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September 20, 2012

Frank DeFiore, Planning Board Chair
Rick Kavanagh
Helen Larson
Pete Hellier
John Sayegh, Planning Board Members
Town of Allegany Town Hall
52 West Main Street
Allegany, NY 14706

Re: Everpower request for change in turbine type

Dear Frank and Board Members:

On Monday, September 10, you heard from Everpower regarding modification of your July 11, 2011 project approval to accommodate different turbine types. Everpower asserted at that time that the changes for which it is seeking your approval would not result in any additional potential impacts. Where project changes do not involve additional adverse impacts, the Planning Board may issue a "negative declaration," declaring there will be no potential additional adverse impacts, and approve the modification without further process. However, if there could be additional adverse impacts, compared to those considered prior to July 11, 2011, the Board is authorized to ask Everpower to prepare a Supplemental EIS addressing the potential effects of the requested changes.

CCCC believes that utilizing larger rotors, as all variations of the change Everpower is seeking would require, result in several incremental increases in other project specifications that, taken together, have the potential to increase the adverse impacts of road routes, turbine pads, runoff of pollutants (including sediments), noise and shadow flicker. This is contrary to Everpower's informal representation, that utilizing larger rotors will result in no more than minor changes, and no increased impacts. Accordingly, we urge you to request a Supplemental EIS, to address the following issues; doing so will allow for public comments that could help the Board determine whether the requested change should be approved:

1. Your findings in support of project approval last year, at p. 7, anticipate "temporary road corner radii of 200 feet." This expectation is based on the transport of turbine blades substantially shorter in length than those now proposed. Will the proposed change result in transport of turbine blades that cannot be accommodated with road corner radii of 200 feet? Will there be other points in the approved road route that cannot accommodate the increased blade

length and town length?

2. Larger blades also weigh more, and thus require stronger concrete anchoring pads. Larger blades, by extracting more energy from the wind, result in higher torque on the machine, and thus increased stress on the foundation. Your findings on the original project proposal anticipate that the concrete foundation for each turbine site will be round, with a radius of 200 feet, and a depth of 10 feet.

How will larger turbine blades affect the design of turbine foundations? How will larger turbine blades, and an increased volume of concrete needed for larger pads affect the number of truck trips required to the site, and any commensurate changes in the loading stress on area roads?

3. If the turbine foundation must be larger than previously approved to accommodate larger turbine types, will this also alter needed erosion and sediment control measures, set forth in the original Stormwater Pollution Prevention Plan and the original Sediment and Erosion Control Plan?

What hauling, staging and construction changes that may be required as a result of larger rotors could result in changes to these plans?

Does the need for larger turbine foundations increase the likelihood of blasting?

4. Your findings, at Section 3.2, anticipate that Everpower will comply with all guidelines issued by New York State Department of Agriculture and Markets, for area disturbance or construction in agricultural districts, and in areas with active agricultural even if outside an Ag district.

A portion of access road (0.8 mi.) and associated buried interconnect and transmission line cross into Agricultural District 7. Two turbines are in Ag District 7 and impacts associated with these are 18.5 acres of temporary disturbance and 4 acres of permanent change. In addition the staging area is located within an area of active agricultural use. Do the proposed changes in area disturbance or construction require review of Everpower's compliance with New York State Department of Agriculture and Markets guidelines?

5. Office of Parks, Recreation and Historic Preservation (OPRHP) expressed concern regarding the archeological significance of outcroppings identified in the DEIS and requested a description of construction activities in proximity to the outcroppings be submitted to the OPRHP and the Seneca Nation of Indians. OPRHP requested that final design plans include limits of construction areas in relation to identified archeological site boundaries and rock outcroppings that these plans be submitted to OPRPH and the Seneca Nation of Indians. Accordingly, any change in project construction activities should be submitted to OPRHP and the Seneca Nation of Indians.

6. Larger turbine blades make more noise, and more low frequency noise in particular, because larger blades encounter different wind speeds within the rotor-swept area more frequently than smaller blades. In addition to the increased frequency with which blades encounter air turbulence, all of the turbine types proposed (except the approved turbine type) are "low wind" models, designed to extract more energy from lower wind speeds. This results in increased operating time. This, in turn, further increases wind turbine noise.[1]

Together these changes make the previous noise assessment unreliable. By directing Everpower to provide a supplemental noise assessment taking these changes into account, the Planning Board can also assure that the requirement to include a low frequency noise assessment is complied with, any decibel penalties to account for the added annoyance if impulsive and low frequency noise deemed appropriate are applied, and the shortcomings of modeling such a large and complex noise source as a wind farm can be rectified, by insisting on actual data from a comparable operating wind farm.

As turbine blades pass from one wind speed to another the blade vibrates creating a characteristic "thump" that pulsates according to the rotational period of the blade. Several arrayed in a line on a ridge, as Everpower proposes, generate a significantly higher sound level than one turbine. This may magnify the additive effect of the change. However, at Monday's meeting Everpower represented that it will be using the manufacturers guaranteed "sound power level" as the input value to its noise assessment model. We previously commented on the problem this approach presents, through our acoustic expert Richard James, on February 23, 2010, and again on May 26, 2011.

James points out that there is an important difference between sound power data and sound level data. Sound power is the air pressure sound waves make, but it does not fully correlate with sound level, which varies with weather conditions. Wind turbine manufacturers' guarantee a sound power level based on test conditions that are uniform for all makes and models. These conditions call for stable atmosphere within the rotor-swept area (no wind shear), flat topography, and a flat acoustically reflective test pad. The receiving microphone is placed 50 feet from the operating wind turbine. This removes any effects of distance on the actual sound level, such as wind speed. According to the international standard setting forth these procedures, "The procedures present methodologies that will enable the noise emissions of a single wind turbine to be characterised in a consistent and accurate manner." IEC 61400-11, 2.1 ed. (2006), p. 7. The procedures are not designed to be used in a noise assessment, because the sound power level actually increases under wind shear conditions, usually at night, at the same time that ambient sound produced by winds at the level of receptors falls. Using the manufacturer's sound power

1 More specifically, if both the N100 and the N117 turbine types were to match rotation for rotation, the total airspace swept by the rotors would be equivalent to adding 6.6 N100s to the original 29 turbines approved. Assume further that 18 N117s operate 25% more of the time than an N100. The amount of air swept by rotor blades would increase by another 6.1 N100s ([18 + 6.6] x 25% = 6.1). With adjustments for both the greater rotor size and the increased operating time, the increase in the rotor-swept area over time of the N117s is equivalent to increasing the approved 29 N100s to 41.7 N100s (11 + 24.6 + 6.1). That is an effective increase in movement of the blades of 44%, which EverPower dismisses as too trivial to have any noticeable impacts.

data therefore fails to assess actual expected noise. (This is why DEC recommended adding penalty decibels to Everpower's model results).

To use the manufacturer's guaranteed sound power level in a noise assessment requires a computer model capable of estimating the effects of topography, absorption of sound by the ground over distance, fluctuations in weather, the additive effect of in-line arrays of turbines, and much more. Numerous assumptions are made when configuring the model that can result in errors, including the failure to consider a reasonable worst case condition. These assumptions results in adjustments to the model that can be manipulated to reach a desired result. As James noted, even the published standards governing the modeling procedures Everpower wants to employ state that model results can be off by 5 decibels, compared to real world operating noise.

There is an additional difference between noise assessments based on a model real world data: noise assessments typically report sound levels averaged over 1-10 seconds, or as little as 125ms (milliseconds; one one-hundreth of a second). However, humans perceive and react to low frequency sound on a timescale of about 10ms. The longer averaging times utilized in modeled noise assessments thus hide the peaks and troughs of the sound, which may peak 10 decibels higher than the 1-second average. This explains some of the mismatch between model predictions of noise disturbance and complaints by people living near operating wind farms. People do not respond to average sound levels, they respond to peak sound levels. This is important because CRA's independent confirmation of Hessler's original sound studies for the Everpower project utilized the same averaging time as did Hessler to support the conclusion that 40 dBA would not be exceeded at most residences. However, the actual peak sound level expected from the project was never assessed.

As noted in my last letter, Everpower's previous noise assessment failed to analyze low frequency and impulsive aspects of the noise its project would make; improperly elevated background sound levels in the community to support the conclusion that the change in sound levels would be tolerable; and failed to meaningfully respond to comments criticizing its noise assessment methods provided to you by DEC and CCCC. This raises the following issue: Why would the Board now rely another Everpower modeling exercise, instead of insisting on actual measurement data from wind farms operating the proposed new turbine types? Why not request independent measurements of noise at the Howard wind farm and the Michigan wind farm Everpower says is operating a turbine type it wants you to approve?

There should be no argument that actual operating noise data is superior to modeled predictions of sound levels, if one wants to evaluate the difference larger turbine blades makes. Conversely, allowing a permit applicant to run another model when the Board is unable to open the “black box” to examine all the assumptions behind the model calculations is unwise, especially when actual data is available, and especially if the Board has misgivings about reliance on modeling that uses as its primary input test data that do not reflect real world conditions. In addition, since Everpower failed to provide an assessment of low frequency noise effects of its project, and manufacturer's sound power data do not report low frequency sound levels during wind shear

conditions, only measurements of actual operations of the requested turbines can accurately reveal the level of low frequency sound under real world conditions.

I am reliably informed that CRA has adopted the same approach as Hessler did for Everpower, for several wind projects that have been CRA's clients. As you learned from a letter by Howard resident Robin Holevinski, Hessler's model predictions for the Howard project have turned out to be wrong. I am enclosing a letter from the town supervisor for the Town of Cohocton who had the same experience, stating that noise complaints lodged with the town were merited, and not predicted by the project sponsor. For CRA now to insist on procedures that depart from Hessler's approach would threaten to invalidate much of their past work for others. The potential conflict this presents is serious enough that you should obtain the assistance of an acoustic engineer who has not worked for wind project sponsors, to obtain actual wind farm operating data.

7. Professional studies submitted to the Board conclude that shadow flicker or aesthetic degradation of the local viewscape by wind turbines interact with noise impacts from wind turbines, making each kind of impact more annoying than would occur if the impacts were not combined.

Everpower represented on Monday that there is no standard for determining how much shadow flicker is "significant." It will therefore use the "industry standard" of 30 hours per year, and will evaluate whether 30 hours of shadow flicker occurs within 500 feet of its proposed turbine sites. However, the Minnesota Department of Health study of the public health impacts of wind turbines, submitted to you by CCCC on May 26, 2011, at page 14 identifies shadow flicker impacts among the major health detriments of a wind farm, and finds that such impacts can be significant up to "distances over 10 rotational diameters (~1000 meters or 1 km (0.6 mi) [or 3,281 feet] for most current wind turbines." Why should the Board agree to allow Everpower to limit the evaluation of shadow flicker to 500 feet from turbines?

8. Your findings, at Section 3.5.2, approve Everpower's Architectural Survey, which identifies 33 historic and architectural resources previously identified and another 50 unevaluated properties within five mile of the project area. The prior Viewshed mapping shows that the project will be visible at 29 of these properties as well as Rock City Park and Flatiron Rock. Also, according to Everpower's Architectural Survey the proposed project would be visible from 19% of Allegany State Park.

The larger dimensions of the N117 make the prior Viewshed study/map obsolete. The models and projections used did not calculate for much larger blades. The viewshed analysis should therefore be supplemented to account for the larger dimensions of the N117.

9. How does an increase in the rotor-swept area affect the potential for avian and bat fatalities resulting from passing into the rotor-swept area? Is it reasonable to conclude, without further analysis, that an increased rotor-swept area will not increase such fatalities?

10. Your findings conclude that the original project proposal complies with the requirement, in Sec. 5.25(C)(10) of the zoning ordinance, that "turbines will be of uniform design." Everpower has requested approval for a "hybrid" option under which it would install two different turbine types. Is not this aspect of Everpower's new proposal in violation of the zoning ordinance?

In conclusion, since Everpower on September 10 said the Nordex N100, originally approved by you, is still available, why should the Board consider the request? Where is the hardship? Should the Board entertain such a request based primarily (if not solely) on the applicant's desire to enhance profits, without regard to a hard look at the potential for added impacts?

Sincerely,

Gary A. Abraham

gaa

cc: Carol Horowitz (via email)