

William Cundiff

From: Burkard, Robert [BurkardRG@cdm.com]
Sent: Friday, September 03, 2010 12:17 PM
To: neexpansion@aol.com; rtab@atlanticcompanies.com; info@americanprowind.com
Cc: William Cundiff; Haskell, Bruce; Guglielmi, Daniel
Subject: RE: Summary of Peer review Meeting and Next Steps

Rod,

Suggested edits are in lowercase and comments are in UPPER CASE.

Also, Bill mentioned that APW should formally respond to CDM's review memorandum on a point by point basis initially in draft form with responses inserted for review. I believe you have pretty much covered the issues below but should plan to put this in a format for Bill to post on the website.

Thanks

Bob

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From: neexpansion@aol.com [mailto:neexpansion@aol.com]
Sent: Thursday, September 02, 2010 12:19 PM
To: rtab@atlanticcompanies.com; Burkard, Robert; info@americanprowind.com
Subject: Summary of Peer review Meeting and Next Steps

Bob/Rich/Ernesto,

The meeting on Tuesday was very productive. I have summarized below the key points coming out of our Peer Review meeting on Tuesday.

1. ZVI: We discussed the need and/or benefit of having a Zone of Visual Influence Map included in the Shadow Flicker Study. While the ZVI Map can give a general sense of where the turbines will be visible from, it is a macro analysis only and is limited in accuracy with respect to specific locations. It will not determine with 100 percent certainty whether the turbines will or will not be completely or partially visible on a specific house by house basis but can provide a general indication of broad areas where the turbines can be expected to be seen. The limitations of the ZVI analysis would need to be fully explained in the report so that it is clear that it's is not an absolute analysis. It was decided that the ZVI Map issue would be brought up for discussion (and samples to be shown by Atlantic Design) at the next Planning Board meeting and that the Planning Board can make the decision on whether to request it or not.
2. Experienced (Real) Flicker Hours Criteria: CDM concurs that the applicable criteria to apply for the project for maximum annual flicker hours should be 30 hours of experienced (or real) flicker taking into account sunshine probability and wind direction as opposed to the astronomical worst case hours. This is substantiated by the variance language which states that the applicant shall "provide for mitigation where shadowing/flicker is reduced to 30 Experienced Hours or below per year." It is also substantiated by the research that CDM did which showed that the standard typically applied in North American wind projects is "Experienced" hours and not astronomical worst case hours. However, CDM did recommend that the astronomical worst case hours still be shown in the

Study for each receptor location alongside the "Experienced Hours" for comparison and to demonstrate the significant reduction of shadow flicker from the worst case to real case calculation. The Mitigation plan will be based on the real case hours calculation. APW concurs with this recommendation and will incorporate it into the final Shadow Flicker Study.

3. Number of Receptors: CDM pointed out that the variance conditions require that all affected residences with respect to shadow/flicker impact need to be identified and that the number of receptors be increased to include all residences that lay within the unmitigated 30-hours or more band on the "Flicker Annual Experienced Hours Map" instead of the four representative receptors as submitted in the current Shadow Flicker Study. This change will make clear the total number of affected households that experience 30 unmitigated hours or more of flicker per year. In addition, for each of these receptors (affected residences receiving more than 30 Experienced Hours) the Shadow Flicker Study will show within the text the calculated "Experienced Hours", the theoretical worst case hours and the resultant hours after mitigation. The "Experienced" hours for each affected household will form the basis of the Flicker Mitigation Plan. Finally, this list will serve as a list of those residents who must be given a copy of the "Flicker Mitigation Plan" per condition #7 of the ZBA Variance. APW concurs with this recommendation and will incorporate it into the final Shadow Flicker Study.
4. Include Sample of Residences Outside of 30-Hour Band: In addition to the receptor households (those receiving more than 30 "Experienced Hours annually), CDM recommends that the final Shadow Flicker Study show several residences just outside the 30-hour band (at least one from each neighborhood cluster I WOULD DO MORE THAN ONE PER NEIGHBORHOOD AND INSTEAD HAVE A GOOD REPRESENTATION ALONG THE LENGTH OF THE OUTSIDE 30 HR BAND. AT THIS POINT, IT'S ONLY A MATTER OF INPUTTING THE COORDINATES AND RUNNING THE MODEL. THIS WAY YOU CAN ALSO SHOW HOW THESE RESIDENCES WILL ALSO BENEFIT FROM THE MITIGATION PLAN EVEN THOUGH IT WILL NOT BE SPECIFICALLY DESIGNED AROUND THEM. DOING THIS WILL ALSO HELP TO COUNTER ACT ANY ISSUES THAT MAY BE RAISED WITH REGARD TO THE ACCURACY OF THE MODEL. THICKNESS OF THE BAND LINES, RESIDENTS ON THE EDGE ETC.) and the calculated "Experienced Hours" and theoretical worst case hours for each of these residences, just to contrast the affected residences (more than 30 Experienced Hours) from the non-affected residences. APW concurs with this recommendation and will incorporate it into the final Shadow Flicker Study.
5. Elimination of Discount Factor for Trees: CDM questioned the use of further discount factors that Atlantic Design used in the Shadow Flicker Study that took into account the location of trees relative to the residence and were used to further reduce the "Experienced" hours of shadow flicker. After lengthy discussion, CDM reiterated that either the discount factors should be eliminated (which would provide an appropriate level of conservativeness to the analysis) or there should be an adequate scientific micro analysis at each of the receptor locations to scientifically justify a particular discount factor as applied on a house by house basis rather than a single reduction factor based on "professional judgment" applied to each particular neighborhood. While APW believes that the application of site specific discount factors is a justifiable approach because of the clear presence of trees between the affected neighborhood and the turbines, it was acknowledged that significant work would be required to look at each residence on a case by case basis to develop a specific reduction factor for each individual residence and that even in doing this there would be further variables such as seasonal presence of leaves on trees. APW agreed to eliminate the discount factors entirely, and proceed with the more conservative approach of comparing the calculation of "Experienced (Real)" Flicker Hours with the 30 hour/year – 30 minute/day standard to identify residences where there would be predicted exceedances that in turn would be mitigated.. APW will comply with the CDM recommendation and will incorporate it into the final Shadow Flicker Study.
6. Elimination of Reference to German standard: Since the variance makes no reference to the German standard, CDM recommends that any reference to this standard should be eliminated from the Shadow Flicker Study to avoid confusion. APW concurs with this recommendation and will incorporate it into the final Shadow Flicker Study.
7. Flicker Mitigation Plan: Several points were discussed and consensus between CDM, APW, and Atlantic Design reached on the following:
 - A separate Flicker Mitigation Plan will be submitted in addition to the Shadow Flicker Study (Rod Jané to draft the plan for review by CDM, Rich, Ernesto with technical addendums on the Flicker Impact Module from Nordex to be added)
 - Once finalized, we will seek to obtain approval of the Flicker Mitigation Plan by the Douglas Planning Board
 - Once approved by the Planning Board, copies of the plan will be mailed (Certified Mail with Return Receipt) to each of the affected residents IT WAS RECOMMENDED THAT THOSE AFFECTED RESIDENTS BE NOTIFIED OF THE DATE OF THE PLANNING BOARD MEETING IN WHICH THE FINAL SHADOW FLICKER STUDY AND MITIGATION PLAN WILL BE PRESENTED AND DISCUSSED TO PROVIDE OPPORTUNITY FOR PUBLIC COMMENT.
 - The Mitigation Plan will use the conservative calculation (no additional discount factors applied) for "Experienced" Hours based on the calculations in the Atlantic Design Shadow Flicker Study.

- All households in the 30 "Experienced Hours" or more band will be included on the list of "Affected Residences"
 - A list of all affected residences, the calculated "Experienced Hours" and the resultant reduction in flicker hours from mitigation will be included in the Flicker Mitigation Plan
 - The Nordex Flicker Impact Module will be installed on the four most "affecting" turbines –OK TO ASSUME 4 FOR NOW BUT UNTIL WE SEE THE REVISED ANALYSIS AND MITIGATION PLAN THE EXACT NUMBER OF MODULES TO INSTALL (EITHER MORE OR LESS) IS TO BE DETERMINED.
 - The Modules will be programmed to shut down the turbines a sufficient number of hours to reduce the "Experienced" Hours to below 30 hours per year (for a single turbine or combination thereof) for each affected household and below 30 minutes per day for each affected household. .
 - The actual shut-down hours and resultant flicker hours will be tracked and reported as follows:
 - If available, these reports will be available for viewing on-line
 - If not available on-line, a quarterly report will be submitted to the Town of Douglas
- The mitigation plan will address operation, maintenance, testing, calibration and alarm requirements and scheduled intervals to ensure long-term compliance and enforcement of the mitigation plan.

The objective is to have both the final Shadow Flicker Study and Flicker Mitigation Plan submitted to the Town of Douglas by 9/8/2010 in time for review by the Planning Board for their 9/15/2010 Planning Board meeting.

Please call me if you have any questions or believe there are corrections or significant omissions in the above summary.

Regards,

Rod

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