

December 10, 2013

Michael S. Blazer
Jeep & Blazer, LLC
24 N. Hillside Avenue, Suite A
Hillside, IL 60162

Re: Summary of California Ridge Wind Energy Center Noise Study to Date

Dear Mr. Blazer,

The following is a brief summary of the noise measurement and data analysis effort I have completed to date for the California Ridge Wind Energy Center, located in Vermillion and Champaign Counties, Illinois. A forthcoming technical report will provide much more detail. The measurements and analysis were conducted in collaboration with Dr. Paul Schomer of Schomer and Associates.

Noise levels were measured at two locations near the residences of concern, which are the Hartke and Miles families. The noise levels measured at these locations are considered roughly equivalent to the levels occurring at the residences themselves, as the differences in the distances to the nearest turbines are similar. Noise levels were measured continuously from August 10 through November 20, 2013. One two-week period of data was lost at one site due to an equipment power failure. Wind speed and direction were measured near one of the noise meters, with the anemometer located approximately 10 feet above the ground.

The Illinois Pollution Control Board (IPCB) regulation Title 35, Subtitle H., Noise, prohibits the generation of noise levels that exceed nine specific frequency band limits. The measured turbine-only noise levels in the lower bands do not even approach their respective limits (31 to 250 Hertz (Hz)). The levels in the upper bands (2,000 to 8,000 Hz) are dominated by ambient sound sources. Thus, it is the 500 Hz and 1,000 Hz bands that are of interest here. The regulation states that turbine noise levels should not exceed 47 dB in the 500 Hz band or 41 dB in the 1,000 Hz band during nighttime hours (10 p.m. to 7 a.m.)

The IPCB limits are based on the one-hour "equivalent level", or L_{eq} (dB). The limits pertain to turbine-only sound. However, over the course of any one-hour time period the measured noise levels are made up of contributions from an array of sources, including the turbines, traffic, trains, nearby and distant farm equipment and vehicles, wind blowing through vegetation and across the microphone, birds, insects, and rain. To separate turbine from non-turbine contributions, noise levels were measured in short time increments and in many different frequency bands. The short time interval allows spurious events like traffic and trains to be filtered out of the analysis. The frequency information allows continuous sources like birds, insects, and wind to be filtered.

The measurement survey resulted in approximately 900 hours of valid nighttime noise data. Again, these measured levels are the result of both turbine and non-turbine sources. The goal of the data analysis was to properly determine the loudest turbine-only noise levels, and compare these to the IPCB limits. The measured noise level data was first compared to turbine operations information. Approximately 185 hours of nighttime noise data pertained to hours during which the nearest turbines were turning at a rate of 12 RPM or more, and the entire plant was operating at at least 75 percent of capacity (150 out of 205 megawatts). These “at or near capacity” operating conditions result in the loudest turbine-only noise levels, and correlate in time completely to noise complaints by area residents.

When both turbine and non-turbine sound are included, approximately 80 hours of measured noise levels exceed the IPCB limits during turbine operations. Note, these levels represent all noise sources, both turbine and non-turbine. These levels occurred primarily in October and November, 2013, as this is when turbine operations were greatest during the survey.

Through a detailed analysis of one-hour noise levels, 10-second noise levels, frequency spectra, and audio files I was able to determine with a reasonable degree of scientific certainty that 95% of the levels exceeding the IPCB limits were not the result of strictly turbine noise and that the turbine-only portion of these levels was below the IPCB limits. When my analysis is complete I expect that 99% of the data will fall into this category. The remaining 1% of the data will be too close to the limit to judge its compliance with a reasonable degree of scientific certainty. This is because the noise from turbines and that from other sources, particularly farming and wind, are too close in time, frequency, and level to be accurately separated. In addition, there is some uncertainty associated with the measurement equipment and placement of the microphones.

Please call if you have any questions.

Sincerely,



Michael Hankard, INCE and ASA Member
Principal Acoustic Engineer