

TOWN OF IPSWICH

UTILITIES DEPARTMENT



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WIND TURBINE #2: QUESTIONS & ANSWERS

BACKGROUND

A second wind turbine is proposed for the end of Town Farm Road. The goal of the project is to add affordable, clean energy to the Light Department's power portfolio, while at the same time **avoiding** a large capital expenditure, a public tax burden, or increased electricity rates.

The project began when the Light Department publicly issued a Request for Qualifications (RFQ) in order to determine whether a suitable private investor might pursue owning and operating a wind turbine in Ipswich. Five bidders responded to the RFQ. Members of the Electric Light Subcommittee rated each application according to specific criteria. D&C Construction of Rockland, MA received the highest overall score. D&C Construction is a well-established developer of wind turbines with a history of sound business practices in Ipswich, having been retained in spring 2011 to build Ipswich's first wind turbine.

Erecting a second turbine through a private-public partnership presents a win-win opportunity for the Light Department, the town of Ipswich, and D&C Construction. By purchasing the turbine's power output at a fixed 20-year rate, the Light Department would gain a new source of clean energy and a hedge against volatile prices on the open market. The town would earn \$1,030,000 in real-estate tax revenues on previously unproductive land. D&C Construction would benefit from owning the project's renewable energy credits (RECS) and from federal and state tax incentives that are only available for corporations, not municipalities.

TRANSPARENT PROCESS

What steps have been taken so far?

The project began with the public bid process, which led to selecting D&C Construction as the turbine developer. At the outset, the Light Department and D&C Construction mutually decided that the project would need to be comparable to or better than Ipswich's first wind turbine in terms of the financial impact on Light Department customers. This understanding remains a fundamental premise of the project.

In early 2011, D&C Construction and the Light Department collaborated on evaluating the engineering, environmental, and financial requirements of building a second wind turbine. A few parcels of land were studied as potential site locations, including two lots in the care and control of the Ipswich Conservation Commission. A warrant article for the spring 2011 Town Meeting was drafted in anticipation of possibly trading conservation land sought for the project for other town-owned land of equal conservation value. The matter was publicly announced in the Light Department's newsletter in April, 2011. The warrant article, however, was retracted to allow more time for project analysis and site studies. After further review, in September, 2011 a parcel of non-conservation land was selected as the optimal site for the second turbine. Consequently, a new warrant article was prepared for consideration at the fall 2011 Town Meeting.

What are the next steps?

A public vote at Town Meeting is required to authorize Ipswich to lease a specific parcel of land for the purpose of erecting a wind turbine. The Town Meeting will take place on October 17, 2011. Additionally, the Planning Board will hold public hearings to decide whether to issue D&C Construction a special land use permit. These hearings are tentatively scheduled for October 6, October 27, and November 17, 2011. Once D&C Construction is assured that the town will allow a second turbine in Ipswich, the company and the Light Department will finalize negotiations on the purchase power agreement.

Is the timing right for this project?

Yes. Ipswich has a unique opportunity to benefit from clean, local energy, without having to pay for the turbine itself. Yet, the project will only happen if D&C meets tight timelines in qualifying for federal incentives that are due to expire and will not be renewed. The loss of these subsidies, which amount to more than 30% of project costs, would render the project financially unworkable. The company has invested nearly \$80,000 to date and is proceeding on good faith that Ipswich will give timely approval of the land lease and the special land use permit.

IMPLICATIONS FOR THE TOWN

What is the risk to Ipswich?

Ipswich bears no risk. D&C Construction would fully absorb any losses in the event that the project stalls or the second turbine fails to operate. The Light Department's role would be to purchase power from the turbine if and when it is generated. If no electricity could be generated, then no payments would be made.

How would the turbine benefit the Town?

Ipswich would gain \$1,030,000 in taxes over the 20-year design life of the turbine, for use of land that was previously unproductive. In addition to paying taxes, D&C Construction would lease the land for a nominal fee. Apart from finances, the turbine would help establish Ipswich as a leader in clean energy and a champion of the climate and the environment, much like it has built a favorable reputation as a preserver of open space.

What would be the energy impact on the Light Department?

The second turbine would supply about 4% of Ipswich's electrical needs, or enough power to run the equivalent of 400 average homes. Importantly, the power would be generated from a clean, renewable resource (wind), instead of harmful sources like fossil fuels, or relatively risky ones, like nuclear reactors. The Light Department is responsible for maintaining a diverse portfolio of electricity sources in order to ensure reliability of service and to provide a buffer against price volatility in many energy markets. The second turbine would add diversification.

What would be the financial impact on the Light Department?

The Light Department would gain a purchase power agreement, through which it would buy the turbine's output at a set price for the life of the turbine. The agreement is not yet finalized, because two other issues must be settled first: whether the town will agree to lease the land, and whether the planning board will issue a special land use permit. Once it's clear that the turbine can be built, discussion will ensue about purchasing its power.

In order to negotiate a fixed, contractual rate, the Light Department has considered energy price forecasts for the years leading up to 2032. The process of forecasting volatile energy prices so far into the future is an inexact science, to say the least, yet it is also part of usual business given the Light Department's many long-term contracts. One possible final rate for clean energy from the second turbine is 10.6 cents per kilowatt-hour (kWh). Since the negotiated rate would be locked in for 20 years, it follows that the price would be higher than today's rates on the spot market. In other words, it's important to consider the average price of energy over the next 20 years, instead of looking simply at today's market price.

Three other important considerations are: (1) the second turbine will provide 4% of the Town's electricity needs, which is a relatively small proportion when considered as part of the big picture; (2) local power helps avoid the expensive transmission costs that must be paid when energy is purchased from distant sources; and (3) green power demands a premium price compared to energy on the spot market, in part because many people are willing to pay more in return for intangible benefits like reduction of greenhouse gases and pollution, energy independence, and safer generation methods.

How would citizens be affected, as tax payers and electric rate payers?

There would be no increase to the tax rate, because the purchase and installation of the turbine would be privately funded. On the plus side, the town stands to gain \$1,030,000 in real estate taxes over the 20-year design life of the turbine. Increases to the electric rate are not expected either. The project is forecasted to be competitive with existing market rates over time. (According to the June, 2011 rate comparison by the Massachusetts Municipal Wholesale Electric Company, the electric rates in Ipswich are the 4th lowest in the Commonwealth compared to those of nearly 60 private and public utility companies. The Light Department is proud of its track record of keeping rates very low and will continue to make this a priority.)

Is having a turbine consistent with the Vision Statement for Ipswich?

The Town's published vision statement urges residents to be "progressive and innovative" with specific mention of renewable energy and wind power. Additionally, the Ipswich Climate Action Plan, approved in May 2011, calls for using renewable energy in place of fossil fuels as a critical means of shrinking the town's carbon footprint.

TURBINE OWNERSHIP AND OPERATION

Who would own the turbine?

D&C Construction of Rockland, MA; a company that develops wind power, would own and operate the turbine.

Could the Light Department buy the turbine later?

Maybe. The Light Department is considering whether to have an option to buy the turbine. If an option to buy becomes part of the purchase power agreement, and the Light Department opts to exercise it at some time in the future, then an independent party would appraise the turbine's value to determine an appropriate sale price. Town bylaws would also require the transaction to be approved by the Ipswich Finance Committee. If the Light Department takes ownership of the turbine, then the Department would automatically own all of the valuable electricity being generated and would also pay land use taxes to the Town.

Who would maintain the turbine?

D&C Construction employs people who are professionally trained to maintain the turbine and supply required parts. In the event that the Light Department opts to purchase the turbine, a maintenance agreement would likely be signed with D&C Construction.

ENVIRONMENTAL IMPACT

How would the turbine affect the environment?

Wind power – the most environmentally friendly electricity generation technology available today – creates energy without the byproduct of pollutants. It is a clean energy that doesn't contribute to global warming, acid rain, air pollution, or radioactive releases. Clean energy from the proposed turbine would offset electricity that must otherwise be made from harmful fossil fuels (oil, coal, natural gas) or nuclear reactors. By generating more than 98,400 megawatt-hours over its 20-year design life, the turbine would enable Ipswich to avoid 87 million pounds of carbon emissions.

Would the turbine present a risk to birds and bats?

An environmental study of the proposed site concluded that there would be no risk to migrating birds. Modern turbines are unlikely to attract birds, because they have smooth towers and no perchable areas. Birds are substantially more likely to be harmed by oil slicks, acid rain, mercury poisoning or climate change, all of which result from traditional methods of energy production. Regarding bats, which differ from birds in terms of flight patterns, the Light Department is monitoring the effect of the first turbine: 6 fatalities were discovered during the first 3 months. During that time period, the base of the turbine was illuminated by a floodlight, which attracted insects – and hence bats. Corrective action seems to have alleviated the problem. The floodlight is no longer used, the occurrence of bat fatalities has curtailed, and daily monitoring continues.

TURBINE AND SITE INFORMATION

Where would the turbine be situated?

The project is sited beside the compost facility at the end of Town Farm Road, on non-conservation land owned by the town of Ipswich. The second turbine would be located about 1,500 feet from the first turbine, on land that is 30 feet higher in elevation. The nearest private residence is nearly half a mile away.

Is there sufficient wind at this site?

Yes. The extensive meteorological and wind studies that preceded the first turbine were used to extrapolate the wind requirements for the second turbine. Additionally, the type of turbine selected for the proposed project is sized and engineered to perform optimally with the type of wind resources at the site. Wind is an inexhaustible resource and something that many communities can't access for reasons related to terrain or geographic location. Ipswich is different – it is uniquely positioned to harness clean energy from coastal winds, as evidenced by the fact that the first turbine is performing to expectations, having generated more than 375,000 kWh since May 18, 2011.

Could more turbines be built at this site in the future?

The Light Department does not foresee the possibility of a third turbine on the site, for reasons related to the formation of the land.

What would the new turbine look like?

The proposed wind turbine is a 2.0MW model made by Hyundai. Well-suited for the site, this model is new to the market and was not available for consideration when the first turbine was built. Compared to the first turbine, the second one would have the same tower size (80 meters) and blade shape; the hub would be slightly larger; and each blade would be 2 meters longer. As is the case with the first turbine, the blades would turn relatively slowly at 10-20 revolutions per minute.

Are wind turbines safe?

Modern wind turbines are designed with a variety of safety systems, including 24/7 monitoring, automatic sensors, and redundant braking systems. The turbine proposed for Ipswich would meet international and Massachusetts standards for safety. There are more than 1,000 wind turbines installed in the New England region, and none of these have caused a human fatality.

What is the risk of weather-related damage to the turbine?

Inclement weather is not a concern. Turbines are built to withstand the windiest sites, which produce the most electricity, and high salt conditions. (During hurricane Irene, the first turbine remained operational, turning the tropical winds into valuable power for Ipswich.) The structure will also be equipped with a lightning rod and will meet national and international standards for fire and lightning safety.