E-Coustic Solutions

Noise Control ▯ Sound Measurement ▯ Consultation
Community ▯ Industrial ▯ Residential ▯ Office ▯ Classroom ▯ HIPPA Oral Privacy
P.O Box 1129, Okemos, MI, 48805
rickjames@e-coustic.com

Richard R. James
Principal
Tel: 517-507-5067
Fax: (866) 461-4103

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Gary A. Abraham, Esq.
170 N. Second St.
Allegany, New York 14706
(716) 372-1913

Subject: January 27, 2010- Environmental Sound Survey and Noise Impact Assessment for Allegany Wind Farm Project

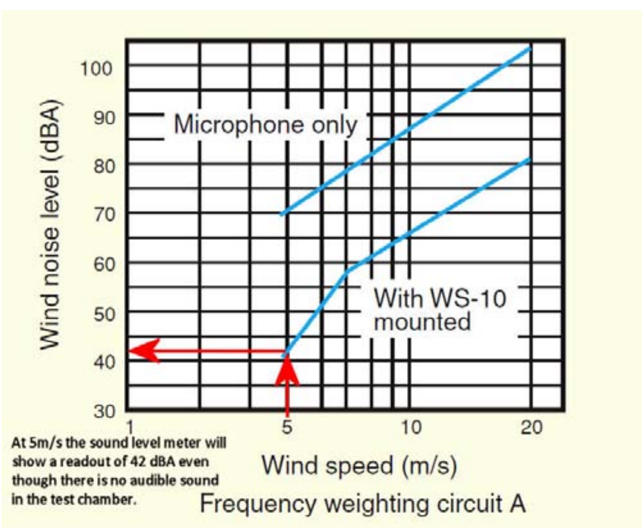
Dear Mr. Abraham:

Thank you for the opportunity to provide my opinion on behalf of the Concerned Citizens of Cattaraugus County (CCCC) regarding what fundamental flaws in the methods used by Hessler and Associates in conducting the background sound study for Everpower, LLC and in the methods used for estimating its impact using computer modeling.

There is no basis in any recognized peer-reviewed acoustic standards for considering the sounds that winds may produce as the basis for establishing the background sound levels. The basis for the approach used in the Hessler study for Allegany Wind is based instead on a procedure known as ETSU-R-97 which was developed in the U.K. by a group of wind industry attorneys, their consultants, and government agency staff working under the authority of a British Government agency tasked with expediting wind turbine implementation in the U.K. (See Item 1, on page v of the attached: "ETSU-R-97 summary" for the origin of the idea that wind turbines should be judged against the noise wind may produce when blowing through trees, shrubs and around objects.) This procedure is based on the desire to expedite development and justify locating turbines close to homes. It is not based upon recognized scientific and medical principles, nor did the authors consider such principles. (See attached paper "ETSU-R-97 Why it is Wrong" describing its genesis and flaws.) Hessler and Associates have been actively promoting this flawed procedure in their work for wind utility developers and it has also been adopted by many other consultants working for the wind utility developers, but that does not make it acceptable or correct.

I addressed some of my concerns about this method of establishing background sound levels in my letter of February 19, 2009 in the sections where I commented on Mr. Charles Ebbing's presentation. It appears that in spite of these forewarnings and advice on proper procedures the most recent study contains the same flawed methods. These methods result in reported background sound levels that do not reflect what would have been reported had the test protocols been conducted using proper procedures which exclude the effects of natural sounds like wind, water, short term events and other contaminating sounds. According to generally accepted acoustical engineering procedures in ANSI S12.9, Part 3 and S12.18 standards, such contaminating sounds are not considered part of a proper background sound test. One significant requirement of the ANSI procedures is that no measurement data may be taken when the wind speed at the measurement microphone exceed 5 meters per sec (m/s). ANSI S12.18 states at 4.4.1.1: "No sound level measurement shall be made when the average wind velocity exceeds 5 m/s….No attempt shall be made to adjust measured noise levels based on the wind data." (see excerpt below the windscreen graph.) The reason for this requirement is best understood by looking at the following graph which shows how a sound level meter outfitted with the manufacturer's recommended wind screen reacts to air movement during a measurement. In this graph the microphone is not subjected to any sound (the test area is quiet) but the air movement across the microphone begins to leak through the windscreen at wind speeds of below 5 m/s (about 11 mph). The air impinges on the microphone's diaphragm and at 5 m/s produces a false reading of 42 dBA. At 10 m/s the false reading has increased to 65 dBA. There are some specialized wind screens that improve on this performance but they only add a few decibels of extra protection. None can handle the strong winds at the ground level that are the 'goal' of the Hessler/ETSU method.

If we examine Figure 2.5.6 "Design Valley Sound Level Compared to Wind Speed" in the January 2101 report we see that the sound levels increase from below 30 dBA during periods without wind to as high as 45 dBA when winds are at 10 m/s. This is presented by the report's author as though it is the sound of winds in the community. But, using the chart below for windscreen failure induced noise we see that these sound levels can be easily explained as being the result of wind screen failure and not as any actual community noise.



The "Hessler Method" is novel in the sense that it is not based on established peer-reviewed procedures. In fact, it violates them. A new, proper background noise study, performed by an independent acoustical consultant should be required. Because Everpower, LLC. has not submitted a professionally defensible sound study, I would urge the Planning Board to insist they supplement the study before accepting the pre-draft EIS as complete.

Computer Modeling

The January 2010 study repeats the same errors in computer modeling that I warned about in my February 19, 2009 letter. On the first and second pages of that letter I described the proper methods for modeling of wind turbines under ridge and valley topographic conditions. Those warnings did not result in any changes to the models submitted by Mr. Hessler in the January 27, 2010 revised sound study for EverPower, LLC.

4.4.1.1 Wind, temperature and cloud cover

No sound level measurement shall be made when the average wind velocity exceeds 5 m/s when measured at a height of 2±0.2 m above the ground. No attempt shall be made to adjust measured noise levels based on the wind data.

Hessler's reliance on the sound power levels used in his model rely on the manufacturer's data as measured using the IEC 61400-11 standard. Mr. Hessler claims that this data represents a worst case situation, but that is far from accurate. It represents standardized measurements of wind turbine noise taken under optimum weather conditions for test repeatability. It does not attempt to reproduce the conditions that lead to worst-case sound emissions. It is a standardized test like the ones used for auto mileage estimates. It is not conservative and does not allow an evaluation of the worst case effect of wind turbine noise. If it did, the results of the model would have been between 5-15 dB higher than reported in this study.

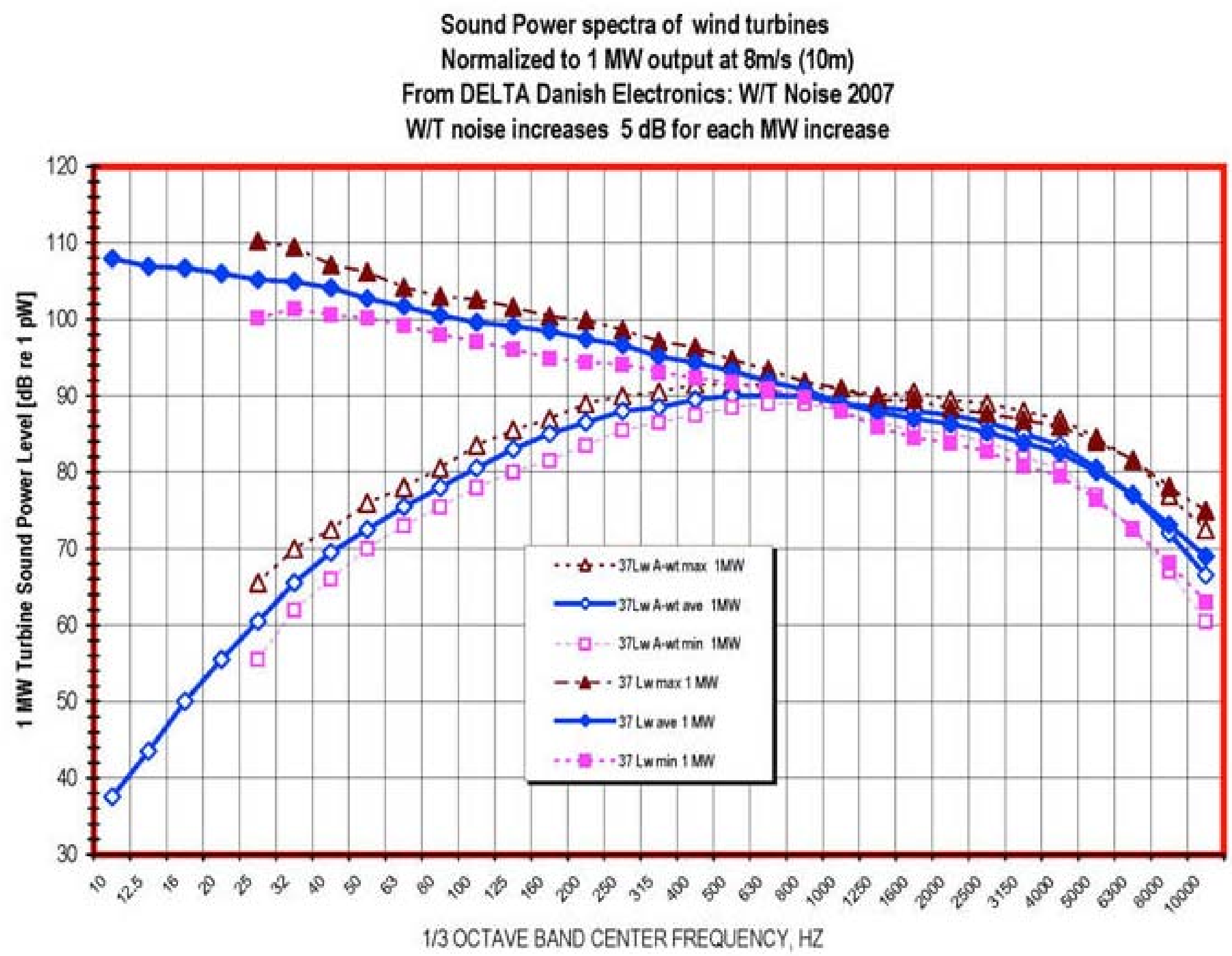
For, example, the standard does not include the sound emissions related to blade swish or other effects of turbulence in the air flowing into the turbine's blades. The standard does not include noise from inflow turbulence, especially up-thrust winds at the ridge's downwind side, wind eddies during storms, or high wind shears. Appendix A of the IEC standard explains that these conditions are known to increase sounds above those reported by the test and that they were not considered when developing the standardized data. Yet, it is these sounds that increase as the wind speeds increase and can add as much as 5-15 dBA to the maximum sound level received at a home. [Van den berg]

I have confirmed this many times while conducting tests for my clients. I found blade swish and thump sounds from turbines 1500 feet downwind that were over 50 dBA outdoors and exceeded 40 dBA inside the bedroom for a client living near the Noble Bliss wind project in Bliss, NY and similar levels in a home near turbines at the High Sheldon Wind Farm in Wyoming County, NY. These sounds exceed the 30 dBA outdoor nighttime sound levels recommended for safe sleep in the 2009 World Health Organization Guidelines for Night Time Noise. They also exceed the 40 dBA limit set in those guidelines at which adverse health effects from sleep disturbance can be expected. The Hessler report shows that sound levels will be above 30 dBA even for the optimum model conditions of the standardized IEC test data. This model does not reflect the real impact of the wind turbine project on the host community. The results do not reflect what the community will experience during normal operation of the wind project once it is installed and operating. This should not be a surprise. The same type of flawed modeling has been used to apply for operating and building permits at many wind projects in western New York and other places. The disconnect between the idealized 'models' and the real-world with its unpredictable weather conditions the models cannot address is the reason why after these projects start operation complaints start being filed as has been seen in Cohocton, NY, Mars Hill, ME, and many other places.

Low Frequency Sound

In section 3.6 of the January 2010 report, Mr. Hessler presents a chart and description of a study by Bo Sondergaard (of DELTA) that is purported to show: "***The results of this testing show that for a typical turbine its sound levels taper down steadily in magnitude towards the low end of the frequency spectrum and that the sound energy below about 40 Hz is actually comparable to or less than the sound energy in the natural rural environment where the measurements were made (Figure 3.6.1).***" This comment is based on an outright misrepresentation of the facts. The graph shown in the Hessler report depicts the spectrum of wind turbines as it appears after applying an A-weighting calculation on the true data that dramatically reduces the low frequency sound levels. Showing these modified spectrums in graph form makes the low frequency energy appear to have little impact compared to higher frequencies (a hump shaped graph) unless one remembers that it depicts data that has been manipulated by applying A-weighting filters. A-weighting reduces sound levels in the 10 Hz region by over 70 dB.

I have inserted a graph below showing the summarized data for all 37 of the turbines in the



Sondergaard study, not just the single turbine in the graph in Figure 3.6.1. For this example I have removed the artificial effect of A-weighting for the set of data that slopes down from left to right. This is the true shape of the energy spectrum for a modern upwind industrial scale wind turbine. It starts with most of the acoustic energy in the infra and low frequency range and the acoustic energy decreases as the frequency increases into the audible speech frequency range. To make the comparison easier I have also reproduced the original A-weighted data from the Sondergaard study. This data is shown in the hump shaped curves that start out appearing to be low in the lower frequency range only because A-weighting subtracts large values (over 70 dB at 10 Hz) from the true values shown in the top curves. These are similar to what Mr. Hessler shows in his example. But, just as the A-weighting gives a false impression about low frequency acoustic energy in my example of the 37 turbines in the DELTA study so it does in Mr. Hessler's example. When looking at Figure 3.6.1 in the January 2010 report it is important to remember that the real curve starts out high on the left side of the graph and slopes down to the left just as in my example.

Thus, Mr. Hessler's argument rests on his expectation that lay reviewers will not notice that he has played tricks with the data and is trying to convince the reader of his report that low frequency sound is not present based on the shape of his graph. Once this trick is removed it is easy to see that most of the sound energy for wind turbines is in the low frequency range. It is appropriate to say that this graph shows that wind turbine sound is primarily low frequency acoustic energy.

Given that Mr. Hessler is not being open and forthcoming on this issue, one must be wary of his other methods and conclusions. I have tried to identify these to you in this and my previous letters. I trust that you can use this information to explain my concerns to the Planning Board so that it understands why these reports are not only incomplete but also misleading. These studies should be repeated by an independent consultant.

Sincerely,
E-Coustic Solutions

Richard R. James

Richard R. James, INCE

Attachments ETSU-R-97 Why it is Wrong, by Dick Bowdler
ETSU-R-97 Executive Summary