Summary of Presentation
Green Committee/Renewable Energy Research Lab
March 25, 2008

The Board of Sewer Commissioners attended a presentation by Charles McClelland and Mary Knipe of the Renewable Energy Research Lab at UMass Amherst. About 40 people were in attendance including the presenters, members of the Green Committee and other Town employees, elected and appointed officials.

Mr. McClelland started the presentation by reviewing that solar power is 25% more expensive than wind power. He reviewed nuclear reactors which seemed irrelevant to the topic. He stated that coal reserves will be available for only about 155 years and that the use of coal as fuel damages the environment and far outweighs the cost savings for this type of fuel. Sulfur and nitrogen oxide emissions cause acid rain. Mercury contamination causes about 30,000 deaths annually from particulates that are generated from burning coal. Global warming thaws the permafrost and that releases methane into the atmosphere.

Kingston is proposing a need for 1660 kilowatts, which would be a 1.5 MW generator. The taller the turbine the more power it is rated for. A 1.6 KW generator has a hub height of 260 feet (15 stories). With good wind it can generate enough energy for 400 to 500 homes. The blades are 75 to 100 feet long, which adds to the total height. The base of the turbine only is 10 to 15 feet in diameter. The average cost of wind energy is about 5 cents per kilowatt hour. The economic incentives would be that the Town would be able to avoid volatile fuel prices and avoid over reliance on fossil fuels.

Some of the abbreviations used are as follows:

- RPS = Renewable Portfolio Standard
- PTC = Production Tax Credit – per kilowatt hour tax credit
- REC = Renewable Energy Certificates – These can be sold
- RGGI = Regional Greenhouse Gas Initiative

Most of the wind resources in Massachusetts are offshore. Kingston would still need to do further research on wind speeds, noise and aircraft patterns. Important bird migratory patterns and habitats are mainly offshore.

The turbine faces the wind, which avoids the thumping that was common in early turbines that faced away from the wind. The nacelle part of the turbine is also soundproofed. A 1.6 MW turbine would have a 300 meter radius where you would not want anyone living within this area. Noise would be a concern inside this area. REPP.org states that property values increase within sight of a turbine.

Some examples of turbines in different areas of the country were shown. They were mainly located in isolated areas with no buildings and roadways in close proximity. Website information provided was www.ceere.org/rerl and windpower.org .

Mr. McClelland discussed that the cost and payback average was between 8 and 12 years depending on the project cost and the wind resources. The life expectancy is 20 years.

Q – What is the decommissioning cost?

A – Recycling of the turbine usually recovers the cost of decommissioning it. (This comment seems to be an assumption since the cost of both is unknown.)

Q – What is the noise level in decibels?

A – At ¼ mile away (about 1500 feet) it will sound like a refrigerator running. It cannot be more than 10 decibels above the ambient levels of noise at the property line.

Q – Is it true that current legislation does not allow the power to be transmitted across a roadway? Would the Town only be able to use the power at the WWTF and the rest would be sold to the grid?

A – If the legislation passes then the power could be allocated to other accounts. The State session ends July 31, 2008 and they are hopeful that this will pass.

Q – Is it possible to plug the WWTF directly into the turbine?

A – No. The power goes to the grid first and then to the WWTF.

A 1.6 MW turbine would be 400 feet high from the tip of the blade to the ground. The rule is to locate the turbine 3 times the tip height to any buildings to mitigate the effects of noise. The Kingston By-Laws propose a distance of only 1.5 times the height of the turbine because the noise from the highway and the surrounding terrain are offsetting factors. Tom Bott added that 1.5 times the height is considered the fall zone and the ice throw zone.

Q – Have any turbines actually reached the 20 year lifespan?

A – Some have reached their lifespan at less than 20 years and some have gone past 20 years. Replacement usually occurs in order to use a more efficient model rather than for structural problems. Wind turbines in Massachusetts are designed to withstand Class 2 and 3 hurricanes.

The average wind speed in Kingston is lower than 6 (3 meters per second to 9 meters per second). The turbine would be producing energy about 80% of the time. Moderate wind speeds would be producing at 23% but would be economically viable.

Ice Shed – Modern Turbines detect when the blades are off balance and will shut the unit down. When the ice melts it will fall off to the base of the unit and the turbine will resume operating. Usually the pieces weigh less than a pound or two.

Q – Is there any other residual equipment or buildings required on site for the turbine?

A – Any other residual equipment needed on the site is usually a small control shed near the base of the turbine, but it would fit within the concrete footprint. The concrete pad is about a 50 foot radius concrete base.

The turbine would be barely viable without new legislation. With the legislation the Town would see about $500,000.00 in revenue. A preliminary cost feasibility study is being done. Several options such as Public Ownership and Leasing to a Utility Company

for a reduced energy price and a small leasing rate are being considered in the study. The most viable option is for the Town to own the turbine.

Mr. Spires stated that the Green Committee wants to seek legislation to form a municipal light plant in order to get grant money to get a better understanding of what kind of unit to buy, how to run it and so forth. The Green Committee is not involved with the financial aspects of the energy produced and being sold. They are looking into whether it is feasible to obtain a turbine and how to obtain grants.

Q – Is this the first meeting the Green Committee has held?

A – Yes. Mr. Spires said no, that there was a meeting last summer and that the Green Committee conducts regularly posted public meetings. The minutes are on the Town web site.

Today is March 25th and Town Meeting is April 5th. Many people don't have any information that is needed to vote on Article 26. Mr. Spires replied that they are not talking about money now. They want to get another $150,000.00 in grant money to decide if it makes sense to build a turbine. He was reminded that Article 26 does refer to borrowing money. The Green Committee does not know now what will be done or what the cost would be. There is a 2 year waiting period to order and obtain a turbine. The zoning articles will not be moved. Such a project would probably be 3 or 4 years away from happening. It was unknown if there is grant money available to purchase a turbine. The Mass. Tech. Collaborative offers to buy Renewable Energy Certificates, which have a market value. The MTC would buy them through a contract over a defined period of time.

The meeting concluded at approximately 8:45 PM.

Suzanne Richards
Administrative Assistant