William Cundiff

From: Burkard, Robert [BurkardRG@cdm.com]
Sent: Monday, September 27, 2010 1:15 PM
To: Rod Jané
Cc: William Cundiff; Steve Zisk; Guglielmi, Daniel; Haskell, Bruce
Subject: comments on shadow flicker study 9-9-2010 (revised 9-21-10) and Noise study 8-9-2010

Rod,

We just completed a conference call with Bill Cundiff and Steve Zisk at the Town to go over comments on the latest environmental reports that have been submitted for the proposed Douglas Woods Wind Farm. The following are the combined comments from CDM and the Town. I would suggest that if anything commented on below is not clear that we set up a conference call to discuss in more detail so that hopefully the report(s) can be issued as final.

Thanks,

Bob

General:

The shadow flicker, noise, photo simulation and all other documents, drawings & reports submitted need to have better document control of the various versions that have been generated and submitted. For each of these submittals going forward and for the final report(s) please include on the first page after the cover a listing of all versions of the report that have been submitted together with the date of the submittal/revision and a brief summary of the edits, changes additions etc. that have been made by revision.

The town is also requesting electronic and hardcopies of all input data used in the analysis for their files including site survey, background noise level data, wind speed/direction data. Windpro input files etc.

Shadow Flicker Comments:

1. It was agreed at the last meeting that the report figures would show the delineation lines at 1000 and 1500 meters from the turbines to show the area of potential shadow/flicker impact with respect to intensity.

2. On page 2 the discussion of shadow flicker intensity gives the impression that the report falls short of having to evaluate intensity. Rather than saying the report does not evaluate shadow flicker intensity, it should be made clear that the analysis is considering total flicker hours irrespective of intensity level i.e. being more conservative rather than trying to evaluate how light or dark a shadow will be – any shadow/flicker generated regardless of intensity is counted toward the maximum 30 hr/year threshold and all flicker hours above 30 hrs/yr will be addressed in the mitigation plan.

3. Page 2 it would be useful to explain how a nominal speed of 14.9 rpm equates to a blade pass frequency of .75 Hz e.g. 14.9/60x3blades

4. Section IV bullet points – for each of the data inputs listed, provide in the main body of the report (suggest making a table) the source of the data set that was used and why and how it is needed and used in the model. The main objective is to provide a laymen's understanding of what the model needs for inputs and why, as well as the source of information that was used. The report as written requires a reader to know what Windpro is and how to look for information on the output sheets. For example:

Input parameter	Source of Information	explanation
- Turbine locations	topo survey/GPS coordinates	input for model to determine proximity of turbines to receptors

- Receptor locations and elevations (add to bullet points) input for model to determine proximity of receptors to turbines

- Turbine Base Elevations (add to bullet points) final design grading/site plan Design base elevation input together with manufacturers height to derive overall height with respect to receptor location/elevation

- Topo Confirm if only USGS used or if actual survey and design grading also inputted

- Hub heights and rotor diameters Windpro database of manufacturer's data determines overall height of turbine combined with specific elevation data

- Calculation time input setting (1 minute) model simulates sun position relative to turbines/receptors at 1 minute intervals or 1440 separate sun positions per day

- Calculation step input setting (365 days) model simulates sun position on daily basis over 1 minute intervals 365 days x 24 hours/day 60 minutes per hour = 525600 data points

- Wind speed and direction site specific met data collected over 1 year period between X and Y dates determines operational time used in model to calculate when turbine is rotating and if turbine is oriented perpendicular to the receptor (two conditions to cause shadow flicker)

- Hours of sunshine indicate source (report says available online sources – be specific- Windpro lookup?) uses the sunshine probability by month from nearby whether station database (indicate how much/years of data considered) together with wind direction and speed to predict actual shadow flicker hours per year (third condition to determine actual shadow flicker).

For the explanation part, you could reference excerpted sections from windpro help manual in include in an appendix.

5. Confirm the source of topo information used in the model as being USGS, site survey, design grading or a combination of all.

6. Page 2 discussion of Zoning Bylaws - The town has a wind turbine bylaw so it would be incorrect to state that one does not exist. Report should explain a bit about the timing of the project approvals in relation to the adoption of the bylaw and the subsequent amendments (exempting the project) to effectively state how the project complies with the existing bylaw.

7. Bottom of page 6 - hours /years should be hours/year

8. VI. Flicker mitigation plan - Delete the statement that the flicker mitigation plan was prepared in consultation with CDM and the Town. We have not seen it and our role is only as independent review.

9. Page 8 third bullet at the bottom… add the words or less after .. will be reduced to 29 hours/year OR LESS at each or the 17 receptors.

10. page 9 last bullet point. APW could also point out that the with exception of the most effected receptors of the 17 identified, (e.g. 4 dream street) that the actual hours after mitigation for many of the 17 receptors will be significantly lower than the 29 hours shown in the table.

11. VIII Moon shadow flicker. I would remove the reference to "self proclaimed observer" as being too condescending, inappropriate and unnecessary. Reword along the lines that a concern was raised at the planning meeting that it is being addressed in the report.

Acoustical Study

1. Top of page 6, for the 2nd set of noise measurements the range of wind speeds during this period need to be stated.

2. Page 7 tables - expand table to show ambient, turbine, combined and net increase for all wind speeds between 3 and 12 m/s conditions)copy data from Windpro output so reader doesn't have to look for it)

3. As discussed at our last meeting, explain that below 3 m/s the turbine doesn't spin and hence there is no noise. Also show in the body of the report the manufacturers sound pressure levels at reference distance over the 3-12 m/s wind speed range and how this maxes out at 7 m/s (Get from windporo output)

4. For the ambient noise measurement for which there was no data (location B and B1) no data beyond 7 m/s, clearly indicate in the table that this has been extrapolated to 12 m/s and also explain how doing this is conservative with respect to the net DBA increase from the turbines.

5. Coordinate with the detailed list of receptors in the shadow flicker study and show which specific receptors are represented by locations A, A1, B and B1. Include a table showing the receptors and noise results in the main body of the report. Alternatively, run the noise analysis using the same receptor locations as used for the shadow study to generate results by receptor. The Town would also like a combined table showing both the noise and shadow impacts by receptor.

6. Same comments for the shadow study apply with respect to providing a laymen's explanation of all model input parameters and sources of data used for the noise study. We believe providing a more detailed discussion of the inputs model and sources of data will be beneficial to concerned residents in understanding the results of the studies.

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