

2021 Mar 25
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Ms. Dianne Martin
Chairwoman
New Hampshire Site Evaluation Committee
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

Re: SEC Docket No. 2015-02
Application of Antrim Wind Energy, LLC
Post-Certificate Filings
March 25, 2021 Public Meeting

In the filing by Barry Needleman: https://www.nhsec.nh.gov/projects/2015-02/post-certificate-filings/2015-02_2021-03-22_awe_submitting_technical_memos.pdf this assertion caught my eye:

Antrim Wind understands raw data to mean in this context the 1/8 second sound measurements, along with corresponding audio recordings, that underlie the hourly data provided in the seasonal sound monitoring reports. As an example of the magnitude of the data, for the winter 2020 report there were approximately 60,185,490 sound measurement records, stored in electronic format, and 93,156 minutes of corresponding audio records, which are necessary to interpret the sound measurements.

I don't know the length of each “sound measurement record” is, but I'm confident it's much less than the audio records. The latter are specified in Site 301.18(a)(2) as:

(2) Long-term unattended monitoring shall be conducted in accordance with the standard of ANSI S12.9-1992 2013 Part 2, available as noted in Appendix B, provided that audio recordings are taken in order to clearly identify and remove transient noises from the data, with frequencies above 1250 hertz 1/3 octave band to be filtered out of the data;

This is adequate to determine how much data is required. Filtering out frequencies above 1,250 Hz can allow the audio data to be sampled at 3,000 samples per second. If each sample is 2 bytes (16 bits), that will allow a 96 dB dynamic range, more than

enough. The math becomes 93.156 kminutes times 60 seconds/minute (5.589 Mseconds) times 3.000 ksamples/second (16.768 Gsamples) times 2 bytes per sample, i.e. 33.536 GB. (k is 1,000, M is 1,000,000, G is 1,000,000,000.)

Amazon is willing to sell me a 64 GB Sandisk Ultra Micro SD Memory Card (it's about the size of my thumbnail) with a USB memory stick adapter for “\$13.17 with FREE Delivery Mon, Mar 29. Only 5 left in stock - order soon.”

If it would be more convenient, Mr. Needleman could make the data files available online. I have seen my TDS Gigabit Fiber Internet connection transfer data at over 100 MB per second, so I could download the audio files in less than six minutes.

Mr. Needleman states that “Antrim Wind is prepared to provide the raw data in its existing format, consistent with the approach described by Commissioner Scott. See, Tr. p. 106, Public Meeting, November 23, 2020.” I will be glad to engage the logistical issues of receiving that data after reviewing the transcript to understand the details. I am not very familiar with today's monitoring instruments, but apparently a 8,000 samples per second rate is common. CD quality audio is at 44,100 samples per second, I'm certain the rate used is no greater than that. That means the audio files may be some 3X to 15X my size estimate above. I see that Amazon has a 512 GB memory card available for \$24.99. I can afford one or two of those.

Sincerely,

Eric Werme