of a working wind turbine at the project site. Overall the public has and continues to show enthusiastic support of NBC's use of wind energy.

Environment

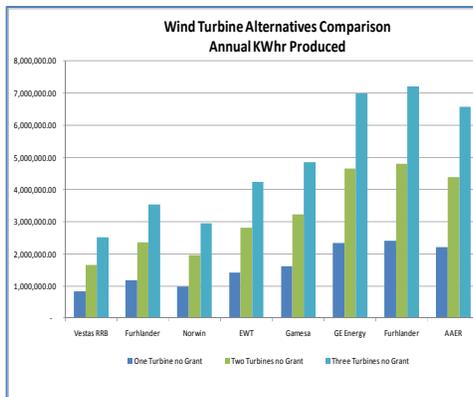
Air Pollution: Three utility-scale wind turbines located at the Field's Point WWTF can be expected to displace as much as 6 million pounds per year of carbon dioxide emissions and 17 thousand pounds per year of nitrogen oxides emissions. Carbon dioxide is an air pollutant that comes from the burning of fossil fuels. Nitrogen oxides are air pollutants that cause high levels of smog in our area on hot summer days.

Wildlife: The wind industry supports more research to better understand the extent of possible wildlife impacts at wind turbine sites, but those impacts must be balanced against the effects of not developing renewable energy sources and thereby aggravating the effect of global warming and air pollution on wildlife and their habitats around the world. NBC is investigating possible mitigating measures that can be taken to minimize impacts to birds in the area.

Noise: Wind turbines generate electricity from a natural, renewable resource, without any hidden social or environmental costs—there is no need to mine for fuel or transport it, no global warming pollutants created, and no need to store, treat, or dispose of wastes. However, virtually everything with moving parts will make some sound and wind turbines are no exception. A well-designed utility scale wind turbine is generally quiet in operation and the sound from such turbines is very low compared to that of road traffic, trains, aircraft, and construction activities. NBC has completed a preliminary Noise Assessment that details sound levels in the area.

Wind Resource and Economics

NBC estimates that three 1,500 kW wind turbines installed at total heights of 360 feet will be capable of supplying between 45 to 55 % of the current electrical power demand of the Field's Point WWTF. The electricity produced by these turbines will have a value (at current electricity rates) of more than \$800,000/year and will offset approximately 3,000 tons/year of carbon dioxide that would have been released from fossil fuel generated electricity.



This results in huge savings on the electric bill of the wastewater treatment facility. These savings are passed on to the rate-paying community in 10 cities and towns serviced by the facility since NBC is a not-for-profit public corporation. The total project cost to install three wind turbines in this size range is approximately 11 million dollars. They would produce an estimated 7,000 MWh/yr of electricity and associated renewable energy credits. The turbines are expected to pay for itself over their lifetime while easing the load on the local electric grid and displacing other fuels and their impacts. NBC is seeking grant funding from State and Federal sources to help offset the capital cost of the project.