Energy and Water Conservation Committee
June 17, 2009 – 5:00 pm

Attendees: Chairman Lutz Wallem, WT Bishop, Marty Robbins, Waltraud Wallem, Susan Chenard, Stephen LaFrance, Joe Chenard, Charles Chenard, Mike Donahue, Dave Beaudin, Mary Conn, Jim Spanos, Tom Smith, Paul Kasianchuk

The meeting was opened at 5:06 pm by Chairman Lutz Wallem. After a brief introduction, he gave the floor to Steve LaFrance, who would speak about a wind turbine at his home and a project up north in which his company, Horizons Engineering, was involved.

Windmill at Home

Steve LaFrance first described the small wind turbine he has at his home. It has a 12 foot rotor diameter and is on a 50 foot tower on his front lawn. It is made by Sky Stream and has a 1.8 kilowatt turbine. This means that when it spins at full power, it would run 18 100-watt light bulbs. Steve is on a net metering program with his power company, PSNH. If the turbine generates more power than he uses, it spins the meter backwards and reduces his bill. Steve explained that when it is running at full output, the windmill will run a hair dryer at most, as he was able to observe one day. His windmill produces about 1/3 of his personal energy. He does have a good open site and breeze, and did all of the work himself. Still it cost about $12,000, so will take 15-20 years to pay back that investment. He put his wind turbine up more to save energy and the environment than for a quick payback. (He explained that the next size up would be 30 kilowatts, have a 30 foot diameter, and would cost about $30,000, so it would more likely be used if someone lived on a mountaintop and had no other choice for power.) Tom Smith asked if Steve could disconnect from PSNH and run on a windmill's power, but Steve said the cost outweighs the benefit. Steve's windmill will shut off if the power company has a blackout, as he does not have a battery for storage at his home. He explained it was hooked into a breaker in the panel at 220 volts. An 8 mph wind will start the turbine, and it goes up to 45 mph, but then locks up again for safety. It will check wind speed again after about 5 minutes and restart if possible. His turbine turns away from the wind, which is known as a downwind style, direct drive. It is on a tip-down tower, for maintenance needs, but Steve hasn't done any in years. Steve's town of Stratford does not have any zoning regulations, so there were no issues with putting a windmill up. At 50 feet, other towns do have ordinances. This windmill makes a low-pitched whine when running and a slight chatter if it is very windy.

Steve opened the conversation to questions at this point.

Tom Smith asked if Steve had heard of someone, living on a mountaintop, who had a windmill and solar power. Steve had no, but said you typically would want both if by yourself.

Marty Robbins asked if one could receive a government subsidy now that wind power is becoming more popular. These are available now. For example, New Hampshire Electric Cooperative's website mentions a $3,500 incentive. The Federal government now also has tax incentives available.

Jim Spanos wondered how difficult it would be to get replacement parts, worrying about if the company would stay in business. Steve said he used Southwest, which is a larger manufacturer, but then so was GM, etc. Basically, though, the windmill is a generator run by wind rather than by a belt such as an automobile alternator. The nacelle weighs about 250 pounds while being fairly small.

Mike Donahue asked about the efficiency of vertical windmills, and Steve said that they tend to be more expensive. Steve also explained the capacity factor; how much power you can expect to get out, given that the wind does not run full-time. This gets more important for financing larger projects.

Marty asked if there was an option to lease windmills, which Steve confirmed.

Dave Beaudin asked what regulations Steve had come across for personal windmills. Regulations are typically created when one person has a great idea and another one says why it won't work. Steve hasn't heard of many regulations in New Hampshire, but had heard of someone on the Jersey shore who had a 33 foot windmill. A neighbor some 50 feet away went to the local zoning board, and now there is a regulation on the distance to neighbors.

Dave also wondered how to know if there was enough wind at one's own house. Steve explained that in New Hampshire, the Presidential Range ridge tops are a good location per the wind maps. The wind here comes from the west, so look to the west and plan to see at least 15 miles for it to be worth installing a windmill. It should also be above the tree line, in front of and behind it. His own windmill works well from September to June, while it is very quiet in July and August.

Larger Windmill Projects

Lutz Wallem recently spoke with Paula Tracy of the Union Leader regarding a larger windmill project by Granite Reliable Power proposing to put up 33 towers in the Dixville Notch area, north of Stark. He asked Steve LaFrance to tell us more, as his company, Horizons Engineering, is involved in this.

Steve explained that the project will be on an 80,000 acre parcel of land, owned by two timber management companies, and is slated to cost about $275 million dollars. Each turbine can produce 3 megawatts, which is enough to power 3,000 homes. Steve showed the group a scale model of these windmills, which are made by Vestas, a Dutch company. Each actual turbine is 410 feet tall and has three blades of about 133 feet in length. They are upwind turbines, so they turn into the wind with power inside. They look like they spin slowly, which they do, because they have a gear box inside. Construction is slated to begin at the end of this year and continue into next year, as it is a 2 year project. Steve showed the group a photo from 3 miles away which depicted a projected view of what the project would look like. He also showed us a layout map of the 3 ridgelines to be used. He explained the turbines cannot be next to each other as each will influence the wind to the next. The turbines are aligned on a north-south axis as the wind in that area typically comes from the northwest.

These turbines will be wired together underground and then connected to a substation, which ties into the Coos Loop of PSNH. The power can then go from here in Coos County all the way to Florida. The windmills make power when the wind blows, so if it doesn't get used here, it needs to be used elsewhere.

Most windmills are located in open areas, but there is one in Boston by the Electric Guild, and Marty saw them in Palm Springs.

Steve noted there is another windmill project up and running in Lempster, NH. It is an 18 megawatt facility, with about 6 turbines. He explained that the turbines need to be placed carefully, not at the front or back of a mountain range top, but rather more towards the middle, where the wind goes across the top. Steve also said that typically, these turbines will generate about a 1/3 of their possible power.

Marty asked what the downside would be to a larger project. Steve explained that any time you do a project over 30 megawatts; you need to go through a public process, which includes a site evaluation committee process. The Granite Reliable Power (GRP) project was just approved 2 weeks ago. Concerns raised included impact to high elevation habitat and avian mortality. Similar projects were monitored in Vermont and Maine and did not have much bird kill. (Some in California did have issues with raptors.) Studies detected and measured wind, checked how many birds and bats were present, and at what height, and considered aesthetics and noise. The GRP windmills are about 10 miles from the nearest structures.

GRP also had to invest in a mitigation package, which included buying 1800 acres on other ridge tops, giving money to NH Fish and Game to buy more land, and planning $200,000 for post construction studies. Marty wondered how one goes about financing such a package. Steve responded that they couldn't talk financing until the permits are in place. Most likely it will come from private investors and hedge funds, with renewable energy credits and selling power being the return on investment. The return on investment is not public info, but the company did say that this is a more attractive package than most.

Lutz asked how to find a good location for a wind power project. Steve responded that one should first look where there is enough wind, then where to hook into the power system; therefore one could not look at the National Forest. GRP will tie in at 13-mile Woods off Route 110A. This project will use up the rest of the capacity in these power lines, and the next user would pay roughly $135,000,000 to add more lines. The new laws requiring that 20% of power should come from renewable resources by the year 2025 include biomass or wind power, but power from Hydro Quebec would not count. There are a couple bio-mass plants planned in Berlin who hope to share the power line. Beyond that, those lines will be maxed out.

Steve felt that GRP construction would most likely occur next year, though site work may start this fall. One turbine alone costs $10 million to install and another $10 million in preparations, so this is a massive undertaking.

Paul Kasianchuk asked about the operation at Jiminy Peak. They apparently want to install large windmills on the top of their ski slope. He wondered if that would make sense here. Steve explained that it is difficult to put on a windmill on Loon Mountain, as it is in the National Forest. He did feel that Forest Ridge and some places in Woodstock would make sense. The first thing to do would be to put up a "met" tower and measure wind over the course of a year. This will tell you how much power you could generate. He just put up a met tower yesterday for a logger in Berlin who has land and money.

David Beaudin asked if the climate change helps or hinders wind power. Steve said that he read that it is reducing wind somewhat, but wondered if wind is being reduced because of global warming or some other causes.

Lutz asked if other products could put windmills out of business because they are more efficient. Steve felt nuclear power was most efficient. Lutz clarified that he was asking about something dealing with wind specifically. Steve felt that wind power will continue to grow, and is most efficient on the seacoast and prairie.

Marty wondered if Canadians are getting involved with wind power and Steve said that there are large parks in Ontario now.

Lutz thanked Steve for coming and after leaving some information for everyone, Steve headed out at 5:50pm.

Lutz asked the group to now turn to the rest of the agenda.

1. Approval of last meeting's minutes – A motion was made by Jim Spanos, seconded by WT Bishop, to accept the minutes as written. The vote was unanimous.

4. The Town of Lincoln signed an agreement with Glacial Energy to save $18,000 to $30,000 in electric costs per year. The average rate over 12 months through Glacial will be 8.4 cents per kilowatt. The town will have 30 days to opt out of the agreement at any time. A spike in costs is very unlikely unless there is an international crisis. Glacial would hook up all 25 Town meters, while the competitor quoted only the 6 biggest meters. The Town had asked for new estimates after seeing information on the water plant savings. The Selectmen approved this agreement and look forward to the savings. Marty wondered if there had been any talk about investing the saved money into making improvements that were suggested at the energy audit last year.

5. There was a discussion of the audit of Marty's unit at Clearbrook and resulting energy saving suggestions by Bob Tortorice. The committee would like to see the system of audits and estimates known to the roughly 20 condo associations in town. Marty thinks Bob wasn't that excited, as he did not respond immediately to Marty's request for an audit. Bob did meet with Roz Lowen and she had the work done that Bob had proposed. A contractor did an estimate and the work. Roz took pictures of the scope of this work. She is happy with the improvement she could already see in this weather. Since the last

meeting, a friend of Marty's had insulation installed in a wall from the kitchen facing the street, which had no insulation. The contractor did just that wall in 2 days. Marty' friend doesn't have a bill for the work yet, but feels it will be reasonable. He also seems to feel a difference in the draft through that wall already. Marty feels we should not recommend just one company or person, as Bob does not seem to respond quickly and needed a push by Lutz to do so. There was also some discussion of the draft regulators that can be obtained on commercial properties through Stanlin Energy, another company with whom Lutz is working.

6. Lutz explained that renewable energy credits are now available through Glacial Energy for .24 cents ($0.0024) each. If the Town wanted to be an investor in the Green Energy Movement, it might invest approximately $4,000 (or the projected 1,600,000 KWH annual usage at .24 cents), from the newly generated energy electricity savings of approximately $18,000 per year and mention this on the Town's website, in promotions, on its letterhead, etc. This might need a Town Warrant Article at next year's Annual Meeting to see if the citizens would approve that expense. The estimated, average cost per KWH would only increase by .24 cents from 8.5 cents to 8.74 cents. Lutz also suggested committee members should read the Selectmen's meeting minutes of June 8th, 2009, which are located on the web at www.lincolnnh.org.

7. Other Business – There was none, but Lutz noted it was very nice to have a bigger turn out tonight. This shows interest in what the committee is doing.

A motion to adjourn was made at 6:14 pm by Tom Smith, seconded by WT Bishop. The vote was unanimous.