

Exhibit I

AFCL Reconsideration

January 9,2019

PUC Docket IP-6946/WS-17-410

p. 13-15 – 0.0 v. 0.5 ground factor explained

**BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

**Nancy Lange
Dan Lipschultz
Matt Schuerger
Katie Sieben
John A. Tuma**

**Chair
Commissioner
Commissioner
Commissioner
Commissioner**

In the Matter of the Application of Freeborn
Wind Energy, LLC for a Large Wind Energy
Conversion System Site Permit for the 84
MW Freeborn Wind Farm in Freeborn County

PUC Docket No. IP6946/WS-17-410

**ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
PETITION FOR RECONSIDERATION**

Association of Freeborn County Landowners (AFCL), intervenor in the above-captioned docket, and participant in the concurrent transmission siting docket (IP6946/TL-17-322), bring this Motion for Reconsideration of the Commission’s decision to grant a site permit to Invenergy’s Freeborn Wind project, deliberated by the Commission on September 20, 2018, and the Order filed on December 19, 2018. Minn. Stat. §216B.27; Minn. R. 7829.3000. This is an issue of first impression, where for the first time, a contested case proceeding had been ordered for a wind project application, where review was under the auspices of the Power Plant Siting Act, and coincidentally, this is the first time that an Administrative Law Judge has recommended the permit be denied. Or not coincidentally... The evidence shows that the project could not

demonstrate it could and would comply with state noise regulation. Because it can't demonstrate it can comply, no permit should be granted. To grant a permit in such a situation without that demonstration, and to push that demonstration to a future "pre-construction meeting" is legal error.

AFCL brings this Petition for Reconsideration and requests the Commission reconsider its decision and amend its Order to adopt the Recommendation of the Administrative Law Judge and deny the permit. In the alternative, AFCL requests that the Commission reconsider its decision and table this docket until the Applicant provides a solid demonstration that it can and will comply with state standards, and that demonstration is filed and receives due process, that it is made public and is subject to iterative Comment and agency review.

Reconsideration is appropriate where there are errors of law, and there are errors of law in this case. The Order granted Freeborn Wind a site permit, but did so without noise modeling that demonstrates that the project will comply with Minnesota's noise standards. The noise modeling provided by the applicants in its application, and the ambient noise monitoring provided after the hearing as requested by the ALJ, was disregarded, and the permit was granted on the basis of modeling to be provided in the future with unknown results. The permit was also granted on a last minute proposed condition filed by the applicants, and based on a handout shown and discussed by the applicant but not visible on the screen, no handouts were provided, it was not filed subsequent to the Commission meeting, and the exhibit had to be requested, at which time it was filed, days later. This "exhibit" is not in the record. The modeling is not in the record, and the Commission's Order is unsupported by the evidence, and in fact, contrary to the evidence.

The ALJ's Recommendation was filed, May 14, 2018, recommending denial of the

permit, or that Freeborn Wind be granted time to submit noise modeling demonstrating it would comply with Minnesota noise standards. During the hearing, the ALJ had requested the applicant comply with Commerce guidance and provide ambient noise modeling, which they did in one week. Here, the Applicants had from May 14, 2018 until the Commission meeting on September 20, 2018, and yet they filed absolutely nothing to provide the Commission with a basis for finding that they would comply with the noise standard. At the last minute, in a full court press with Commerce and the MPCA, Applicant produced a promise and a piece of paper. The Commission's decision is unsupported by substantial evidence in the record, and is far in excess of its authority, pulling a permit out of thin air.

I. RECONSIDERATION AND STANDARD OF REVIEW

Reconsideration is appropriate where there are new issues, new and relevant evidence, errors or ambiguities in the prior order, or when the Commission is otherwise persuaded that it should rethink the decisions set forth in its order, which the Commission may take up on its own, or upon a petition setting out specific grounds or errors. Minn. Stat. §216B.27, Subd. 2; Minn. R. 7829.300, Subp. 2.

The appellate court may reverse or remand an agency decision if it is a) in violation of constitutional provisions; b) in excess of the statutory authority or jurisdiction of the agency; c) made upon unlawful procedure; d) affected by other error of law; e) unsupported by substantial evidence in view of the entire record as submitted; or f) arbitrary and capricious. Minn. Stat. §14.69.

An agency's decision will be deemed arbitrary or capricious if "its determination represents its will and not its judgment." *Id.* It will also be deemed arbitrary and capricious if the agency relied on factors which the legislature had not intended it to consider, if it entirely

failed to consider an important aspect of the problem, if it offered an explanation for the decision that runs counter to the evidence, or if the decision is so implausible that it could not be ascribed to a difference in view or the product of agency expertise. *Trout Unlimited, Inc. v. Minn. Dep't of Agric.*, 528 N.W.2d 903, 907 (Minn. App. 1995), *review denied* (Minn. Apr. 27, 1995). In this case, the Commission was intent on granting a permit, contrary to the Recommendation of the Administrative Law Judge, and despite the ALJ's finding that the Applicant had not demonstrated it would comply with noise standards, then granted a permit without any demonstration that the applicant could indeed comply with state noise standards. Further, it granted a permit and allowed for modeling to be provided after the permit was issued, just 14 days prior to a pre-construction meeting, with no opportunity for public review, comment, or cross-examination. This decision is counter to the evidence, and beyond the authority of the Commission. The Order is in excess of the Commission's statutory authority; it is made upon unlawful procedure and legal errors; is unsupported by substantial evidence; and is arbitrary and capricious.

Association of Freeborn County Landowners asks for Reconsideration of the Commission's Order in this matter of first impression, and for modification of the Order in several specific ways to result in an Order supported by the law and facts of this case.

II. THE LEGAL STANDARD FOR WIND SITING PERMIT

The Commission makes an error of law in issuing the Site Permit. In this case of first impression, the Site Permit cites only Minn. Stat. Ch. 216 F and Minn. R. Ch. 7854. There is no mention of the Power Plant Siting Act and the PPSA siting factors. Minn. Stat. §216E.03, Subd. 7. The Draft Site Permit was the same, only citing Minn. Stat. Ch. 216 F and Minn. R. Ch. 7854 despite a specific request/warning during the hearing to include Minn. Stat. §216E.03, Subd. 7.

Davis, Tr. Vol. 2, p. 158-170.

Under Minnesota's Chapter 216F, Wind Energy Conversion Systems, wind projects are granted exemptions from the Power Plant Siting Act, except for several sections which do apply, most notably the siting criteria of the Power Plant Siting Act's (PPSA) Minn. Stat. §216E.03, Subd. 7.

216F.02 EXEMPTIONS.

(a) The requirements of chapter 216E do not apply to the siting of LWECS, except for sections 216E.01; **216E.03, subdivision 7**; 216E.08; 216E.11; 216E.12; 216E.14; 216E.15; 216E.17; and 216E.18, subdivision 3, which do apply.

Minn. Stat. §216F.02 (emphasis added).

In addition to being the first wind project sited using a contested case proceeding, the Freeborn Wind Project's application is the first project in Minnesota to be sited under the umbrella of Minn. Stat. §216E.03, Subd. 7 siting criteria. In testimony, the Commerce project manager had no idea what Minn. Stat. 216E.03, Subd. 7 was and why it should be incorporated into the permit. EERA proved unequipped to evaluate the Freeborn Wind proposal because Davis was not familiar with the criteria to review this project and upon which permitting would be based. When asked about adding the statutory criteria to the parts of EERA Comments and Recommendations and the Draft Site Permit addressing authority and citing only Minn. Stat. Ch 216F and Minn. R. 7854, Davis stated that he wasn't clear why a reference to Minn. Stat. §216E.03, Subd. 7 should be added to the Comments and Recommendations and Draft Site Permit. Davis, Tr. Vol. 2, p. 158-170.

I would question whether our permit does not meet that already and our review does not meet that.

Davis, Tr. Vol. 2, p. 169, l. 19-22.

It should be noted that the Commission and Commerce-EERA have been siting wind projects using small wind siting standards, designed for projects under 25 MW and for use by counties if a project is small and locally sited. These “siting standards” are vague and variable, and setbacks for residences are established in the site permit using boilerplate language. Despite Commerce-EERA claims that “[t]he rules to implement the permitting requirements for LWECs are in Minn. Rule 7854,” that is false. There are no statutory siting criteria or rules for siting. See Minn. Stat. Ch. 216F; Minn. R. ch. 7854, cited on the first page of the Freeborn Wind site permit.. There are siting standards which were developed a decade ago for small wind, in a rushed hybrid process that was not a rulemaking. AFCL-8, Wind Siting Standards (Unique ID # [4897855](#)); see PUC Docket No. E,G-999/M-07-1102. Commerce uses a boilerplate site permit, with setbacks set at 1,000 feet. The origin of that distance? From the hearing:

The origin of the commonly used 1,000 foot setback, as found in Section 4.2 of the Freeborn Wind draft Site Permit, is not based in statute, rule, or standards, is arbitrary and is unknown:

Q: ... it lists 1,000 feet as a setback from residences. Where does that number come from? It's for the SDP template. Where do you get that number?

A: For the template or for what we've submitted for the preliminary?

Q: Both, really. But where do you get – where does the thousand foot come from?

A: Thousand foot. I don't know exact – the exact location of where that comes from. But in the most recent site permit applications that have been approved in the most recent site permits that have been issued by the Commission, that has been the standard distance that they've approved, along with the consideration of noise standards being met.

Davis, Vol. 2, p. 171-173; see also EERA-8, DSP, p. 3.

The residential setback for the Freeborn Wind project is 1,000 feet. Permit, §4.2, p. 2. There is no basis for this number in the record – it is not supported by evidence.

This use of the PPSA siting criteria was raised in the proceeding, it was properly addressed by the Administrative Law Judge, but Commission's Site Permit's silence makes this

error of law.

II. A PROJECT MUST DEMONSTRATE ABILITY TO COMPLY WITH STATE REGULATIONS

The Commission's decision, while claiming to adopt the Recommendation of the Administrative Law Judge, turns it full circle by permitting the project with no demonstration of ability to comply until the pre-construction meeting. Order, p. 29. The Commission misstates the MPCA's noise rule, and alters Findings to backwards engineer the desired result, and pulls numbers out of the air – the Order and the amended Findings are arbitrary and capricious.

Throughout the hearing, Invenergy/Freeborn Wind repeated the mantra that their sound studies were conservative, in large part due to the modeling assumption for the ground factor, set at 0.0, and the 3 dBA margin of error. Tr. Vol. 1B at 64-65, 115-116. The ground factor used of 0.0 was frequently raised in filings, written and oral testimony, and in briefs. From Hankard's Pre-Construction Noise Analysis:

A ground factor of **0.0** represents a completely reflective surface such as pavement, which would result in a higher level of sound reaching a receiver. A ground factor of 1.0 represents absorptive ground such as thick grass or fresh snow, resulting in a lower level of sound reaching the receiver. For this Project, a ground factor of 0.0 (completely reflective) was used to be conservative. Actual ground conditions could, at rare times, be 0.0 when the ground is completely frozen and bare, but would generally be closer to 0.5 when the ground is covered with vegetation or is bare and unfrozen.

Ex. A, Application, Appendix B, Pre-Construction Noise Analysis, p. 12; see also FoF 230-231, 234 (& fn. 364), 236-237.

At the last minute, the afternoon before the Commission meeting, the Applicant's proposed a "Special Condition," which presented a changed ground factor, one of 0.5, rather than 0.0, and setting a "turbine-only noise limit at 47 dB(A)." p. 2, September 19, 2018 letter. These two changes are significant. There is nothing in the record regarding the impact of a change from 0.0 to 0.5 as a ground factor.

The state noise standard is set at 50 dB(A) and it includes all noise from any source. Minn. R. 7030.0040. Freeborn claimed that “3 dB(A) is the generally recognized minimum detectable change in environmental noise levels...” and that this change “would result in a non-significant increase in total sound of less than 3 dB(A).” **3 dB(A) is a doubling of sound pressure.** Hankard, Tr. Vol. 1B at 64-65; 113-115. A doubling of sound pressure is significant.

Applicant argued that this change would make for an ‘noise regulation, but in a manner than can actually be measured following the applicable rules and standards.’ p. 2, September 19, 2018 letter. However, the “but” negates what comes before it. The state noise rules have clear measuring protocol, utilized by the Department of Commerce in a wind noise enforcement action. See Minn. R. 7030.0060; see also EERA-9, Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report [20183-140949-02](#); Bent Tree Noise Monitoring and noise Study Phase I – September 29, 2017 [01712-138411-07](#); Ambient sound is incorporated into the noise rule, and separating it out is compliance via sleight of hand. When measuring noise, part of that task is separating out the “rustling leaves or the dawn chorus” and that is what the consultants do. See Schedule E, Hansen Rebuttal Testimony, where the consultant states that he can hear birds chirping and wind blowing, but “he cannot discount the wind facility as being a main contributor.”

At the Commission meeting, Invenergy produced a chart labeled “Special Condition -- Example” but it was not eFiled, there were no copies for parties, and though it was put up on the viewer, it was not centered and was not legible, and the camera was focused on the speakers and not the chart. It was not filed until two weeks after the Commission meeting. Likely, it is not legally in the record. What was said at the meeting made no sense, and the numbers, such as the Turbine Level of 47 dB(A) was a number grabbed out of the air, as was the number 45 dB(A).

As above, the baseline ground factor changed from 0.0 to 0.5, and the mantra of 3 dB(A), a doubling of sound, was repeatedly claimed to be a “non-significant” increase. Letter and Attachment A, Proposed Special Condition Language. The production of modeling to demonstrate compliance was shuttled off until the “pre-construction meeting,” which would occur after granting of a permit, not before to demonstrate compliance. The “pre-construction meeting” is a meeting that occurs behind closed doors, there is no public review, and there is no public comment. Not only was the permit granted, but the work to demonstrate ability to comply with noise standards was not completed before the Commission meeting. There were at least four months in which the Applicants could have produced the modeling, but they did not, and instead, changed the parameters and pushed off their production of modeling into the back room where we have no way of evaluating their work. Given the four months from May to September to perform modeling that could demonstrate compliance, which they did not do, and given the last minute “Proposed Special Condition Language,” the Applicant’s claims that they can comply with Minnesota’s noise rules have little credibility.

The ALJ’s basis for determining that the project would not meet state standards was specific:

241. Table 2 in FR-18 shows that there are many instances where total noise will be quite close to, or exceed, 50 dB(A). There are approximately 254 homes in the Freeborn Wind Project footprint.³⁷³ According to Table 2, any time the ambient noise level is 50 dB(A), added wind turbine noise results in 53 homes experiencing levels of 51 dB(A) and 25 homes at levels of 52 dB(A), for a total of 78 homes experiencing more noise than permitted by Minn. R. 7030.0040.³⁷⁴ Two of the homes will experience 58 dB(A) if the ambient noise is 57 dB(A).³⁷⁵ None of these homes was predicted to experience wind turbine noise alone above 48.9 dB(A). Many were predicted to experience wind turbine noise alone in the very low-to-mid 40’s range.³⁷⁶ Thus, the addition of ambient noise is significant in that it raises the predicted nighttime noise exposure of more than 30 percent of the homes in the footprint of the Project beyond what is allowed in Minn. R. 7030.0040.

FOF 241, Recommendation, p. 48. This is legitimate cause for concern.

After the Commission took two months to revise the Findings to fit its Order, Finding 241 looks like this:

Finding 241

Table 2 in FR-18 shows that there are many instances where total noise will be quite close to, or could exceed, 50 dB(A). There are approximately 254 homes in the Freeborn Wind Project footprint.³⁷³ The turbines have yet to be built. However, pre-construction, it is the modeling Freeborn Wind conducted that is relevant for determining whether the Project will comply with the Noise Standards once operational. The record here demonstrates that Freeborn Wind included very conservative assumptions in its modeling and calibrated its modeling with real world data to ensure that modeled estimates are conservatively high.¹ If changes are made to the turbine layout, number of turbines, or turbine type, the Noise Analysis will be updated accordingly. According to Table 2, any time the ambient noise level is 50 dB(A), added wind turbine noise results in 53 homes experiencing levels of 51 dB(A) and 25 homes at levels of 52 dB(A), for a total of 78 homes experiencing more noise than permitted by Minn. R. 7030.0040.³⁷⁴ Two of the homes will experience 58 dB(A) if the ambient noise is 57 dB(A).³⁷⁵ None of these homes was predicted to experience wind turbine noise alone above 48.9 dB(A). Many were predicted to experience wind turbine noise alone in the very low-to-mid 40's range.³⁷⁶ Thus, the addition of ambient noise is significant in that it raises the predicted nighttime noise exposure of more than 30 percent of the homes in the footprint of the Project beyond what is allowed in Minn. R. 7030.0040. Table 2 in Ex. FR-18 shows that when background noise levels are 45 dB(A) or less, total sound levels are 50 dB(A) or less regardless of the turbine-only noise level. When background noise levels are in the 45 to 50 dB(A) range, turbines contribute to the total when turbine-only noise levels are approximately 44 dB(A) or greater.

Footnote(s)

1. See evidentiary hearing transcript Volume 1B at 111-112 (February 21, 2018 (Hankard)).

The Commission also exercised its will in gutting one of the ALJ's conclusions regarding noise:

Finding 301

The Commission's January 11, 2008 Order Establishing General Wind Permit Standards states that turbines must be setback from homes at least 500 feet and sufficient distance to meet the State noise standard, whichever is greater. While Freeborn Wind's proposed project meets the setback requirements based on Freeborn County's ordinance, it is not clear that it meets the requirements of the Commission's 2008 Order Establishing General Wind Permit Standards.⁴⁶³ Those standards call for a setback distance of 750-1,500 feet, "depending on turbine model, layout, and specific site conditions."⁴⁶⁴ In addition, for homes, the required setback is "at least 500 feet plus the distance required to meet the state noise standard."⁴⁶⁵

Footnote(s)

⁴⁶³. Ex. AFCL-8 (Order Establishing General Standards, PUC Docket No. E.G-999/M-07-1102 (Jan.11, 2008)).

⁴⁶⁵. Id. at 8.

The line-by-line changes are an exercise in working the ALJ's Recommendation to the opposite of the ultimate Recommendation, allowing for permitting of the project.

The site permit section on noise does specifically require compliance with MPCA noise standards. See Site Permit, § 4.3. The Commission cannot change the black letter regulation of MPCA's noise standards. Minn. R. 7030.0400.

The Commission handled this meeting flouting their "expertise," but there was no discussion of the impact of changing the ground effect from 0.0 to 0.5, and numbers of 50, 47, and 45 dB(A) were plugged in arbitrarily. The site permit was approved, the findings rewritten, with a result contrary to the admittedly advisory Recommendation of the Administrative Law Judge – that is arbitrary and capricious on its face. The noise standards are a black and white rule with specific, unambiguous definitions, limits and measurement methodology. The Commerce guidance with attached MPCA clarifying comments are equally unambiguous. Applicants argued in briefs that the guidelines are neither law nor rule, and have no weight. Commissioners in deliberation repeated several times, "this is not a rulemaking," and that is correct. It is an act of will on the part of the Commission, a willful desire to permit a project that could not demonstrate compliance, and despite the Commission's "expertise," to permit the project despite the evidence calling the project's compliance into question. The Commission made last minute changes in conditions, allowed Applicants to engineer last minute material changes that claimed compliance through a last minute Applicant filing, facilitated a presentation orchestrated with Commerce and MPCA to the Commission focused on a last minute proposal and a document not available to the public,¹ and acted in a manner to remove the project from public scrutiny and process. This is demonstration of acting against evidence, a decision not

¹ AFCL was asked in this deliberation flurry whether the proposed change was better than nothing, and of course, the response is "Yes, but..." and a detailed list of issues not addressed and why that was not sufficient is in the meeting transcript.

supported by evidence, and doing so in a way that is contrary to the statutory “broad spectrum citizen participation as a principal of operation.” Minn. Stat. §216E.08. The Commission failed to act responsibly, instead permitting the Freeborn Wind project against evidence and without requiring a demonstration of likely compliance prior to granting the permit.

The Commission should reconsider its modifications of the ALJ’s findings, conclusions, and recommendation in Attachment 1 of the Order. The Order is not supported by the evidence, and is arbitrary and capricious. The Commission should reconsider its Order that Freeborn Wind Energy LLC shall provide an updated pre-construction noise analysis demonstrating that the Project will comply with the noise permit conditions recommended by the Department as modified by the conditions proposed by the Company.

III. **SHADOW FLICKER WAS DEMONSTRATED TO BE SIGNIFICANT ISSUE BUT DISMISSED BY COMMISSION**

Shadow flicker is a common issue and consideration in siting of wind project. The record reflects that shadow flicker occurs when the turbines block the sun and although there is no regulation of shadow flicker in Minnesota, flicker is typically limited for nearby homes to 30 hrs/yr. See Recommendation, p. 49-53, FoF 242-262. Wind developers perform shadow flicker monitoring, but shadow flicker occurs, whether someone is a “receptor” or not. Wind companies propose “mitigation” using blinds and shades, leaving people to sit in the dark in daytime, or as Freeborn’s Litchfield suggested in writing, “go to Florida for the winter.” See Public Comment, Kathy Nelson, 7/3/2017 ([20177-133467-02](#)). Freeborn Wind did “receptor” specific shadow flicker modeling, which revealed potential for beyond 30 hours. Recommendation FoF 256; Litchfield Rebuttal, Ex. RF-11 p. 5. The modeling itself, however, seems to show a much greater number of hours. Litchfield Rebuttal, Ex. RF-11, Flicker modeling results; Nelson 20183-141036-02; Robbins 20183-141040-01; Hansen 2-17010-136232-01; 20183-141225-02.

The Commission's Order understates the shadow flicker impacts, claiming that 2 locations would receive between 27 and 30 hours per year, but that was not the ALJ's Finding. There are at least seven "receptors" over 30 hours, three participating landowners, and four non-participating. FoF 256, Recommendation p. 51; Ex. FR-1, at App. B (Shadow Receptor Coordinates & Realistic Shadow Hours). The ALJ's Finding 261 was gutted, and the level of concern for monitoring was raised from 27 hours to 30. This change is not supported by the evidence, and is another example of the Commission jettisoning its expertise and instead exercising its will. See FoF 260 and 261, Recommendation, p. 52-53.

The Commission should reconsider its modifications of the ALJ's findings, conclusions, and recommendation in its Order. The Order is not supported by the evidence, and is arbitrary and capricious. The Commission should reconsider its Order that monitoring only be required at those locations where 30 hours or more of shadow flicker are predicted.

IV. DECOMMISSIONING RULES REQUIRING INFORMATION TO BE INCLUDED IN THE APPLICATION WERE CIRCUMVENTED.

The Commission has expertise in decommissioning, from decommissioning plans to the actual decommissioning of turbines, which is occurring now in southwest Minnesota. In this case, the Commission has disregarded its expertise and acted against interest in permitting a project that has not provided information on decommissioning, and by pushing off decommissioning planning to a post-hearing private process between the Applicants and Commerce. What lessons learned from the ongoing decommissioning of turbines were brought to this project?

The required decommissioning information was not included in the application. The Commission let that omission through, declaring the Application "substantially complete." Minnesota Rules require a minimum of decommissioning information:

Subp. 13. Decommissioning and restoration.

The applicant shall include the following information regarding decommissioning of the project and restoring the site:

- A. the anticipated life of the project;
- B. the estimated decommissioning costs in current dollars;
- C. the method and schedule for updating the costs of decommissioning and restoration;
- D. the method of ensuring that funds will be available for decommissioning and restoration; and
- E. the anticipated manner in which the project will be decommissioned and the site restored.

Minn. R. 7854.0500, Subp. 13.

Despite this requirement, and both the Commission's and Commerce's responsibility to assure an application is complete, EERA did not raise this omission to the Commission, and the Commission blithely declared the Application complete without any acknowledgement of the omission of decommissioning information. This abdication and postponement of decommissioning planning is a systemic problem, but in this case, a specific problem for this project. In practice, Commerce has not been addressing decommissioning until the "Pre-construction meeting," where there is no public scrutiny or review, no opportunity for comment.

When questioned about decommissioning, Invenenergy's Litchfield was not able to provide any information, either in Data Requests or testimony. There is virtually no information from Applicants on decommissioning in the record.

Despite the Commission's and Commerce's disregard for the rule, and despite failure of the Applicants to provide the required information in the course of the proceeding, the Commission granted the permit with language amendment in the permit regarding decommissioning. Permit, p. 23-24. The language acknowledges Minn. R. 7854.0500, Subp.

13. The Commission did not establish a requirement that the information and decommissioning plan be provided to parties or the public, there is no process for review for adequacy, and no specifics on requirements for financial assurance. There is a section on Abandoned Turbines, but evidence in the record reveals lease provisions specifying that if turbines are not decommissioned, the landowner may decommission and turn to Freeborn Wind for collection:

If Grantee fails to remove such Windpower Facilities within twelve (12) months of termination of the Easement, or such longer period as Owner may provide by extension, Owner may do so, in which case grantee shall reimburse Owner for reasonable and documented costs of removal and restoration incurred by Owner.

AFCL-35, Wayne Brandt Public Comment from Public Hearing, p. “15;” see also Brandt, Public Hearing, p. 133-139.

No permit should be granted until a thorough decommission plan has been vetted and financial assurance has been provided, opened for comment, and reviewed by Commerce, the public, and the Commission, as contemplated by the requirement that decommissioning information be in the application. The Commission’s Order is not supported by evidence.

V. **FREEBORN WIND IS ALREADY NOT COMPLYING WITH PERMIT**

The site permit requires that Invenenergy/Freeborn Wind maintain current contact information for Complaints and Complaint Reporting. Freeborn gives the address of 120 East Main St., Glennville, but that office is empty, walk unshoveled, numbers taken off the mailbox.



Freeborn Wind must provide a legitimate address for the permit. Also, a Post Office Box is not an office.

VI. NEW INFORMATION HAS SURFACED THAT HAS AN IMPACT ON PROJECT PERMITTABILITY.

New information has become available that the Commission should consider.

A. Data Practices Act Requests show confusion and Freeborn Wind efforts to gain access to county easements for transmission – an admission that it does not have sufficient land rights for the project – and Freeborn County seeks guidance on its legal issue from Commerce staff.

As in the transmission docket, there is new information from Data Practices Act Requests, the responses from Freeborn County and the Dept. of Commerce. The documents produced by both the County and Commerce show acknowledgement of easement and land acquisition problems through the stated questions and concerns of Freeborn Wind regarding use of the County's road easements for transmission, and concern about utility status and eminent domain, not available to a non-utility, trying to find a way to get the transmission line across 803th Avenue. There is also an issue in the siting docket of whether there is sufficient land to build the project. We have been told numerous times that there is no room to move any turbines. Litchfield, Tr. Vol. 1A, p. 81; 83. If they do not have land rights, they cannot build the project as planned.

The Freeborn County responses show that the County was seeking and receiving advice from Commerce's Larry Hartman regarding use of county road easements for transmission and Freeborn's utility status.

B. World Health Organization addresses Wind Turbine Noise.

For the first time, the World Health Organization has addressed the issue of wind turbine noise and offered precautionary noise guidelines. Exhibit G (selected). This is a conditional

strength guideline, with sufficient support from the WHO scientists to be included in this year's Environmental Noise Guideline. The 45 dB noise limit is in line with that found in Wisconsin for wind turbines, and is lower than that of Minnesota. Wis. PSC Code Ch. 128; Minn. R. Ch. 7030.

 Wind turbine noise	
Recommendation	Strength
<p>For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below 45 dB L_{day} as wind turbine noise above this level is associated with adverse health effects.</p>	Conditional
<p>No recommendation is made for average night noise exposure L_{night} of wind turbines. The quality of evidence of night-time exposure to wind turbine noise is too low to allow a recommendation.</p>	
<p>To reduce health effects, the GDG conditionally recommends that policy-makers implement suitable measures to reduce noise exposure from wind turbines in the population exposed to levels above the guideline values for average noise exposure. No evidence is available, however, to facilitate the recommendation of one particular type of intervention over another.</p>	Conditional

AFCL asks that the Commission reconsider its Order, and to review the WHO Environmental Noise Guidelines and consider these voluntary limitations on noise for the Freeborn Wind project. Each part of the WHO Environmental Guidelines regarding wind should be given serious consideration and incorporated into the Order and Site Permit.

VII. THE COMMISSION SHOULD RECONSIDER ITS ORDER AND DENY THE PERMIT, OR TABLE THE MATTER AND REQUIRE FREEBORN WIND DEMONSTRATE COMPLIANCE PRIOR TO ISSUANCE OF A PERMIT.

AFCL asks that the Commission reconsider its Order, and that the permit be denied. In the alternative, AFLC requests that it be remanded to the Administrative Law Judge for Findings

and a Recommendation consistent with the evidence regarding Freeborn Wind's lack of land rights to build this project, and a recommendation that the permit be denied for lack of land rights, or held in abeyance until such land rights are acquired. The Applicant must demonstrate that it has land rights for the entire project and not encroach on non-participants' land. Beyond that, in respect for affected landowners, Association of Freeborn County Landowners takes no position as to the route of the project. Overall, AFCL's position is clear: The community does not consent to this project.

Respectfully submitted,

January 8, 2019



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BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
Katie J. Sieben	Commissioner
John A. Tuma	Commissioner

In the Matter of the Application of Freeborn
Wind Energy LLC for a Route Permit for the
Freeborn Wind Transmission Line in
Freeborn County

ISSUE DATE: December 19, 2018

DOCKET NO. IP-6946/TL-17-322

ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
PETITION FOR RECONSIDERATION

Association of Freeborn County Landowners (AFCL), participant in the above-captioned docket and intervenor in the related and concurrent wind siting docket (IP6946/WS-17-410), bring this Motion for Reconsideration of the Commission's decision to grant a route permit to Invenergy's Freeborn Wind transmission project, deliberated September 20, 2018, and the Order filed on December 19, 2018. Minn. Stat. §216B.27; Minn. R. 7829.3000. AFCL requests the Commission reconsider its decision and amend its Order to deny the permit and to reflect that Invenergy/Freeborn Wind is not a public service corporation, does not have sufficient land rights to build the project, and because it is not a utility, does not have the power of eminent domain.

The Administrative Law Judge and the Commission are to address the factors set forth in the Power Plant Siting Act:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;

- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;
- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

Minn. Stat. §216E.03, Subd. 7; Minn. R. 7850.4100.

The Commission's decision is an error of law because the Commission ignored or dismissed crucial information regarding Applicant's lack of land rights, fraudulent actions on the part of Applicant's employees. The Order and process was flawed because AFCL exceptions were not included with or addressed in the Staff Briefing Papers, and there was no opportunity for the Commission to consider the specifics of the AFCL exceptions; in error because it grossly misstates Robert B. Knutson's comments and documentation and did not take into account the Dept. of Commerce enforcement action of revocation of notary commission and fine of Thomas Spitzer,

documentation of which was provided by Robert Knutson and filed August 10, 2018,¹ and by AFCL on July 24, 2018.² There is new information that should be considered by the Commission, including responses to AFCL’s Data Requests of Freeborn County in late November, and Commerce’s responses in January 2019, that acknowledge failure of Freeborn to secure all necessary land rights and efforts to use county right-of-way, and evidence of discussions between the County and Commerce staff not assigned to the project seeking advice on use of county right of way. The other important piece of new information is the World Health Organization’s Environmental Noise Guidelines, released October 10, 2018. The Commission’s decision is also flawed due to procedural errors and the exceptional disregard of the Administrative Law Judge for Commission process, statutory requirements of notice of Prehearing Conference, the public, and specifically, for Association of Freeborn County Landowners. The Recommendation in this case reads as if we were not there.

Public participation is to be the Commission’s principle of operation:

Subd. 2. Other public participation.

The commission shall adopt broad spectrum citizen participation as a principal of operation. The form of public participation shall not be limited to public hearings and advisory task forces and shall be consistent with the commission's rules and guidelines as provided for in section [216E.16](#).

There was no “broad spectrum citizen participation” allowed in this docket.

I. ADMINISTRATIVE LAW JUDGE SYSTEMATICALLY AND REPEATEDLY DISREGARDED AND DISMISSED COMMENTS OF ASSOCIATION OF FREEBORN COUNTY LANDOWNERS.

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20188-145696-01	PUBLIC	17-322	ROBERT B KNUTSON	OTHER--REQUEST TO DENY PERMIT DUE TO FRAUDULENT NOTARIZING OF LEASE AND REQUIRE RENEWAL OF ALL LEASES BY REMOVED NOTARY	08/10/2018
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20187-145162-02	PUBLIC	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	LETTER--TO PUC RE COMMERCE ORDER REVOKING NOTARY COMMISSION OF THOMAS SPITZER INVENERGY	07/24/2018
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In this transmission docket, the Administrative Law Judge systematically and repeatedly disregarded and dismissed comments of Association of Freeborn County Landowners, whether oral testimony or written comments.³ AFCL raised these issues in Exceptions,³ but the Commission failed to consider these fundamental problems. For this reason, AFCL is including our line-by-line exceptions within in this Petition for Reconsideration.

From the beginning, in Comments to the Commission, and following in Comments to the ALJ, AFCL has raised the issues of fraudulent notarization; inability of the project to be constructed only on participant land; misguided claims of availability of the power of eminent domain to Freeborn Wind, LLC; missing locations of eagle nests; impact of the project on Shell Rock Water Trail; lack of inclusion of county and township zoning ordinances for consideration of

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20187-145162-02	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	LETTER--TO PUC RE COMMERCE ORDER REVOKING NOTARY COMMISSION OF THOMAS SPITZER INVENERGY	07/24/2018
20187-144869-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	MOTION--AFCL-MOTION TO SUSPEND TRANSMISSION PROCEEDING,PENDING COMMISSION ACTION ON SITING PERMIT.	07/13/2018
20187-144769-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	LETTER--NOTICE OF DATA PRACTICES ACT REQUEST TO COMMERCE INVESTIGATIONS	07/12/2018
20186-144263-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	MOTION--MOTION TO SUSPEND PROCEEDING OR DENY WITHOUT PREJUDICE OR CERTIFY TO COMMISSION	06/27/2018
20186-143993-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	MOTION--MOTION TO STRIKE FREEBORN FILINGS AS UNTIMELY	06/19/2018
20186-144003-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	MOTION--TO STRIKE OR IN THE ALTERNATIVE REOPEN	06/19/2018
20186-144006-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	MOTION--AMENDED MOTION TO STRIKE OR IN THE ALTERNATIVE REOPEN	06/19/2018
20186-143735-01	17-322	DORENNE HANSEN, FOR ASSOCIATION OF FREEBORN COUNTY LANDOWNERS (AFCL)	COMMENTS--RE: TRANSMISSION LINE ROUTE AND POTENTIAL ISSUES.	06/12/2018
20186-143738-01	17-322	DORENNE HANSEN, FOR ASSOCIATION OF FREEBORN COUNTY LANDOWNERS (AFCL)	COMMENTS--RE: OMISSIONS AND ISSUES WITH THE TRANSMISSION LINE APPLICATION.	06/12/2018
20186-143756-01	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	COMMENTS	06/12/2018

community concerns and impacts; the 22 foot diagonal crossing of 830th Avenue over non-participants land; the misleading minimization of magnetic field potential; conflating magnetic fields with electric fields for interference with pacemakers, etc; gathering of Iowa generated electricity into this project substation; minimal cost analysis and no identification or attribution of MISO system upgrade costs; impact on property values and marketability, and many factual and legal errors and omissions in the application, record, and the ALJ's Recommendation and adoption by the Commission. At the public hearing, AFCL requested its members and the public be provided the opportunity to testify under oath or affirmation, and encountered resistance from the Administrative Law Judge, but each of those testifying in support of AFCL was ultimately sworn on oath.

In this docket, there is no indication that the community has been heard. The community does not consent to this project.

In addition to these issues documented in the record, there is also new information. AFCL filed Data Practices Act Requests with Freeborn County regarding the land to which Applicants do not have land-rights to build its transmission line. Freeborn County delayed considerably, and then produced the documents at an outrageous price. From these documents, it was apparent that the Dept. of Commerce had a role, and a subsequent Data Practices Act request was filed with Commerce. The results of those Data Practices Act requests are attached as Exhibit E and F.

II. THE PROCESS WAS FRAUGHT WITH PROCEDURAL IRREGULARITIES.

There were significant procedural irregularities and errors as this docket proceeded forward. The Association of Freeborn County Landowners raised these issues as they occurred and/or before the Commission, and the Commission failed to take these errors into account.

AFCL chose to participate in this transmission docket as participants, not intervenors, as provided by Minn. Stat. §216E.08 and Minn. R. 1405.1800. The First Prehearing Order for this transmission case was issued after the Prehearing Conference on April 2, 2018. However, there

was no notice provided of this Prehearing Conference by either the PUC or OAH.⁴ Without notice, how does one participate?

The first and only Prehearing Order did not include the standard boilerplate language regarding participation versus intervention that is included in other Prehearing Orders:

5. It is not necessary to be an intervenor or party to participate in these proceedings. Members of the public may submit written comments during the comment periods, appear at all hearings and forums, and participate in the public hearing. The public hearing will provide an opportunity for individuals and groups to present evidence and argument on the issues in this case, and to question all persons testifying. Members of the public:

- (1) may offer testimony without or without the benefit of oath or affirmation;
- (2) are not required to pre-file their testimony;
- (3) may offer testimony or other material in written form, at or following the hearing;
- (4) may question any person testifying or who has offered pre-filed testimony, either directly or by submitting questions to the Administrative Law Judge, who will then ask the questions of the witness.

Prehearing Order, Freeborn Wind Site Permit Docket, p.2 (IP6946/TL-17-410).⁵

The First Prehearing Order in this Freeborn transmission docket also did not provide the standard language regarding providing testimony in a hearing “without benefit of oath or affirmation” and its weight given:

6. Oral testimony or written testimony provided without benefit of oath or affirmation, and which is not subject to cross-examination, shall be given such weight as the Administrative Law Judge deems appropriate [citing Minn. R. 1405.0800].

Id.⁶ This language should always be included in Prehearing Orders because the ALJ and

⁴ Take a look, find it – good luck with that!

20179-135814-01	PUBLIC	17-410	<input type="checkbox"/>	WS	OAH	ORDER--RE-SERVE FIRST PREHEARING ORDER	09/26/2017
20179-135781-01	PUBLIC	17-410	<input type="checkbox"/>	WS	OAH	ORDER--FIRST PREHEARING ORDER	09/25/2017

Commission assign weight to testimony, and the public would have no way of knowing or understanding the importance of testifying under oath. Why is this important? The Commission has previously questioned whether public testimony was given under oath or not, while deliberating. Offering testimony under oath is important for full inclusion and consideration – the matter of testifying under oath was raised before this public hearing began, and the ALJ did not want to offer the public the option of affirmation or swearing under oath. Despite this, during the public hearing, AFCL members and other public testifiers requested to be sworn in, and were sworn. This is not noted in the Recommendation. Swearing in of witnesses should not be an issue at public hearings, and a testifier’s request to be sworn should not be challenged.

There were additional problems. **NONE** of the typical OAH language regarding options and methods of participation appear in the transmission docket Orders, either the First Prehearing Order or the following First Prehearing Order with amended filing dates, the only Prehearing Orders filed.⁷ The “Prehearing Order” in this docket contains only nominal scheduling information, and the barest of information regarding Notice and the public hearing. There was only the “First Prehearing Order” in its two versions, and no other orders.

The connected nature of the wind project site permit and this dependent transmission project route permit were brought to the forefront in Completeness comments and again by AFCL after the Recommendation regarding the wind site permit was issued. Freeborn Wind is waffling on this dependence and linkage between the projects:

Condition 16: Any permit issued should have a “Special Condition” that “the

⁶ . Prior to the beginning of the hearing, the judge was requested to offer oath and affirmation, and he was reluctant. Each AFCL member, testifying as an individual, requested to be placed under oath, and did testify under oath, as did the undersigned (which was objected to by Freeborn’s attorney!). Swearing in was also an issue at a previous hearing in another docket, indication of a systemic problem.

⁷

<u>20185-143153-01</u>	PUBLIC	17-322	OAH	ORDER--AMENDED FIRST PREHEARING	05/17/2018
<u>20184-141685-01</u>	PUBLIC	17-322	OAH	ORDER--FIRST PREHEARING	04/04/2018

Project will not be constructed unless the Commission issues a Site Permit for the Freeborn Wind Farm,” and that if permitted, it may be transferred to, owned and built only by a public service corporation.

“Freeborn Wind indicates it will only construct the project if the wind farm is permitted.” (EA, at page i.) In its reply comments Freeborn Wind indicates that it “finds it necessary to clarify that it would intend to proceed with construction of the Project to support the Worth County wind turbines. Accordingly, Freeborn Wind requests that a Route Permit be granted to allow construction of the Transmission Line irrespective of the Commission’s decision in the Site Permit docket.” (Reply Comments, at page 6) Staff believes this condition is unwarranted.

Commerce-EERA Comments, 6/28/2018. Freeborn Wind has not amended its application.

On May 14, 2018, the Administrative Law Judge assigned the Freeborn Wind Project site permit (IP6946/WS-17-410) filed her Recommendation:

The Administrative Law Judge concludes that Freeborn Wind has failed to demonstrate that the proposed Project will meet the requirements of Minn. R. 7030.0040, the applicable Minnesota Noise Standards. Therefore, the Administrative Law Judge respectfully recommends that the Commission either deny Freeborn Wind’s Application for a Site Permit, or in the alternative, provide Freeborn Wind with a period of time to submit a plan demonstrating how it will comply with Minnesota’s Noise Standards at all times throughout the footprint of the Freeborn Wind Project.

Summary of Recommendations, p. 2. On May 27, 2018, following the filing of the site permit Recommendation of denial, AFCL filed a Motion to Suspend the transmission proceeding because the underlying Freeborn Wind project site permit is in limbo. In the alternative, this application should be denied without prejudice, or be Certified to the Commission for consideration. This Motion was ignored, neither granted nor denied, nor listed in the “Procedural History.” There is no mention of the ALJ’s transmission Recommendation of the transmission line’s dependence on the wind project and its site permit and the impact of the ALJ’s wind site permit recommendation on need or timing of transmission for Freeborn Wind.

Consideration of timing in this transmission route proceeding is not prohibited by either rule or statute. Minn. Stat. §216E.02, Subd. 2; Minn. R. 7850.4200. Because of the significance of a recommendation of permit denial or opportunity for a demonstration of compliance, the timing of

this transmission project and proceeding is a material issue – the wind project and this connected transmission project should be delayed. The Commission’s order, however, was to the contrary.

Disregard, discounting, and dismissal of the public and issues raised by the public is disappointing, but it is not surprising, given the minimalist Prehearing Order. Intervention is not necessary under the rules, participation is encouraged, participants have rights. To issue a Recommendation “based on the Applicant’s preference” goes beyond, and is not acceptable. For decades it has been law:

The commission shall adopt broad spectrum citizen participation as a principal of operation.

Minn. Stat. §216E.08. It’s a great theory, but in practice, it isn’t working. In the line by line Exceptions, AFCL noted some of the specific facts and issues not incorporated, but they were not regarded as “relevant documents” by Commission staff. The Commission never had a chance to review and consider filings not deemed “relevant” by staff.

III. “THE APPLICANT’S PREFERENCE” IS NOT A VALID ROUTING CRITERIA!

The ALJ’s Recommendation in this this transmission docket is an error of law. Instead of adhering to the applicable statutory factors of the Power Plant Siting Act, in this transmission docket it is the “applicant’s preference”⁸ that rules, and the Recommendation of the ALJ was based on the “applicant’s preference.” In three instances, the Applicants was a deciding factor.

- **Given the Applicant’s preference** for the Purple Parallel Route, the Commission should **GRANT** the Route Permit for the Purple Parallel Route...⁹ (emphasis added).
- 262. As set forth above, because the Teal, Orange, and Purple Parallel routes make use of existing ROW and generally compare favorably in terms of cost to the route alternatives, the record demonstrates that the Teal, Orange, and Purple Parallel routes best meet Minnesota’s route selection criteria. **Based on** consideration of all routing factors **and the Applicant’s preference**, the Orange Route combined with the Purple Parallel Route is the best route for the Project (emphasis added).¹⁰

⁸⁸ See ALJ Recommendation, p. 2; FOF 262 p. 51; p. 53.

⁹ See ALJ Recommendation, p. 2.

¹⁰ FOF 262 p. 51.

Twice in the two paragraph “Recommendations” – once in each paragraph/sentence, the Applicant’s preference is the focus:

RECOMMENDATIONS

The Commission should **GRANT** a Route Permit with the general and special route permit conditions for a 161 kV HVTL along the Purple Parallel Route **based on Applicant’s preference** and with Applicant’s proposed modification to narrow the route by 130th Street to match the Orange Route in this area.

In the alternative, the Commission should grant a Route Permit for the Orange Route with the general and special route permit conditions **based on the Applicant’s preference**.

Recommendation, p. 53. The ultimate Recommendation is in large part “based on Applicant’s preference.” The Commission adopted the ALJ’s Recommendation including the “based on the Applicant’s preference” statements. This is an error of law – the Applicant’s preference is not a criteria for routing a transmission line.

IV. APPLICANT DOES NOT HAVE LAND RIGHTS TO BUILD THIS PROJECT AND IS ATTEMPTING TO CIRCUMVENT NON-PARTICIPANTS’ FEE INTEREST.

The ALJ’s Recommendation, adopted by the Commission is dependent on Applicant’s ability “to maintain the entire route on participating landowners’ property.”¹¹ The Commission’s order ignores determinative facts in the record. The Commission’s narrative stated that:

AFCL questioned whether Freeborn Wind has, or will obtain, the necessary property rights to build its project. It argued that the Company’s land agents acted inappropriately in securing and documenting easements, that the county lacks authority to use road easements for transmission lines, and that the law does not grant Freeborn Wind eminent domain powers to acquire easements without a landowner’s consent.

Order, p. 9. However, AFCL demonstrated that Freeborn Wind does not have all the necessary property rights, and both Freeborn Wind and AFCL entered evidence that the Company’s land agents acted inappropriately.”

¹¹ Recommendation, p. 2.

Freeborn Wind repeatedly states that it has land rights sufficient to build this project, but admittedly does not have all land rights. Freeborn Wind was concerned about both its non-utility status and using the county's road easements to build over the non-participating landowners. Newly discovered evidence, from Data Practices Act requests to Freeborn County and the Dept. of Commerce show multiple discussions and references to discussions of these topics. See attached Exhibits E and F.

The repeated statements that Freeborn has all land rights to build this project is a false statement, and the project should not go forward. Minn. Stat. §216E.14(1).

A. Freeborn Wind employees and contractors have not acted in good faith in securing land rights.

In its application, Appendix A, Freeborn Wind admits an employee was fired for lying. Notice of this land agent's firing was sent in a letter of many subjects, and copies were included in the Application, Appendix A:

9. We hire experienced and trustworthy professionals to spend the time at kitchen tables and in the field negotiating our land agreements. Unfortunately, a land agent working on our project in 2015 did not live up to this standard and was exposed to be blatantly lying to some landowners. He was fired as soon as we found out, as we deem this behavior completely unacceptable. I don't know what else to say about this – I'm sorry for those who were lied to. It is not ok. We are doing the best we can do rebuild trust.

See e.g., Application, Appendix A, p. 58 of 78.

Another employee fraudulently notarized a lease, notarizing a signature purporting to be that of Robert B. Knutson when he did not sign the document and was not present when it was notarized. Knutson's comments and documentation regarding this were disregarded by the ALJ and the Commission, which grossly misrepresented the situation. From the Commission's

Order:

D. Robert B. Knutson

Robert B. Knutson, who is a notary, alleged irregularities on the part of a person who notarized some of the leases related to the Project.

Order, p. 9.

Where did the Commission come up with this statement? Not from the record! Robert B. Knutson is not a notary – he is the landowner who filed a Complaint with the Department of Commerce, which revoked the Commission of said Notary, Thomas Spitzer, and fined him \$500. On August 10, 2018, Mr. Knutson filed a notarized statement that he was the one who made the Complaint and requested that his lease be terminated.¹² Exhibit A. At no time did he represent himself as a notary, and he did notify the Commission of this impropriety that affects land rights. AFCL filed the Dept. of Commerce Enforcement Department’s Order on July 24.¹³ Exhibit B.

It has recently come to AFCL’s attention that there are irregularities in Invenergy/Freeborn Wind’s leases from its contractor William Gillen. Mr. Gillen signed his easements as “a single person” on September 10, 2015; July 24, 2017; and April 10, 2018. However, his marriage license is dated 9/21/2013 and filed September 21, 2013. Mr. Gillen can easily correct this error, but given his position with Invenergy/Freeborn Wind, the fired employee early in the process, the revocation of Spitzer’s notary commission -- how many other such errors are there? The Commission should verify all claims of land rights for this project.

These questions of land rights play into the projects lack of land where the transmission route would cross a county road. The fact of non-participants’ land in Freeborn’s proposed corridor on the recommended Purple route along 830th Avenue is repeated in the Recommendation:

¹²

20188-145696-01	PUBLIC	17-322	ROBERT B KNUTSON	OTHER--REQUEST TO DENY PERMIT DUE TO FRAUDULENT NOTARIZING OF LEASE AND REQUIRE RENEWAL OF ALL LEASES BY REMOVED NOTARY	08/10/2018
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¹³

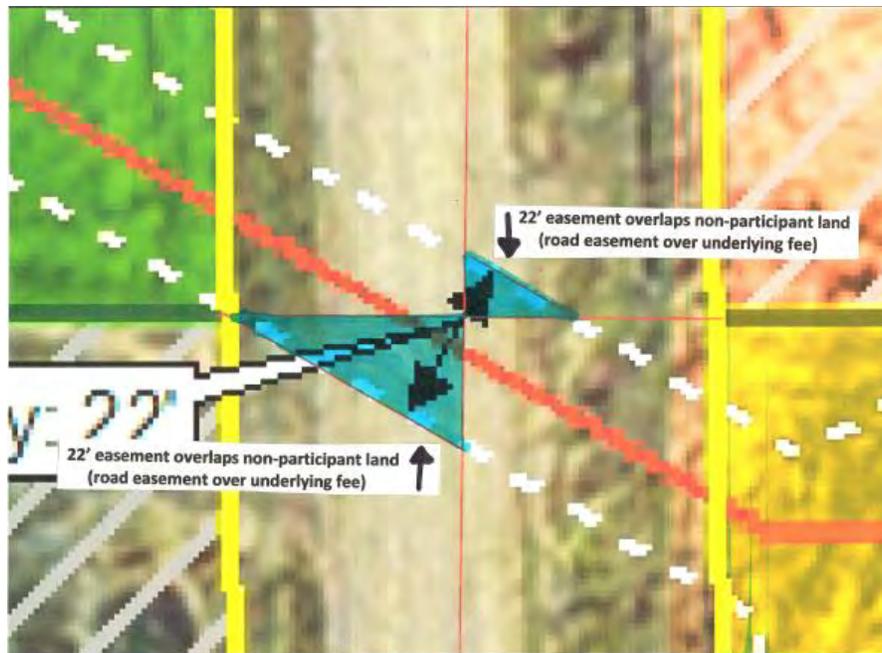
20187-145162-02	PUBLIC	17-322	ASSOCIATION OF FREEBORN COUNTY LANDOWNERS	LETTER--TO PUC RE COMMERCE ORDER REVOKING NOTARY COMMISSION OF THOMAS SPITZER INVENERGY	07/24/2018
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This is the proposed alignment from the Application:



Freeborn Transmission Application, p. 18.

There is no information in the record specifically regarding the fee interests underlying the County road, and there should be, although non-participating landowners are admittedly at that intersection. The underlying fee interests of these non-participants looks like this blue shaded area:



AFCL Route Comments to ALJ, June 12, 2018. This non-participating landowner interest is also shown in the Environmental Assessment map:



Environmental Assessment, Map 6 Participating and Non-Participating Landowners, Landowner Participation, crop of Map 3 of 3.

This issue of the interests of the fee landowners was raised in the public comments, orally, and in writing, and is included in the Environmental Assessment, in narrative and noted visually in maps, as well as the June 28, 2018 comments of Commerce.

The underlying fee interest of non-participant landowners should have been prominent in the Recommendation, because at least one landowner specifically brought this to the attention of the Administrative Law Judge. The fact of non-participants' land in the proposed corridor is also found repeatedly in the Application, as is the Applicant's attempt to skirt non-participants' land through use of improperly narrow 22 foot easement over the road. This 22 foot "easement" proposal, through making the easement as narrow as possible, runs right over the non-participants' fee interest in the property over which the county has its road easement. The Recommendation's Findings of Fact state:

53. The Purple Route Segment was proposed during scoping and follows an existing transmission line corridor. The EA studied two possibilities for this route segment: running the proposed HVTL parallel to the existing ITC Line (paralleling) (Purple Parallel) or overbuilding the proposed HVTL above the ITC Line on new structures within the existing ITC ROW (overbuilding) (Purple Overbuild). The Purple Route Segment includes a small area of the route width of this route segment, located to the east of 810th Avenue crossing 130th Street, **with two non-participating landowners**, but the Purple Parallel routing option could be constructed entirely on participants' land (emphasis added).

54. Traveling south to north, the Purple Route Segment breaks from the Teal/Orange route in the NE 1/4 of S28, T101, R20W where it continues west approximately 1,000 feet along field lines to the existing ITC Line. The route segment turns north and travels along the ITC Line for approximately one and one-quarter miles until it reaches 130th Street, where it rejoins the Teal and Orange routes. Route widths vary from 250, 400, and 600 feet. Constructing the Purple Overbuild Route south of 120th Street would cause some of the ROW to be on a nonparticipant's land. Overbuilding for the first half mile north of 120th could be done all on participating land. The remaining half mile towards 130th Street would require **two new transmission easements**. (emphasis added)

61. For certain segments, Freeborn Wind proposes to use a vertical configuration, with all conductors located on one side of the pole. **This design is needed to create the correct approach angle for the segment of turn 2 to turn 3 that uses the 22-foot wide ROW across County Road 108/830th Avenue.** For the single-circuit 161 kV vertical-designed poles, a braced post structure TSP-161 structure type will be used (emphasis added).

67. Route widths vary from 250, 400, and 600 feet for the Purple Route. The Purple Route includes a small area with **two non-participating landowners**, but the Purple Parallel routing option could be constructed entirely on participants' land (emphasis added).

73. In one location, at the crossing of County Road 108/830th Avenue at one quarter mile south of 120th Street, **a narrowed ROW is proposed to maintain the ROW for the Project within land owned by participating landowners and within public road ROW where Freeborn Wind is seeking a utility permit from Freeborn County.** A vertical design with a **22-foot ROW** will be used on this single, short span. Freeborn Wind engineers developed a design in this limited area that can be operated in a **22-foot ROW**, which is within the 66-foot wide County Road 108 ROW. To ensure adequate clearances, Freeborn Wind proposes a special design using two dead-end structures. The two poles will be located feet apart and the **22-foot ROW** would apply only to the area between the two poles. The area needed for construction will be contained on the participating landowners' parcels. The existing distribution line will be buried in this location. **Freeborn Wind continues to talk with adjacent landowners and Freeborn County and may propose to change the design and alignment if a voluntary easement is obtained or to meet Freeborn County requirements.** When the proposed line is parallel to a roadway, Freeborn Wind does not intend to locate structures within road ROW, and poles will be placed within the private ROW adjacent to the roadway ROW (emphasis added).

89. The Orange and Purple Parallel routes have the least impact on nonparticipating landowners. Freeborn Wind has, through voluntary agreements, obtained the rights necessary to construct the Project along the Teal, Orange, and Purple Parallel routes on participants' land **except for a road crossing associated with 830 Avenue.** Freeborn Wind is **seeking a utility permit from Freeborn County for this road crossing to keep the transmission line entirely within**

participating landowner property or public ROW (emphasis added).

152. Prior to construction, Freeborn Wind will coordinate with the applicable local and state road jurisdictional authorities to **obtain the necessary permits for road access and public road ROW use**. For example, Freeborn Wind is seeking a **utility permit from Freeborn County for the crossing of County Road 108/830th Avenue at one-quarter mile south of 120th Street, where Freeborn Wind has proposed a narrowed ROW in order to maintain the ROW for the Project within land owned by participating landowners and within public road ROW**. Freeborn Wind has had multiple constructive discussions with Freeborn County Staff and Shell Rock Township officials, and is confident a thorough Three Part Agreement will be reached that will address all of these issues.

The Findings of Fact repeatedly refer to Freeborn’s efforts in “seeking a utility permit from Freeborn County for this road crossing to keep the transmission line entirely within participating landowner property or public ROW.” Recommendation, FOF 89; see also FOF 73, 152. In the same vein, Commerce Comments state, “Freeborn Wind, in its reply comments, indicates that it is negotiating a Three Part Agreement “to address issues related to utility permits for use of public [right-of-way], including the 108/830th Avenue crossing.” (Reply Comments, at 8).” No mention is made regarding authority for such an agreement. There is no mention of the township road. The record does not contain any information regarding whether the county owns the 830th and 108th road Right of Way in fee, or whether the County has an easement for the roads. The record does not contain any information regarding notice to the non-participating landowners regarding Freeborn’s efforts in “seeking a utility permit from Freeborn County for this road crossing,” and/or whether landowners have been invited or participated in these discussions regarding their land. Further, there is no evidence in the record to support the notion that the County or Township have rights to convey an easement to the utility. There is no example in the record of County or Township road easement having any authority or permission to site a transmission line on this non-participant land. This is why the county has been seeking guidance and approval from staff at Commerce. Exhibits E and F.

New information shows that Freeborn Wind was concerned about this and raised it with the

County and Commerce. A Data Practices Act Request to the County revealed documentation of several discussions between Freeborn Wind and the County, and between County staff and Dept. of Commerce employees, including Larry Hartman, not assigned to this project, who advised the County on legal issues regarding both utility status and use of private easements by Freeborn Wind. Exhibit E, Freeborn County Data Practices Act response (selected). A follow up Data Practices Act Request to the Dept. of Commerce reflects Freeborn Wind's continued concern about land rights at 380th Avenue, but there were, apparently, no records of Larry Hartman's discussions with county staff. Attachment F, Dept. of Commerce Data Practices Act response (selected).

It is at best not appropriate for Commerce staff not assigned to the project to be opining about legal issues and/or encouraging county facilitation of Freeborn Wind encroachment onto non-participant's land. It appears that the County and Commerce/Hartman are working hard to pave the way for Freeborn Wind, that government staff is promoting and facilitating the project, to roll right over the non-participant landowners who do not want transmission on their land.

On the other hand, there is law that holds that while a county, township, or city may have an easement for the road, non-participants' have a fee interest in the land beneath the road:

The general rule applicable to the question is this: If a deed bounds the land upon a street or highway, title passes to the center thereof, subject to the public easement, if there be nothing in the deed, or the location of the land, or the relation of the parties showing a different intention; but where a deed expressly makes the near external line of the highway or street the boundary line of the tract conveyed, and no other language is used indicating a contrary intention, no title to the street passes to the grantee.

Pratt v. Quirk, 119 Minn. 316, 319, 138 N.W. 38, 39 (1912). The Applicant may attempt to take this land by eminent domain¹⁴ or through the county or township, not only because it is not a utility, but "if forced to bring an inverse condemnation action to protect his rights, [a party] may be entitled to recover attorney fees and costs. *See* Minn. Stat. § 117.195, subd. 2 (1994) (when

¹⁴ Application, p. 1.

proceeding dismissed or discontinued, owner may recover reasonable costs and expenses from petitioner); *State v. Miller Home Dev., Inc.*, 243 Minn. 1, 9, 65 N.W.2d 900, 904-05 (1954) (when state brought proceeding to condemn land and right of access appurtenant to land, but abandoned that part of proceeding involving right of access, landowners entitled to costs incurred in defending that taking).” In the Matter of the Condemnation of Certain Lands in the City of White Bear Lake by the City of White Bear Lake Housing and Redevelopment Authority.¹⁵

The matter of the fee interest extending to the centermost point of the road was also an issue in a recent CapX 2020 eminent domain case, which was provided to all parties in a prior AFCL finding¹⁶. The landowner’s Buy the Farm claim was challenged by the utility, claiming its parcels were not contiguous, but the court found that they were contiguous, meeting under the road. Applicants may choose to ignore landowners’ fee interest at their risk.

Encroachment on landowners is also an issue for the Gold Route. The Findings of Fact note that the Gold Route traverses non-participants’ land and note impacts:

28. On January 25, 2018, DOC-EERA filed comments summarizing the EA scoping process and informing the Commission of the route and route segments that DOC-EERA intended to recommend for inclusion in the scoping decision for the EA. DOC-EERA considered the comments submitted during the scoping process regarding the various alternatives proposed. DOC-EERA identified the “Purple Route” and the “Gold Route” segments as alternative routes that co-locate or parallel the Project with existing transmission infrastructure. DOC-EERA recommended that the Deputy Commissioner of Commerce include in the scoping decision the original route proposed by Freeborn Wind (which it calls the “Teal Route”), the Orange Route (which limits the route to participating landowners’ property), and the Purple Route. DOC-EERA did not recommend the Gold Route be included in the scope due **to impacts to non-participating landowners and other issues** (emphasis added).

87. The Gold Route would have the most impact on non-participating landowners because it would require placing the Project on non-participants’ land. Impacts to nonparticipating landowners along the Gold routing options are unavoidable, and will be long-term and significant (emphasis

¹⁵ In the Matter of the Condemnation of Certain Lands in the City of White Bear Lake by the City of White Bear Lake Housing and Redevelopment Authority, C4-96-744, November 12, 1996 (Unpublished)(online: <https://mn.gov/law-library-stat/archive/ctappub/9611/c496744.htm>).

¹⁶ See AFCL Exceptions, end of document, eDocket #[20186-143686-01](#).

added)

Recommendation, FoF 28, 87 (citations omitted).

The Gold Route was specifically not recommended by Commerce-EERA or the ALJ due to routing over non-participants' land. The same rejection must also apply to the Purple Route and Orange Route modification. Further, there is no evidence in the record to support a finding that the County and/or Township have authority to grant an easement for transmission, and there is no evidence in the record to support a finding that they will. Freeborn Wind, LLC does not have the power of eminent domain. The Commission should not approve the Freeborn transmission project because it encroaches over non-participants' land.

V. FREEBORN WIND IS ALREADY NOT IN COMPLIANCE WITH PERMIT

The site permit requires that Invenergy/Freeborn Wind maintain current contact information for Complaints and Complaint Reporting. Freeborn gives the address of 120 East Main Street in Glennville, Minnesota, but that office is now empty. Freeborn Wind must correct the address. Also, a Post Office Box is not an office.

VI. AFCL'S EXCEPTIONS POINT OUT FATAL FLAWS IN ALJ RECOMMENDATION AND COMMISSIONS ORDER.

The AFCL Exceptions are attached below, and included, among other things, procedural errors and objections to the ALJ's multiple statements in Findings giving great weight to "the Applicant's preference," because "the Applicant's preference" is not a factor for routing. Exceptions also pointed out in technicolor, as above, the Applicant's lack of land rights sufficient to build the project.

VII. NEW INFORMATION HAS BECOME AVAILABLE THAT THE COMMISSION SHOULD CONSIDER.

New information has become available that the Commission should consider.

A. Data Practices Act Requests show confusion and Freeborn Wind efforts to gain access to county easements for transmission – an admission that it

does not have sufficient land rights for the project – and Freeborn County seeks guidance on its legal issue from Commerce staff.

As above, there is new information from Data Practices Act Requests, the responses from Freeborn County and the Dept. of Commerce. The documents produced show acknowledgement of problems through stated concern of Freeborn Wind regarding use of the County’s road easements for transmission, and concern about utility status and eminent domain, not available to a non-utility.

The Freeborn County responses show that the County was seeking and receiving advice from Commerce’s Larry Hartman regarding use of county road easements for transmission and Freeborn’s utility status.

B. World Health Organization addresses Wind Turbine Noise.

For the first time, the World Health Organization has addressed the issue of wind turbine noise and offered precautionary noise guidelines. Exhibit G (selected).



Wind turbine noise

Recommendation	Strength
For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below 45 dB L_{den} , as wind turbine noise above this level is associated with adverse health effects.	Conditional
No recommendation is made for average night noise exposure L_{night} of wind turbines. The quality of evidence of night-time exposure to wind turbine noise is too low to allow a recommendation.	
To reduce health effects, the GDG conditionally recommends that policy-makers implement suitable measures to reduce noise exposure from wind turbines in the population exposed to levels above the guideline values for average noise exposure. No evidence is available, however, to facilitate the recommendation of one particular type of intervention over another.	Conditional

The Commission should review the WHO Environmental Noise Guidelines and consider these

voluntary limitations on noise in the Freeborn Wind project, to be discussed in more detail in that docket's Reconsideration.

VIII. THE COMMISSION SHOULD RECONSIDER ITS DECISION IN THIS TRANSMISSION INTERCONNECTION DOCKET, AND THE ROUTE PERMIT SHOULD BE DENIED, PENDING DEMONSTRATION THAT ALL LAND RIGHTS NEEDED HAVE BEEN ACQUIRED.

The Commission should reconsider its decision, and the Invenergy/Freeborn Wind Transmission Route Permit should be denied. Beyond that, in respect for affected landowners, Association of Freeborn County Landowners takes no position as to the route of the project. Overall, AFCL's position is clear: The community does not consent to this project.

Respectfully submitted,

January 8, 2019



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LINE BY LINE EXCEPTIONS

These are Exceptions of Association of Freeborn County Landowners, and are not all inclusive. Omission of an exception is not acceptance or agreement with any Finding.

AFCL asks that this transmission permit Recommendation be rejected in its entirety. If a wind site permit (IP6946/WS-17-410) should be approved at some point in the future, this transmission docket should be then remanded and set for rehearing. In the alternative, the application should be put on hold, until land rights are secured and a decision is made to grant the Freeborn Wind project site permit (IP6946/WS-17-410), and then remanded and set for rehearing.

Nonetheless, AFCL offers these Exceptions:

SUMMARY OF RECOMMENDATIONS

The Administrative Law Judge concludes that Freeborn Wind has partially satisfied the criteria set forth in Minnesota law for a Route Permit and that both the Orange Route and the Orange Route with the Purple Parallel Segment (Purple Parallel Route) meet the routing criteria and minimize impacts to the human and natural environments.

~~Given the Applicant's preference for the Purple Parallel Route, the Commission should GRANT the Route Permit for the Purple Parallel Route with the modification the Applicant proposed to maintain the entire route on participating landowners' property. That modification would narrow the route at 130th street to match the Orange Route in this area. (invalid due to consideration and weight of "Applicant's preference.")~~

~~Given the Recommendation of the Administrative Law Judge in the wind siting case which this transmission line is to serve, Applicant's preference for the Purple Parallel Route, the Commission should not GRANT the Route Permit unless and until a site permit is granted for the Freeborn Wind Project and the transmission route has been demonstrated to be routed only on participants land. The Administrative Law Judge in this transmission docket recommends for the Purple Parallel Route with the modification the Applicant proposed to maintain the entire route on participating landowners' property. That modification would, however, improperly narrow the route at 130th street to match the Orange Route in this area.~~

In the alternative, the Administrative Law Judge recommends the Commission should grant a Route Permit for the Orange Route but should not GRANT the Route Permit unless and until a site permit is granted for the Freeborn Wind Project and the transmission route has been demonstrated to be routed only on participants land-.

FINDINGS OF FACT

2. As part of Invenergy's various generation projects, including wind farms, natural gas facilities, solar projects, and battery storage, Invenergy has, in other states, built 401

miles of transmission lines greater than 69 kV and continues to operate 251 miles of those lines.⁵

5. Freeborn Wind has entered into an agreement with Xcel Energy whereby Xcel Energy will acquire Freeborn Wind upon conclusion of all development activities and subsequently construct, own, and operate the Project.¹⁰ On September 21, 2016, Freeborn Wind entered into a Purchase and Sale Agreement (PSA) with Xcel Energy, and Invenergy.¹¹ The Commission approved the Purchase and Sale Agreement on September 1, 2017.¹² Xcel Energy's acquisition of Freeborn Wind was part of a 1,550 MW wind portfolio proposed by Xcel Energy and approved by the Commission.¹³ Thus, no Certificate of Need is required, and no Certificate of Need has been issued. Xcel Energy will assume the obligations of Freeborn Wind, whether made by the company or imposed by the Commission.¹⁴ Permits, ownership and operation will continue under the Freeborn Wind, LLC, organization.:

7. The Commission's rules establish two tracks for the permitting of HVTL. The "full permitting process" includes preparing an environmental impact statement (EIS) and holding a contested case hearing.¹⁸ The "alternative permitting process" in practice generally applies to modestly sized projects that are not contested or controversial.¹⁹ It requires an EA instead of an EIS and a public hearing instead of a contested case hearing.²⁰ This permitting proceeding is controversial.

15. Fifteen public comments were received during the initial and reply comment periods on the completeness of the Application. The comments were largely related to the potential impacts of the Project and requested the appointment of an advisory task force.³⁵ The Association of Freeborn County Landowners (AFCL) raised completeness issues including organizational form of Freeborn Wind; issues of timing; Minnesota's policy of non-proliferation; viewshed; a listing of eagle nests; no disclosure of eagle and transmission collision potential; County and Township land use plans; routing over non-participants; lack of cost analysis; lack of attribution and apportionment of system upgrade costs; conflicting interconnection information; and requested that "[b]ecause this project and the Freeborn Wind project³⁶ are tied and dependent, these two dockets should be joined as one, ideally the pre-existing 17-410."³⁷ The dockets were not joined.

17. On November 2, 2017, DOC-EERA filed a letter stating that Freeborn Wind's reply comments provided the requested information, including Freeborn's statement that it has acquired all land needed for the project and that it has the power of eminent domain.³⁹

19. On November 8, 2017, Commission Staff filed Briefing Papers for the November 16, 2017, Commission meeting.⁴¹ Staff recommended that the Commission refer this matter to an Administrative Law Judge for a "summary proceeding" which would involve findings of fact, conclusions of law, and a recommendation.⁴² On November 16, 2017, Staff filed amended decision options to provide an option to "combine this application with Docket IP6946/17-410" as requested by AFCL.⁴³ The interdependent nature of this

transmission docket and the wind project siting docket is noted in light of the AJL's Recommendation in Docket IP6946/17-410.

25. On January 2 and January 3, 2018, three individuals filed public comments.⁵⁰ On January 3, 2018, AFCL filed 10 pages of comments, raising issues regarding use of eminent domain; future development and relationship to the land; property values and marketability; MISO interconnection and size/spec of line questions; policy of non-poliferation; existing local corridors; no prohibition of consideration of size, type, and timing; 16 proposed permit conditions and an alternate route (expressly stated as not acceptance of that route).⁵¹

28. On January 25, 2018, DOC-EERA filed comments summarizing the EA scoping process and informing the Commission of the route and route segments that DOC-EERA intended to recommend for inclusion in the scoping decision for the EA.⁵⁴ DOC-EERA considered the comments submitted during the scoping process regarding the various alternatives proposed.⁵⁵ DOC-EERA identified the "Purple Route" and the "Gold Route" segments as alternative routes that co-locate or parallel the Project with existing transmission infrastructure.⁵⁶ DOC-EERA recommended that the Deputy Commissioner of Commerce include in the scoping decision the original route proposed by Freeborn Wind (which it calls the "Teal Route"), the Orange Route (which limits the route to participating landowners' property), and the Purple Route.⁵⁷ DOC-EERA did not recommend the Gold Route be included in the scope due to impacts to non-participating landowners and other issues.⁵⁸ Impacts to landowners on any route option are unavoidable, and will be long-term and significant.

31.5 On February 15, 2015, the Commission filed "Public Comment Batch One" which contained 16 comments supporting the project, from those with a stated interest such as a participant, a business/contractual interest, or a wind developer/financier.

34. On April 2, 2018, a prehearing conference was held before Administrative Law Judge Jim Mortenson. There is no eFiled notice of this prehearing conference. On April 4, 2018, the Administrative Law Judge issued the First Prehearing Order, establishing a schedule for the proceedings.⁶⁷ On May 17, 2018, the Administrative Law Judge issued an Amended First Prehearing Order.⁶⁸

43. Minn. Stat. § 216B.243, subd. 2 (2016) states that "no large energy facility" shall be sited or constructed in Minnesota without the issuance of a Certificate of Need by the Commission.⁸⁶ The proposed Project is not classified as a "large energy facility" under Minn. Stat. §§ 216B.243 and 216B.2421, subd. 2(3) (2016).⁸⁷ While the Project is an HVTL with a capacity of 100 kV or more, it is not more than 10 miles long in Minnesota and it does not cross a state line.⁸⁸ Therefore, a Certificate of Need is not required for the Project.⁸⁹ Because no Certificate has been issued, there is no prohibition of consideration of size, type, and timing.¹

¹ Minn. Stat. §216E.02, Subd. 2; Minn. R. 7850.4200.

48. The Project is located entirely within Shell Rock Township in Freeborn County, Minnesota.¹⁰⁰ This transmission project is expressly designed to serve the Freeborn Wind project, located in Shell Rock, London, Hayward and Oakland townships in Minnesota's Freeborn County, as well as the Iowa Freeborn Wind project in Worth County, Iowa.² All of the Freeborn Wind project's Minnesota and Iowa generation will be sent through a collector system to the project substation, and through this transmission line to the Glenworth substation.

52. In response to comments at the scoping meeting that the route width should be located entirely on land owned by participating landowners, "EERA staff provided Freeborn Wind with a route alternative that also moves the route width to participating landowners' property . . . In response, Freeborn Wind suggested that an adapted EERA route replace the proposed route and be included in the scoping decision. Freeborn Wind proposed a reduced route width for a more precise route location and a slight expansion in the route width for the half-mile segment south of 130th Street to allow for potential colocation with the existing ITC Line, should the company be able to secure easement agreements to obtain adequate right-of-way."¹⁰² Freeborn Wind proposed a new route with the same alignment as the Teal Route, but with a narrower route width that attempts to avoid non-participants' land through use of a 22 foot wide diagonal crossing of a county and township road intersection. This narrowed easement does encroach on the corners of non-participants land. This route is identified as the Orange Route. The Orange Route is not constructible. The Orange Route follows the same alignment as the Teal Route with route widths varying from 225, 250, and 400 feet.¹⁰³

53. The Purple Route Segment was proposed during scoping and follows an existing transmission line corridor.¹⁰⁵ The EA studied two possibilities for this route segment: running the proposed HVTL parallel to the existing ITC Line (paralleling) (Purple Parallel) or overbuilding the proposed HVTL above the ITC Line on new structures within the existing ITC ROW (overbuilding) (Purple Overbuild).¹⁰⁶ The Purple Route Segment includes a small area of the route width of this route segment, located to the east of 810th Avenue crossing 130th Street, with two non-participating landowners,¹⁰⁷ but the Purple Parallel routing option could be constructed entirely on participants' land.¹⁰⁸ As an LLC, Freeborn Wind does not have the power of eminent domain. The Purple Parallel route is not constructible.

54. Traveling south to north, the Purple Route Segment breaks from the Teal/Orange route in the NE 1/4 of S28, T101, R20W where it continues west approximately 1,000 feet along field lines to the existing ITC Line. The route segment turns north and travels along the ITC Line for approximately one and one-quarter miles until it reaches 130th Street, where it rejoins the Teal and Orange routes. Route widths vary from 250, 400, and 600 feet.¹⁰⁹ Constructing the Purple Overbuild Route south of 120th Street would cause some of the ROW to be on a nonparticipant's land. Overbuilding for the first half mile north of 120th could be done all on participating land. The remaining half mile towards 130th Street would require two new transmission easements.¹¹⁰ As an LLC, Freeborn Wind does not have the power of eminent domain. Without the two new

² See Freeborn Wind application, PUC Docket IP6946/WS-17-410.

transmission easements, this route is not constructible.

61. For certain segments, Freeborn Wind proposes to use a vertical configuration, with all conductors located on one side of the pole.¹²⁰ This design is needed to create the correct approach angle for the segment of turn 2 to turn 3 that uses the 22-foot wide ROW across County Road 108/830th Avenue.¹²¹ For the single-circuit 161 kV vertical-designed poles, a braced post structure TSP-161 structure type will be used.¹²² Any route attempting to utilize the 22-foot wide ROW encroaches on non-participant land and is not constructible.

67. Route widths vary from 250, 400, and 600 feet for the Purple Route.¹³² The Purple Route includes a small area with two non-participating landowners,¹³³ but there is no documentation in the record that the Purple Parallel routing option could be constructed entirely on participants' land.¹³⁴ As an LLC, Freeborn Wind does not have the power of eminent domain. Without the landowner easements, this route is not constructible.

70. Contrary to Minnesota's policy of route non-proliferation,³ the entire length of the proposed Project will require new ROW.¹³⁷

73. In one location, at the crossing of County Road 108/830th Avenue at one quarter mile south of 120th Street, a narrowed ROW is proposed to maintain the ROW for the Project within land owned by participating landowners and within public road ROW where Freeborn Wind is seeking a utility permit from Freeborn County. A vertical design with a 22-foot ROW will be used on this single, short span. Freeborn Wind engineers developed a design in this limited area that can be operated in a 22-foot ROW, which is within the 66-foot wide County Road 108 ROW. To ensure adequate clearances, Freeborn Wind proposes a special design using two dead-end structures. The two poles will be located 123 feet apart and the 22-foot ROW would apply only to the area between the two poles. The area needed for construction will be contained on the participating landowners' parcels. The existing distribution line will be buried in this location. Freeborn Wind continues to talk with adjacent landowners and Freeborn County and may propose to change the design and alignment if a voluntary easement is obtained or to meet Freeborn County requirements.¹⁴⁰ As an LLC, Freeborn Wind does not have the power of eminent domain. There is no information in the record regarding authority of Freeborn County to enter into an agreement regarding the 22-foot ROW. Without landowner agreements, this is not constructible. When the proposed line is parallel to a roadway, Freeborn Wind does not intend to locate structures within road ROW, and poles will be placed within the private ROW adjacent to the roadway ROW.¹⁴¹

76. Total Project costs are estimated to be approximately \$3.8-8.05 million, depending on which route option is approved and a variety of other factors, including

³ People for Environmental Enlightenment & Responsibility (PEER), Inc. v. Minnesota Environmental Quality Council, 266 N.W.2d, 858, 868 (Minn. 1978); Minn. Stat. §216E.03, Subd. 7(e).

timing of construction, cost of materials, and labor.¹⁴⁴ Total costs are summarized below in Table 1:¹⁴⁵ ~~* Total includes the cost to construct the entire HVTL, not just the route segment. (chart makes no sense, apples to oranges comparison)~~

78. The permittee for the Project is Freeborn Wind Energy LLC. Freeborn Wind is currently owned by Invenergy, LLC. Should the Commission issue a route permit for the project, Freeborn Wind will be transferred from Invenergy to Xcel Energy, and Freeborn Wind, LLC would own and operate the transmission line. Freeborn Wind, LLC, is not a public service corporation.¹⁴⁷

87. The Gold Route would have the most impact on non-participating landowners because it would require placing the Project on non-participants' land. Impacts to nonparticipating landowners along the Gold routing options are unavoidable, and will be long-term and significant, as they would be with any route.¹⁵⁷

88. The Purple Overbuild Route would also require constructing the Project on nonparticipants' land, and impacts are unavoidable and will be long-term and significant.¹⁵⁸

89. The Orange and Purple Parallel routes have the least impact on nonparticipating Landowners, only because there are fewer non-participating landowners. The impacts will be the same, unavoidable, long-term, and significant, no matter what route is chosen. Freeborn Wind has, through voluntary agreements, obtained the rights necessary to construct the Project along the Teal, Orange, and Purple Parallel routes on participants' land except for a road crossing associated with 830 Avenue.¹⁵⁹ Freeborn Wind is seeking a utility permit from Freeborn County for this road crossing to keep the transmission line entirely within participating landowner property or public ROW.¹⁶⁰ As an LLC, Freeborn Wind does not have the power of eminent domain.

95. Freeborn Wind committed to take steps to comply with all applicable Minnesota noise standards.¹⁷⁰ For example, noise from intermittent and infrequent construction activities will be mitigated by the distance of the activity from a receptor (e.g., construction activities will not be near residences, farmsteads, etc.), using sound control devices on vehicles and equipment, conducting construction activities during daylight hours as much as possible during normal business hours, and not running vehicles and equipment when not needed.¹⁷¹ When exceedences occur, the activity must stop. Compliance with noise standards shall be a condition of the permit.

99. Aesthetic impacts are associated with residents viewing the HVTL from their homes, residents traveling in the project area, recreationalists along the Shell Rock River and Shell Rock Water Trail, and nonresidents traveling through the Project Area. Residents and recreationalists generally have a higher sensitivity to potential aesthetic impacts than temporary observers.¹⁷⁹

120. The results of these studies can be summarized, generally, as follows:

- Over time, there is a consistent pattern with about half of the studies

finding negative property value effects and half finding none.

- When effects have been found, they tend to be small; almost always less than 10 percent and usually in the range of three percent to six percent. A 3 or 6 or 10% impact on a typical \$150-300k home with acreage would not be “small” to that homeowner, and a 3 or 6 or 10% impact on a \$1.2 million dollar farm is significant amount of money. This loss would also represent a loss in property tax revenue.

- Where effects are found, they decay rapidly as distance to the lines increases and usually disappear at about 200 feet to 300 feet.

- Two studies investigating the behavior of the effect over time find that, where there are effects, they tended to dissipate over time.²¹⁸

122. There is no evidence in the record that shows a property value guarantee is or is not warranted for the Project.

134. ~~Magnetic-Electric~~ fields may interfere with implantable electromechanical medical devices, such as pacemakers, defibrillators, neurostimulators, and insulin pumps.²³¹ However, interference from magnetic fields in pacemakers is not observed until 2,000 mG—a field strength greater than that associated with transmission lines.²³²

152. Prior to construction, Freeborn Wind will coordinate with the applicable local and state road jurisdictional authorities to obtain the necessary permits for road access and public road ROW use.²⁵⁵ For example, Freeborn Wind is seeking a utility permit from Freeborn County for the crossing of County Road 108/830th Avenue at one-quarter mile south of 120th Street, where Freeborn Wind has proposed a narrowed ROW in order to maintain the ROW for the Project within land owned by participating landowners and within public road ROW.²⁵⁶ As an LLC, Freeborn Wind does not have the power of eminent domain. There is no evidence in the record demonstrating that Freeborn Wind has had multiple constructive discussions with Freeborn County Staff and Shell Rock Township officials, and there has been no notice of any meetings with Shell Rock Township officials.⁴and is confident a thorough Three Part Agreement will be reached that will address all of these issues.²⁵⁷

242. The Gold Route and Purple Route co-locate the Project with existing transmission lines for their entire lengths.⁴⁰³ The Teal Route and Orange Route do not share ROW with an existing transmission line route; however, a significant portion 21% of these routes follow existing roadways.⁴⁰⁴ Agricultural field boundaries are not existing transportation, pipeline, and electrical transmission right of way.

246. The evidence on the record does not demonstrates that it will be most cost-effective to collect all energy generated in Minnesota and Iowa and transmit to the Minnesota project substation and to- construct the Project along the Teal, Orange, or Purple Parallel routes to the new Glenworth substation in Minnesota.⁴⁰⁸ Absent a

⁴ There are only 3 voting supervisors, and any meeting of more than two requires publication of notice under Open Meeting Law.

Minnesota wind siting permit, there is no evidence in the record regarding cost effectiveness of this transmission project.

255. The PPSA presumes irreversible and irretrievable commitments of resources, such as land for the project lost for production, a permanent change in vista with transmission lines, and establishment of a transmission corridor where there once was none. Project will require minimal commitments of resources that are irreversible and irretrievable. Only Others include construction resources, such as concrete, steel, and hydrocarbon fuels, will be irreversibly and irretrievably committed to this Project. During construction, vehicles necessary for these activities would be deployed on site and would need to travel to and from the construction area, consuming hydrocarbon fuels. Other resources would be used in pole construction, pole placement, and other construction activities.⁴¹⁷

~~262. As set forth above, because the Teal, Orange, and Purple Parallel routes make use of existing ROW and generally compare favorably in terms of cost to the route alternatives, the record demonstrates that the Teal, Orange, and Purple Parallel routes best meet Minnesota's route selection criteria. Based on consideration of all routing factors and the Applicant's preference, the Orange Route combined with the Purple Parallel Route is the best route for the Project. (invalid due to weight given to "the Applicant's preference.") (There is no analysis in this summary section of the PEER and Minn. Stat. §216E.03, Subd. 7(e) non-proliferation factor.)~~

266. The EA process is the alternative environmental review approved for high voltage transmission lines.⁴²⁰ The Commission is required by the rule to determine the "completeness" of the EA.⁴²¹ An EA is complete if it and the record address the issues and alternatives identified in the Scoping Decision. Adequacy of the EA should also be determined for MEPA compliance. Minn. Stat. §116D.04.

CONCLUSIONS OF LAW

12. The evidence on the record demonstrates that, in addition to the Special Route Permit Conditions referenced above, the general Route Permit conditions are appropriate for the Project, including a requirement of compliance with MPCA noise standards.

~~The Commission should **GRANT** a Route Permit with the general and special route permit conditions for a 161 kV HVTL along the Purple Parallel Route **based on Applicant's preference** and with Applicant's proposed modification to narrow the route by 130th Street to match the Orange Route in this area. (invalid due to weight and consideration of "Applicant's preference.")~~

~~In the alternative, the Commission should grant a Route Permit for the Orange Route with the general and special route permit conditions **based on the Applicant's preference.** (invalid due to consideration and weight of "Applicant's preference.")~~

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange
Dan Lipschultz
Matt Schuerger
Katie Sieben
John A. Tuma

Chair
Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of Freeborn
Wind Farm, LLC for a Large Wind
Energy Conversion System Site Permit for the
84 MW Freeborn Wind Farm in Freeborn
County.

PUC Docket No. IP-6946/WS-17-410

In the Matter of the Application of Freeborn
Wind Energy LLC for a Route Permit for the
Freeborn Wind Transmission Line in
Freeborn County

PUC Docket No. IP-6946/TL-17-322

AFFIDAVIT OF CAROL A. OVERLAND
IN SUPPORT OF ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
PETITION FOR RECONSIDERATION

STATE OF MINNESOTA)
) ss.
COUNTY OF GOODHUE)

Carol A. Overland, after duly affirming on oath, states and deposes as follows:

1. I am an attorney in good standing, licensed in the State of Minnesota, Lic. No. 254617, and have extensive experience in utility regulatory proceedings in many venues.
2. I am representing the Association of Freeborn County Landowners in both of the above-captioned proceedings.

3. I offer the Exhibits below in support of Association of Freeborn County Landowners' Petition for Reconsideration in the siting docket and the transmission docket.

INFORMATION THE COMMISSION IGNORED – IRREGULARITIES AND ILLEGALITIES – LAND RIGHTS MUST BE INDEPENDENTLY VERIFIED

4. Attached as Exhibit A is a true and correct copy of Robert B. Knutson's notarized eDockets filing dated August 10, 2018.
5. Attached as Exhibit B is a true and correct copy of Carol A. Overland's eDockets filing dated July 24, 2018. In that filing is a copy of the Order revoking the notary Commission of Thomas Spitzer dated June 26, 2018.

IRREGULARITIES – LAND RIGHTS MUST BE INDEPENDENTLY VERIFIED

6. Attached as Exhibit C is a true and correct copy of three easements and easement amendments signed by William Glen Gillen, identified as "a single person." The initial Grant of Easement was dated July 24, 2015; the First Amendment of Easement was dated July 31, 2017; and the Second Amendment of Easement was dated April 10, 2018. Each of these three agreements was signed by William Glen Gillen as "a single person." The July 31, 2017 and April 10, 2018 agreements were notarized by Thomas Spitzer, prior to revocation of his notary commission.
7. Attached as Exhibit D is a true and correct copy of William Glen Gillen's marriage license dated September 21, 2013. A search of District Court files does not show any record of a divorce for William Glen Gillen's since that time.

NEW INFORMATION

8. A Data Practices Act to Freeborn County revealed that County staff had been seeking and receiving advice from Larry Hartman, Commerce, about utility status of Freeborn Wind and power of eminent domain, and the use by Freeborn Wind of county road easements for transmission. Attached as Exhibit E is a true and correct copy of emails received in response to the AFCL Data Practices Act request to Freeborn County.
9. The Freeborn County Data Practices Act responsive emails that discuss use of the County Road for the transmission easement, over non-participant's land established a trail to Larry Hartman of Commerce, and AFCL sent a Data Practices Act Request to the Dept. of Commerce for any documents in its possession regarding the Freeborn Wind transmission easement and county road easement, and the utility status of Freeborn Wind and the power of eminent domain. Attached as Exhibit F is a true and correct copy of selected emails referencing easements and right of way, utility status, and discussions

10. Other directly relevant new information has surfaced since the Commission's meeting. On October 10, 2018, the World Health Organization released its Environmental Noise Guidelines. Attached as Exhibit G is a true and correct copy of selected pages of the World Health Organization report, those related to wind noise, pages 77-86. The full report is available online at: <http://www.euro.who.int/en/media-centre/sections/press-releases/2018/press-information-note-on-the-launch-of-the-who-environmental-noise-guidelines-for-the-european-region>

Further your affiant sayeth naught.

Dated: January 8th, 2019



Carol A. Overland MN Lic. 254617
Attorney for Association of Freeborn
County Landowners
Legalelectric
1110 West Avenue
Red Wing, MN 55066
(612) 227-8638
overland@legalelectric.org

Signed and sworn to before me this
8th day of January, 2019



Notary Public



Exhibit A

eFiled Notarized Letter from Robert B. Knutsen

Commerce Enforcement Complaint re: Invenergy's Thomas Spitzer

August 10, 2018 – eDockets # 20188-145697-01

EXECPTIONS TO RECOMMENDATION

August 10, 2018

PUC Docket 17-322

PUC Docket 17-410

Dear Public Utility Commissioners,

I am the person who filed a complaint against Thomas Spitzer for falsely notarizing my signature. When I was not present, he notarized a signature as mine that was not mine.

He was removed from his office as a notary in the state of Minnesota and he was fined by the MN Commerce Department.

I ask the following of the PUC:

- Review all leases notarized by Thomas Spitzer;
- Declare my lease invalid because I didn't sign it and it's fraudulent;
- Require Freeborn Wind to renew leases with all parties with a lease notarized by Thomas Spitzer; and
- Deny the transmission and the siting permit because of fraudulent land acquisition practices.

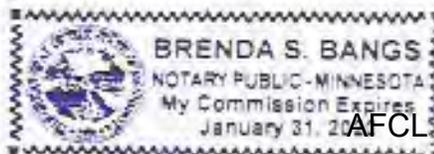
Robert B Knutson
76901 150th St
Albert Lea MN 56007
507-402-1250
Lknutson@deskmedia.com

Robert B Knutson
8-10-18

Notary
State of MN
Freeborn County

Subscribed to and sworn before me
this 10 day of August 2018
by Robert B Knutson

Brenda S Bangs



AFCL Exhibit I

Exhibit B

eFiled Letter - Commerce Enforcement Action Order

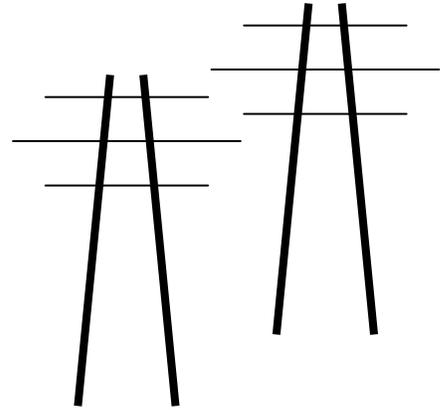
Invenergy's Thomas Spitzer

July 24, 2018 – eDockets #20187-145162-01

Legalelectric, Inc.

Carol Overland Attorney at Law, MN #254617
Energy Consultant—Transmission, Power Plants, Nuclear Waste
overland@legalelectric.org

1110 West Avenue
Red Wing, Minnesota 55066
612.227.8638



July 24, 2018

Dan Wolf
Executive Secretary
Public Utilities Commission
121 – 7th Place East, Suite 350
St. Paul, MN 55101

via eFiling and eService only

RE: Order - Commerce Enforcement Action – Invenergy’s Thomas Spitzer
Commerce Enforcement Action and Order Revoking Commission and Fine
Freeborn Wind, LLC - MPCU Docket: IP-6946/WS-17-410; IP-6946/WS-17-322

Dear Mr. Wolf:

On behalf of Association of Freeborn County Landowners, I attach a copy of a Commerce Enforcement Action Order regarding Thomas Spitzer, revoking his notary commission and assessing a \$500 fine.¹ AFCL awaits further information from the Commerce investigation file through the Data Practices Act earlier this month.

Thomas Spitzer notarized leases for Invenergy and because he notarized improperly, sufficient for his commission to be revoked, this calls into question the validity of at least one, and perhaps more, land leases for the Freeborn Wind Project.

AFCL requests that the Commission make a direct request and obtain the primary documentation from Commerce for review prior to consideration of the Freeborn Wind site permit.

Thank you for your consideration of these matters.

Very truly yours,

Carol A. Overland
Attorney at Law

¹Online at: <https://www.cards.commerce.state.mn.us/CARDS/security/search.do?documentId={9DE2F4F8-D4CE-46E0-99F5-EC586625586A}>

JUN 26 2018

Rec'd \$

500

File: 49913/lr

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

In the Matter of
Thomas S Spitzer
Notary Commission #31080307

CONSENT ORDER

TO: Thomas Spitzer
24800 41st NE
Wilton, ND 58579

Commissioner of Commerce Jessica Looman (Commissioner) has determined as follows:

The Commissioner has advised Thomas Spitzer (Respondent) that she is prepared to commence formal action pursuant to Minn. Stat. § 45.027 (2016), and other applicable law, against Respondent based on allegations that Respondent affixed his signature and notary stamp to a document without witnessing the actual signing of the document by another person in violation of Minn. Stat. § 359.085 subd. 3 (2016).

Respondent acknowledges that he has been advised of his rights to a hearing in this matter, to present argument to the Commissioner and to appeal from any adverse determination after a hearing, and Respondent hereby expressly waives those rights. Respondent further acknowledges that he has been represented by legal counsel throughout these proceedings, or has been advised of his right to be represented by legal counsel, which right he hereby expressly waives.

Respondent has agreed to informal disposition of this matter without a hearing as provided under Minn. Stat § 14.59 (2016) and Minn. R. 1400.5900 (2016).

The following Order is in the public interest.

NOW, THEREFORE, IT IS HEREBY ORDERED, pursuant to Minn. Stat. § 45.027, subd. 6 (2016), that Respondent shall pay to the state of Minnesota a civil penalty of \$500.

IT IS HEREBY ORDERED, pursuant to Minn. Stat. §§ 45.027, subd. 7 and 359.12 (2016), that Respondent is removed from his office as a notary in the state of Minnesota.

IT IS HEREBY ORDERED, pursuant to Minn. Stat. § 359.12 (2016), that Respondent shall surrender his official notary stamp and deliver it to the Commissioner within five days of the effective date of this order.

This Order shall be effective upon signature on behalf of the Commissioner.

Dated: 6-29-2018

JESSICA LOOMAN
Commissioner

By:



MARTIN FLEISCHHACKER
Minnesota Department of Commerce
Assistant Commissioner of Enforcement
85 Seventh Place East, Suite 280
Saint Paul, Minnesota 55101
651-539-1600

CONSENT TO ENTRY OF ORDER

The undersigned, Thomas Spitzer ("Respondent"), states that he has read the foregoing Consent Order; that he knows and fully understands its contents and effect; Respondent acknowledges that he has been advised of his rights to a hearing in this matter, to present argument to the Commissioner and to appeal from any adverse determination after a hearing, and Respondent hereby expressly waives those rights. Respondent further acknowledges that he has been represented by legal counsel throughout these proceedings, or has been advised of his right to be represented by legal counsel, which right he hereby expressly waives; and he consents to entry of this Order by the Commissioner. It is further understood that this Consent Order constitutes the entire settlement agreement between the parties, there being no other promises or agreements, either express or implied.

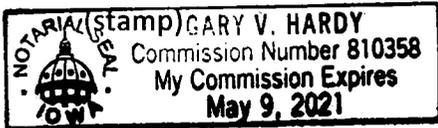
Respondent

By: Thomas S. Spitzer
Thomas S. Spitzer

STATE OF IOWA
COUNTY OF Worth

This instrument was acknowledged before me this 21st day of June, 20 18,
by Gary V. Hardy.

Gary V. Hardy
(Signature of notary officer)



My commission expires: 5-9-21

Exhibit C

William Gillen Easements and Easement Amendments

Signed as “a single person”

OFFICE OF COUNTY RECORDER
FREEBORN COUNTY, MINNESOTA



Document A- 524349

Certified, Filed, and/or Recorded on:

October 28, 2016 11:15 AM

KELLY CALLAHAN

FEE: \$46.00

FREEBORN COUNTY RECORDER

By: NH

The space above this line is reserved for recording purposes.

GRANT OF EASEMENTS

THIS GRANT OF EASEMENTS (this "Agreement") is made, dated and effective as of July 24, 2015 (the "Effective Date"), between **William Gillen, a single person** (together with his successors, assigns and heirs, "Owner"), and INVENERGY WIND DEVELOPMENT LLC, a Delaware limited liability company (together with its transferees, successors and assigns, "Grantee"), and in connection herewith, Owner and Grantee agree, covenant and contract as set forth in this Grant of Easements.

1. Grant of Easement and Profits. For good and valuable consideration, the receipt of which is hereby acknowledged by Owner, Owner hereby grants, bargains, sells, conveys and warrants to Grantee an exclusive easement for wind energy purposes and for any and all activities related thereto upon, over, across, through and under the real property of Owner located in the County of Freeborn, State of Minnesota and legally described on Exhibit A attached hereto and incorporated herein (the "**Property**"), together with the right to all rents, royalties, credits and profits derived from wind energy purposes upon, over and across the Property.

The Easement Premises are that portion of the Property shown on Exhibit B which shall consist horizontally three hundred and sixty degrees (360°) from any point where any Windpower collection Facilities are or may be located at any time from time to time (each such location referred to as a "**Site**") and for a distance from each Site to the boundaries of the Easement Premises together vertically through all space located above the surface of the Easement Premises, that is, one hundred eighty degrees (180°) or such greater number or numbers of degrees as may be necessary to extend from each point on and along a line drawn along the surface from each point along the exterior boundary of the Easement Premises through each Site to each point and on and along such line to the opposite exterior boundary of the Easement Premises.

2. Wind Energy. Under this Grant of Easements, "wind energy purposes" means converting wind energy into electrical energy, and collecting and transmitting the electrical energy so converted, together with any and all activities related thereto, including, without limitation:

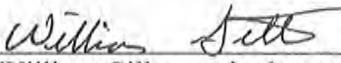
(a) determining the feasibility of wind energy conversion and other power generation on the Property, including studies of wind speed, wind direction and other meteorological data, extracting soil samples, and erecting anemometers;

(b) constructing, laying down, installing, using, replacing, relocating and removing from time to time, and maintaining and operating, wind turbines, overhead and

IN WITNESS WHEREOF, Owner and Grantee, acting through their duly authorized representatives, have executed this Agreement with the intent that it be effective as of the Effective Date, and certify that they have read, understand and agree to the terms and conditions of this Agreement.

OWNER:

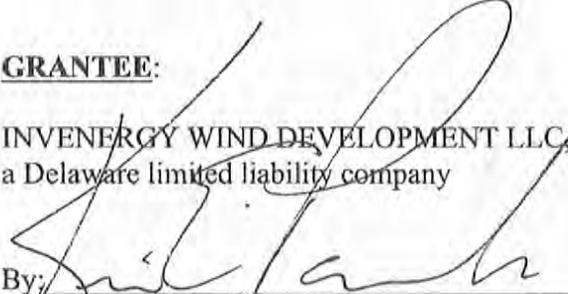
William Gillen, a single person



William Gillen, a single person

GRANTEE:

INVENERGY WIND DEVELOPMENT LLC,
a Delaware limited liability company


By: _____
Name: Kevin Parzyck
Title: Vice President, Development

This Document Drafted By:

Invenergy Wind Development LLC
Attn: Michael Svedeman
One South Wacker Drive
Chicago, IL 60606 312-224-1400

**Recording Requested By and
When Recorded Return to:**

Invenergy Wind Development LLC
c/o Invenergy LLC
Attn: Land Administration
One South Wacker Drive
Chicago, IL 60606 312-224-1400

ACKNOWLEDGMENT

STATE OF MINNESOTA)
) SS.
COUNTY OF *Freeborn*)

Personally came before me this 10 day of September, 2015
William Gillen, who executed the foregoing instrument, and
acknowledged the same. a single person

(SEAL)



Name: David Lee Johnson
Notary Public, State of Minnesota
My Commission: January 31, 2020

ACKNOWLEDGMENT

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

Personally came before me this 23 day of September
2015, Kevin Parzyck, the Vice President of Invenergy Wind Development LLC, who executed
the foregoing instrument, and acknowledged the same, on behalf of Invenergy Wind
Development LLC, a Delaware limited liability company.

(SEAL)



Name: Samia K. Atasi
Notary Public, State of Illinois
My Commission: 4/9/19

EXHIBIT A
The Property

Schedule of Locations:

<u>Parcel Number</u>	<u>County</u>	<u>Township/ Range</u>	<u>Section</u>	<u>Acreage</u>
020140051	Freeborn	101/20	14	40.00
			Total	<hr/> 40.00

Legal Description:

NW 1/4 NW 1/4 of Section 14, Township 101 North, Range 20 West containing 40.00 acres more or less.

OFFICE OF COUNTY RECORDER
FREEBORN COUNTY, MINNESOTA



Document A- 528580

Certified, Filed, and/or Recorded on:

August 17, 2017 9:20 AM

KELLY CALLAHAN

FEE: \$46.00

FREEBORN COUNTY RECORDER

By: NH

DRAFTED BY AND UPON RECORDING RETURN TO:
INVENERGY WIND DEVELOPMENT LLC
ONE SOUTH WACKER DRIVE, SUITE 2020
CHICAGO, IL 60606

THE SPACE ABOVE THIS LINE IS RESERVED FOR RECORDING PURPOSES.

FIRST AMENDMENT TO AGREEMENT REGARDING EASEMENTS

THIS FIRST AMENDMENT TO AGREEMENT REGARDING EASEMENTS (this "Amendment") is made as of July 31, 2017 by and between William Gillen, a single person (together with his successors, assigns and heirs, "Owner") and Invenergy Wind Development LLC, a Delaware limited liability company (together with its transferees, successors and assigns "Grantee") and in connection herewith, Owner and Grantee agree, covenant and contract as set forth in this Amendment

WITNESSETH:

WHEREAS, Grantee and Owner are parties to that certain Agreement Regarding Easements dated July 24, 2015 as evidenced by that certain Grant of Easements recorded on October 28, 2016 as Document No. A-524349 in the official records of Freeborn County, Minnesota (collectively, the "Agreement"), as such property is more particularly described in Schedule A hereto.

WHEREAS, Grantee and Owner desire to amend the Agreement on the terms and conditions as provided below.

NOW THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, Grantee and Owner hereby agree that the Agreement shall be amended as follows:

1. **Recitals.** The foregoing recitals are hereby incorporated herein by this reference.
2. **Exhibit C.** Exhibit C of the Agreement Regarding Easements is amended as shown on Schedule B hereto. Schedule B will be removed prior to recording, and the removal thereof shall not affect the validity hereof.

OFFICE OF COUNTY RECORDER
FREEBORN COUNTY, MINNESOTA



Document A- 531971

Certified, Filed, and/or Recorded on:

April 16, 2018 1:25 PM

KELLY CALLAHAN

FEE: \$46.00

FREEBORN COUNTY RECORDER

By: NH

DRAFTED BY AND UPON RECORDING RETURN TO:
INVENERGY WIND DEVELOPMENT LLC
ONE SOUTH WACKER DRIVE, SUITE 1800
CHICAGO, IL 60606

THE SPACE ABOVE THIS LINE IS RESERVED FOR RECORDING PURPOSES.

SECOND AMENDMENT TO AGREEMENT REGARDING EASEMENTS

THIS SECOND AMENDMENT TO AGREEMENT REGARDING EASEMENTS (this "Amendment") is made as of April 10, 2018 by and between **William Gillen; a single person** (together with its transferees, successors and assigns, "Owner") and Invenergy Wind Development LLC, a Delaware limited liability company (together with its transferees, successors and assigns "Grantee") and in connection herewith, Owner and Grantee agree, covenant and contract as set forth in this Amendment

WITNESSETH:

WHEREAS, Grantee and Owner are parties to that certain Agreement Regarding Easements dated July 24, 2015 as evidenced by that certain Grant of Easements recorded on October 28, 2016 as Document No. A-524349, and amended by that First Amendment to Agreement Regarding Easements dated July 31, 2017, recorded on August 17, 2017 as Document No. A-528580 in the official records of Freeborn County, Minnesota (collectively, the "Agreement"), as such property is more particularly described in Schedule A hereto.

WHEREAS, Grantee and Owner desire to amend the Agreement on the terms and conditions as provided below.

NOW THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, Grantee and Owner hereby agree that the Agreement shall be amended as follows:

1. **Recitals.** The foregoing recitals are hereby incorporated herein by this reference.

IN WITNESS WHEREOF, the parties hereto having due authorization on behalf of their respective entities have executed this Amendment as of the day and year set forth above.

Owner:

William Gillen
William Gillen

Grantee: ~~Invenergy~~ Wind Development LLC

By: Kevin E. Parzyck
Its: Vice President

STATE OF Minnesota)
) ss.
COUNTY OF Fuelton)

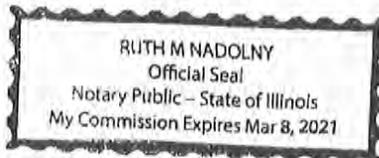
On the 5th day of April, 2018 before me, a Notary Public, in and for said County personally appeared William Gillen, a single person, to me known to be the same person(s) described in and who executed the within instrument, who acknowledged the same to be his/her/their free act and deed.



Thomas Spitz
Notary Public

STATE OF Illinois)
) ss. 1-31-2022
COUNTY OF COOK)

The foregoing instrument was acknowledged before me this 10th day of April, 2018, by Kevin E. Parzyck the Vice President of Invenergy Wind Development LLC, a Delaware limited liability company, on behalf of the limited liability company.



Ruth M. Nadolny
Notary Public

3-8-2021

**SCHEDULE A
TO
SECOND AMENDMENT
TO AGREEMENT REGARDING EASEMENTS**

LEGAL DESCRIPTION OF OWNER'S PROPERTY

The Northwest Quarter of the Northwest Quarter (NW1/4 NW1/4) of Section Fourteen (14), Township One Hundred One (101) North, Range Twenty (20) West of the Fifth Principal Meridian, Freeborn County, Minnesota.

Tax Parcel ID No. 02.014.0051

Exhibit D

William Gillen Marriage License

Filed October 10, 2013

NOT FOR LEGAL PURPOSES

STATE OF IOWA
IOWA DEPARTMENT OF PUBLIC HEALTH
CERTIFICATE OF MARRIAGE
Marriage Ceremony Performed In the State of Iowa

114-

LICENSE COUNTY: WORTH NUMBER: 28141

PARTY A - NAME BEFORE MARRIAGE FIRST MIDDLE LAST SUFFIX, if any		LAST NAME PRIOR TO ANY MARRIAGE
1. Melinda Marie Bartz		1b. Berg
PARTY A - NAME AFTER MARRIAGE FIRST MIDDLE LAST SUFFIX, if any		
1c. Melinda Marie Bartz Gillen		
2a. Iowa	2b. Worth	2c. Northwood
3. Iowa		4. December 10, 1961
5. Allen Jene Berg		6. Marsha Rae Fox
PARTY B - NAME BEFORE MARRIAGE FIRST MIDDLE LAST SUFFIX, if any		LAST NAME PRIOR TO ANY MARRIAGE
7. William Glen Gillen		7b. Gillen
PARTY B - NAME AFTER MARRIAGE FIRST MIDDLE LAST SUFFIX, if any		
7c. William Glen Gillen		
8a. Minnesota	8b. Freeborn	8c. Glenville
9. Minnesota		10. October 23, 1963
11. Jacob Gregory Gillen		12. Ruth Schwistal
13a. <i>Melinda Bartz Gillen</i>		13b. <i>William Glen Gillen</i>
13c. <i>September 21 2013</i>		
14. 09/21/2013		14b. Worth
14c. Kensett		14d. No
15a. <i>Rev Thomas E. Martin</i>		15b. P.O. BOX 38, KENSETT, IA 50498
16a. <i>Tamera Patterson</i>		16b. <i>Adam Bartz</i>
17a. <i>Liz Kerison</i>		17b. OCTOBER 10, 2013

PLEASE PRINT NAMES OF:
OFFICIANT REV. THOMAS E. MARTIN
FIRST WITNESS Tamera Patterson
SECOND WITNESS Adam Bartz

NOT FOR LEGAL PURPOSES

Exhibit E

Data Practices Act Request Responses

Requested November 21, 2018

Freeborn County

References to discussions with Commerce's Larry Hartman p. 10, 13, 19.

Sue G. Miller

From: Sue G. Miller
Sent: Tuesday, November 29, 2016 3:21 PM
To: John Kluever
Subject: Re: Wind energy informational workshop

Most of my company will be gone by then so I should be there...

Thanks.
Sue

On Nov 29, 2016, at 3:16 PM, John Kluever <John.kluever@co.freeborn.mn.us> wrote:

Chicago guy(s) here for the workshop on 12/28 at 9:00.

From: John Kluever
Sent: Tuesday, November 29, 2016 3:16 PM
To: 'Litchfield, Daniel'
Cc: Svedeman, Michael
Subject: RE: Wind energy informational workshop

Thanks for the call and look forward to seeing you on 12/28 at 9:00.

From: Litchfield, Daniel [<mailto:DLitchfield@invenergyllc.com>]
Sent: Monday, November 28, 2016 12:11 PM
To: John Kluever
Cc: Svedeman, Michael
Subject: Wind energy informational workshop

Hi John,

I just left you a voicemail about an idea for a wind energy workshop. It partially came from a meeting with Commissioner Belshan a few weeks ago. I asked if we should come present to a Commissioners' meeting and he said no, but maybe a workshop. I'm wondering what he meant by that. We are considering our own concept for a workshop/informational forum and I'd appreciate your opinion on a few matters.

Dan Litchfield | Senior Manager, Project Development
Invenergy LLC | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com T 312-582-1057 | C 773-318-1289 | F 312-224-1444

<image001.jpg>

This electronic message and all contents contain information which may be privileged, confidential or otherwise protected from disclosure. The information is intended to be for the addressee(s) only. If you are not an addressee, any disclosure, copy, distribution or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify the sender by reply e-mail and destroy the original message and all copies.

Sue G. Miller

From: Sue G. Miller
Sent: Friday, November 04, 2016 2:37 PM
To: 'Dan Belshan'
Cc: John Kluever
Subject: Xcel Wind
Attachments: Xcel Wind Farm initial mtg w PW 102616.docx; tentative boundary as of 102616 per invenergy.pdf

Hi Dan,

Here is the information on Xcel that we have...let us know if there is more going on out there that we should be involved in now.

Thanks. And enjoy this awesome weather!!

sue

Susan G. Miller
Freeborn County Engineer
3300 Bridge Avenue
Albert Lea, MN
sue.miller@co.freeborn.mn.us
(507) 377-5188

NOTE TO FILE

Xcel Wind Farm Development Meeting

1:30 pm, Wednesday @ FCHD

October 26, 2016

John Kluever and Sue Miller met with Dan Litchfield, Invenergy (see contact info below) for an introductory meeting with Public Works. Previously, John Kluever and Wayne Sorensen have met with representatives of Invenergy regarding future development in the southeast corner of Freeborn County.

Area and Plan:

Proposed is the construction of 200 Mega Watt Wind Farm (2 mW towers ~ 100 towers).

Area will include parts of Riceland, Hayward, Oakland, London, Shell Rock and Worth County.

Substation to serve this area is south of the City of Glenville

Tentative Timeline:

Acquisition – Completed by Jan/Feb 2017

Layout/Permitting – Beginning in Spring 2017; completed in 2017 including the County developer agreement.

Construction – Earliest in 2018. Latest in 2020.

Invenergy

www.invenergyllc.com

Dan Litchfield, Sr. Mgr, Business Development

office: 312.582.1057 cell: 773.318.1289

dlitchfield@invenergyllc.com

One South Wacker Drive, Suite 1800
Chicago, IL 60606

General Discussion:

Tower siting and haul roads have not been determined as landowner lease agreements are about 60% of what they would need to move forward. Landowner dinners have been held and most of the town boards have been visited for introductory meetings. No laydown yard has been sited. It has not been determined if rail will be used or not, but certainly this area has good highway access so Invenergy stated that is more probable.

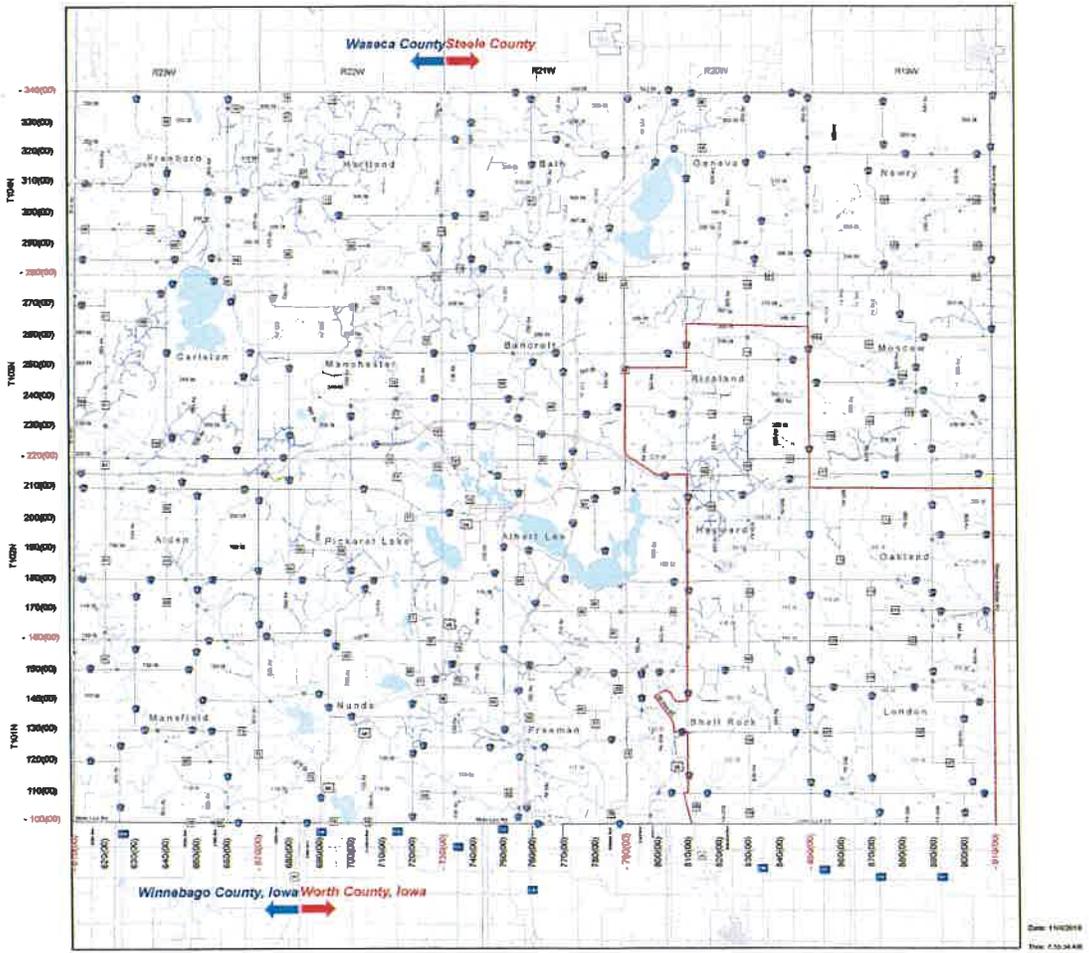
Invenergy will work with Xcel Power Company as the eventual owner. Invenergy will do all the siting and permitting including the county developer agreement with haul roads, etc; but not including building permits and access permits. Xcel will do the building permits and access permits. Xcel will also hire the contractors and run the actual construction. Concern was expressed from the County on the perspective that Xcel should be a signatory to the developers agreement citing a previous project and the problems with a large pipeline constructed in the County with the contractors unawareness and lack of contractual inclusion of County requirements in third party negotiated agreements and permits.

Discussion about environmental impacts and communication impacts from the towers and construction also yielded Invenergy's knowledge and mapping of existing conditions but admitted that communications can be one of the biggest post construction complaints. Invenergy has not done a project in Minnesota but has completed projects in VanWert and Pauling counties in Ohio. As in Ohio, a repeated theme from landowners is the concern for agricultural drainage. John Kluever also noted the need to include the County agricultural drainage system in the discussion.

Next steps:

- Public Works should dust off Township agreements in order to offer to the townships the option of designation of their road authority to the County for project purposes.
- Public Works should contact County Engineer in Ohio counties mentioned, maybe even check with Fred to see what he knows of the Ohio projects.
- Public Works should reach out to Rich in Worth County to see their level of involvement and understand their road agreements if any.

end-----



Sue G. Miller

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Tuesday, October 25, 2016 10:19 AM
To: Sue G. Miller
Subject: tomorrow

Hi Sue,

Are we on track for tomorrow at 1:30? I don't intend to take too much of your time – just want to introduce myself and our project, show you where we are working and discuss your experience with wind farm construction in the county and lessons learned.

Dan Litchfield | Senior Manager, Project Development
Invenergy LLC | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com T 312-582-1057 | C 773-318-1289 | F 312-224-1444



This electronic message and all contents contain information which may be privileged, confidential or otherwise protected from disclosure. The information is intended to be for the addressee(s) only. If you are not an addressee, any disclosure, copy, distribution or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify the sender by reply e-mail and destroy the original message and all copies.

Sue G. Miller

From: Sue G. Miller
Sent: Wednesday, October 05, 2016 1:09 PM
To: John Kluever
Subject: Re: Freeborn Wind Farm

I asked and Daniel said he has already met with you and Wayne but I think it would be good if you are available as we both know certain folks will be asking you a lot of questions?!

On Oct 5, 2016, at 12:44 PM, John Kluever <John.kluever@co.freeborn.mn.us> wrote:

Ok, do you want me there? Sounding like this is having more traction all the time.

Sent from my iPhone

On Oct 5, 2016, at 12:25 PM, Sue G. Miller <Sue.Miller@co.freeborn.mn.us> wrote:

Fyi – Mr. Litchfield will be meeting with me on 10/26 at 1:30 pm here in my office. Wanted you to be up to date so you could relay to the Commissioner of that district. Note: Mr. Litchfield said they plan to begin the conversations with the townships next week I think.

sue

From: Litchfield, Daniel [<mailto:DLitchfield@invenergyllc.com>]
Sent: Wednesday, September 28, 2016 3:01 PM
To: Sue G. Miller
Cc: Svedeman, Michael
Subject: Freeborn Wind Farm

Hello Ms. Miller,

Michael Svedeman and I are developing a new wind farm in the southeastern corner of Freeborn County. The project has been under development for quite a while, but we are starting to get busier on it and hope to get into permitting next year. I don't believe our team has met with you before and if you have some time available, I would like to have an introductory meeting and learn about your experience with wind in the County and how we can best prepare our project to meet your requirements. Are you available on Tuesday, October 11?

Sincerely,

Dan Litchfield | Senior Manager, Project Development
Invenergy LLC | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com T 312-582-1057 | C 773-318-1289 | F 312-224-1444

<image001.jpg>

Sue G. Miller

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Wednesday, September 28, 2016 3:01 PM
To: Sue G. Miller
Cc: Svedeman, Michael
Subject: Freeborn Wind Farm

Hello Ms. Miller,

Michael Svedeman and I are developing a new wind farm in the southeastern corner of Freeborn County. The project has been under development for quite a while, but we are starting to get busier on it and hope to get into permitting next year. I don't believe our team has met with you before and if you have some time available, I would like to have an introductory meeting and learn about your experience with wind in the County and how we can best prepare our project to meet your requirements. Are you available on Tuesday, October 11?

Sincerely,

Dan Litchfield | Senior Manager, Project Development
Invenergy LLC | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com T 312-582-1057 | C 773-318-1289 | F 312-224-1444



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Sue G. Miller

From: John Kluever
Sent: Thursday, September 08, 2016 9:23 AM
To: Sue G. Miller
Cc: Wayne Sorensen
Subject: RE: Wind Farm

No maps or anything to that level. This was just another check in visit as they have been doing periodically over the past year or two.

If what he says holds to form, I would guess more substantive conversations, documents, plans, developers agreements, etc... all start to take place next year if they begin the permit process as he stated and wish to be fully operational by end of 2019

They are still keeping everyone close (i.e. ask if he could ID the buyer for the project and he politely said no).

From: Sue G. Miller
Sent: Thursday, September 08, 2016 9:15 AM
To: John Kluever
Cc: Wayne Sorensen
Subject: RE: Wind Farm

Did he provide a revised map of the wind farm footprint? We have several projects in this neck of the woods in the next couple years....

From: John Kluever
Sent: Thursday, September 08, 2016 8:06 AM
To: Sue G. Miller
Cc: Wayne Sorensen
Subject: Wind Farm

Chicago guy (Dan) from Invenergy was here yesterday to update the proposed wind farm project:

What he said was:

- Signing buyer agreement for the project in the near future;
- Secure all the land/property owners by the end of 2016;
- Begin permit process in 2017; and
- Looking at being fully operational at end of 2019 (when the current federal tax credits run out)

All for now and stay tuned to this local station for more updates as they come available. Now back to our regular broadcasting.

Sue G. Miller

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Wednesday, March 08, 2017 3:59 PM
To: Sue G. Miller
Cc: Svedeman, Michael
Subject: ROW permits

Follow Up Flag: Follow up
Flag Status: Completed

Hi Sue,

I understand that you are out of the office this week. When you get a moment, would you be able to call or email me back to answer some questions about the use of County ROW easements for running collection lines?

I spoke with Sandy at your office and she was very helpful but deferred some questions to you.

The approval process is pretty straightforward – the road maintenance engineer visits the site to inspect and if he signs off, then you could approve. The typical charge is \$100 per site permit. If we are seeking a route and not a specific site, the permit fee would be commensurately higher. She said the turnaround time is usually a couple days or weeks and you are the approver, but you sometimes take more complex applications to the Board of Commissioners. What would trigger that review? Sandy said the concept of getting a permit in the near term but not building for several years shouldn't be a problem, as long as we state our plans at the time of application.

One question: are you able to grant sub-easements of your easement, as an alternative to the ROW permit?

Dan Litchfield | Senior Manager, Project Development
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dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

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Sue G. Miller

From: Michal Hanson <michal@CO.MOWER.MN.US>
Sent: Thursday, March 09, 2017 1:54 PM
To: Sue G. Miller
Subject: RE: ROW permits

Well then I screwed up too ☺ But...

These wind projects are done as "turn key" where a contractor builds it and then a company like xcel take it. So I consider them public utilities.

From: Sue G. Miller [<mailto:Sue.Miller@co.freeborn.mn.us>]
Sent: Thursday, March 09, 2017 12:41 PM
To: Michal Hanson
Subject: Re: ROW permits

Yes that is my question. I forwarded the email below to Larry Hartman asking if I screwed up on Bent Tree by treating these lines as a public utility and if Invenergy would be considered a public utility or ultimately XCel.

On Mar 9, 2017, at 12:21 PM, Michal Hanson <michal@CO.MOWER.MN.US> wrote:

I would say an emphatic no to granting "sub-easements".

I do not see where there would be any advantage to the county...or whether you even could grant them for that matter.

I would also say that they (or will be after constructed) a public utility....

Are those your questions?

From: Sue G. Miller [<mailto:Sue.Miller@co.freeborn.mn.us>]
Sent: Thursday, March 09, 2017 9:44 AM
To: Michal Hanson
Subject: Fwd: ROW permits

Mike, read below please. Also, can you send me your fee schedule? Much appreciated!
Sue

Begin forwarded message:

From: "Sue G. Miller" <Sue.Miller@co.freeborn.mn.us>
Date: March 8, 2017 at 4:02:06 PM CST

To: Michal Hanson <michal@co.mower.mn.us>

Subject: Fwd: ROW permits

I defer to your vast experience with Alliant, they are a public utility so that is how we treated permitting the electrical collection lines, right or wrong?

How have you handle this element of wind farm construction?

Begin forwarded message:

From: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Date: March 8, 2017 at 3:59:00 PM CST
To: "Susan G. Miller (sue.miller@co.freeborn.mn.us)" <sue.miller@co.freeborn.mn.us>
Cc: "Svedeman, Michael" <MSvedeman@invenergyllc.com>
Subject: ROW permits

Hi Sue,

I understand that you are out of the office this week. When you get a moment, would you be able to call or email me back to answer some questions about the use of County ROW easements for running collection lines?

I spoke with Sandy at your office and she was very helpful but deferred some questions to you.

The approval process is pretty straightforward – the road maintenance engineer visits the site to inspect and if he signs off, then you could approve. The typical charge is \$100 per site permit. If we are seeking a route and not a specific site, the permit fee would be commensurately higher. She said the turnaround time is usually a couple days or weeks and you are the approver, but you sometimes take more complex applications to the Board of Commissioners. What would trigger that review? Sandy said the concept of getting a permit in the near term but not building for several years shouldn't be a problem, as long as we state our plans at the time of application.

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Sue G. Miller

From: Hartman, Larry (COMM) <larry.hartman@state.mn.us>
Sent: Thursday, March 09, 2017 3:16 PM
To: Sue G. Miller
Subject: RE: Future Freeborn County Wind Farm

Follow Up Flag: Follow up
Flag Status: Completed

Sue: Thank you for your inquiry. However, without more information I am unable to respond. It would be helpful to discuss this matter on the phone in order to provide an appropriate response. Please contact me at your convenience.

Larry B. Hartman
Larry.hartman@state.mn.us
Tel: 651-539-1839

From: Sue G. Miller [mailto:Sue.Miller@co.freeborn.mn.us]
Sent: Thursday, March 09, 2017 3:08 PM
To: Hartman, Larry (COMM) <larry.hartman@state.mn.us>
Subject: Future Freeborn County Wind Farm

Good Morning Mr. Hartman:

You were very helpful in the past with the planning and implementation of the Bent Tree Wind Farm in Freeborn County. I was hopeful that you could assist me with responding to the email below.

With the County's experience on Bent Tree, we permitted the underground electrical collection system as a public utility able to be placed in the road right easement. Upon initial meetings the Invenergy, we proposed the same process. This is the second phone call/email questioning our process and now I am wondering if the County didn't handle this correctly with Bent Tree.

The core question would be: are these underground electric collection lines considered a public utility allowable in the public right of way?

I would so appreciate your guidance. We have a new county attorney who has previously focused his career on the criminal side and is not immediately knowledgeable in this area.

Thank you so much!

sue

Begin forwarded message:

From: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Date: March 8, 2017 at 3:59:00 PM CST
To: "Susan G. Miller (sue.miller@co.freeborn.mn.us)" <sue.miller@co.freeborn.mn.us>
Cc: "Svedeman, Michael" <MSvedeman@invenergyllc.com>
Subject: ROW permits

Hi Sue,

I understand that you are out of the office this week. When you get a moment, would you be able to call or email me back to answer some questions about the use of County ROW easements for running collection lines?

I spoke with Sandy at your office and she was very helpful but deferred some questions to you.

The approval process is pretty straightforward – the road maintenance engineer visits the site to inspect and if he signs off, then you could approve. The typical charge is \$100 per site permit. If we are seeking a route and not a specific site, the permit fee would be commensurately higher. She said the turnaround time is usually a couple days or weeks and you are the approver, but you sometimes take more complex applications to the Board of Commissioners. What would trigger that review? Sandy said the concept of getting a permit in the near term but not building for several years shouldn't be a problem, as long as we state our plans at the time of application.

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[@InvenergyLLC](#) [@danlitch](#)

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Via Certified Mail

March 31, 2017

Susan Miller, Engineer
 Highway Department
 3300 Bridge Avenue
 Albert Lea, MN 56007

RE: Freeborn Wind Farm, Freeborn County, Minnesota

Dear Susan Miller:

Freeborn Wind Energy LLC, a wholly-owned subsidiary of Invenergy LLC, is proposing a wind energy project in Freeborn County, Minnesota and Worth County, Iowa called the Freeborn Wind Farm (Project). The purpose of this letter is to request agency comments and gather additional information regarding the Minnesota-portion of the Project Boundary as indicated in the attached Figure 1. Comments and information we receive will be included in the Site Permit Application for a Large Wind Energy Conversion System we will be submitting to the Minnesota Public Utilities Commission (MPUC).

The locations of turbines, access roads, collection lines, crane paths and related facilities are being finalized. The following sections are located within the Project Boundary in Minnesota.

Table 1 Sections within the Freeborn Wind Farm Project Boundary

County	Civil Township Name	Township	Range	Sections
Freeborn	Hayward	102	20	12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 34, 35, 36
Freeborn	London	101	19	13, 14, 19, 20, 21, 22, 23, 24, 27, 28, 29, 30, 31, 32, 33
Freeborn	Oakland	102	19	7, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22
Freeborn	Shell Rock	101	20	1, 2, 8, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35, 36



The Project would include a nameplate wind energy capacity of up to 100 megawatts (MW) in Minnesota. Project facilities include:

- Wind turbines and associated equipment;
- Gravel access roads to turbine sites and necessary modification to existing roads;
- Buried electric collection lines;
- Overhead electric collection lines;
- An operations and maintenance facility;
- A Project substation and
- Permanent meteorological towers.

Temporary facilities for the Project include staging areas for construction of the Project, two temporary meteorological towers that are currently in place, temporary batch plant area, and improvements to public and private roads for delivery of materials and equipment.

Please respond with any comments and/or questions within 30 days of receipt of this letter so that we can address, as appropriate, and include them within the MPUC Site Permit Application.

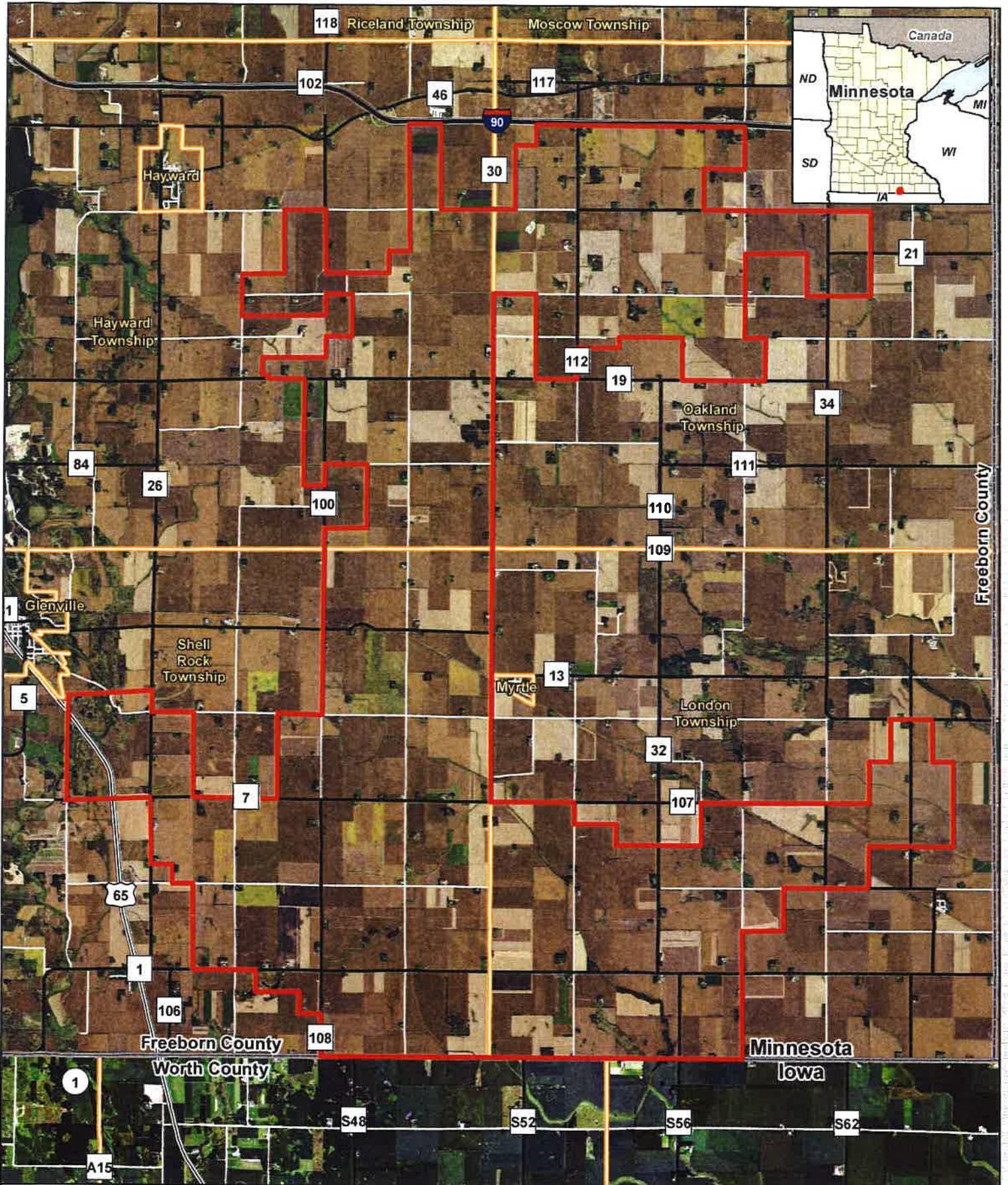
Should you require additional information, please feel free to contact me at dlitchfield@invenergyllc.com, 312.582.1057, or Freeborn Wind Energy LLC, c/o Invenergy LLC, One South Wacker Drive, Suite 1800, Chicago, IL 60606.

Sincerely,

Freeborn Wind Energy LLC

Dan Litchfield
Senior Manager, Project Development

Enc. Figure 1 Project Boundary Map



1 inch = 1.5 miles



Merjant
 For Environmental Review Purposes Only

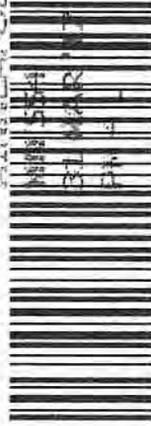
Figure 1
Freeborn Wind Farm
Project Boundary
Freeborn County, MN

Project Boundary

AFCL Exhibit I

Freeborn Wind Energy LLC
c/o Invenergy LLC
One South Wacker Drive, Suite 1800
Chicago, IL 60606

CERTIFIED MAIL™



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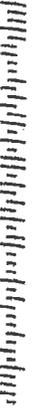
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Highway Department
Susan Miller
Engineer
3300 Bridge Avenue
Albert Lea, MN 56007



56007-424600

Sue G. Miller

From: Sue G. Miller
Sent: Monday, April 10, 2017 8:26 AM
To: Wayne Sorensen; John Kluever
Subject: RE: Two more questions

I did talk with Larry Hartman at the PUC and he confirmed the status.

Thanks Wayne!

From: Wayne Sorensen
Sent: Monday, April 10, 2017 8:22 AM
To: Sue G. Miller; John Kluever
Subject: RE: Two more questions

It appears this “mega” company probably has various divisions that are proceeding to try and get their ducks in a row. To my knowledge the State permit has not been formally applied for though, so I am still guessing 2018 construction.

That being said, they do appear to be putting the cart ahead of the horse. I agree with Sue that the developers agreement should be started.

Wayne

From: Sue G. Miller
Sent: Monday, April 10, 2017 7:53 AM
To: John Kluever; Wayne Sorensen
Subject: FW: Two more questions

I am of the opinion that these folks need to formally initiate the developers agreement. This feels like the cart ahead of the horse or a divide and conquer type approach versus the holistic project management I believe we strive to execute.

Let me know your thoughts.....I have been fielding a few calls from Townships and also believe a comprehensive approach would be beneficial to them as well.

sue

From: Birmingham, Daniel [<mailto:DBirmingham@invenergyllc.com>]
Sent: Monday, April 10, 2017 7:49 AM
To: Sue G. Miller
Cc: Svedeman, Michael; Litchfield, Daniel; Halley, Nicholas; Leon, Andrew; Correa, Esteban
Subject: RE: Two more questions

Good morning Sue,

I am following up on Dan’s behalf to introduce Nick, Andy, and Esteban (copied) from Invenergy’s construction and electrical engineering teams. They had some specific questions regarding the required documentation for the ROW permit along T-236/840th or CSAH 30/850th that you discussed with Dan last week. I will defer to them but wanted to make the introduction.

Thanks,

Daniel

From: Litchfield, Daniel
Sent: Wednesday, April 5, 2017 9:50 AM
To: Halley, Nicholas <NHalley@invenergyllc.com>
Cc: Birmingham, Daniel <DBirmingham@invenergyllc.com>; Svedeman, Michael <MSvedeman@invenergyllc.com>
Subject: FW: Two more questions

FYI below, both on electrical routes and roads.

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

From: Sue G. Miller [<mailto:Sue.Miller@co.freeborn.mn.us>]
Sent: Wednesday, April 05, 2017 8:46 AM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Cc: loren.lair@yahoo.com
Subject: Re: Two more questions

Hi Dan-

CSAH 30 will need to be widened/regarded at some point in future but transportation funding in Minnesota is in flux right now so not defined dates.

The County has not met with the townships to see if they would want to work with the County as their road authority agent for the purposes of this project only. The County did act as the agent for the townships on the previous Wind Farm development project and it worked well.

I would imagine that the same public utilities question raised by the County would apply to use of the township right of way for electrical lines as well since the same Statutes apply.

Sue

On Apr 5, 2017, at 7:55 AM, Litchfield, Daniel <DLitchfield@invenergyllc.com> wrote:

Good morning Sue,

Are there any impending plans to widen or do other major work on County Highway 30/850th ave?

T-236/840th ave may be a better solution as we have a majority of private ROW asking that corridor. Should I ask the townships directly about that or also work with you on a ROW permit?

Dan Litchfield
773-318-1289

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Sue G. Miller

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Sent: Monday, April 10, 2017 8:59 AM
To: Birmingham, Daniel; Sue G. Miller
Cc: Svedeman, Michael; Litchfield, Daniel; Leon, Andrew; Correa, Esteban
Subject: RE: Two more questions

Hello Sue,

I think it would be best to have a short call with the team. What time works for you this week?

Kind Regards,

Nicholas C. Halley | Senior Project Manager
Invenergy LLC | One South Wacker Drive, Suite 1800, Chicago, IL 60606
nhalley@invenergyllc.com | D +1 312-582-1256 | M +1 614-507-1937 | @InvenergyLLC

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Sent: Monday, April 10, 2017 7:49 AM
To: Sue G. Miller <Sue.Miller@co.freeborn.mn.us>
Cc: Svedeman, Michael <MSvedeman@invenergyllc.com>; Litchfield, Daniel <DLitchfield@invenergyllc.com>; Halley, Nicholas <NHalley@invenergyllc.com>; Leon, Andrew <ALEon@invenergyllc.com>; Correa, Esteban <ECorrea@invenergyllc.com>
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Subject: FW: Two more questions

FYI below, both on electrical routes and roads.

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606

From: Sue G. Miller [<mailto:Sue.Miller@co.freeborn.mn.us>]

Sent: Wednesday, April 05, 2017 8:46 AM

To: Litchfield, Daniel <DLitchfield@invenergyllc.com>

Cc: loren.lair@yahoo.com

Subject: Re: Two more questions

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Sue G. Miller

From: Litchfield, Daniel <DLitchfield@inenergyllc.com>
Sent: Wednesday, April 12, 2017 10:32 AM
To: Sue G. Miller
Cc: Brusven, Christina; Leon, Andrew; Svedeman, Michael; Birmingham, Daniel; Halley, Nicholas
Subject: Freeborn wind farm ROW permit discussion

Hi Sue,

I'd like to set up a phone call with our team and anyone else on the County's side to discuss our potential use of public ROW along either township or county roads. We'd like to cover the definition of public utility and issues around that, and also understand a bit better what you would want to see in an eventual permit application. We are available on Friday from 10:30-11:30. Would that work for you? I'll send a calendar event with a call-in #.

Dan Litchfield | Senior Manager, Project Development
Inenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@inenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InenergyLLC
@danlitch

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VIA UPS

April 27, 2017

Susan G. Miller, Engineer
Highway Department
3300 Bridge Avenue
Albert Lea, MN, 56007

**RE: Freeborn Wind Energy Proposed Transmission Line Project
Notice of Availability for Meeting**

Dear Susan G. Miller:

Freeborn Wind Energy LLC ("Freeborn Wind"), a wholly-owned subsidiary of Invenergy LLC ("Invenergy"), is proposing the Freeborn Wind Farm, a wind energy project in Freeborn County, Minnesota and Worth County, Iowa ("Project"). You should have recently received a letter from me requesting input regarding the Project for the purposes of its upcoming Minnesota Public Utilities Commission ("MPUC") Site Permit Application.

The Project will also include the construction of an approximately seven-mile long 161 kilovolt ("kV") transmission line from the Project Substation in Shell Rock Township to the interconnection point located at the existing Glenworth Substation just southeast of Glenville, Minnesota in Shell Rock Township as well. A map of the proposed route for the transmission line is included with this letter.

Freeborn Wind is currently gathering information in preparation for filing a Route Permit Application for a High Voltage Transmission Line ("Route Permit") to the MPUC under its alternative review procedures. This Route Permit process would be separate but more or less contemporaneous with the Project's Site Permit application, thus this separate letter seeking comment. We would appreciate any input you have regarding the proposed transmission line, and we would be happy to meet with you to discuss the transmission line if desired.

Please respond with any comments and/or questions to me at dlitchfield@invenergyllc.com, 773-318-1289, or Freeborn Wind Energy LLC, c/o Invenergy LLC, One South Wacker Drive, Suite 1800, Chicago, IL 60606.

We would appreciate hearing from you by May 15, 2017 to ensure that we have adequate time to address questions or concerns in our Route Permit Application.

Sincerely,

Freeborn Wind Energy LLC

Dan Litchfield
Senior Manager, Project Development Enc. Freeborn Wind Proposed Transmission Line Route Map

Enc. Freeborn Wind Proposed Transmission Line Route Map

AFCL EXhibit I

Sue G. Miller

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Friday, June 16, 2017 9:09 AM
To: glenmath@frontiernet.net; Christopher Shoff; ccmikelee@yahoo.com; dbelshan@clear.lakes.com
Cc: Hayley Pirsig; Sue G. Miller; Kelly Callahan
Subject: RE: Freeborn wind farm update

Follow Up Flag: Follow up
Flag Status: Completed

The application for our proposed wind farm is now online:

<https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={F76DF730-2CD0-4517-A7B8-31F1DE48E1E9}&documentTitle=20176-132804-01>

We don't have a docket page yet, but will in about a week and in the meantime if you want to see what was posted, you can also search eDockets by entering 17-410 for the wind farm: https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showeDocketsSearch&showE_docket=true&userType=public

As we detail in the application, we are proposing 42 turbines in Freeborn County that would occupy only 33 acres of farmland and would produce almost \$400,000 per year in new local tax revenue.

Please let me know if you have any questions.

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

From: Litchfield, Daniel
Sent: Friday, June 02, 2017 10:51 AM
To: glenmath@frontiernet.net; christopher.shoff@co.freeborn.mn.us; ccmikelee@yahoo.com; 'dbelshan@clear.lakes.com' <dbelshan@clear.lakes.com>
Cc: 'hayley.pirsig@co.freeborn.mn.us' <hayley.pirsig@co.freeborn.mn.us>; Susan G. Miller (sue.miller@co.freeborn.mn.us) <sue.miller@co.freeborn.mn.us>; 'kelly.callahan@co.freeborn.mn.us' <kelly.callahan@co.freeborn.mn.us>
Subject: Freeborn wind farm update

Dear Freeborn County Commissioners,

When we last met I pledged to get our permit application filed by June 1 and I wanted to let you know that we have missed that date. I do hope to file the application with the state by the end of next week, so it is not a significant delay. If you have any questions, please ask.

Sincerely,

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606

dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

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Sue G. Miller

From: Sue G. Miller
Sent: Monday, July 17, 2017 10:37 AM
To: 'Litchfield, Daniel'
Cc: Kelly Callahan
Subject: RE: Freeborn wind farm road agreement discussions

Tuesday, July 25th would only work for me as I am booked for MnDOT Disaster Review committee on July 28. Does 1 pm work for you? We can meet out here at the Highway shop, 3300 Bridge Avenue in our conference room. I will try to see if others can attend as well.

Thanks Dan!
sue

From: Litchfield, Daniel [mailto:DLitchfield@invenergyllc.com]
Sent: Monday, July 10, 2017 7:42 PM
To: Sue G. Miller
Cc: Kelly Callahan
Subject: RE: Freeborn wind farm road agreement discussions

Sure. Tuesday-Friday could work just fine for me. Any preference?

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

From: Sue G. Miller [mailto:Sue.Miller@co.freeborn.mn.us]
Sent: Monday, July 10, 2017 8:52 AM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Cc: Kelly Callahan <Kelly.Callahan@co.freeborn.mn.us>
Subject: Re: Freeborn wind farm road agreement discussions

I will be out of the office most of that week for meetings out of town. Can we look at the following week?

On Jul 7, 2017, at 3:42 PM, Litchfield, Daniel <DLitchfield@invenergyllc.com> wrote:

Hi Sue,

I will be back in your area the week after next. Would you, Kelly and possibly Wayne Sorensen (if he is going to be involved) like to meet on Thursday the 20th to discuss a first draft 3-part agreement?

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Sue G. Miller

From: Sue G. Miller
Sent: Monday, July 17, 2017 10:54 AM
To: Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
Subject: Invenergy Meetings

Good Morning folks:

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What would you all think of meeting later this week to review and discuss internally first. Anytime on Thursday morning would work for me or most of the day Friday, but if on Friday, can we do it out here at the Hwy shop as we are short staffed and I need to be a little more accessible.

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Thanks.

sue

Susan g. Miller
Freeborn County Engineer
3300 Bridge Avenue
Albert Lea, MN
sue.miller@co.freeborn.mn.us
(507) 377-5188

Sue G. Miller

From: Litchfield, Daniel <DLitchfield@inverenergyllc.com>
Sent: Monday, July 17, 2017 10:56 AM
To: Sue G. Miller
Cc: Kelly Callahan
Subject: Re: Freeborn wind farm road agreement discussions

Good morning Sue and Kelly,

Yes, Tuesday 7/25 at 1 PM at Sue's office will work for me. I'll block that time off and we can be in touch later this week to create an agenda for the meeting. I may have some folks from Xcel interested in joining too if that's ok. They are very interested in a smooth handover from us and extending you their assurances they will be a good neighbor and take care of the public infrastructure, etc.

Dan Litchfield
773-318-1289

----- Original message -----

From: "Sue G. Miller" <Sue.Miller@co.freeborn.mn.us>
Date: 7/17/17 10:37 AM (GMT-06:00)
To: "Litchfield, Daniel" <DLitchfield@inverenergyllc.com>
Cc: Kelly Callahan <Kelly.Callahan@co.freeborn.mn.us>
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Sue G. Miller

From: Wayne Sorensen
Sent: Monday, July 17, 2017 1:16 PM
To: Sue G. Miller; Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Subject: RE: Invenergy Meetings

Kelly,

Do you wish for me to participate? Going forward I will not be involved, but perhaps some of my experience would be helpful.

Either way let me know.

Thanks, Wayne

PS. Thursday before 10:30 would not work

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I placed the most recent southern MN wind farm development documents in a folder on the Common drive under Invenergy/SW MN. Every iteration yields a better agreement 😊

Thanks.

sue

Susan g. Miller
Freeborn County Engineer
3300 Bridge Avenue
Albert Lea, MN
sue.miller@co.freeborn.mn.us
(507) 377-5188

Sue G. Miller

From: David Walker
Sent: Monday, July 17, 2017 1:49 PM
To: Sue G. Miller; Kelly Callahan; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
Subject: RE: Invenergy Meetings

Good Afternoon,

I would be happy to participate in the meeting. I MAY be available on July 25th. Jury trials are scheduled on that date. If they all settle, the day will be open for me.

I am available late Thursday morning this week and Friday afternoon.

Please advise.

David

David Walker
Freeborn County Attorney



Freeborn County Attorney's Office

411 South Broadway Avenue

Albert Lea, MN 56007

(507) 377-5192

www.co.freeborn.mn.us/attorney

From: Sue G. Miller
Sent: Monday, July 17, 2017 10:54 AM
To: Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
Subject: Invenergy Meetings

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Albert Lea, MN
sue.miller@co.freeborn.mn.us
(507) 377-5188

Sue G. Miller

From: Kelly Callahan
Sent: Monday, July 17, 2017 2:01 PM
To: Sue G. Miller; David Walker; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
Subject: RE: Invenergy Meetings

Thursday (earlier in the AM – I have an 11:30 speaking engagement) or Friday works for me.

From: Sue G. Miller
Sent: Monday, July 17, 2017 10:54 AM
To: Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
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sue.miller@co-freeborn.mn.us
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Sue G. Miller

From: Kelly Callahan
Sent: Monday, July 17, 2017 2:05 PM
To: Wayne Sorensen; Sue G. Miller; David Walker; Wayne Sorensen; Winston Beiser
Subject: RE: Invenergy Meetings

I would appreciate that if possible, since you were involved with the Bent Tree project.

From: Wayne Sorensen
Sent: Monday, July 17, 2017 1:16 PM
To: Sue G. Miller; Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Subject: RE: Invenergy Meetings

Kelly,

Do you wish for me to participate? Going forward I will not be involved, but perhaps some of my experience would be helpful.

Either way let me know.

Thanks, Wayne

PS. Thursday before 10:30 would not work

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Cc: Wayne Sorensen
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Thanks.

sue

Susan G. Miller
Freeborn County Engineer
3300 Bridge Avenue
Albert Lea, MN

Sue G. Miller

From: Winston Beiser
Sent: Monday, July 17, 2017 3:31 PM
To: Sue G. Miller; Kelly Callahan; David Walker; Wayne Sorensen
Cc: Wayne Sorensen
Subject: RE: Invenergy Meetings

Either day works for me as of now.

Winston Beiser

From: Sue G. Miller
Sent: Monday, July 17, 2017 10:54 AM
To: Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Cc: Wayne Sorensen
Subject: Invenergy Meetings

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sue

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(507) 377-5188



WIDSETH SMITH NOLTING

JOB 7/11/17 Brd Mtg (Wind)

JOB NO. 953:38

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

Ordinance 1141' Required setbacks

Plan for this project
 Have 6 towers
 < 1500'

- 1 is a participating landowner
- 2 may have good neighbor agreement

42 towers total in Freedom County

1109' w/ participating
 1248' - Schumacher
 1366'
 1399'

1476'
 1495'

discussions @ 7/11/17 10:00 am
 County Board Meeting under Commissioner Items
 would eliminate this tower to > setbacks due to other setbacks

1000 Tower Hanson
 + 45 towers - 17 towers within 1500' from PUC docket

PUC application says 1126' ~~1000'~~

FC Ordinance 26-51 say 1,000' setbacks

142 turbines?

Sue G. Miller

From: David Walker
Sent: Tuesday, July 18, 2017 2:35 PM
To: Sue G. Miller
Subject: Invenergy Meetings

Sue,

...just to confirm:

Meeting #1: Thursday, July 20 at 10:30, County Atty conference rm

Meeting #2: Tuesday, July 25 at 1:00, County Atty conference rm (but I may be in a Jury trial)

Right?

David

From: Kelly Callahan
Sent: Monday, July 17, 2017 2:05 PM
To: Wayne Sorensen; Sue G. Miller; David Walker; Wayne Sorensen; Winston Beiser
Subject: RE: Invenergy Meetings

I would appreciate that if possible, since you were involved with the Bent Tree project.

From: Wayne Sorensen
Sent: Monday, July 17, 2017 1:16 PM
To: Sue G. Miller; Kelly Callahan; David Walker; Wayne Sorensen; Winston Beiser
Subject: RE: Invenergy Meetings

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Thanks, Wayne

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(507) 377-5188

Sue G. Miller

From: Sue G. Miller
Sent: Tuesday, July 18, 2017 3:04 PM
To: David Walker
Subject: Re: Invenergy Meetings

Meeting on Tuesday July 25 is out at highway. Will be a larger group with Invenergy and Xcel folks attendance.

On Jul 18, 2017, at 2:34 PM, David Walker <David.Walker@co.freeborn.mn.us> wrote:

Sue,

...just to confirm:

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Thanks.

sue

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sue.miller@co.freeborn.mn.us
(507) 377-5188

Sue G. Miller

From: Winston Beiser
Sent: Thursday, July 20, 2017 11:40 AM
To: Kelly Callahan; Sue G. Miller; David Walker; Wayne Sorensen
Subject: Wind Farm Development Agreement items 5-15-15
Attachments: Wind Farm Development Agreement items 5-15-15.docx

Here are some items I put together after consulting with Morreim Drainage on some lessons learned from the Bent Tree experience.

Thanks,

Winston Beiser



WINSTON BEISER, DRAINAGE INSPECTOR
*Government Center, P.O. Box 1147, 411 S. Broadway
Albert Lea, Minnesota 56007
Telephone 507/379-2962 Fax 507/377-5175
Cell 507/320-0552 Home 507/265-3416*



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7-19-2017

By Winston Beiser

Wind Farm Development Agreement

Items to include with a Wind Farm Development Agreement

- 1- The electric collector lines should be installed with a "chain trencher" and all collector lines must have a minimum 5.5 feet of cover over the collector line. A shallower cover could be allowed where it is determined that the County Tile is at that depth and a shallower installation of the collector line would avoid the lines being at the same depth. When a shallow large main tile is crossed the County Drainage Authority can require the collector line be bored under the main tile. *Typical*
- 2- The developer would employ a local Tile Drainage Contractor to have a person / repair crew on site at the time of any installation of collector lines so that the identification of cut tile lines would be immediately flagged and Geo Tagged and repaired by a crew of the local Tile Contractor immediately. *2' below recorded grade?*
- 3- All County Ditches that are crossed with a collector line would be bored to a sufficient depth to allow for future ditch cleaning and a possible deeper flow line of the County Ditch. *how to define*
IMPROVEMENT
- 4- To lessen soil compaction and tile line damage on the crane paths between turbine towers, the developer would utilize moveable crane mats while moving cranes between towers. *Private issue*
- 5- Before the developer applies for a permit for the exact location of each tower the developer must work with the Drainage Authority or their designated Drainage Inspector to determine if there is a main tile line 8" or larger underneath or very close to the footprint of the tower and then relocate the tower away from that main tile. This would not apply to small regular tile laterals. When the contractor is digging the hole for the turbine pad and pinches off a tile line the contractor must identify the exact location and the size and type of tile line pinched off *gis conflict points*

at conflict areas only

gis conflict points

Private issue

gis conflict points

tough sell?

6- In reference to Construction Related Damages to county and private tile lines, the developer would retain a local Tile Contractor to repair any undiscovered damage for 10 years afterwards instead of 5 years.

7- The County Board can choose to direct a person to represent the Private Ditch and Tile systems of the affected landowners in the wind farm footprint to coordinate with the Developer the same provisions as with the County Ditch and Tile systems.

8- Developer is required to bury a "tracer wire" with all fiber optic communication lines installed within the Wind Farm. *standard*

Board has authority on private systems

landowners should be protecting themselves within their own agreement

Sue G. Miller

From: Sue G. Miller
Sent: Thursday, July 20, 2017 2:40 PM
To: 'Litchfield, Daniel'
Cc: Kelly Callahan; David Walker
Subject: RE: Freeborn wind farm road agreement discussions

Hi Dan,

Mr. Walker has confirmed that he will not be able to be in attendance.

Thank you!

sue

From: Litchfield, Daniel [mailto:DLitchfield@inenergyllc.com]
Sent: Thursday, July 20, 2017 10:15 AM
To: Sue G. Miller
Cc: Kelly Callahan; David Walker
Subject: RE: Freeborn wind farm road agreement discussions

Sue –

When do you think you can confirm whether the County Attorney will attend? Is that Mr. Walker, copied here? I ask because I would welcome his attendance and if he is able to attend, I'd like to bring our attorney as well.

Dan Litchfield | Senior Manager, Project Development
Inenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
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From: Sue G. Miller [mailto:Sue.Miller@co.freeborn.mn.us]
Sent: Wednesday, July 19, 2017 10:40 AM
To: Litchfield, Daniel <DLitchfield@inenergyllc.com>
Cc: Kelly Callahan <Kelly.Callahan@co.freeborn.mn.us>; David Walker <David.Walker@co.freeborn.mn.us>
Subject: RE: Freeborn wind farm road agreement discussions

Hi Dan –

I received your voicemail regarding confirmation of next week's meeting. Kelly and I for sure will be able to meet with you and Xcel folks. Our County Attorney may be in a jury trial so his attendance is tentative at this point.

Regarding agenda for the meeting, I would assume this meeting to be considered the initial discussion regarding the formulation of a developers agreement. In the coming weeks, the County will need to meet with townships to see if they would like the County to act on their behalf as road authority for the purposes of the project. Any documents you have regarding tower siting, access requests, utility requests, drainage system impacts, etc. would be great so we can get a draft agreement for all to review.

See you next week.

sue

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Dan Litchfield
773-318-1289

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dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

From: Sue G. Miller [<mailto:Sue.Miller@co.freeborn.mn.us>]
Sent: Monday, July 10, 2017 8:52 AM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>

Cc: Kelly Callahan <Kelly.Callahan@co.freeborn.mn.us>

Subject: Re: Freeborn wind farm road agreement discussions

I will be out of the office most of that week for meetings out of town. Can we look at the following week?

On Jul 7, 2017, at 3:42 PM, Litchfield, Daniel <DLitchfield@invenergyllc.com> wrote:

Hi Sue,

I will be back in your area the week after next. Would you, Kelly and possibly Wayne Sorensen (if he is going to be involved) like to meet on Thursday the 20th to discuss a first draft 3-part agreement?

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 |
@InvenergyLLC @danlitch

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87340 135th St
Glenville, MN 56036

MINNEAPOLIS MN 553

18 JUL 2013 PM 7.1



Ferguson County Highway Dept.
3300 Bridge Ave.
Albert Lea, MN 56007

56007-424800



London Township

90314 2nd St.

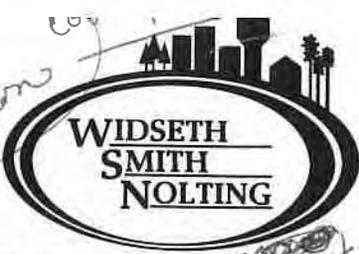
Glenville, MN 56036

Sue Miller,

Thank you, but at this time London Township has decided to decline the County's road ordinance written up for the Freeborn Wind Farm Project. We will be following our own ordinance relating to the Oversize Truck Use, Resolution #17-1, written up by Messerli & Kramer PA. For any questions or comments, please contact Daniel Schleck at 612.672.3683.

Thanks,

London Township Board of Supervisors



WV110
 JOB Freeborn ~~and~~ Development 1pm
Construction 202-0 JOB NO. July 25
 CALCULATED BY _____ DATE Kelly 1:10 pm
 CHECKED BY _____ DATE asleep by 1:45 pm

Sue Kelly Winston
 Manage Contractors

Sarah X
 Cox
 (Community relations)
 Local governments

Chad Bonhiring XCEL
 (Land Rights)
 Reason w/ the landowners w/ in the project

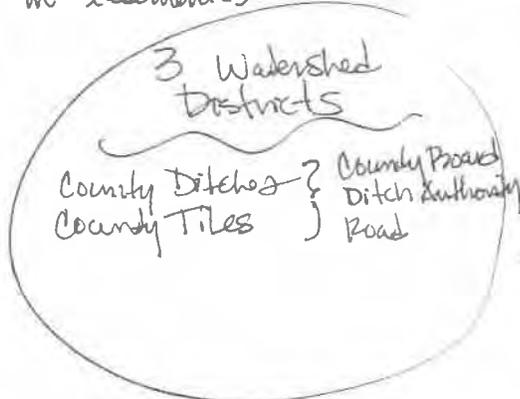
Emanuel X
 (Construction)

Dan L. I
 (Developer)

- Introductions
- Project facilities
- Public ROW (gaps in easements)
- Road Agreement
- O&M yard

Concerns

- agreements w/ Inmanergy to XCEL to Contractor XYZ
- crane walks



△ from Bent Tree

more spread out larger turbines

Robot...

WB ?

- private tiles
 - size warranty & use of local
 - Dan in the lease
- Wouldn't be opposed.

true up
 * crushed tile on crane paths
 Dan to Winston

County tiles

placement of the pads

Abrahms Farm
 Ellingson Drainage

Stateman County ND

gaps in ROW
 Dam circle

- log and trap
 - St John Av (trap)
 - T-69
 - CSAH 30
- Use of ROW

Winston > depth for collector line should be at 5' to 5.5'



JOB _____

JOB NO. _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

WB wants a chain trencher
and at 5' to 5' 5"
and Morrison - shouldn't recommend

(*) turbine 31

CL 3 / CL 4 Wetland

2.9 Roto diameters → ordinance

118 planned

110 → 2dB quieter

} possibility of variance

(*)

yellow line above ground transmission line

3 part agreement }
Road }
Drainage }
Development } (*)



JOB _____

JOB NO. _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

August 10 Public Hearing

July 6 completeness

July 13 reply

Aug 10 - hearing on completeness

Sept / Oct public hearing
w/ ~~Open~~ public comment period

Early September; next meeting w/ us

(*) She to send letter to all 4 twps.
Ask to attend August twp mtgs
Ask for yea or nca to twp resolution
before early October 2017

Sue G. Miller

From: Rich Brumm <richard.brumm@worthcounty.org>
Sent: Tuesday, July 25, 2017 12:56 PM
To: Sue G. Miller
Subject: Re: wind
Attachments: Invenergy Road Agreement - Worth County_61773198(4)-c.docx;
freeborn_roadagreements_ia_11x17l_20170720.pdf

Sue,

This is the latest and probably final version of the agreement.

Rich

On Tue, Jul 25, 2017 at 11:29 AM, Sue G. Miller <Sue.Miller@co.freeborn.mn.us> wrote:

Hi Rich:

Wondering what you have agreed to for road use agreements with the Freeborn Wind Development. Can you give me a call to discuss sometime?

Thanks.

sue

Susan g. Miller

Freeborn County Engineer

3300 Bridge Avenue

Albert Lea, MN

sue.miller@co.freeborn.mn.us

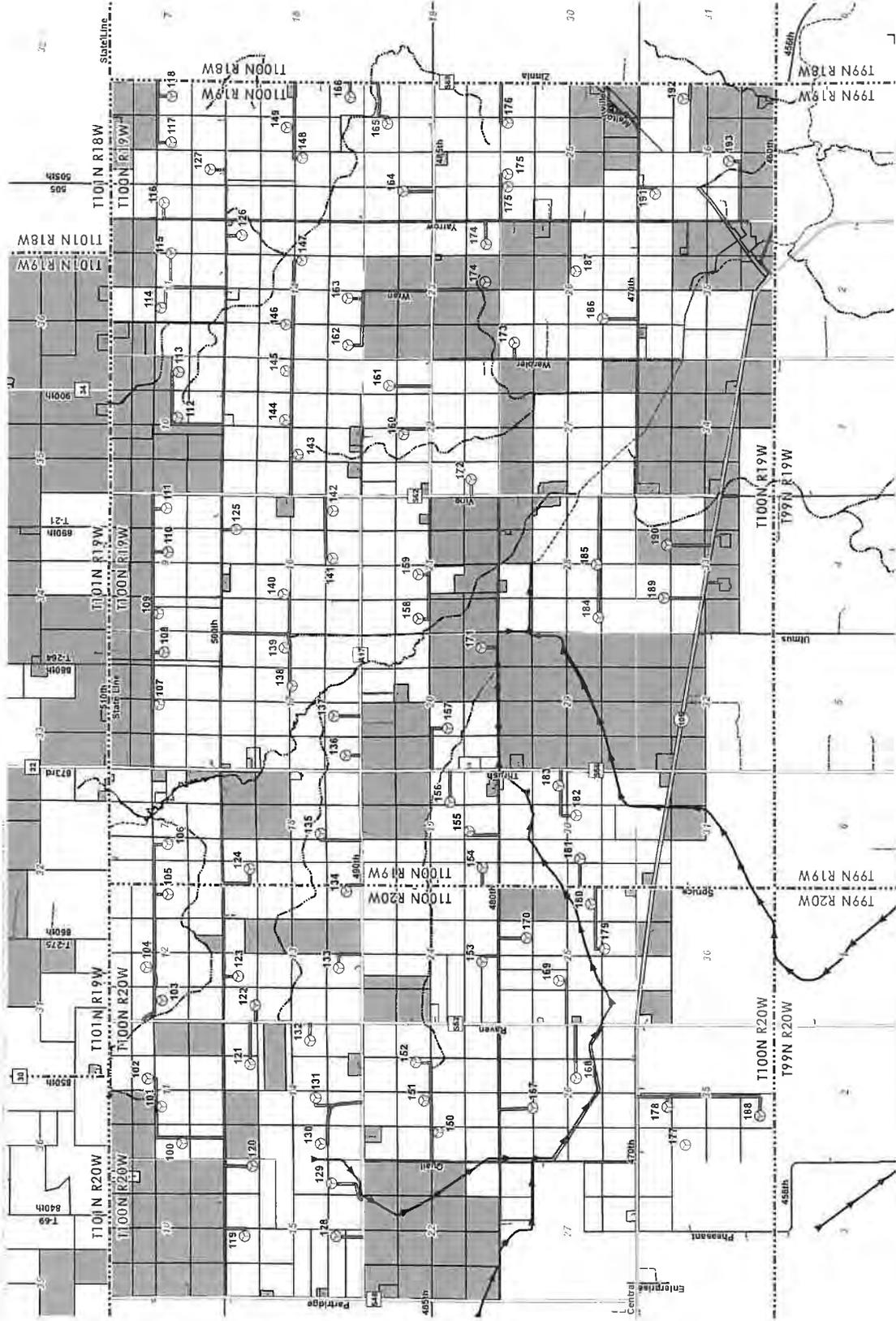
[\(507\) 377-5188](tel:(507)377-5188)

--
Richard C. Brumm, PE
County Engineer
Mitchell Co. 641-732-5849
Worth Co. 641-324-2154



Legend

- Proposed Turbine Location (A)
- Proposed Access Road
- Participating Property
- Non-Participating Property
- Section Line
- Township/Range Boundary
- Road Classification
 - US/State Route
 - County Road
 - Local Road
 - Dirt/Unpaved Road
- Stream Type (NHD)
 - 33k Connector
 - 33k Ditch
 - 460 Stream
 - 558 Artificial Path



Road Agreement Summary

Freeborn Wind Energy Project | Worth County, Iowa

Invenergy

Rev 00
July 20, 2017

**ROAD AND DRAINAGE EASEMENT AND MAINTENANCE
AGREEMENT
Recorder's Cover Sheet**

Preparer Information: Jennifer Hodge Burkett
(Name & Address of Preparer) 505 East Grand Avenue, Ste. .200
Des Moines, IA 50309
515-242-8900

Taxpayer Information: _____
(Name & Address of Owner) _____

Return Document To: **Jennifer Hodge Burkett**
505 East Grand Avenue, Ste. 200
Des Moines, IA 50309

Grantors: Board of Supervisors of Worth County, Iowa and
Board of Supervisors as Trustees of Drainage Districts in Worth County, Iowa

Grantees: Freeborn Wind Energy LLC

Legal Description: See Exhibit B

Document or instrument number of previously recorded documents: N/A

**ROAD AND DRAINAGE EASEMENT AND MAINTENANCE
AGREEMENT**

THIS ROAD AND DRAINAGE EASEMENT AND MAINTENANCE AGREEMENT (this "Agreement") is made as of the ____ day of _____, 2017, by and among Freeborn Wind Energy LLC, a Delaware limited liability company ("Freeborn Wind"), the Board of Supervisors of Worth County, Iowa ("Board of Supervisors", "Worth County" or "County"), and the Board of Supervisors of Worth County, Iowa as Trustees of Drainage Districts in Worth County, Iowa ("Trustees") (to the extent the Drainage Districts in Worth County, Iowa are applicable, "Worth County" or the "County" shall include both the Board of Supervisors and the Trustees; Freeborn Wind and County are sometimes referred to individually as a "Party" or collectively as the "Parties").

RECITALS:

- A. Freeborn Wind desires to develop, construct and operate a wind-powered electrical generating facility in Worth County (the "Project") with all necessary associated facilities such as underground power collection lines and access roads.
- B. The Parties agree that it is in the best interest of each to memorialize the rights, obligations, and responsibilities of the Parties with respect to Freeborn Wind's use of Worth County roads and rights-of-way during construction and operation of the Project, as well as potential repair of Worth County public drainage infrastructure.

AGREEMENT:

NOW, THEREFORE, in consideration of the mutual promises, covenants, and agreements contained herein, and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Parties to this Agreement hereby stipulate and agree as follows:

- 1. **Planning**
 - a. **Preliminary Site Plan.** Exhibit A is a preliminary plan for construction of aboveground facilities in Worth County. At least ninety (90) days prior to the start of construction, Freeborn Wind shall meet with the County Engineer (the "pre-construction meeting") to present a final plan for use of public roads (the "Haul Roads"), including temporary modifications to the roads such as widened intersections. Freeborn Wind shall advise the County Engineer of plans for heavily-laden vehicles and/or equipment over Worth County's public roads, and in the event the County Engineer identifies a reasonable safety concern regarding the load-bearing capacity of any road or structure, said road or structure shall not be used for the transportation of any heavily laden vehicles or equipment until the safety concern has been alleviated. Such alleviation can include a mutually agreeable alternate route or temporary upgrades to the deficient road or

structure, and such alternates shall not be unreasonably conditioned or delayed.

- b. Initial Evaluation. At the pre-construction meeting, the parties shall decide upon a scope of work for evaluating the condition of the roads and Drainage Infrastructure immediately prior to construction, which Freeborn Wind shall carry out at its expense. Freeborn Wind shall present a complete copy of the evaluation (the "Initial Evaluation") to the County Engineer prior to starting construction.
- c. Later changes. The parties recognize that despite good faith efforts, additional information may later reveal needs to modify some portions of the plans for use of public roads and crossing of Drainage Infrastructure and the parties agree to collaborate in good faith to address any changes necessary to such plans.

2. **Use of Rights-of-Way and Drainage Infrastructure**

a. Use. The Parties anticipate and acknowledge that in connection with the construction, operation and maintenance of electric collection lines, conductors, cables and other equipment appurtenant thereto (collectively, the "Facilities"), Freeborn Wind will use Worth County road rights-of-way and the County grants Freeborn Wind an easement to use such road rights-of-way as set forth in this Agreement. It is further anticipated that all right-of-way crossings of paved roadways will be by underground borings perpendicular to the rights-of-way, plus or minus thirty (30) degrees. All underground borings across any right-of-way shall commence and terminate outside of the right-of-way. No boring shall be made across a right-of-way at the intersection of rights of way. Trenching across gravel roadways may be approved with permission of the County Engineer. The County also grants Freeborn Wind an easement to cross rights-of-way to walk heavy lift construction cranes from one turbine site to another, and the Trustees grant Freeborn Wind an easement to maintain the Facilities along, over, through or across the public drainage infrastructure owned by drainage districts managed by the Worth County Board of Supervisors as Trustees (the "Drainage Infrastructure"). The parties intend that this agreement, and the grants contained herein, shall constitute an easement and shall satisfy the requirements for an easement in Iowa Code Chapter 468.

b. Ownership. The Facilities installed pursuant to this Agreement shall remain the property of Freeborn Wind. Notwithstanding the foregoing, Freeborn Wind shall have the right to sell, assign, or lease all or portions of its Facilities to other parties and, in that event, such other parties shall, with Freeborn Wind or, in the event of a total assignment or transfer, in lieu of Freeborn Wind, have the right, in the manner and to the same extent above, to operate the Facilities in, along, under, and across said rights-of-way and Drainage Infrastructure. Freeborn Wind, its successors or assigns, shall, at all times and at its sole cost and expense, maintain the Facilities in good condition and repair, ordinary wear and tear excepted.

c. Termination. In the event the Project is terminated by Freeborn Wind, Freeborn Wind shall remove all the Facilities above four feet below grade in, along, and across certain rights of way in Worth County within twenty four months of such termination.

3. Obligations of Freeborn Wind

a. Road Repair Obligations. Throughout the construction of the Project, Freeborn Wind shall maintain public road infrastructure in a safe condition for passage by the public. At the conclusion of construction, Freeborn Wind, at its expense, shall repair any damage to the Haul Roads due to any cause connected with the Project, but excluding repair caused by the County's negligence or intentional misconduct, to as-good or better than the condition they were in prior to construction, as documented in the Initial Evaluation (the "Road Repair Obligations"). The Parties shall rely upon the Initial Evaluation for purposes of determining the type of repair required. Upon completion of the repair, Freeborn Wind and the County Engineer will jointly inspect the repair to determine if it has been completed in accordance with the standard set forth in this Section. In the event a hazardous road condition exists that presents a likely safety hazard to the motoring public (a "hazardous road condition") and is not promptly corrected by Freeborn Wind after receipt of notice of the same, the County Engineer may make emergency road repairs or order emergency road repairs to be performed by qualified contractors, and Freeborn Wind shall promptly reimburse Worth County for reasonable emergency road repair costs. Except in the case of emergency road repair, Freeborn Wind shall notify the County Engineer's Office forty-eight (48) hours in advance of any road repair project and/or the closing or partial closing of any road in connection with the road repair project. Weather permitting, the final Road Repair Obligations shall be completed to the reasonable satisfaction of the County Engineer within six (6) months after the completion of construction of the Project as determined by Freeborn Wind, or as soon thereafter as weather conditions permit, or as mutually agreed upon by the Parties. Road repair shall include restoration of original configuration (as documented in the Initial Evaluation) of ditches, slopes, embankments or fills within the right-of-way unless special circumstances dictate otherwise and specific approval has been requested by Freeborn Wind and granted by the County Engineer. In the event it becomes necessary to remove or displace any traffic control device along the transportation routes, the same shall be reinstalled by Freeborn Wind at their original locations and restored to their original condition. All materials and construction methods shall be equal to or better than the standards established by AASHTO for "utilities within highway right of way." All warning and work zone signs shall comply with the "Uniform Manual for Traffic Control Devices." Road closures shall only be allowed after notification to the County Engineer in person or by telephone.

b. Emergency Services. To the extent Freeborn Wind's construction or operation of the Project results in an increase in expenses for emergency services provided by Worth County (e.g., increased emergency personnel

training and equipment), Freeborn Wind agrees to pay directly to the County its allocable share of such increased expenses as determined in good faith by the Parties with reference to documentation supporting such increase in expenses.

c. Drainage Infrastructure. If Drainage Infrastructure is damaged by Freeborn Wind, Freeborn Wind shall restore the Drainage Infrastructure to its Pre-existing Condition. Notwithstanding the foregoing, to the extent required by Iowa Code Section 468.186, if Freeborn Wind's actions disturb or cause replacement of any portion of a tile drain less than twenty inches in diameter and a portion of such drain will remain wholly or partially exposed after the project has been completed, the portion which is to remain exposed and not less than three feet of such drain immediately on either side of the portion which is to remain exposed, shall be replaced either with steel pipe of not less than sixteen gauge or polyvinyl chloride pipe conforming to current industry standards regarding diameter and wall thickness. For the purposes of this Agreement, "Pre-existing Condition" shall mean the flow capacity existing immediately prior to Freeborn Wind commencing construction of the Project. Freeborn Wind is responsible for all expenses related to repairs, relocations, reconfigurations, and replacements to the Drainage Infrastructure in accordance with this Agreement.

4. Obligations of Worth County. Worth County agrees to furnish Freeborn Wind with any and all road construction and maintenance records it has on the Haul Roads and any drainage district maps within sixty (60) days upon written notice from Freeborn Wind. Worth County agrees to make the County Engineer or his designee available to perform his obligations as set forth herein. Worth County shall give timely notification to Freeborn Wind of any conditions which come to its attention and may give rise to damage to the Drainage Infrastructure, a Road Repair Obligation or which would constitute a "hazardous road condition" as described in Paragraph 3(a) above. On a negotiated case by case basis, Worth County will perform snow removal on its Schedule B roads that are required to access wind turbine access roads.

5. Cooperation. Freeborn Wind and the County agree to communicate and cooperate in good faith concerning the safe construction and operation of the Project and preventing or correcting any hazardous road condition that may be created by the Project.

6. Indemnification. Freeborn Wind agrees to defend, indemnify, and hold harmless Worth County and its supervisors, trustees, administrators, employees, and representatives (collectively the "Indemnified Party") against any and all losses, damages, claims, expenses, including reasonable attorneys' fees, and liabilities for physical damage to the property of Worth County and for physical injury to any person, to the extent the same is a result of any activities or operations of Freeborn Wind, its agents and employees, on the property of the County for the performance or non-performance of its duties pursuant to this Agreement except to the extent caused by the negligence or intentional misconduct of the County. Furthermore, Freeborn Wind agrees to defend, indemnify, and hold harmless the Indemnified

ROAD AND DRAINAGE EASEMENT AND MAINTENANCE AGREEMENT, Page 5 of 12 Pages.

Party from any third party claims arising out of terms and conditions of this Agreement, except to the extent that such claims are caused by the negligence or intentional misconduct of the County. This indemnification obligation shall survive the termination of this Agreement.

7. Insurance. Freeborn Wind shall at all times during construction and operation of the Project, carry: (i) Worker's Compensation insurance in accordance with the laws of the State of Iowa and Employer's Liability insurance, (ii) Commercial General Liability insurance with minimum limit of \$5,000,000 per occurrence, and (iii) Automobile Liability insurance with minimum limit of \$1,000,000 per occurrence. Certificates of insurance will be provided to County upon written request to Freeborn Wind.

8. Compliance with Laws. Freeborn Wind shall at all times comply with all federal, state, and local laws, statutes, ordinances, rules, regulations, judgments, and other valid orders of any governmental authority with respect to Freeborn Wind's activities associated with the Project and shall obtain all permits, licenses, and orders required to conduct any and all such activities.

9. Entire Agreement. It is mutually understood and agreed that this Agreement constitutes the entire agreement between the Parties and supersedes any and all prior oral or written understandings, representations, or statements, and that no understandings, representatives, or statements, verbal or written, have been made which modify, amend, qualify, or affect the terms of this Agreement. This Agreement may not be amended except in writing and executed by both Parties.

10. Default. Any failure by a Party to perform a material obligation hereunder which is not remedied within thirty (30) days after receipt by the defaulting Party of written notice of such failure shall be deemed a default under this Agreement and, in such case, the non-defaulting Party shall be entitled to pursue any remedies available at law or in equity, including terminating this Agreement and collecting reasonable attorneys' fees from the defaulting Party. Notwithstanding the foregoing, so long as the defaulting Party has initiated and is diligently working to cure, the defaulting Party's cure period shall extend for a time period reasonably sufficient for the default to be remedied.

11. Relationship of the Parties. The duties, obligations, and liabilities of each of the Parties are intended to be several and not joint or collective. This Agreement shall not be interpreted or constructed to create an association, joint venture, fiduciary relationship, or partnership between the Parties hereto or to impose any partnership obligation or liability or any trust or agency obligation or relationship upon either Party. The Parties shall not have any right, power, or authority to enter into any agreement or undertaking for, or act on behalf of, or to act or be an agent or representative of, or otherwise to bind, the other Party.

12. Successors and Assigns. This Agreement shall inure to the benefit of and shall be binding upon the Parties hereto, their respective successors, assignees and legal representatives.

(i) Assignment Requiring Consent. This Agreement may not be assigned without the written consent of the other Parties and such consent shall not be unreasonably withheld, conditioned or delayed.

(ii) Permitted Assignment. Notwithstanding subparagraph (i) above, Freeborn Wind shall be entitled to assign this Agreement, in whole or in part, without the prior written consent of the County to any affiliate of Freeborn Wind, to any purchaser of any portion of the assets of Freeborn Wind, or to any person or entity providing financing to Freeborn Wind or any such affiliate or any collateral agent or security trustee acting on behalf of any such person or entity (each a "Permitted Assignment"). Any such assignment that is a collateral assignment for financing purposes will not relieve Freeborn Wind of its obligations under this Agreement. In the event of a Permitted Assignment, Freeborn Wind shall, not more than sixty days after such assignment, provide written notice to the County of the name, address, entity type and state of incorporation of the assignee, as well as the name and address of the assignee's registered agent in the State of Iowa. It is understood, however that any assignee shall be bound by the terms and conditions contained within this agreement.

13. Notices. Notices, requests, demands, and other communications shall be sent to the following addresses:

If to Freeborn Wind:

Freeborn Wind Energy LLC
c/o INVENERGY WIND DEVELOPMENT LLC
Attn: Dan Litchfield
One South Wacker Drive
Suite 1900
Chicago, IL 60606
dlitchfield@invenergyllc.com
773-318-1289

If to Worth County:

Worth County Engineer Richard Brumm
1000 Central Ave
Northwood, IA 50459
engineer@worthcounty.org
641-324-2154

All notices shall be in writing. Any notice shall be deemed to be sufficiently given (i) on the date, if delivered in person; (ii) five (5) days after being sent by United States registered or certified mail, postage prepaid, return receipt requested; or (iii) on the next Business Day if sent by overnight delivery service (e.g. Federal Express) to the notified Party at its address set forth above. These addresses shall remain in effect unless another address is

substituted by written notice. Notices may be sent via email transmission the email addresses provided, however, notice sent via email shall be followed by notice delivered by personal service or by registered or certified mail, return receipt requested, or by overnight delivery.

14. Relevant Law. Any and all disputes arising under this Agreement and/or relating to the actual development and/or construction of the Project shall be resolved pursuant to the laws of the State of Iowa.

15. Disputes. Should a dispute arise between the Parties on whether hazardous road conditions exist as defined in Section 2a, such determination shall be made by an independent civil engineer licensed in Iowa and selected by the mutual agreement of the Parties (the "Independent Engineer"). If the parties cannot agree on an independent engineer, they each shall select an independent engineer and the two independent engineers shall select a third independent engineer within thirty days, and this third independent engineer shall be the independent engineer for settling such disputes. Compensation for work performed by the Independent Engineer shall be shared equally by the Parties.

16. Waiver of Breach. No waiver of a breach of this Agreement shall be deemed a waiver of any subsequent breach.

17. Severability. If any provision of this Agreement shall be held by a court of competent jurisdiction to be contrary to public policy or unenforceable for any reason, such finding shall not invalidate any other provision of this Agreement and such provision shall be replaced with a suitable and equitable provision in order to carry out, so far as may be valid and enforceable, the extent of such provision that has been found to be contrary to public policy or unenforceable.

18. Binding Effect. This Agreement shall bind the assigns and successors of the respective Parties hereto to the same full degree and extent as the Parties themselves are hereby bound.

19. **Mortgagee Protection.** In the event that any mortgage is entered into by Freeborn Wind, then the mortgagee shall, for so long as its mortgage is in existence and until the lien thereof has been extinguished, be entitled to the protections set forth in this section. Freeborn Wind shall send written notice to Worth County of the name and address of any such mortgagee; provided that failure of Freeborn Wind to give notice of any such mortgagee shall not constitute a default under this Agreement and shall not invalidate such mortgage, however it is understood that any successor in interest to Freeborn Wind, be it a mortgagee, or other entity, shall be bound by the terms and conditions set forth in this agreement.

(a) **Mortgagee's Right to Possession, Right to Acquire and Right to Assign.** A mortgagee of Freeborn Wind shall have the absolute right: (i) to assign its security interest; (ii) to enforce its lien and acquire Freeborn Wind's rights, including without limitation rights to the permit to install, construct,

operate, repair, replace, remove, inspect and perpetually maintain the Facilities, by any lawful means; (iii) to take possession of and operate the Facilities or any portion thereof, to exercise all of Freeborn Wind's rights hereunder, and to perform all obligations to be performed by Freeborn Wind hereunder, or to cause a receiver to be appointed to do so; and (iv) following exercise of its rights under applicable mortgage, to assign or transfer Freeborn Wind's rights to a third party. The County's consent shall not be required for any of the foregoing.

(b) Notice of Default; Opportunity to Cure. As a precondition to exercising any rights or remedies as a result of any default of Freeborn Wind, the County shall give notice of Freeborn Wind's failure to perform to each mortgagee, of which it has notice, concurrently with delivery of such notice to Freeborn Wind. In the event the County gives such notice of failure to perform, the following provision shall apply:

i) The mortgagee shall have the same period after receipt of the notice of failure to perform to remedy the failure to perform, or cause the same to be remedied, as is given to Freeborn Wind, plus, in each instance, sixty (60) days, provided that such 60-day period shall be extended for the time reasonably required to complete such cure, including the time required for the mortgagee to perfect its right to cure failure to perform by obtaining possession (including possession by a receiver) or by instituting foreclosure proceedings, and provided the mortgagee acts with reasonable and continuous diligence. The mortgagee shall have the absolute right to substitute itself for Freeborn Wind and perform the duties of Freeborn Wind hereunder for purposes of curing such failure to perform. The County expressly consents to such substitution, agrees to accept such performance, and authorize the mortgagee (or its employees, agents, representatives or contractors) to enter upon the County roads to complete such performance with all the rights, privileges and obligations of the original Freeborn Wind hereunder.

(c) No Waiver. No payment made to the County by a mortgagee shall constitute an agreement that such payment was, in fact, due under the terms of this Agreement; and a mortgagee, having made any payment to the County pursuant to the County's wrongful, improper or mistaken notice or demand, shall be entitled to the return of any such payment.

[signature page to follow]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed on the day and year first above written.

BOARD OF SUPERVISORS
/

FREEBORN WIND ENERGY LLC

By: _____
Printed Name: _____
Title: _____

ATTEST:

By: _____
County Clerk

BOARD OF SUPERVISORS, AS TRUSTEES OF
DRAINAGE DISTRICTS IN WORTH COUNTY, IOWA

By: _____
Printed Name: _____
Title: _____

By: _____
Printed Name: _____
Title: _____

By: _____
Printed Name: _____
Title: _____

ATTEST:

By: _____
County Auditor

STATE OF _____)
)
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, as _____ of Freeborn Wind Energy LLC, a Delaware limited liability company, on its behalf.

Notary Public for _____
My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor.

Notary Public for _____
My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor.

Notary Public for _____
My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor.

Notary Public for _____

My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor, as Trustee of the Drainage Districts in Worth County, Iowa.

Notary Public for _____
My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor, as Trustee of the Drainage Districts in Worth County, Iowa.

Notary Public for _____
My commission expires: _____

STATE OF IOWA)
)ss:
COUNTY OF WORTH)

The foregoing instrument was acknowledged before me this ___ day of _____, 20__ by _____, Supervisor, as Trustee of the Drainage Districts in Worth County, Iowa.

Notary Public for _____
My commission expires: _____

EXHIBIT A

EXHIBIT B
LEGAL DESCRIPTION

T100N, R20W, Sections 10-15, 23-26 and 35.

T100N, R19W, Sections 7-30, 34-36

Sue G. Miller

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Thursday, July 27, 2017 10:56 AM
To: Sue G. Miller; Kelly Callahan; Winston Beiser
Cc: Amanuel Haile (amanuel.t.haile@xcelenergy.com); Ruberg, Brittni J; Peterson, Chad T; Rosenfeld, Trisha A; Cox, Sarah
Subject: Freeborn Wind Farm 3-part agreement discussion
Attachments: L060_final turbines_FOR FILING.zip; L060_final_roads_rev02.zip; Freeborn.zip; Freeborn_RPA_Data_for_Review_20170720.zip; L058_collection.zip; L058_crane paths.zip

Dear Sue, Kelly and Winston,

Thank you so much for your time on Tuesday. I look forward to continued, productive discussions.

Attached are shape files per Sue's request.

I look forward to Sue's feedback from the townships and a potential next meeting in early September. I think we may have a state-run Public Information Meeting for the project mid-September, so maybe we could schedule our next meeting for that morning when we will all be in town anyway. I will let you know when a date is set. I think we can pencil in September 16, but that is far from final.

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC
@danlitch

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Exhibit F

Data Practices Act Request Responses

Requested November 30, 2018

Minnesota Department of Commerce

Received January 3, 2019

Subject: November 30 Freeborn DPA Response
From: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>
Date: 1/3/2019, 12:15 PM
To: "Carol A. Overland" <overland@legalectric.org>

Hello Carol.

Sorry for the delay getting back to on your Freeborn data practices act request of November 30, 2018. I have attached five emails between Andrew Levi (EERA staff) and Invenegy regarding eminent domain generally. But these are the only documents that we found that are responsive to your DPA request

We do not, however, have any notes, email or correspondence between Commerce staff and Freeborn County officials.

Mr. Hartman does remember talking to someone at the county, but does not have any notes and doesn't remember any details.

Please feel free to get back to me with any questions though.

John

John Wachtler
Energy Program Director
Minnesota Department of Commerce
85 7th Place East, Suite 500, Saint Paul, MN 55101
P: 651-539-1837
C: 651-724-1063

Logo

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From: Carol A. Overland <overland@legalectric.org>
Sent: Thursday, December 13, 2018 12:06 PM
To: Wachtler, John (COMM) <john.wachtler@state.mn.us>
Subject: Fwd: FW: Wind Farm Info.

Here's everything they sent.

References to Hartman are in Packet 2, p. 10, 13, and 19. Not much in writing, but a request to call, and a statement that he was called and that he "confirmed" who knows what. The discussion is both about public utility and the easement on the corner of the problematic route.

----- Forwarded Message -----

Subject:FW: Wind Farm Info.
Date:Wed, 21 Nov 2018 17:44:16 +0000
From:Tom Jensen <Tom.Jensen@co.freeborn.mn.us>
To:Carol A. Overland <overland@legalectric.org>
CC:Dorene Hansen <dhansen078@gmail.com>

Thomas Jensen

AFCL EXhibit I

To: "Levi, Andrew (COMM)" <andrew.levi@state.mn.us>

Still going strong in the small hearing room. I'll let you know when we wrap up.

Attached is what I'd like to discuss if you have the opportunity and inclination to preview it.

Dan Litchfield

773-318-1289

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Subject: Eminent Domain

From: "Levi, Andrew (COMM)" <andrew.levi@state.mn.us>

Date: 9/18/2017, 3:30 PM

To: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>

CC: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>

Dan—

Thank you for the opportunity to review a draft public notice. I've discussed the notice with my supervisor and others within Commerce.

We find that Minn. R. 7850.2100, Subp. 3(J) requires applicants to clearly state their eminent domain authority. The draft notice neither states nor implies Freeborn Wind Energy LLC's power of eminent domain to acquire land necessary for the project. As such, we question whether this notice constitutes a "bona fide attempt to comply" with the obligation to inform the public of the project.

We discussed several examples, including [Odell Transmission](#), [Prairie Rose](#), and [Bull Moose](#). The landowner letters in those dockets clearly state the extent of the applicant's authority.

This issue is unavoidable and will be discussed during scoping. It is a necessary component of alternative development provided in Minn. R. 7850.3700. EERA staff evaluates proposed alternatives based on several factors, one of which is feasibility. Easement acquisition certainly plays into that.

If you have further questions regarding this issue, I suggest you contact my supervisor, John Wachtler, at (651) 539-1837 or john.wachtler@state.mn.us.

— Andrew

Andrew Levi, Environmental Review Specialist
Energy Environmental Review and Analysis
85 Seventh Place East, Suite 280 | Saint Paul, MN 55101
P: (651) 539-1840 | F: (651) 539-0109



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Subject: call

From: "Levi, Andrew (COMM)" <andrew.levi@state.mn.us>

Date: 9/18/2017, 1:57 PM

To: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>

I received your telephone message. I hope to send you an email later today regarding that section. In the meantime, attached here are several minor changes mostly related to contact information. Are you attaching Figure 1 as the overview map?

AFCL EXhibit I

—Andrew

—ForwardedMessage.eml

Subject: RE: Route Alternatives
From: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Date: 1/17/2018, 10:37 AM
To: "Levi, Andrew (COMM)" <andrew.levi@state.mn.us>

Good morning Andrew,

Below are responses to your questions in red. Please let me know if you require any additional clarification or information. As noted below, I will follow up shortly with your requested shape file.

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC @danlitch

From: Levi, Andrew (COMM) [mailto:andrew.levi@state.mn.us]
Sent: Tuesday, January 16, 2018 11:48 AM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Subject: RE: Route Alternatives

Dan.

Thank you for this.

Please be sure to provide me any additional response you might have regarding Freeborn Wind Energy's review of route or route segment alternatives. For example, AFCL proposes the use of the Barton Switching Station or the Hayward Substation on pages 7 and 8 of their comments. The project's initial interconnection plan had been to connect to Hayward, but we moved the interconnection point to Glenworth, in part to avoid additional wildlife activity near Hayward substation and Albert Lea Lake. MISO was ok with this move because the electrical performance of the Hayward and Glenworth interconnections are similar. The ITC Midwest 161 kV line is from the Worth County substation to Glenworth, then up to Hayward. So there were no significant technical issues presented by this move. Now we have a completed, signed GIA for the Project to connect at Glenworth. Changes to that plan cannot be made at this time.

The Barton substation has a very different electrical performance, and a switch to that substation would not be possible. Also, the Barton substation is in the center of a competitor's wind project, and securing easements necessary to access that substation, at the center of the wind farm, would be impractical at best. Finally, from a timing standpoint, we have executed a Generator Interconnection Agreement with MISO and ITC for our connection to Glenworth and, even if those other substation locations were viable alternative interconnection points (which they are not), a switch at this time would irreparably harm the Project from a cost and schedule standpoint. We would have to terminate a viable GIA to Glenworth (with very low interconnection costs) and start the process anew into Barton. This process would likely require 2 or more years to conclude and cannot be commenced until March 2018. The conclusions could be very negative, for example, that an interconnection into Barton requires substantial network upgrades that make the project economically not viable. Indeed, the mature interconnection position into Glenworth is a major reason why the project was selected by Xcel Energy for its self-build program. Freeborn's excellent access to electrical markets via the Glenworth substation is a prime piece of evidence that it is an ideal site for a wind energy generating facility. For these reasons, Freeborn Wind strongly opposes consideration of any route with a differing end point.

Additionally, I have several follow-up questions. Please don't search for the answers; if you don't know or the answer is "no" that's okay.

How wide is the right-of-way for the ITC Midwest LLC 69 kV line? Would the right-of-way need to be widened to accommodate underbuilding the proposed line? Did you contact ITC Midwest? If so, what did they say about underbuilding or right-of-way sharing? Attached is an example easement that appears to underlie the ITC Midwest LLC 69 kV line. It does not specify a ROW width, but it does specify that it can clear trees to 50' on either side of the land. Yes, we have been in contact with ITC Midwest and they are willing to consider a colocation.

Please provide answers to the above questions for the Dairyland Cooperative Line. You mentioned it would require taller poles and cost more money: Can you tell me anything about how tall the poles would need to be? And how much more expensive? Our very rough estimate is 20-30 feet taller and probably 50% more expensive.

Could you please provide a shapefile of the proposed 1.1x tip height setback from proposed turbines 22 and 23. Yes. Our project engineer is traveling today so I cannot get that for you right away. Will send it as soon as I can. Rich Davis will have shapefiles of all our proposed facilities, including turbine locations. When I can get ahold of our engineer, I will ask him to create a new shapefile that shows the proposed alternate route, presumably with a transmission line alignment centered on the route width, and then a 110' turbine height setback on either side of that.

Thank you.

AFCL Exhibit I

—Andrew

Andrew Levi, Environmental Review Specialist
[Energy Environmental Review and Analysis](#)
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From: Litchfield, Daniel [<mailto:DLitchfield@invenergyllc.com>]
Sent: Friday, January 12, 2018 10:45 AM
To: Levi, Andrew (COMM) <andrew.levi@state.mn.us>
Subject: RE: Route Alternatives

Dear Andrew,

Attached are:

1. Memo discussing the alternate routes
2. Modified route width for proposal #2
3. Participating land shapefiles for the entire area

Please contact me at your convenience if you would like to discuss our response

Dan Litchfield | Senior Manager, Project Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC @danlitch

From: Levi, Andrew (COMM) [<mailto:andrew.levi@state.mn.us>]
Sent: Monday, January 08, 2018 3:03 PM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Cc: Levi, Andrew (COMM) <andrew.levi@state.mn.us>
Subject: Route Alternatives

Dan—

Please review and provide a response at your earliest convenience. Let me know you received this. Note: The response will be attached to Commerce comments to the Commission.

—Andrew

* * *

DATE: January 9, 2018

TO: Dan Litchfield, Project Manager
Freeborn Wind Energy LCC

FROM: Andrew Levi, Environmental Review Manager
Minnesota Department of Commerce

RE: Route alternatives identified during scoping

Minnesota Rule 7850.3700, subpart 2, requires that Commerce provide applicants with an opportunity to respond to each request that an alternative be included in the environmental assessment. The following route and route segment alternatives were proposed. Shapefiles are attached. (I may forward additional alternatives based on my continued review of comments.)

Route Alternative 1

The Association of Freeborn Wind Landowners (AFCL) proposed this alternative route to limit land used by the proposed project to only participating landowners. AFCL provided a map as part of their written comments (**Pages from eDockets - AFCL**). When transferring this map to ArcGIS software,

AFCL Exhibit I

staff maintained a 400-foot route width, and ensured the route width was entirely on participating landowner's property (**Map 1**).

Route Alternative 2

Staff proposes this alternative. It addresses those issues identified in Route Alternative 1. Staff's alternative differs from Route Alternative 1 inasmuch that staff only modified the proposed route where it overlapped onto non-participating landowner's property—staff did not modify the proposed centerline. (**Map 2**)

Route Segment Alternative 1

Ms. Stephanie Richter proposed this alternative route segment to mitigate transmission line proliferation in the project area. She requests the proposed project be routed parallel to existing transmission lines. Staff defines paralleling as immediately adjacent to the existing line (either with or without right-of-way sharing). Ms. Richter provided a map at the public hearing (**Stephanie Richter Document**).

Staff developed Route Segment Alternative 1 (**Map 3**) based on Ms. Richter's comments. This route segment alternative begins west of 820th Avenue at approximately mile three of the proposed line from south to north. The segment alternative continues west from the proposed route. It then travels north along the existing 69 kV line. At 140th Street it turns west until it rejoins the proposed route just south of the Glenworth Substation.

Staff modified the 400-foot route width to 600 feet near the communications tower to allow for the line to pass to the west of the tower. Staff requests that both paralleling and underbuilding be analyzed along the entire route segment.

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Subject: response to inquiry #3
From: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Date: 5/4/2018, 5:05 PM
To: "Levi, Andrew (COMM)" <andrew.levi@state.mn.us>

Andrew,

Here you go. Have a great weekend.

Dan Litchfield | Director, Renewable Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InvenergyLLC

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— Attachments: —

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37.4 KB

AFCL EXhibit I

Freeborn Notice of Route Permit Application Submission_62178690(3)-c.DOCX	22.1 KB
ForwardedMessage.eml	34.7 KB
ForwardedMessage.eml	37.4 KB
Freeborn Notice of Route Permit Application Submission_62178690(3)-c+AL.docx	24.0 KB
ForwardedMessage.eml	349 KB
Doc 203489.pdf	195 KB
ForwardedMessage.eml	547 KB
HEI - Freeborn Wind Transmission Line Noise Response to MN Inquiry 20180502.pdf	116 KB
Information Inquiry 3 response.pdf	129 KB
FBW-A-T009-5-THI-161S-JX.pdf	146 KB

Exhibit G

World Health Organization Environmental Noise Guidelines

Selected -- pages 77-86.

Released October 10, 2018



**World Health
Organization**

REGIONAL OFFICE FOR **Europe**

ENVIRONMENTAL
NOISE
GUIDELINES
for the European Region





3.4 Wind turbine noise

Recommendations

For average noise exposure, the GDG **conditionally** recommends reducing noise levels produced by wind turbines below **45 dB L_{den}** , as wind turbine noise above this level is associated with adverse health effects.

To reduce health effects, the GDG **conditionally** recommends that policy-makers implement suitable measures to reduce noise exposure from wind turbines in the population exposed to levels above the guideline values for average noise exposure. No evidence is available, however, to facilitate the recommendation of one particular type of intervention over another.



3.4.1 Rationale for the guideline levels for wind turbine noise

The exposure levels were derived in accordance with the prioritizing process of critical health outcomes described in section 2.4.3. For each of the outcomes, the exposure level was identified by applying the benchmark, set as relevant risk increase to the corresponding ERF. In the case of exposure to wind turbine noise, the process can be summarized as follows (Table 36).

Table 36. Average exposure levels (L_{den}) for priority health outcomes from wind turbine noise

Summary of priority health outcome evidence	Benchmark level	Evidence quality
Incidence of IHD Incidence of IHD could not be used to assess the exposure level.	5% increase of RR	No studies were available
Incidence of hypertension Incidence of hypertension could not be used to assess the exposure level.	10% increase of RR	No studies were available
Prevalence of highly annoyed population Four studies were available. An exposure–response curve of the four studies revealed an absolute risk of 10%HA (outdoors) at a noise exposure level of 45 dB L_{den} .	10% absolute risk	Low quality
Permanent hearing impairment	No increase	No studies were available
Reading skills and oral comprehension in children	One-month delay	No studies were available

In accordance with the prioritization process, the GDG set a guideline exposure level of 45.0 dB L_{den} for average exposure, based on the relevant increase of the absolute %HA. The GDG stressed that there might be an increased risk for annoyance below this noise exposure level, but it could not state whether there was an increased risk for the other health outcomes below this level owing to a lack of evidence. As the evidence on the adverse effects of wind turbine noise was rated low quality, the GDG made the recommendation conditional.

Next, the GDG considered the evidence for night noise exposure to wind turbine noise and its effect on sleep disturbance (Table 37).

Table 37. Night-time exposure levels (L_{night}) for priority health outcomes from wind turbine noise

Summary of priority health outcome evidence	Benchmark level	Evidence quality
Sleep disturbance Six studies were available; they did not reveal consistent results about effects of wind turbine noise on sleep.	3% absolute risk	Low quality

Based on the low quantity and heterogeneous nature of the evidence, the GDG was not able to formulate a recommendation addressing sleep disturbance due to wind turbine noise at night time.

The GDG also looked for evidence about the effectiveness of interventions for wind turbine noise exposure. Owing to a lack of research, however, no studies were available on existing interventions and associated costs to reduce wind turbine noise.

Based on this assessment, the GDG therefore provided a conditional recommendation for average noise exposure (L_{den}) to wind turbines and a conditional recommendation for the implementation of suitable measures to reduce noise exposure. No recommendation about a preferred type of intervention could be formulated; nor could a recommendation be made for an exposure level for night noise exposure (L_{night}), as studies were not consistent and in general did not provide evidence for an effect on sleep.

3.4.1.1 Other factors influencing the strength of recommendation

Other factors considered in the context of recommendations on wind turbine noise included those related to values and preferences, benefits and harms, resource implications, equity, acceptability and feasibility. Ultimately, the assessment of all these factors did not lead to a change in the strength of recommendation, although it informed the development of a conditional recommendation on the intervention measures. Further details are provided in section 3.4.2.3.

3.4.2 Detailed overview of the evidence

The following sections provide a detailed overview of the evidence constituting the basis for setting the recommendations on wind turbine noise. It is presented and summarized separately for each of the critical health outcomes, and the GDG's judgement of the quality of evidence is indicated (for a detailed overview of the evidence on important health outcomes, see Annex 4). Research into health outcomes and effectiveness of intervention is addressed consecutively.

A comprehensive summary of all evidence considered for each of the critical and important health outcomes can be found in the eight systematic reviews published in the *International Journal of Environmental Research and Public Health* (see section 2.3.2 and Annex 2).

It should be noted that, due to the time stamp of the systematic reviews, some more recent studies were not included in the analysis. This relates in particular to several findings of the Wind Turbine Noise and Health Study conducted by Health Canada (Michaud, 2015). Further, some studies were omitted, as they did not meet the inclusion criteria, including, for instance, studies using distance to the wind turbine instead of noise exposure to investigate health effects. The justification for including and excluding studies is given in the systematic reviews (Basner & McGuire, 2018; Brown et al.,

2017; Clark & Paunovic, 2018; in press; Guski et al., 2017; Niewenhuijsen et al., 2017; Śliwińska-Kowalska & Zaborowski, 2017; van Kempen et al., 2018; see Annex 2 for further details).

3.4.2.1 Evidence on health outcomes

The key question posed was: in the general population exposed to wind turbine noise, what is the exposure–response relationship between exposure to wind turbine noise (reported as various noise indicators) and the proportion of people with a validated measure of health outcome, when adjusted for main confounders? A summary of the PICOS/PECCOS scheme applied and the main findings is set out in Tables 38 and 39.

Table 38. PICOS/PECCOS scheme of critical health outcomes for exposure to wind turbine noise

PECO	Description
Population	General population
Exposure	Exposure to high levels of noise produced by wind turbines (average/night time)
Comparison	Exposure to lower levels of noise produced by wind turbines (average/night time)
Outcome(s)	For average noise exposure: 1. cardiovascular disease 2. annoyance 3. cognitive impairment 4. hearing impairment and tinnitus 5. adverse birth outcomes 6. quality of life, well-being and mental health 7. metabolic outcomes
	For night noise exposure: 1. effects on sleep



Table 39. Summary of findings for health effects from exposure to wind turbine noise (L_{den})

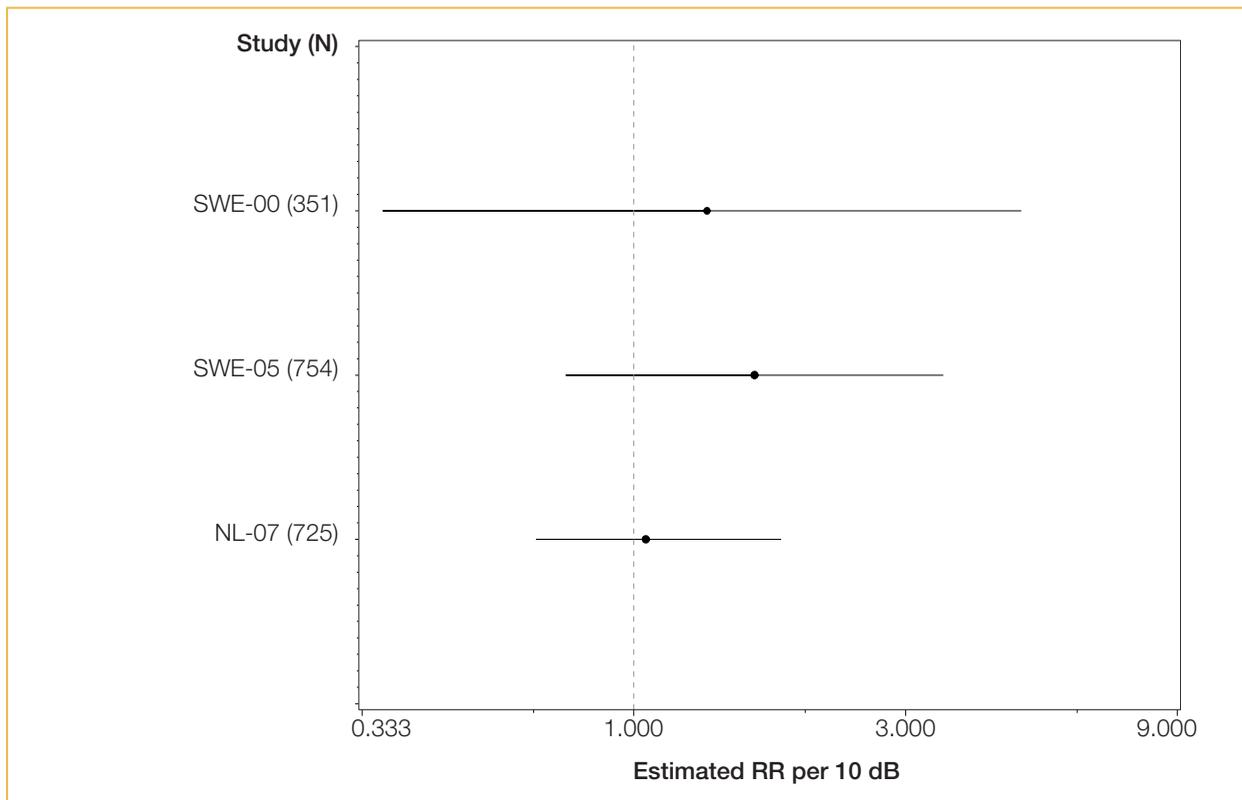
Noise metric	Priority health outcome measure	Quantitative risk for adverse health	Lowest level of exposure across studies	Number of participants (studies)	Quality of evidence
Cardiovascular disease					
L_{den}	Incidence of IHD	–	–	–	–
L_{den}	Incidence of hypertension	–	–	–	–
Annoyance					
L_{den}	%HA	Not able to pool because of heterogeneity	30 dB	2481 (4)	Low (downgraded for inconsistency and imprecision)
Cognitive impairment					
L_{den}	Reading and oral comprehension	–	–	–	–
Hearing impairment and tinnitus					
L_{den}	Permanent hearing impairment	–	–	–	–

Cardiovascular disease

For the relationship between wind turbine noise and prevalence of hypertension, three cross-sectional studies were identified, with a total of 1830 participants (van den Berg et al., 2008; Pedersen, 2011; Pedersen & Larsman, 2008; Pedersen & Persson Waye, 2004; 2007). The number of cases was not reported. All studies found a positive association between exposure to wind turbine noise and the prevalence of hypertension, but none was statistically significant. The lowest levels in studies were either <30 or <32.5 L_{den} . No meta-analysis was performed, since too many parameters were unknown and/or unclear. Due to very serious risk of bias and imprecision in the results, this evidence was rated very low quality (see Fig. 14).

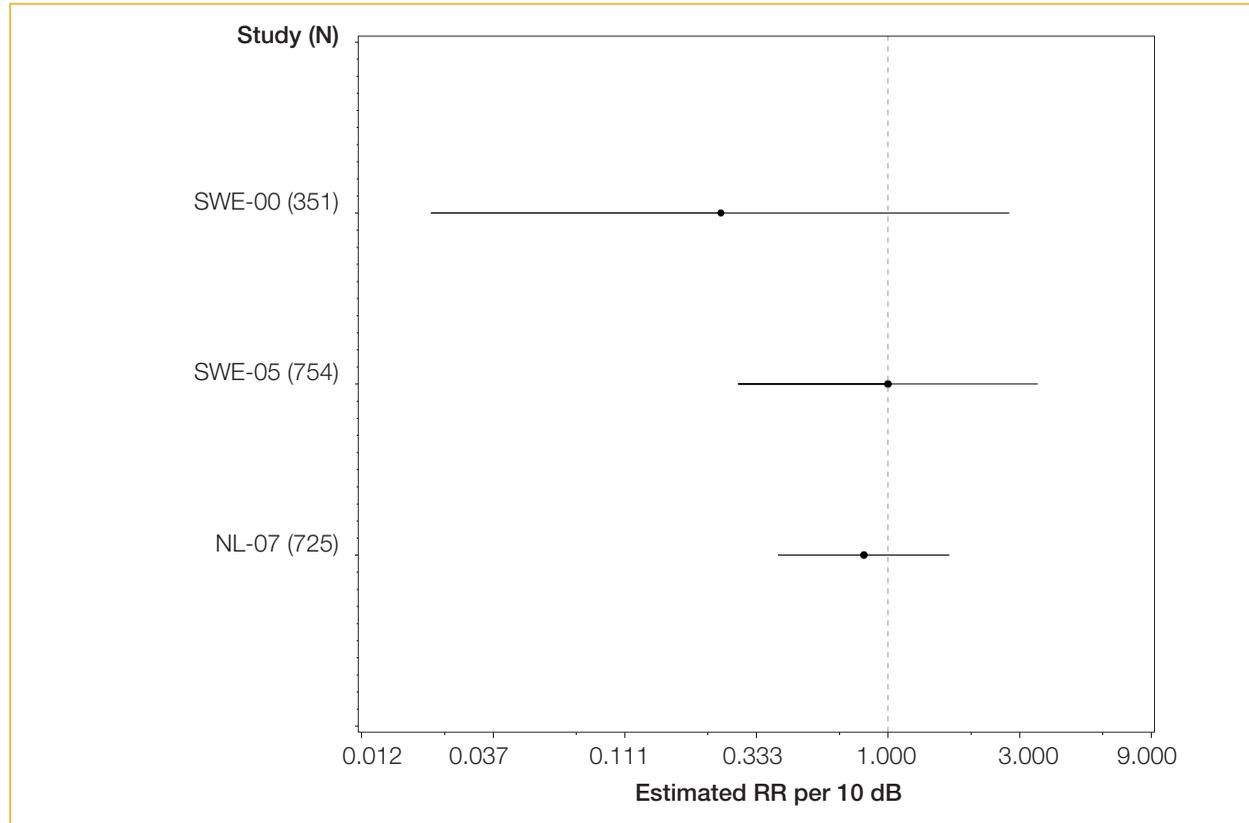
The same studies also looked at exposure to wind turbine noise and self-reported cardiovascular disease, but none found an association. No evidence was available for other measures of cardiovascular disease. As a result, only evidence rated very low quality was available for no considerable effect of audible noise (greater than 20 Hz) from wind turbines or wind farms on self-reported cardiovascular disease (see Fig. 15).

Fig. 14. The association between exposure to wind turbine noise (sound pressure level in dB) and hypertension



Notes: The dotted vertical line corresponds to no effect of exposure to wind turbine noise. The black dots correspond to the estimated RR per 10 dB and 95% CI. For further details on the studies included in the figure please refer to the systematic review on environmental noise and cardiovascular and metabolic effects (van Kempen et al., 2018).

Fig. 15. The association between exposure to wind turbine noise (sound pressure level) and self-reported cardiovascular disease



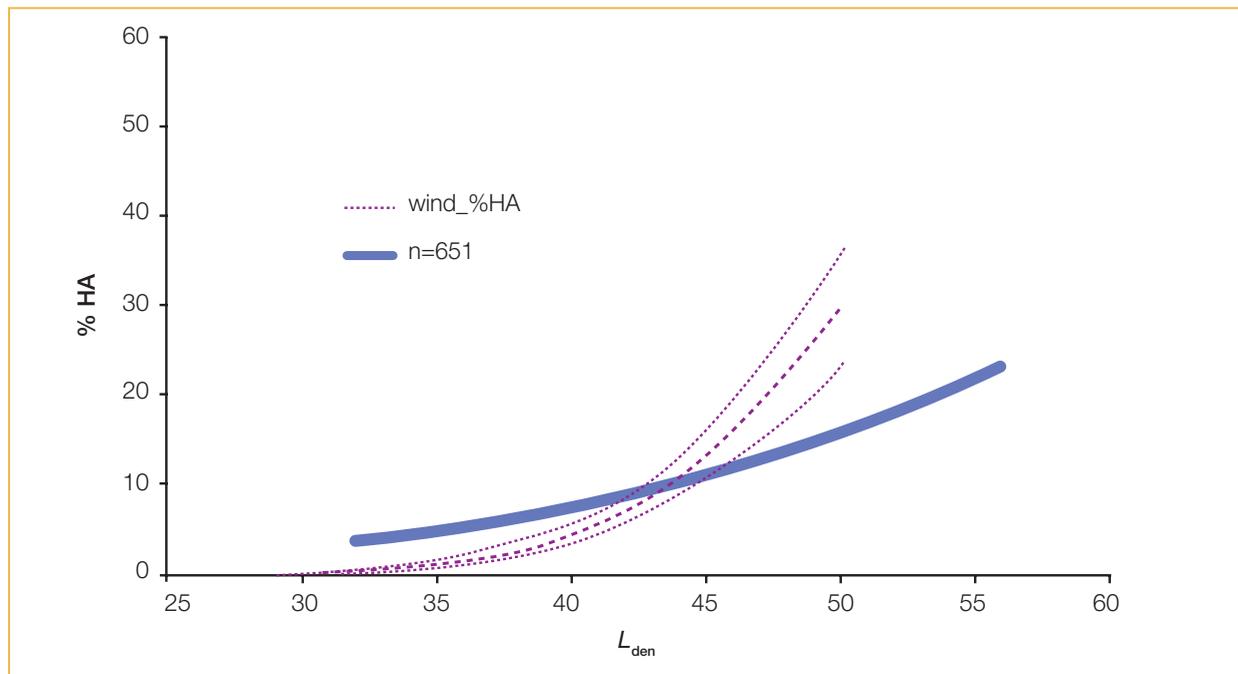
Notes: The dotted vertical line corresponds to no effect of exposure to wind turbine noise. The black circles correspond to the estimated RR per 10 dB (sound pressure level) and 95% CI. For further details on the studies included in the figure please refer to the systematic review on environmental noise and cardiovascular and metabolic effects (van Kempen et al., 2018).

Annoyance

Two publications containing descriptions of four individual studies were retrieved (Janssen et al., 2011; Kuwano et al., 2014). All four studies used measurements in the vicinity of the respondents' addresses; the noise exposure metrics used in the three original studies (Pedersen, 2011; Pedersen & Persson Waye, 2004; 2007) included in Janssen et al. (2011) were recalculated into L_{den} . The noise levels in the studies ranged from 29 dB to 56 dB. Different scales were used to assess annoyance, with slightly different definitions of "highly annoyed" and explicit reference to outdoor annoyance in the data used for the Janssen et al. (2011) curve. Construction of the ERFs provided in the two publications differed and they were therefore not further combined in a meta-analysis. Fig. 16 shows the %HA from the two publications. The 10% criterion for %HA is reached at around 45 dB L_{den} (where the two curves coincide). There was a wide variability in %HA between studies, with a range of 3–13%HA at 42.5 dB and 0–32%HA at 47.5 dB. The %HA in the sample is comparatively high, given the relatively low noise levels. There is evidence rated low quality for an association between wind turbine noise and annoyance, but this mainly applies to the association between wind turbine noise and annoyance and not to the shape of the quantitative relationship.

Further statistical analyses of annoyance yield evidence rated low quality for an association between wind turbine noise and %HA when comparing an exposure at 42.5 dB and 47.5 dB, with a mean difference in %HA of 4.5 (indoors) and 6.4 (outdoors). There is also evidence rated moderate quality for a correlation between individual noise exposure and annoyance raw scores ($r = 0.28$).

Fig. 16. Overlay of the two wind turbine annoyance graphs



Notes: Overlay of the two wind turbine outdoor annoyance graphs adapted from Janssen et al. (2011, red) and Kuwano et al. (2014, blue). The Kuwano et al. curve is based on L_{dn} ; no correction for L_{den} has been applied.¹⁸ For further details on the studies included in the figure please refer to the systematic review on environmental noise and annoyance (Guski et al., 2017).

Cognitive impairment, hearing impairment and tinnitus, adverse birth outcomes

No studies were found, and therefore no evidence was available on the relationship between wind turbine noise and measures of cognitive impairment; hearing impairment and tinnitus; and adverse birth outcomes.

Sleep disturbance

Six cross-sectional studies on wind turbine noise and self-reported sleep disturbance were identified (Bakker et al., 2012; Kuwano et al., 2014; Michaud, 2015; Pawlaczyk-Luszczynska et al., 2014; Pedersen & Persson Wayne, 2004; 2007). Noise levels were calculated using different methods, and different noise metrics were reported. Three of the studies asked how noise affects sleep; the other three evaluated the effect of wind turbine noise on sleep using questions that explicitly referred to noise (Table 40).

¹⁸ L_{dn} is the day-night-weighted sound pressure level as defined in section 3.6.4 of ISO 1996-1:2016.

Table 40. Summary of findings for health effects from exposure to wind turbine noise (L_{night})

Noise metric	Priority health outcome measure	Quantitative risk for adverse health	Lowest level of effects in studies	Number of participants (studies)	Quality of evidence
Effects on sleep					
L_{night}	%HSD	1.60 (95% CI: 0.86–2.94) per 10 dB increase	31 dB	3971 (6)	Low (downgraded for study limitations, inconsistency, precision)

The risk of bias was assessed as high for all six studies, as effects on sleep were measured by self-reported data. There were a limited number of subjects at higher exposure levels. A meta-analysis was conducted for five of the six studies, based on the OR for high sleep disturbance for a 10 dB increase in outdoor predicted sound pressure level. The pooled OR was 1.60 (95% CI: 0.86–2.94). The evidence was rated low quality.

3.4.2.2 Evidence on interventions

This section summarizes the evidence underlying the recommendation on the effectiveness of interventions for wind turbine noise exposure. The key question posed was: in the general population exposed to wind turbine noise, are interventions effective in reducing exposure to and/or health outcomes from wind turbine noise? A summary of the PICOS/PECCOS scheme applied is set out in Table 41.

Table 41. PICOS/PECCOS scheme of the effectiveness of interventions for exposure to wind turbine noise

PICO	Description
Population	General population
Intervention(s)	The interventions can be defined as: (a) a measure that aims to change noise exposure and associated health effects; (b) a measure that aims to change noise exposure, with no particular evaluation of the impact on health; or (c) a measure designed to reduce health effects, but that may not include a reduction in noise exposure.
Comparison	No intervention
Outcome(s)	For average noise exposure: 1. cardiovascular disease 2. annoyance 3. cognitive impairment 4. hearing impairment and tinnitus 5. adverse birth outcomes 6. quality of life, well-being and mental health 7. metabolic outcomes For night noise exposure: 1. effects on sleep



No studies were found, and therefore no evidence was available on the effectiveness of interventions to reduce noise exposure from wind turbines.

3.4.2.3 Consideration of additional contextual factors

As the foregoing overview has shown, very little evidence is available about the adverse health effects of continuous exposure to wind turbine noise. Based on the quality of evidence available, the GDG set the strength of the recommendation on wind turbine noise to conditional. As a second step, it qualitatively assessed contextual factors to explore whether other considerations could have a relevant impact on the recommendation strength. These considerations mainly concerned the balance of harms and benefits, values and preferences, and resource use and implementation.

Regarding the balance of harms and benefits, the GDG would expect a general health benefit from a marked reduction in any kind of long-term environmental noise exposure. Health effects of individuals living in the vicinity of wind turbines can theoretically be related not only to long-term noise exposure from the wind turbines but also to disruption caused during the construction phase. The GDG pointed out, however, that evidence on health effects from wind turbine noise (apart from annoyance) is either absent or rated low/very low quality (McCunney et al., 2014). Moreover, effects related to attitudes towards wind turbines are hard to discern from those related to noise and may be partly responsible for the associations (Knopper & Ollson, 2011). Furthermore, the number of people exposed is far lower than for many other sources of noise (such as road traffic). Therefore, the GDG estimated the burden on health from exposure to wind turbine noise at the population level to be low, concluding that any benefit from specifically reducing population exposure to wind turbine noise in all situations remains unclear. Nevertheless, proper public involvement, communication and consultation of affected citizens living in the vicinity of wind turbines during the planning stage of future installations is expected to be beneficial as part of health and environmental impact assessments. In relation to possible harms associated with the implementation of the recommendation, the GDG underlined the importance of wind energy for the development of renewable energy policies.

The GDG noticed that the values and preferences of the population towards reducing long-term noise exposure to wind turbine noise vary. Whereas the general population tends to value wind energy as an alternative, environmentally sustainable and low-carbon energy source, people living in the vicinity of wind turbines may evaluate them negatively. Wind turbines are not a recent phenomenon, but their quantity, size and type have increased significantly over recent years. As they are often built in the middle of otherwise quiet and natural areas, they can adversely affect the integrity of a site. Furthermore, residents living in these areas may have greater expectations of the quietness of their surroundings and therefore be more aware of noise disturbance. Negative attitudes especially occur in individuals who can see wind turbines from their houses but do not gain economically from the installations (Kuwano et al., 2014; Pedersen & Persson Wayne, 2007; van den Berg et al., 2008). These situational variables and the values and preferences of the population may differ between wind turbines and other noise sources, as well as between wind turbine installations, which makes assessment of the relationship between wind turbine noise exposure and health outcomes particularly challenging.

Assessing resource use and implementation considerations, the GDG noted that reduction of noise exposure from environmental sources is generally possible through simple measures like insulating windows or building barriers. With wind turbines, however, noise reduction interventions are more

complicated than for other noise sources due to the height of the source and because outdoor disturbance is a particularly large factor. As generally fewer people are affected (compared to transportation noise), the expected costs are lower than for other environmental sources of noise. The GDG was not aware of any existing interventions (and associated costs) to reduce harms from wind turbine noise, or specific consequences of having regulations on wind turbine noise. Therefore, it could not assess feasibility, or discern whether any beneficial effects of noise reduction would outweigh the costs of intervention. In particular, there is no clear evidence on an acceptable and uniform distance between wind turbines and residential areas, as the sound propagation depends on many aspects of the wind turbine construction and installation.

In light of the assessment of the contextual factors in addition to the quality of evidence, the recommendation for wind turbine noise exposure remains conditional.

Additional considerations or uncertainties

Assessment of population exposure to noise from a particular source is essential for setting health-based guideline values. Wind turbine noise is characterized by a variety of potential moderators, which can be challenging to assess and have not necessarily been addressed in detail in health studies. As a result, there are serious issues with noise exposure assessment related to wind turbines.

Noise levels from outdoor sources are generally lower indoors because of noise attenuation from the building structure, closing of windows and similar. Nevertheless, noise exposure is generally estimated outside, at the most exposed façade. As levels of wind turbine noise are generally much lower than those of transportation noise, the audibility of wind turbines in bedrooms, particularly when windows are closed, is unknown.

In many instances, the distance from a wind farm has been used as a proxy to determine audible noise exposure. However, in addition to the distance, other variables – such as type, size and number of wind turbines, wind direction and speed, location of the residence up- or downwind from wind farms and so on – can contribute to the resulting noise level assessed at a residence. Thus, using distance to a wind farm as a proxy for noise from wind turbines in health studies is associated with high uncertainty.

Wind turbines can generate infrasound or lower frequencies of sound than traffic sources. However, few studies relating exposure to such noise from wind turbines to health effects are available. It is also unknown whether lower frequencies of sound generated outdoors are audible indoors, particularly when windows are closed.

The noise emitted from wind turbines has other characteristics, including the repetitive nature of the sound of the rotating blades and atmospheric influence leading to a variability of amplitude modulation, which can be a source of above average annoyance (Schäffer et al., 2016). This differentiates it from noise from other sources and has not always been properly characterized. Standard methods of measuring sound, most commonly including A-weighting, may not capture the low-frequency sound and amplitude modulation characteristic of wind turbine noise (Council of Canadian Academies, 2015).

Even though correlations between noise indicators tend to be high (especially between L_{Aeq} -like indicators) and conversions between indicators do not normally influence the correlations between the noise indicator and a particular health effect, important assumptions remain when exposure to



wind turbine noise in L_{den} is converted from original sound pressure level values. The conversion requires, as variable, the statistical distribution of annual wind speed at a particular height, which depends on the type of wind turbine and meteorological conditions at a particular geographical location. Such input variables may not be directly applicable for use in other sites. They are sometimes used without specific validation for a particular area, however, because of practical limitations or lack of data and resources. This can lead to increased uncertainty in the assessment of the relationship between wind turbine noise exposure and health outcomes.

Based on all these factors, it may be concluded that the acoustical description of wind turbine noise by means of L_{den} or L_{night} may be a poor characterization of wind turbine noise and may limit the ability to observe associations between wind turbine noise and health outcomes.

3.4.3 Summary of the assessment of the strength of recommendations

Table 42 provides a comprehensive summary of the different dimensions for the assessment of the strength of the wind turbine recommendations.

Table 42. Summary of the assessment of the strength of the recommendation

Factors influencing the strength of recommendation	Decision
Quality of evidence	<p>Average exposure (L_{den}) <i>Health effects</i></p> <ul style="list-style-type: none"> Evidence for a relevant absolute risk of annoyance at 45 dB L_{den} was rated low quality. <p><i>Interventions</i></p> <ul style="list-style-type: none"> No evidence was available on the effectiveness of interventions to reduce noise exposure and/or health outcomes from wind turbines. <p>Night-time exposure (L_{night}) <i>Health effects</i></p> <ul style="list-style-type: none"> No statistically significant evidence was available for sleep disturbance related to exposure from wind turbine noise at night. <p><i>Interventions</i></p> <ul style="list-style-type: none"> No evidence was available on the effectiveness of interventions to reduce noise exposure and/or sleep disturbance from wind turbines.
Balance of benefits versus harms and burdens	Further work is required to assess fully the benefits and harms of exposure to environmental noise from wind turbines and to clarify whether the potential benefits associated with reducing exposure to environmental noise for individuals living in the vicinity of wind turbines outweigh the impact on the development of renewable energy policies in the WHO European Region.
Values and preferences	There is wide variability in the values and preferences of the population, with particularly strong negative attitudes in populations living in the vicinity of wind turbines.
Resource implications	Information on existing interventions (and associated costs) to reduce harms from wind turbine noise is not available.
Additional considerations or uncertainties	There are serious issues with noise exposure assessment related to wind turbines.
Decisions on recommendation strength	<ul style="list-style-type: none"> Conditional for guideline value for average noise exposure (L_{den}) Conditional for the effectiveness of interventions (L_{night})

Exhibit J

AFCL Comment including Motion for Remand

March 13, 2019

PUC Docket IP-6946/WS-17-410

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
Katie J. Sieben	Commissioner
John A. Tuma	Commissioner

In the Matter of the Application of Freeborn
Wind Energy LLC for a Route Permit for the
Freeborn Wind Transmission Line in
Freeborn County

PUC Docket No. IP-6946/TL-17-410

COMMENTS OF ASSOCIATION OF FREEBORN COUNTY LANDOWNERS

Association of Freeborn County Landowners (AFCL), intervenor in this above-captioned wind siting docket and participant in the related and concurrent transmission docket (IP6946/WS-17-410), offer these Comments in response to the Commission’s requests for parties to comment and provide rationales supporting their requested changes to the draft site permit and the permit. In its Order, the Commission invited parties to propose language changes for Section 7.4 and its subsections. Of particular note, the Commission did not invite comments and proposals regarding “Special Conditions” of Section 6, as proposed by Applicants as part of its self-disclosed “agreement” with Commerce and MPCA. That self-disclosed “agreement” and Special Conditions should be of utmost concern to the Commission. AFCL further objects to provision of Pre-Construction modeling outside of a hearing, where there is no opportunity to vet the modeling and assumptions – this is contrary to the Findings adopted by the Commission.

AFCL has filed a Motion to Remand to the Administrative Law Judge, and Addendum to Motion, which have not yet been addressed by the Commission. They are attached here, with Exhibits. AFCL also, with this Comment, files a Motion to Strike a document not in the record

which is relied on to rewrite “Findings of Fact” and twist the Commission’s decision in favor of the Applicants.

I. THE COMMISSION IS FAILING IN ITS DUTY TO THE PUBLIC

For over a year and a half, AFCL has been participating in the two Freeborn Wind dockets in good faith, doing the best possible with limited time and money – intervention is an intense undertaking requiring lots of attention and effort. Intervention is always a struggle because Applicants are in the business of project permitting, construction, and operation, and intervenors are in this case landowners who have never encountered a permitting docket before, and need to learn the basics to act effectively. AFCL has participated in good faith, within the rules of the Commission and of Office of Administrative Hearings, and also filed a Petition for Rulemaking for wind siting rules, because Commerce and the Commission are utilizing small wind standards and setbacks in the draft siting permit of unknown origin, in an effort to establish certainty in wind siting, but the Petition for Rulemaking was denied by the Commission. We have spent the last year and a half learning the ropes of Commission participation, and have done well.

The Commission’s Order states, as amending the ALJ’s Recommendation:

Finding 243

Should the Commission choose to do so, it could provide Freeborn Wind with an opportunity to submit a plan demonstrating how it will comply with Minnesota’s noise standards at all times throughout the footprint of the Freeborn Wind Project. ~~The plan should include low frequency noise measurements for evaluation in consultation with MDH.~~

Finding 244

The Administrative Law Judge further recommends that the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota’s noise standards.

Order, p. 8-9, December 19, 2018. The Commission adopted these findings. In its Order it states that “the ALJ recommended giving Freeborn Wind the opportunity to submit a plan

demonstrating how it would comply with the Noise Standards...” but omits the public and agency review and a hearing with a summary report, and subsequent Commission review and approval of a pre-construction noise mitigation plan. Instead of making Freeborn Wind’s offerings public, with opportunity for review and comment and a hearing, the Commission has cut the public out entirely.

The Commission is committed to public participation by both statute and rules and has an ethical responsibility as well.

Other public participation.

The commission shall adopt broad spectrum citizen participation as a principal of operation. The form of public participation shall not be limited to public hearings and advisory task forces and shall be consistent with the commission's rules and guidelines as provided for in section 216E.16.

Minn. Stat. §216E.08, Subd. 2 (not exempted by Minn. Stat. §216F.02). Minn. Stat. §216E.16 provides:

The chief administrative law judge shall adopt procedural rules for public hearings relating to the site and route permit process. The rules shall attempt to maximize citizen participation in these processes consistent with the time limits for commission decision established in sections 216E.03, subdivision 10, and 216E.04, subdivision 7.

Minn. Stat. §216E.6. Citizen participation was avoided, not maximized.

In addition to this blatant procedural problem contrary to the Commission adopted Recommendation of the ALJ, the actions of the Applicant and agencies are in conflict with the Commission’s ethical rules:

7845.0400 CONFLICT OF INTEREST; IMPROPRIETY.

Subpart 1. General behavior.

A commissioner or employee shall respect and comply with the law and shall behave in a manner that promotes public confidence in the integrity and impartiality of the commission's decision making process.

Subp. 2. Actions prohibited.

Commissioners and employees shall avoid any action that might result in or create a conflict of interest or the appearance of impropriety, including:

- B. giving preferential treatment to an interested person or entity;
- C. impeding the efficiency or economy of commission decision making;
- D. losing independence or impartiality of action;
- E. making a commission decision outside official channels; and
- F. affecting adversely the confidence of the public in the integrity of the commission.

Minn. R. 7845.0300 (selected).

In this docket, there have been unabashed misrepresentations of agency roles regarding permit compliance; fabrication of an “agreement” that is not supported by the record, and which instead contradicts the record; utilization and reliance on an exhibit not offered or entered in the record as the critical piece, at the critical time, of adding “Findings of Fact” made of whole cloth; the public has been excluded, intervenors with full party status were excluded, and plans to exclude the public and parties are written into permit proposals.

The Commission and applicants have often praised the Minnesota siting process for the lack of public discontent in siting the recent transmission projects across Minnesota, owing that “accomplishment” to the Commission’s statutory and regulatory process, which provides for early and constant public notice, contact, and participation, lauding the openness and transparency.

The public is to participate “within the system” using the administrative and commission rules. Yet when the first full contested case for siting a wind project has the result of a ALJ Recommendation that the permit be denied, the applicants, EERA and MPCA (which has no role in utility permitting) go behind closed doors and privately come up with an “agreement” which anticipates using changed modeling assumptions, and pushing back provision of modeling to “pre-construction” AFTER a permit would be granted, rather than requiring a demonstration of

probably compliance prior to permitting. This is shameful.

AFCL has filed a Motion for Remand to ALJ, which includes documentation of communications between Applicants, Commerce, and MPCA and documenting the existence of the “agreement” in support of admissions of Applicant. See Request for Clarification, p. 3 (“Freeborn Wind’s September 19, 2018, Late-Filed proposal for Special Conditions Related to Noise outlines the agreement reached between Freeborn Wind, the Department and the MPCA on this issue.); Applicants repeated statements that “[d]uring oral argument, both the Department and MPCA supported Freeborn Wind’s proposed special conditions.” Id., and March 4 Comment, p. 3 (“During deliberations, the Minnesota Department of Commerce and Minnesota Pollution Control Agency made comments supportive of these conditions.”). The Affidavits and Exhibits that verify their meetings, discussions, and “agreement” are attached here as well, in hopes that the Commission will pay attention to the actions of Applicant and the agencies.

AFCL asks that the Freeborn Wind site permit be held in abeyance until Freeborn Wind has demonstrated compliance with the noise standards through provision of modeling, with at the very least, public and agency comments, a hearing, and a summary report. Section 6 “Special Conditions” should be rejected out of hand and the permit denied, because those amendments proposed by Applicants are unsupported by the record, and were developed in collusion between Applicant, Commerce, and, inexplicably, the MPCA. In the alternative, AFCL requests that this matter be remanded to the Administrative Law Judge, in a hearing open to parties and the public, to build a record regarding those amendments. See Order, FoF 243 and 244, December 19, 2018. The issues to be addressed include, but are not limited to, Pre-Construction noise modeling with and without ambient noise demonstrating ability to comply with Minnesota’s noise standards (necessary because post-hearing attempt to use 0.5 ground factor invalidates previous exclusive use of a 0.0 ground factor for modeling on which record is based); use of the 0.5 ground factor rather than the 0.0 ground factor used in all modeling in the record and the 3

dB(A) change that the 0.5 ground factor would build into results; evaluation of the additional 1-3 dB(A) margin that Applicants request as consideration of ambient sound; the cumulative impact of the change in ground factor and addition of a 1-3 dB(A) margin; and Applicant's notion of "non-significant increase in total sound of less than 3 d(B(A)," and impact of use of 47 dB(A) wind only when modeling performed using 0.5 ground factor rather than 0.0. AFCL also requests that Section 7.4.1 and 7.4.2 be amended to comply with Findings adopted by the Commission and in recognition of Commerce's established and utilized post-construction monitoring protocol.

II. AFCL COMMENTS ON WRITTEN ORDER

One way we got to where we are is with the Commission's deletion and addition of Findings in the Commission's Order, apparently to get to the decision the Commission wanted with apparent record support. How did that happen?

A. Staff Briefing Papers misrepresent MPCA as having authority over PUC permit compliance issues, and utilize and rely on an Exhibit not in the Record.

Let's look to the Staff Briefing Papers. For example, staff falsely claims that the MPCA administers the noise standards:

Minnesota noise standards are administered by the Minnesota Pollution Control Agency. All permit-holders are required to comply with the permit conditions, including those for noise. Permit holders assume the risk of having to undertake any necessary mitigation measures, including curtailment, to ensure compliance with the applicable standards. The MPCA may also grant variances to its noise standards if warranted. The Commission may amend conditions in its permits with cause, should it become necessary to do so.

Staff Briefing Papers, p. 17. This is false. EERA handled the Bent Tree noise compliance studies and MPCA was not involved. EERA also expressly states that, "DOC-EERA is responsible for insuring the Permittee is in compliance with the Site Permit, and we provide technical review and analysis of pre-construction and post-construction documents that must be filed per the Site Permit." EERA Comment, p. 1, January 18, 2019. PUC staff should be well

aware of the fact that it is Commerce that addresses permit compliance with noise standards, as was done in Bent Tree.

The Bent Tree noise studies performed by Commerce’s consultant at Commerce direction are exhibits in this Freeborn Wind docket.¹ Both the Commission and Commerce are well aware of the Bent Tree noise studies, which found noise exceedences at 1,150 and 1,525 feet from the nearest turbines. *Id.*, p. 11. These two studies contain, and were performed using, protocol for noise monitoring, which is in the Bent Tree study in this record. See Bent Tree noise study protocol, AFCL-11, Bent Tree Noise Monitoring and Noise Study Phase I, Appendix A.

There is no reason to ignore existing and functional protocol, and there is no basis in the record for the notion that existing protocol is flawed or that new protocol should be developed. There is no basis for Permit Section 7.4.2 – Post-Construction noise study methodology developed in consultation with the Department of Commerce has already been established.

B. The Commission’s Order expressly sets out the timing and process for pre-construction modeling and demonstration of probable compliance.

The Commission’s Order states very clearly that any ongoing process is to be public:

Finding 243

Should the Commission choose to do so, it could provide Freeborn wind with an opportunity to submit a plan demonstrating how it will comply with Minnesota’s noise standards at all times throughout the footprint of the Freeborn Wind Project. ~~The plan should include low frequency noise measurements for evaluation in consultation with MDH.~~

Finding 244

The Administrative Law Judge further recommends that the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota’s noise standards.

¹ See Freeborn Wind Exceptions, p. 24, fn. 215 (citing Evidentiary Hearing Tr. Vol. 2 at 184 (Feb. 22, 2018) (Davis); AFCL-11 (201712-138411-07); AFCL Exhibit 15, Rebuttal Schedule E, Email to and from noise consultant Shant Dokouzian to Dept. of Commerce Louise Miltich 8/14/2017, regarding noise monitoring by Commerce.

FoF 243 and 244, Order, December 19, 2018 (Findings 243 and 244 adopted by Commission). There is no basis for ignoring these adopted findings, no basis for changing the Applicant's provision of pre-construction modeling from public review and comment to private post-permit setting, and elimination of public and agency comment – this is contrary to the Commission's policy of broad spectrum public participation and its adoption of Findings in the Order adopted by the Commission. See Minn. Stat. §216E.08, Subd. 2; Minn. R. 7845.0300, Subp. (B), (E), and (F).

C. The Commission's Order is inexplicably altered, relying on evidence not in the record, the "MPCA Guide."

The Commission's December 19, 2018 written Order contains inexplicable alterations, including removal of factual statements with citations, particularly regarding noise, also apparently to shape to conform to Applicant's "agreement." See, e.g., Finding 181; Finding 185; 193; 195; 197... Finding 206 was completely eliminated!

There are also inexplicable additions to findings, for example Finding 191A; 205 (Commerce guidance DOES have specifics on pre-construction noise modeling); and in particular, Findings 207A and 207 B, made of whole cloth.

The Order's Findings 207 A and B improperly rely on the MPCA's "A Guide to Noise Control in Minnesota (2015)" which is NOT an exhibit in the record. It is also improperly used by the Commission without any citation other than "MPCA Guide." Order, p. 4.

This "MPCA Guide" first appeared, improperly, in Applicant's proposed Findings of Fact, with only a very general incomplete link referenced:

The Noise Standards also contain specific measurement procedures to be used for accurately measuring the noise from the source only, while taking care not to include noise from "background noise", which is defined as "any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc."²⁰⁷

207 Minn. R. 7030.0060 and "A Guide to Noise Control in Minnesota; Acoustical Properties, Measurement, Analysis and Regulation," MPCA (November 2015) available at: www.pca.state.mn.us (accessed March 8, 2018) [hereinafter "MPCA Guide"] at 13.

Freeborn Wind Proposed Findings of Fact, p. 24, with six citations to this extra-record exhibit on that page. This “MPCA Guide” is also cited in Staff Briefing Papers, noting the citation of this document not in the record. Staff Briefing Papers, p. 16. The Staff Briefing Papers also conflate the MPCA’s Guidance with the Commerce Guidance, entered into the record as EERA-9, stating “DOC EERA notes that the MPCA 2015 Guidance document addresses this question in their exceptions.” Id., fn. 31.

In the Order, the “MPCA Noise Guidance” is improperly referenced without citation:

The MPCA Noise Guidance provides guidance on how to properly measure and isolate the contribution from the regulated source.

Order, p. 10. The Conflation continues in the discussion of the position of Freeborn Wind, with two references to “MPCA guidance.” Order, p. 13.

When fabricating the Order’s Findings 207A and 207B repeatedly improperly rely on the MPCA Guide, with no citation beyond “MPCA Guide” referenced:

Finding 207A

The Noise Standards also contain specific measurement procedures to be used for accurately measuring the noise from the source only, while taking care not to include noise from “background noise”, which is defined as “any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc.”¹ The MPCA provides guidance on the implementation of its Noise Standards.²

The MPCA separately defines sound occurring in the natural environment. “Background, or ambient, noise” consists of “all noise sources other than the noise source of concern.”³ Because wind is often a major source of background noise (particularly during full operation of a wind farm), it can frequently present problems when trying to isolate and monitor a specific source of noise.⁴ Accordingly, MPCA’s measurement protocols and guidance state that high wind and rainy weather conditions should be avoided when measuring the noise source.⁵ Further, when analyzing a specific noise source along with other noise sources, correction factors can be used to isolate the noise source being monitored and calculate its individual noise level. Specifically, total noise levels from all sources are to be measured and recorded. Then the noise source being measured should be turned off, and a noise level reading taken with all other existing noise sources in operation. Then, the background noise is subtracted from the total noise level to find the noise level of the source being measured.⁶ It is the source noise that must meet the levels set in the Noise Standards.⁷

Footnote(s)

1. MPCA Guide at 11.

2. Id.
3. MPCA Guide at 11.
4. Id.
5. Minn. R. 7030.0060 and MPCA Guide at 11.
6. MPCA Guide at 12.
7. 348 See Minn. Stat. §§ 116.07, subd. 2©, 116.06, subd 15, Minn. R. 6030.0040 and 0060
and MPCA Guide at 12.

Finding 207B

The Legislature authorized the MPCA to regulate “noise”, as defined in the statute. MCPA’s guidance further confirms that the regulated noise source to be measured must be isolated from background noise when measuring sound at a given location. Accordingly, Freeborn Wind has correctly interpreted the Noise Standards to require that Project-related noise cannot exceed a nighttime L50 of 50 dB(A).

Order, Attachment 1: Modifications to ALJ Report, p. 4-5. There is no citation at all for statements in Finding 207B!

The “MPCA Guide” is not an Exhibit in the record, and should not be used and relied on by any party or staff or the Commission. All references to “MPCA Guide” and statements relying on it should be stricken from the record.

Another of the Commission’s addition to the Order’s Findings of Fact states:

The turbines have yet to be built. However, pre-construction, **it is the modeling Freeborn Wind conducted that is relevant for determining whether the Project will comply with the Noise Standards once operational.** The record here demonstrates that Freeborn Wind included very conservative assumptions in its modeling and calibrated its modeling with real world data to ensure that modeled estimates are conservatively high.¹ **If changes are made to the turbine layout, number of turbines, or turbine type,** the Noise Analysis will be updated accordingly.

Order, FoF 241, p. 8.² This verification that “it is the modeling Freeborn Wind conducted that is relevant for determining whether the Project will comply with the Noise Standards once

² Similar language appears in the staff briefing papers, p. 17: The applicant’s pre-constructions studies should be given due consideration. The applicant’s analyses indicates that, under extremely conservative assumptions, it is possible that there may be violations of the state noise standard. Using more realistic assumptions, it may be shown that the project does comply with the noise standards.

operational” is crucial, because all modeling performed by Applicants thus far has been based on a 0.0 ground factor assumption. Over and over in the record, Applicants stressed in testimony that 0.0 was the appropriate ground factor, and produced all modeling using that 0.0 ground factor. Applicants are attempting a bait-and-switch. No modeling has been entered into the record utilizing a 0.5 ground factor – everything in this record is based on a 0.0 ground factor.

There has been no modeling on which to base a determination that the project may comply with the noise standards. Applicants have produced nothing in the ten months since the ALJ’s Recommendation was released last May. There is no basis for the Commission to issue a Permit at this time, there is no support in the record and it is contrary to the Recommendations adopted by the Commission in September and December 2018. There is the suggestion of allowance for updating the Noise Analysis if “turbine layout, number of turbines or turbine type” changes. That has not occurred, there have been none of those listed changes.

III. AFCL COMMENTS ON SITE PERMIT V. DRAFT SITE PERMIT

How did we get to where we are with this permit? The Recommendation of the Administrative Law Judge did not include a permit, as it was recommended that the application be denied (that a permit should not be issued) and suggested the applicant be provided time to demonstrate that it could comply with noise standards.

The Permit issued by the Commission in writing on December 19, 2018 contains provisions not supported by the record. Findings of Fact were adopted that provide for public comment and a hearing that were not incorporated into the Order. More problematic, the Commission’s December 19, 2018 permit contains provisions not supported by the record and originating in an “agreement” between Applicant, Commerce, and MPCA that were developed privately and in exclusion of parties of record. These provisions must be rejected by the Commission, and if the Commission is set on consideration of these new notions, this docket

must be remanded to the ALJ for development of the record. Attached is mark-up of permit, with narrative below.

A. SECTION 4.2 RESIDENCES SETBACK IS CONTRARY TO THE RECORD

The 1,000 foot setback in Section 4.2 of the permit is not supported by the record, and is contrary to the evidence in the record.

4.2 Residences

Wind turbine towers shall not be located closer than 1,000 feet from all residences or the distance required to comply with the noise standards pursuant to Minn. R. 7030.0040, established by the Minnesota Pollution Control Agency, whichever is greater.

Site Permit, p. 3, December 19, 2018.

The Order states that the ALJ recommend that this section “require a 1500-foot setback to all landowners that have not consented to the Project. (Finding 548).” Order, p. 7. The Order goes on to cite “Wind Standards Order” which, in citing, correctly characterizes it as standards for “Projects Less than 25 Megawatts.” Order, fn. 10, p. 8. Again, the Freeborn Wind project as proposed is larger than 25 megawatts.

Next, the Order discusses the SMALL wind setback, which states “at least 500 feet plus the distance required to meet the state noise standard” and states “The ALJ then construed this language as requiring a setback of between 750 and 1,500 feet. On this basis, the ALJ adopted Finding 548 recommending that the language of Draft Site Permit Section 4.2 incorporate a requirement that the turbines be set back at least 1,500 feet from any landowner who has not consented to the Project,” implying that this was the ALJ’s invention. Id. The Order fails to note or quote the full SMALL wind setback, which states that “Typically 750 – 1500 ft is required to meet noise standards depending on turbine model, layout, site specific conditions” and again, this recommendation is for SMALL wind projects:

Noise Standard	Project must meet Minnesota Noise Standards, Minnesota Rules Chapter 7030, at all residential receivers (homes). Residential noise standard NAC 1, L50 50 dBA during overnight hours. Setback distance calculated based on site layout and turbine for each residential receiver.	Typically 750 – 1500 ft is required to meet noise standards depending on turbine model, layout, site specific conditions.
Homes	At least 500 ft <u>and</u> sufficient distance to meet state noise standard.	500 feet + distance required to meet state noise standard.

The Order then admits that “First, the Commission observes that the Wind Standards Order pertained to projects generating less than 25 MW, and thus is not directly applicable to the current docket,” but then states that “the ALJ misconstrues the order” and discusses only the “Homes” setback and not the “Noise Standard” which is focused on residential noise. Order, p. 9. The Commission fails to address the “Typically 750-1500 is required.” The Commission also fails to address the Bent Tree noise exceedences at 1,150 feet (Langrud) and 1,525 feet (Hagen), both in the record and addressed in AFCL’s brief.

The origin of the commonly used 1,000 foot setback, as found in Section 4.2 of the Freeborn Wind draft Site Permit, is not based in statute, rule, or standards, is arbitrary and is unknown:

Q: ... it lists 1,000 feet as a setback from residences. Where does that number come from? It’s for the SDP template. Where do you get that number?

A: For the template or for what we’ve submitted for the preliminary?

Q: Both, really. But where do you get – where does the thousand foot come from?

A: Thousand foot. I don’t know exact – the exact location of where that comes from. But in the most recent site permit applications that have been approved in the most recent site permits that have been issued by the Commission, that has been the standard distance that they’ve approved, along with the consideration of noise standards being met.

Davis, Vol. 2, p. 171-173; see also EERA-8, DSP, p. 3.

There is no basis in the record for 1,000 foot setbacks. Where the record includes SMALL wind standards that “typically require 750 – 1500 ft” to comply with noise standards, and where the record includes Commerce noise study with evidence of exceedences (noise

standard violations) at 1,150 feet and 1,525 feet from the nearest turbine. Instead of support, there is evidence in the record that 1,000 feet is an insufficient setback. Given the Bent Tree buyouts, the Commission is on notice that adequate setbacks are necessary, and that compliance with the noise standard should be well-established prior to permitting. The Commission's use of a 1,000 foot setback is arbitrary and capricious. This permit condition should be stricken, and the ALJ's recommendation be adopted. See Minn. R. 7845.0300 (B), (D), (E), and (F).

B. PERMIT SECTION 6.0 SHOULD BE STRICKEN IN ITS ENTIRETY.

The specific Special Conditions proposed are without support in the record.

The Commission's Staff Briefing Papers contain no Special Conditions, and that section is marked "N/A." That is how it should be. Looking at Freeborn Wind's Supplemental Comments – ATTACHMENT B, there were no Special Conditions in the Preliminary Draft Site Permit or Draft Site Permit, the ALJ Report, the EERA Exceptions, or the Staff Briefing Papers dated September 14, 2018.

The Section 6.0 Special Conditions have no basis or support in the record. The history shown in ATTACHMENT B demonstrates that there were no special conditions proposed prior to those proposed by the Applicants the day before the Commission's meeting.

There is no support in the record for Permit Section 6.0, and instead, Applicants and Commission improperly rely on an exhibit not in the record.

i. Special conditions, if taking precedence over other conditions, neuters the other conditions.

Special conditions should not be separate, but if used, should be incorporated into the existing conditions of the site permit. The conditions, if taking precedence over other conditions, effectively neuter the other conditions. Acceptance of Special Condition 6.0 taking precedence over other conditions, increasing acceptable noise in contradiction to the Noise

Conditions in Section 7.4, is an unacceptable abdication of the Commission's regulatory authority. See Minn. R. 7845.0300 (B), (D), (E), and (F).

ii. There is no basis for use of a 0.5 ground factor.

Special Condition 6.1 should be stricken in its entirety because there is nothing in the record supporting use of a 0.5 ground factor or the 47 dB(A) turbine-only sound level modeling assumptions proposed, and there is no basis for use of these assumptions in a permit. Instead, Applicant's proposal of Special Condition 6.1 is an admission that Applicant's noise modeling thus far does not demonstrate compliance, and is attempting to move the goal posts with these changes in modeling assumptions.

When the "Special Conditions" were proposed on September 19, 2018, this was the first time that use of a 0.5 ground factor was proposed. There is nothing in the record regarding use of a 0.5 ground factor. Each of the studies performed, offered, and admitted as evidence utilized a 0.0 ground factor. See FR-1, Appendix B, Noise Analysis; FR-18, Affidavit of Mike Hankard and Noise Tables. No modeling has been produced utilizing a 0.5 ground factor. Acceptance of use of a 0.5 ground factor without any modeling provided using this assumption, much less modeling provided using this assumption that demonstrates likely compliance, is abdication of the Commission's regulatory authority. See Minn. R. 7845.0300 (B), (D), (E), and (F).

iii. There is no basis in the record for use of 47 dB(A) as turbine-only noise limit.

Special condition 6.1 should also be stricken because there is no basis in the record for the condition that turbine-only noise levels of 47 dB(A) are in compliance with the noise standards. Applicant is correct that this 47 dB(A) conflicts with the permit's Section 7.4. Applicant's push for this 47 dB(A) in Section 6, and wanting Section 6 to take precedence over Section 7.4, leads to the belief that Applicant's cannot comply with Section 7.4. This adds to the necessity of the pre-construction modeling demonstrating potential compliance be provided, for

public and agency review and comment, prior to issuance of a permit. Section 6.1 should be stricken in its entirety. If the Commission were to issue a permit prior to provision of modeling and public and agency review with hearing and summary report, particularly in light of its approval of the ALJ's FoF 243 and 244, it would be abdication of the Commission's regulatory duty. See Minn. R. 7845.0300 (B), (D), (E), and (F).

iv. Section 6.2 Post-Construction Noise Modeling should be stricken in its entirety.

Section 6.2, Post-Construction Noise Modeling, should be struck in its entirety, first, because it utilizes the 47 dB(A) levels which are not supported in the record. Secondly, it should be stricken because the condition only states that "then the Permittee shall work with the Department of Commerce to develop a plan to minimize and mitigate turbine-only noise impacts," which is too little, too late. When exceedences are demonstrated, because the project is built and running, the means to mitigate are very limited, and moving the constructed turbine is not likely, leaving landowner buyouts as the only option, as happened with Bent Tree. Bent Tree is not the only project where landowners have complained of noise, and the Commission has actual and constructive notice that noise complaints have been filed regarding multiple wind projects. Noise issues are a clear demonstration of the necessity of prudent and preventative siting. Applicant's provision of pre-construction modeling and a demonstration that the project can likely comply is the way to avoid post-construction issues.

C. PERMIT SECTION 7.4.1 SHOULD COMPLY WITH COMMISSION ADOPTED ALJ RECOMMENDATION OF PUBLIC AND AGENCY VETTING OF PRE-CONSTRUCTION NOISE MODELING.

Section 7.4.1 of the Site Permit is contrary to the record and the Findings adopted by the Commission. As above, the Commission's Order adopted Findings 243 and 244, the ALJ's recommendation, which state very clearly that any ongoing process, which would include pre-construction demonstration of compliance with noise standards, is to be public:

Finding 243

Should the Commission choose to do so, it could provide Freeborn wind with an opportunity to submit a plan demonstrating how it will comply with Minnesota's noise standards at all times throughout the footprint of the Freeborn Wind Project. ~~The plan should include low frequency noise measurements for evaluation in consultation with MDH.~~

Finding 244

The Administrative Law Judge further recommends that the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota's noise standards.

FoF 243 and 244, Order, December 19, 2018. There is no basis for ignoring these adopted findings, no basis for changing the Applicant's provision of pre-construction modeling from public review and comment to private post-permit setting, and elimination of public and agency comment – this is contrary to the Findings in the Order adopted by the Commission. See Minn. R. 7845.0300, Subp. (B), (E), and (F).

The first paragraph of Section 7.4.1 should read:

~~Freeborn Wind Energy LLC shall file a plan, including modeling and/or proposed mitigation, at least 60 days prior to the pre-construction meeting that demonstrates it will not cause or significantly contribute to an exceedance of the state noise standards using the following two-part protocol:~~

Freeborn Wind shall have an opportunity to submit a plan demonstrating how it will comply with Minnesota's noise standards at all times throughout the footprint of the Freeborn Wind Project. the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota's noise standards. A permit shall not become effective until this condition is met.

In the alternative, the Commission should issue an order simply stating:

Freeborn Wind shall have an opportunity to submit a plan demonstrating how it will comply with Minnesota's noise standards at all times throughout the footprint of the Freeborn Wind Project. the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota's noise standards. Freeborn Wind's site permit and the Commission's Order shall be held in abeyance until such time as this demonstration and public process has been completed.

For the Commission to allow this project to go forward without a demonstration that it can comply with the noise standards, and without public process, is a failure in its duty to the public and abdication of its regulatory authority. See Minn. Stat. §216E.08, Subd. 2; Minn. R. 7845.0300, Subp. (B), (E), and (F).

D. PERMIT SECTION 7.4.2 -- COMMERCE HAS ESTABLISHED POST-CONSTRUCTION NOISE MONITORING PROTOCOL.

Section 7.4.2's first two sentences of the first paragraph should be stricken.

~~The Permittee shall file a proposed methodology for the conduct of a post-construction noise study at least 14 days prior to the pre-construction meeting. The Permittee shall develop the post-construction noise study methodology in consultation with the Department of Commerce.~~ The study must incorporate the most current Department of Commerce Noise Study Protocol to determine total sound levels and turbine-only contribution at different frequencies and at various distances from the turbines at various wind directions and speeds. The Permittee must conduct the post-construction noise study and file with the Commission the completed post-construction noise study within 12 months of commencing commercial operation.

This section of the permit focuses on Permittee development of post-construction noise methodology with the Dept. of Commerce. This is unnecessary. There is no need to reinvent the wheel, or worse, toss it out. Commerce, together with its wind noise monitoring consultant, has developed and vetted post-construction noise monitoring protocol. See Bent Tree noise study protocol, AFCL-11, Bent Tree Noise Monitoring and Noise Study Phase I, Appendix A. This information is in the record.

There is no reason to ignore existing and functional protocol, and there is no basis in the record for a notion that existing protocol is flawed or that new protocol should be developed. There is no basis, no support in the record, for Permit Section 7.4.2. Post-Construction noise study methodology developed in consultation with the Department of Commerce has already been established.

The final paragraph of this section utilizes a 45 dB(A) limit, which is in conflict with the Applicant's 47 dB(A) that it wants in Section 6.1 and Section 6.2. Applicant's push for a 47

dB(A) in Section 6, and wanting Section 6 to take precedence over Section 7.4 leads to the belief that Applicant's cannot comply with Section 7.4. This adds to the necessity of the pre-construction modeling demonstrating potential compliance be provided, for public and agency review and comment, prior to issuance of a permit. For the Commission to issue a permit prior to provision of modeling and public and agency review with hearing and summary report would be abdication of the Commission's regulatory duty.

IV. AFCL REQUESTS THAT THE PERMIT BE DENIED, AND IN THE ALTERNATIVE, THAT THE APPLICANT BE REQUIRED TO PROVIDE PRE-CONSTRUCTION MODELING, WITH PUBLIC PROCESS.

AFCL asks that the Freeborn Wind site permit be held in abeyance until Freeborn Wind has demonstrated compliance with the noise standards through provision of modeling, with at the very least, public and agency comments, a hearing, and a summary report. Section 6 "Special Conditions" should be rejected out of hand and the permit denied, because those amendments proposed by Applicants are unsupported by the record, and were developed in collusion between Applicant, Commerce, and, inexplicably, the MPCA.

In the alternative, AFCL requests that this matter be remanded to the Administrative Law Judge, in a hearing open to parties and the public, to build a record regarding those amendments. See Order, FoF 243 and 244, December 19, 2018. The issues to be addressed include, but are not limited to, Pre-Construction noise modeling with and without ambient noise demonstrating ability to comply with Minnesota's noise standards (necessary because post-hearing attempt to use 0.5 ground factor invalidates previous exclusive use of a 0.0 ground factor for modeling on which record is based); use of the 0.5 ground factor rather than the 0.0 ground factor used in all modeling in the record and the 3 dB(A) change that the 0.5 ground factor would build into results; evaluation of the additional 1-3 dB(A) margin that Applicants request as consideration of ambient sound; the cumulative impact of the change in ground factor and addition of a 1-3 dB(A)

margin; and Applicant's notion of "non-significant increase in total sound of less than 3 d(B(A)," and impact of use of 47 dB(A) wind only when modeling performed using 0.5 ground factor rather than 0.0. AFCL also requests that Section 7.4.1 and 7.4.2 be amended to comply with Findings adopted by the Commission and in recognition of Commerce's established and utilized post-construction monitoring protocol.

Respectfully submitted,

March 12, 2019



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Attached below are AFCL's Motion to Remand to ALJ, eFiled 2/13/2019 and Addendum to Motion, eFiled 2/14/2019.

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

Dan Lipschultz
Matthew Schuerger
Katie J. Sieben
John A. Tuma

Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of Freeborn
Wind Energy LLC for a Route Permit for the
Freeborn Wind Transmission Line in
Freeborn County

PUC Docket No. IP-6946/TL-17-410

LATE FILED

**ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
MOTION FOR REMAND TO ADMINISTRATIVE LAW JUDGE**

Association of Freeborn County Landowners (AFCL), intervenor in this above-captioned wind siting docket and participant in the related and concurrent transmission docket (IP6946/WS-17-410), bring this LATE FILED Motion¹ for Remand to Administrative Law Judge for additional hearing to inform the record. This Motion is late filed because the information attached in Exhibits A-K was just received from MPCA yesterday, in response to AFCL Data Practices Act Request. There is good cause not to exclude this filing, as it exposes addresses the private contortions and machinations in private of agency staff to improperly lead the Commission to give Freeborn Wind its wishes and permit the project

A prior Freeborn Wind pleading disclosed an agreement made between Applicant, Dept. of

¹ Any opposition to the motion must be filed and served on the same list of persons within 14 days of service of the motion filing. Minn. R. 7829.0410.

Commerce, and the Pollution Control Agency. AFCL followed up with Data Practices Requests to the MPCA and Commerce, and the MPCA response was received yesterday, attached. Commerce has yet to provide documents requested.

The responses to the Data Practices Act Request provide documentation that on Freeborn Wind initiative, beginning with a request on May 30, 2018, roughly two weeks after the ALJ Recommendation of denial of the permit was filed in this docket, there were multiple back and forth emails and at least one meeting between Freeborn Wind and Commerce's John Wachtler and MPCA's Frank Kohlasch. There was a flurry of emails also initiated by Litchfield/Freeborn Wind beginning Friday, September 14, at 5:42 PM and continuing through the weekend until the last email provided, on Monday September 17. These agency representatives, in private discussions, absent notice to or participation of AFCL, a full party in this proceeding, reworked and rewrote "conditions" to the permit to allow this project to move forward knowing it could not comply with the state's noise standard.

Suddenly, to those not informed or participating in private discussions, on September 19, 2018, Freeborn Wind filed a proposed "condition." This "condition" included a change in the ground factor assumption from 0.0, the ground factor repeatedly discussed in the hearing record, to 0.5, not discussed in the record, and which increases noise by 3 dB(A). In addition, an additional increase of 3 dB(A) was added as "tolerance." Again, 3 dB(A) is a doubling of noise, and 3 dB(A) plus 3 dB(A) is a four-fold increase in noise. Is the Commission aware of the meaning of this increase in this change in ground factor input and the increase in "tolerance" of the condition?

For Freeborn to be meeting privately with agency staff, rearguing their case to these regulators, inserting conditions with no vetting, inserting conditions allowing noise exceedences after admission that it could not comply with noise rules, all topped with an orchestrated presentation to the Commission and the Commission's blithe acceptance of this behavior and terms that are not supported by the record, how is this anything but blatant ex parte contact and improper

conduct on the part of the Commission? This is flagrant abuse of process.

There is no basis in the record for either the 0.0 to 0.5 ground factor change; there is no basis in the record for an additional 3 dB(A) “tolerance.” There is no basis in the record for this “condition.” There is no basis in the record for allowing four-fold increase in noise modeling and/or noise. This must be remanded to the ALJ for additional proceedings to inform the record in public, with opportunity for review, cross-examination, briefing, argument, and due consideration.

I. FREEBORN ADMITS IT CANNOT DEMONSTRATE IT CAN COMPLY “USING PRUDENT MEASURING PRACTICES” AND PROCEEDS TO USE IMPRUDENT AND DECPTIVE PRACTICES

The ALJ’s Conclusions and Recommendation were clear, that Freeborn Wind had not demonstrated that it could comply with the noise standard:

5. The Applicant failed to demonstrate, by a preponderance of the evidence, that the Project complies with Minn. R. 7030.0040. Therefore, the Project does not comply with criteria set forth in chapter 216F and section 216E.03, subdivision 7 of the Minnesota Statutes and chapter 7854 of the Minnesota Rules.

...

9. Should the Applicant demonstrate that it can meet the requirements of Minn. R. 7030.0040, the Project, with the Draft Site Permit conditions and the amended and additional Permit Conditions and Special Conditions to sections 4.2, 5.2, 5.2.25, 7.2, 7.4, and 11.1, as described at paragraphs 543 through 550 of this Report, would satisfy the site permit criteria for an LWECS in Minn. Stat. § 216F.03 and meet all other applicable legal requirements.

RECOMMENDATION

Based upon these Conclusions of Law, the Administrative Law Judge respectfully recommends that the Commission deny the site permit to Freeborn Wind Energy, LLC to construct and operate the up to 84 MW portion of the Freeborn Wind Farm in Freeborn County, Minnesota. In the alternative, the Administrative Law Judge respectfully recommends that the Commission provide Freeborn Energy, LLC with a period of time to submit a plan demonstrating how it will comply with Minnesota’s Noise Standards at all times throughout the footprint of the Freeborn Wind Project.

ALJ Recommendation, pps. 118-119.

In a September 16, 2018 email, Dan Litchfield, Freeborn Wind, admits that Freeborn cannot comply with the noise standard:

3. Finally, we think that demonstrating compliance with the final paragraph (showing we're at 45 dBA or less when wind is at 50 dBA) is technically impossible, per ANSI standards and MPCA guidance. My concern is that this isn't an "innocent until proven guilty" scenario – as I understand it, we have to demonstrate innocence, or compliance. And we will not be able to do that using prudent measuring practices...

We are drafting some proposed alternate language that could go in section 6.0: Special Conditions and would like to review that with you. Also, we'd like to propose an amendment to paragraph 2 of 7.4.1 so that the tolerance is 5 dBA, which is supported by our record "A Guide to Noise Control in Minnesota • November 2015," section 2.3: "The human ear can usually tell the difference when sound changes by 3 dBA and a 5 dBA change is clearly noticeable."

Litchfield, Exhibit A, p. 3, in "basic details," para. 3; conclusion, p. 4.

As AFCL argued in its brief, the record reflects the distinction between black letter dB(A) modeling and measurements and perception of noise, and that 3 dB(A) is a doubling of noise. Hankard, Tr. Vol. 1B, p. 65, 114, 116. Doubling of sound energy, or sound pressure level, is 3 dB. Id. "They do not perceive it as a doubling of loudness, until the – until the increase in the decibels is 10. Tr., Vol. 1B, p. 115. Doubling of sound energy doesn't mean a perception of doubling of sound. But the numbers are what matters, not perception. In this case what matters is the 50 dB(A) of the MPCA 7030 rule.

Freeborn Wind went to the MPCA and Commerce, and the emails reveal Freeborn Wind's belief that it could not meet the noise standards. Reborn Wind reargued its post-hearing brief, its reply brief, and its proposed Findings of Fact. Exhibits D-K, attached. Intervenors had no such opportunity.

Hankard's post hearing modeling, brought before the MPCA and Commerce in May, 2018, shows many instances of 50 dB(A) or higher levels in the "Ambient 50 dBA Plus Turbine Noise Level (dBA)" and many in the "Ambient 45 dBA Plus Turbine Noise Level (dBA)" column. The hearing record reflects that Hankard testified that there was a +/- 3 dB(A) "margin of error built

into the modeling. See Hankard, Tr., Vol. 1B, p. 64, 113. Over and over, the record reflects the reasons and importance of using the 0.0 ground factor.

Another recent statement by Hankard, in another docket, in another state, also shows that a ground factor of 0.5 is not typically used for wind:

The model that we use has been shown to predict conservatively with 0.5. I mean, 0.5 ground factor is used in probably – well, with the exception perhaps of wind turbine projects which are different because the source is elevated. Bot for projects like a typical power plant, a solar plant where the sources are relatively close to the ground, I would say 90-99 percent of the studies use 0.5.

Exhibit G, Tr. p. 122, l. 7-14.

Enough of the machinations and private meetings and development of “conditions” that have no basis in the record. This matter must be opened to the light of day.

II. THE COMMISSION ACTIONS ARE IMPROPER.

Given Applicant’s “Request for Clarification” pleading, admitting an “agreement” with MPCA and Commerce, the Commission cannot now plausibly claim that it did not know of Freeborn’s behind the scenes actions with MPCA and Commerce staff. Those actions, meetings, agreements, should have been made public, parties included in all discussions, all parties allowed to reargue their case as done by Freeborn Wind. Better yet, those meetings should have never occurred, should have stopped, staff should be disciplined for these ethical violations, and the hearing reopened immediately to address these issues. That didn’t happen, and the Commission, as the decider, is responsible.

Commission ethics and integrity rules speak for themselves:

7845.0400 CONFLICT OF INTEREST; IMPROPRIETY.

Subpart 1. General behavior.

A commissioner or employee shall respect and comply with the law and shall behave in a manner that **promotes public confidence in the integrity and impartiality of the commission's decision making process.**

Subp. 2. Actions prohibited.

Commissioners and employees shall avoid any action that might result in or create a conflict of interest or the appearance of impropriety, including:

- A. using public office for private gain;
- B. giving preferential treatment to an interested person or entity;**
- C. impeding the efficiency or economy of commission decision making;
- D. losing independence or impartiality of action;**
- E. making a commission decision outside official channels; and**
- F. affecting adversely the confidence of the public in the integrity of the commission.**

Minn. R. 7845.0400 (emphasis added).

A look at the process and Commission treatment of Freeborn Wind, there are known examples of giving preferential treatment to an interested entity. The Commission has lost independence and impartiality of action. The decision has been made, for all intents and purposes, outside official channels, in private between Freeborn Wind, Commerce, and MPCA, arguably and generously assuming Commission knew nothing about these discussions and agreement. This process failure absolutely adversely affects the confidence of the public in the integrity of the Commission.

III. THE FREEBORN WIND DOCKET MUST BE REMANDED TO THE ALJ FOR FURTHER PROCEEDINGS TO BUILD THE RECORD.

This docket, this permit, must not proceed as it is, with the improper, behind the scenes, deal-making, based on information not in the record, and inaccurate information. The Commission must be reconsidered, and remanded. There is no basis in the record for either the 0.0 to 0.5

ground factor change or the notion of adding an additional 3 dB(A) “tolerance.” There is no basis in the record for this “condition.” There is no basis in the record for allowing four-fold increase in noise modeling and/or noise. This must be remanded to the ALJ for additional proceedings to inform the record in public, with opportunity for review, cross-examination, briefing, argument, and due consideration.

At this time, considering all of the above, AFCL requests that this LATE FILED pleading be accepted, and that the Commission Reconsider its September 20, 2018 decision and December 19, 2018 written order, and remand the siting docket to the Administrative Law Judge for rehearing and due process, including public fact-finding regarding modeling and use of a 0.0 ground factor, with opportunity for discovery, cross-examination, briefing, and argument.

Respectfully submitted,

February 13, 2019



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STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Dan Lipschultz
Matt Schuerger
Katie Sieben
John A. Tuma

Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of Freeborn
Wind Farm, LLC for a Large Wind Energy
Conversion System Site Permit for the 84
MW Freeborn Wind Farm in Freeborn
County.

PUC Docket No. IP-6946/WS-17-410

AFFIDAVIT OF CAROL A. OVERLAND
IN SUPPORT OF ASSOCIATION OF FREEBORN COUNTY LANDOWNERS’
MOTION FOR REMAND TO ADMINISTRATIVE LAW JUDGE

STATE OF MINNESOTA)
) ss.
COUNTY OF GOODHUE)

Carol A. Overland, after duly affirming on oath, states and deposes as follows:

1. I am an attorney in good standing, licensed in the State of Minnesota, Lic. No. 254617, and have extensive experience in utility regulatory proceedings in many venues.
2. I am representing the Association of Freeborn County Landowners in the above-captioned proceeding and the linked transmission docket.
3. Attached as Exhibit A is a true and correct copy of the email received yesterday from MPCA in response to AFCL’s Data Practices Act Request regarding documents related to

meetings between Freeborn Wind and MPCA and/or Commerce representatives. Separate responses from Commerce have not been received.

4. Attached as Exhibit B is a true and correct copy of AFCL's Data Practices Act Request to MPCA.
5. Attached as Exhibit C is a true and correct copy of AFCL's Data Practices Act Request to Commerce. Other than an acknowledgement of receipt, there has been no response, no provision of documents.
6. Attached as Exhibit D is a true and correct copy of a full email thread as provided by MPCA, which includes:
 - Wednesday, May 30, 2018 8:36 AM: Litchfield to Davis, Wachtler, Kohlasch, cc: Hankard (including Brusven/Fredrickson & Byron Letter dated September 18, 2018)
 - Wednesday, May 30, 2018 12:47 PM: Kohlasch to Litchfield, Davis, Wachtler cc: Hankard
 - Friday, September 14, 2018 5:42 PM: Litchfield to Wachtler, Kohlasch
 - Saturday, September 15, 2018 2:08 PM: Wachtler to Litchfield, Kohlasch
 - Sunday, September 16, 2018 11:38 AM: Litchfield to Wachtler, Kohlasch
 - Sunday, September 16, 2018 8:19 PM: Wachtler to Litchfield
 - Sunday, September 16, 2018 8:34 PM: Litchfield to Wachtler
 - Sunday, September 16, 2018 8:50 PM: Wachtler to Litchfield
 - Monday, September 17, 2018 12:37 PM: Litchfield to Wachtler
 - Monday, September 17, 2018 5:22 PM: Litchfield to Wachtler.
7. Attached as Exhibit E is a true and correct copy of another full email thread as provided by the MPCA, which includes some of the same emails and a "new" ones asserting that "demonstrating compliance at 45 dBA with a 50 DBA ambient may be technically impossible when following ANSI standards" in the last one listed:
 - Wednesday, May 30, 2018 8:36 AM: Litchfield to Davis, Wachtler, Kohlasch, cc: Hankard
 - Wednesday, May 30, 2018 12:47 PM: Kohlasch to Litchfield, Davis, Wachtler cc: Hankard
 - Friday, September 14, 2018 5:42 PM: Litchfield to Wachtler, Kohlasch
 - Saturday, September 15, 2018 2:08 PM: Wachtler to Litchfield, Kohlasch
 - Saturday, September 15, 2018 1:54 PM: Litchfield to Wachtler and Kohlasch
 - Saturday, September 15, 2018 6:48 PM: Kohlasch to Wachtler
 - Sunday, September 16, 2018 4:01 PM: Wachtler to Kolasch

8. Attached as Exhibit F is a true and correct copy of “May 30, 2018 Meeting Freeborn Handout Kohlasch Notes Freeborn Highlights_05” provided by MPCA. This document, MPCA name is “May 30” Litchfield did not request a meeting with MPCA and Commerce until May 30, 8:36 AM, and the meeting was scheduled for the following day, May 31, 2018 (see Exhibit E, email Wednesday, May 30, 2018, 12:47 PM). The participants listed on this document, “AWEA, Wind on the Wires, Turbine Manuf., other wind developers/competitors” goes beyond Litchfield and Hankard. The chart and notes may have been from another meeting or the date used in the file is off, or Litchfield brought many others to the meeting. Pay attention to the p. 5 note regarding ground effect, “Invenergy modeling uses a Ground Effect buffer of \emptyset = all paved surfaces (hard) with no absorptive land cover; other modelers will use a factor of 0.5 which will lead to a noise reduction of 3 Dba;” The record for Freeborn Wind is based on the Invenergy modeling, discussed often and at length, at 0.0 ground factor. No modeling for any other ground factor input was produced or discussed.

9. Attached as Exhibit G is a true and correct copy of a part of Invenergy’s Freeborn Wind sound expert, Hankard, testimony in the Badger Hollow solar project hearing, where he testified, regarding the Badger Hollow solar project and use of 0.5 ground factor:

The model that we use has been shown to predict conservatively with 0.5. I mean, 0.5 ground factor is used in probably – well, with the exception perhaps of wind turbine projects which are different because the source is elevated. Bot for projects like a typical power plant, a solar plant where the sources are relatively close to the ground, I would say 90-99 percent of the studies use 0.5.

Exhibit G, Tr. p. 122, l. 7-14.

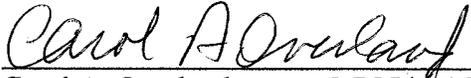
10. Attached as Exhibit H is a true and correct copy of “May 30_Meeting Freeborn Handout Freeborn Highlights_01,” the noise related Findings of Fact proposed by Freeborn Wind. These are not the findings from the ALJ’s recommendation. This document’s MPCA name is “May 30” but Litchfield did not request a meeting with MPCA and Commerce until May 30, 8:36 AM, and the meeting was scheduled for the following day, May 31, 2018.

11. Attached as Exhibit I is a true and correct copy of “May 30_Meeting_Freeborn_Handout Freeborn Highlights_02” which is selected pages of Freeborn Wind’s post-hearing brief, pages 17-24, regarding noise. This document’s MPCA name is “May 30” but Litchfield did not request a meeting with MPCA and Commerce until May 30, 8:36 AM, and the meeting was scheduled for the following day, May 31, 2018

12. Attached as Exhibit J is a true and correct copy of "May 30_Meeting_Freeborn_Handout Freeborn Highlights_03" which is selected pages of Freeborn Wind's Reply Brief, pps. 5-8, regarding noise.
13. Attached as Exhibit K is a true and correct copy of "May 30_Meeting_Freeborn_Handout Freeborn Highlights_04" which is the post-hearing Ex. FR-18, Affidavit of Mike Hankard and attached calculation of total predicted noise based on predicted wind turbine noise levels and observed nighttime ambient noise levels. As with Hankard's noise modeling included in Appendix C to the Application, and Hankard's testimony, this modeling is based with "a ground factor of 0.0. See Hankard Affidavit, para. 8. The tables' 2nd and 3rd from left columns, Ambient 45 and 50, show many instances of 50 and over dBA, both as modeled, and when considered with the +/- 3 dBA "margin of error."

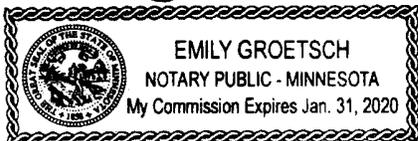
Further your affiant sayeth naught.

Dated: February 13, 2019


Carol A. Overland MN Lic. 254617
Attorney for Association of Freeborn
County Landowners
Legalelectric
1110 West Avenue
Red Wing, MN 55066
(612) 227-8638
overland@legalelectric.org

Signed and sworn to before me this
13th day of February, 2019


Notary Public



AFCL EXHIBIT A

Subject: R#26891
From: "Boettcher, Dale (MPCA)" <dale.boettcher@state.mn.us>
Date: 2/12/2019, 7:44 AM
To: "overland@legalelectric.org" <overland@legalelectric.org>

Carol

Here is the information for the site that you have requested. Please review and confirm.
I will closing out your request.

Thank you
Dale

The name of the file you need is: **DB_R26891_021219_031219**

Please follow the below link to gain access to your files: : ftp://files.pca.state.mn.us/pub/file_requests/

****Please note that files are kept at this location for 30 days than will be deleted. Please save to your computer locally and promptly.****

Notes on viewing TIF files on FTP site:

When files are uploaded to an FTP site, it is the intention that the files will be downloaded locally for viewing. The issue of not being able to view these files only occurs if you try to open the files directly from the FTP site. Here is a solution to successfully opening TIF files from the FTP site:

Internet Explorer:

Right-click file > Choose **Save Target As...** > Select location to Save in: (suggest desktop)
Open document from saved location.

Firefox:

Right-click file > Choose **Save Link As...** > Select location to Save in: (suggest desktop)
Open document from saved location.

Dale A Boettcher

*Remediation/AL. File Manager, MPCA Records Management Unit
Minnesota Pollution Control Agency (MPCA)
520 Lafayette Rd N
Saint Paul, MN 55155-4194
651-757-2441*

The mission of the MPCA is to protect and improve the environment and enhance human health.



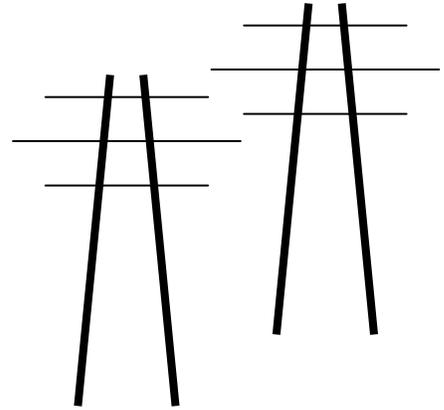
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AFCL EXHIBIT B

Legalelectric, Inc.

Carol Overland Attorney at Law, MN #254617
Energy Consultant—Transmission, Power Plants, Nuclear Waste
overland@legalelectric.org

1110 West Avenue
Red Wing, Minnesota 55066
612.227.8638



DATA PRACTICES ACT REQUEST

January 9, 2019

Frank Kohlasch
Air Assessment Section
frank.kohlasch@state.mn.us
MPCA
520 Lafayette Road North
St. Paul, MN 55155-4194

Laura Bishop
Commissioner
laura.bishop@state.mn.us
MPCA
520 Lafayette Road North
St. Paul, MN 55155-4194

RE: DATA PRACTICES ACT REQUEST
Discussions and Agreement between Freeborn Wind and/or Dept. of Commerce
and MPCA

At this time, I request all documents, including but not limited to notes, records of phone calls, and emails regarding the Agreement between Freeborn Wind, the Dept. of Commerce, and MPCA.

Please assemble the documents and contact me to schedule a file review.

In the requests below, Applicant is defined as Applicant and/or representatives of Applicant. Agreement is defined as any and all agreements, formal and/or informal.

- Provide documentation of agreement between Applicant, Commerce, and MPCA.
- Identify representatives of Applicant, Commerce, and MPCA that entered into Agreement.
- Provide emails to and from Applicant, Commerce and MPCA between June 8, 2018 and present.
- On what dates were discussions had between Applicant, Commerce, and MPCA? Provide any and all responsive documentation.

AFCL EXHIBIT B

- Did PUC representative(s) (Commissioners and/or staff) participate directly or indirectly in these discussions? If so, identify participant(s) and dates of participation. Provide any and all responsive documentation.
- Identify representatives for Applicant, Commerce, MPCA and PUC involved in discussions and dates of participation. Provide any and all responsive documentation.
- On what date and time was Commission staff informed of Agreement between Applicant, Commerce, and MPCA? Provide any and all responsive documentation.
- On what date and time were Commissioners informed of Agreement between Applicant, Commerce, and MPCA? Provide any and all responsive documentation.
- On what date and time were parties in the case notified of discussions between Applicant, Commerce, and MPCA? Provide any and all responsive documentation.
- On what date and time were parties in the case notified of Agreement between Applicant, Commerce, and MPCA? Provide any and all responsive documentation.
- For each MPCA representative identified above, what is that Commerce representative's understanding of ground factor used in noise modeling entered as evidence in PUC Docket WS-17-410? Provide any and all responsive documentation.
- For each MPCA representative identified above, what is that Commerce representative's understanding of "(NARUC ISO 9613-2 with 0.5 ground) as used in Freeborn Wind's "Special Condition." Provide any and all responsive documentation.

If you have any questions or require anything further, please let me know.

Very truly yours,



Carol A. Overland
Attorney at Law

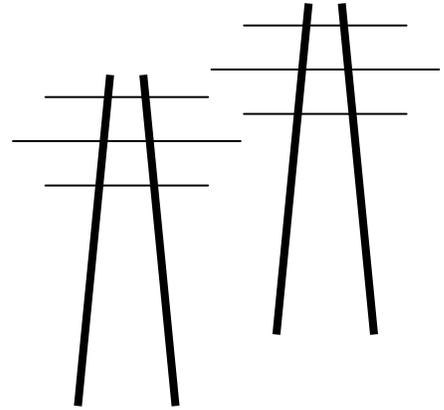
cc: Association of Freeborn County Landowners

AFCL EXHIBIT C

Legalelectric, Inc.

Carol Overland Attorney at Law, MN #254617
Energy Consultant—Transmission, Power Plants, Nuclear Waste
overland@legalelectric.org

1110 West Avenue
Red Wing, Minnesota 55066
612.227.8638



DATA PRACTICES ACT REQUEST

January 9, 2019

Bill Grant
bill.grant@state.mn.us
Deputy Commissioner
Department of Commerce
85 – 7th Place East, Suite 500
St. Paul, MN 55101

John Wachtler
john.wachtler@state.mn.us
EERA
Department of Commerce
85 – 7th Place East, Suite 500
St. Paul, MN 55101

RE: DATA PRACTICES ACT REQUEST
Discussions and Agreement between Freeborn Wind and/or Dept. of Commerce
and MPCA

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AFCL EXHIBIT C

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- For each Commerce representative identified above, what is that Commerce representative's understanding of "(NARUC ISO 9613-2 with 0.5 ground) as used in Freeborn Wind's "Special Condition." Provide any and all responsive documentation.

If you have any questions or require anything further, please let me know.

Very truly yours,



Carol A. Overland
Attorney at Law

cc: Association of Freeborn County Landowners

AFCL EXHIBIT D

From: Wachtler, John (COMM)
Sent: Monday, September 17, 2018 5:32 PM
To: Kohlasch, Frank (MPCA)
Subject: Fwd: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards
Attachments: Freeborn_ Letter Regarding Special Condition on Noise_64862108(2)-c.docx; ATT00001.htm

Sent from my iPhone

Begin forwarded message:

From: "Litchfield, Daniel" <DLitchfield@inverenergyllc.com>
Date: September 17, 2018 at 5:22:29 PM CDT
To: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>
Subject: RE: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards

John,

Does the attached look acceptable to you? If so, I'd suggest we file this tomorrow and you file a short letter confirming you agree. Then we show up Thursday morning.

Dan Litchfield | Director, Renewable Development
Inverenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@inverenergyllc.com | 773-318-1289 | @InverenergyLLC

From: Litchfield, Daniel
Sent: Monday, September 17, 2018 12:37 PM
To: 'Wachtler, John (COMM)' <john.wachtler@state.mn.us>
Subject: RE: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards

John,

Below are two proposed conditions that would go in section 6.0 – Special Conditions – of the Proposed Site Permit. These take a different approach than EERA's proposed language, but I think the intent is the same except for insertion of the +3 dBA tolerance instead of +1 dBA. The +3 is strongly supported by the case record – both in the MPCA's own guidance document and in testimony by Hankard and discussion with the ALJ at the public hearing. So we feel that is the justifiable tolerance.

The post-construction monitoring condition is likewise intended to get to the point stated by EERA/MPCA, but in a way that is actually measurable.

Also, I wanted to give you a courtesy heads up that we will be filing a motion to strike Mr. Kohlasch's letter as untimely and clarify that we think it could be an unlawful rulemaking. However, as I am attempting to demonstrate, we are willing to negotiate in good faith a special condition on the topic with EERA (and MPCA if they want to be involved), that will apply solely to our project.

AFCL EXHIBIT D

Please call me if you would like to discuss. I'll check in with you tomorrow.

6.1 Pre-Construction Noise Modeling

Freeborn Wind Energy LLC shall file a plan, including modeling and/or proposed mitigation, at least 60 days prior to the pre-construction meeting that demonstrates it will not cause or significantly contribute to an exceedance of the MPCA Noise Standards.

To ensure that the turbine-only noise does not cause or significantly contribute to an exceedance of the MPCA Noise Standards, modeled wind turbine-only sound levels (NARUC ISO 9613-2 with 0.5 ground) at receptors shall not exceed 47 dB(A) L₅₀-one hour. Given this, at no time will turbine-only noise levels exceed the MPCA Noise Standards, and when total sound does exceed the limits it will be primarily the result of wind or other non-turbine noise sources. Under these conditions, the contribution of the turbines will be less than 3 dBA, which is the generally recognized minimum detectible change in environmental noise levels (non-laboratory setting). For example, when nighttime background sound levels are at 50 dB(A) L₅₀-one hour, a maximum turbine-only contribution of 47 dB(A) L₅₀-one hour would result in a non-significant increase in total sound of less than 3 dB(A).

6.2 Post-Construction Noise Monitoring

If the Noise Studies conducted under Section 7.4 document an exceedance of the MPCA Noise Standards where turbine-only noise levels produce more than 47 dB(A) L₅₀-one hour at nearby receptors, then the Permittee shall work with the Department of Commerce to develop a plan to minimize and mitigate turbine-only noise impacts.

Dan Litchfield | Director, Renewable Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | 773-318-1289 | @InvenergyLLC

From: Wachtler, John (COMM) [<mailto:john.wachtler@state.mn.us>]
Sent: Sunday, September 16, 2018 8:50 PM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Subject: RE: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards

I'm actually taking a legal education class tomorrow on compliance issues of all things. It starts at 9:00....

There is a break at 10:15,

otherwise 8:00 am would probably work while I'm driving to Minneapolis.

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Sunday, September 16, 2018 8:34 PM
To: Wachtler, John (COMM) <john.wachtler@state.mn.us>
Subject: Re: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards

Thanks John. What about the other points I raised? What time is good for you to talk tomorrow? Can we do 9 a.m.?

AFCL EXHIBIT D

Dan Litchfield
773-318-1289

----- Original message -----

From: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>
Date: 9/16/18 8:19 PM (GMT-06:00)
To: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Subject: [EXTERNAL] RE: Freeborn Wind and MPCA sound standards

Dan, I just got back home and am looking at your email more closely. I see the permit condition in 7.4.2 regarding "continuing for the first 12 months." That isn't the language we suggested, of course. It should be completed with 12 months. Mike K, I assume at this point, must have accidentally added that. I'll call him tomorrow about it.

From: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Sent: Sunday, September 16, 2018 11:38 AM
To: Wachtler, John (COMM) <john.wachtler@state.mn.us>
Cc: Kohlasch, Frank (MPCA) <frank.kohlasch@state.mn.us>
Subject: RE: Freeborn Wind and MPCA sound standards

Good morning John and Frank,

Here are the basic details I'd like to discuss:

1. Proposed Permit condition 7.4.1 (1) is internally inconsistent: "If background sound levels are less than the applicable standard at nearby receptors, the modeled turbine-only noise levels cannot cause an exceedance of the applicable state standard at nearby receptors, inclusive of the measured background noise level. "Cause" means that the project turbine-only contribution is in excess of the applicable state standard."
 - a. The first sentence is confusing because it says "modeled turbine-only noise levels" but then clarifies that it is "inclusive of the measured background noise level." So I understand the first sentence to essentially mean "total noise" has to meet the standard.
 - b. But then the second sentence seems to disagree with the first and it could be interpreted to mean that the turbine-only noise can be up to 50 dBA L₅₀-one hour.
2. The second paragraph of 7.4.2 ("continuing for the first 12 months") seems to propose 12 months of operational monitoring, not *within* the first 12 months, which is what has been done and is what EERA recommended in its exceptions to the ALJ report.
3. Finally, we think that demonstrating compliance with the final paragraph (showing we're at 45 dBA or less when wind is at 50 dBA) is technically impossible, per ANSI standards and MPCA guidance. My concern is that this isn't an "innocent until proven guilty" scenario – as I understand it, we have to demonstrate innocence, or compliance. And we will not be able to do that using prudent measuring practices:
 - a. S12.9 Part 3 (2013) Quantities and Procedures for Description and Measurement of Environmental Sound - Part 3: Short-Term Measurements With an Observer Present. Also relevant to environmental noise measurements is ANSI S12.18-1994 (R2009) Outdoor Measurement of Sound Pressure Level. Correction for continuous background sound, states: "If the difference between the measurement period equivalent-

AFCL EXHIBIT D

continuous total sound pressure level (sound that is the sum of source in question and the continuous background sound) and the corresponding continuous background sound pressure level is less than 3 dB, then the reported source sound level shall be set equal to -99 dB for subsequent calculations, or to n/a". Let me explain this with an example: If your turbine-only limit is 45 dBA, once the noise level from the wind in the trees exceeds about 42 dBA you are technically not following the standard. There is too much background noise present, and it is similar in frequency content so can't be filtered (like insects, frogs or birds). On a traditional project like a combustion turbine, we would just wait for the wind to die down and take our measurement. No such luxury for wind farms.

b. MPCA standards:

i. "A Guide to Noise Control in Minnesota," section 3.1, both the "weather condition" and "background noise" sections - "Measurements should not be made when noise from wind or precipitation results in a difference between the background sound level and noise source being measured that is less than 10 dBA." And "The difference between the sound level of the source being monitored and that of the background noise must be less than 10dBA."

ii. 7030.0060, Subp. 4 (C) C. "Measurements must not be made in sustained winds or in precipitation which results in a difference of less than ten decibels between the background noise level and the noise source being measured."

We are drafting some proposed alternate language that could go in section 6.0: Special Conditions and would like to review that with you. Also, we'd like to propose an amendment to paragraph 2 of 7.4.1 so that the tolerance is 5 dBA, which is supported by our record "A Guide to Noise Control in Minnesota • November 2015," section 2.3: "The human ear can usually tell the difference when sound changes by 3 dBA and a 5 dBA change is clearly noticeable."

Dan Litchfield | Director, Renewable Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | 773-318-1289 | @InvenergyLLC

From: Wachtler, John (COMM) [<mailto:john.wachtler@state.mn.us>]
Sent: Saturday, September 15, 2018 2:08 PM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>
Cc: Kohlasch, Frank (MPCA) <frank.kohlasch@state.mn.us>
Subject: [EXTERNAL] Re: Freeborn Wind and MPCA sound standards

Dan, can you tell us more details about what you want to meet about?

Also feel free to try me on my cell this weekend if you'd like. I'm out of town but should be able to answer.

651-724-1063

Sent from my iPhone

On Sep 14, 2018, at 5:42 PM, Litchfield, Daniel <DLitchfield@invenergyllc.com> wrote:

AFCL EXHIBIT D

Gentlemen:

Happy Friday.

I respectfully and urgently request a meeting Monday or Tuesday next week. Frank's letter and its subsequent interpretation by PUC staff has resulted in Proposed Permit conditions that we feel are fundamentally unworkable, let alone unprecedented in Minnesota. Mike and I would really appreciate the opportunity to sit down, face-to-face and explain why. Please let me know of your availability. I will throw out 11 am on Tuesday for starters, but I will make any time that you can find in your schedule prior to Wednesday (it is Yom Kippur, I will be with my family). I am in Chicago, so if Monday morning is the only time that works, kindly let me know before Sunday evening. My hope is we can come to an understanding of why the proposed permit condition language will not allow for construction of wind turbines and jointly propose new language on Thursday.

Sincerely,

Dan Litchfield | Director, Renewable Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | 773-318-1289 | @InvenergyLLC

From: Kohlasch, Frank (MPCA) [<mailto:frank.kohlasch@state.mn.us>]
Sent: Wednesday, May 30, 2018 12:47 PM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>; Davis, Richard (COMM) <richard.davis@state.mn.us>; Wachtler, John (COMM) <john.wachtler@state.mn.us>
Cc: Michael Hankard <mhankard@hankardinc.com>
Subject: RE: Freeborn Wind and MPCA sound standards

Dan,

I checked John's schedule and my schedule and we can meet tomorrow from 10-11 am at the MPCA. I have reserved Conference Room 102 at the MPCA for a potential meeting. If this time doesn't work, please let me know and I will see if there is time Thursday afternoon.

Also, I want to be clear that the MPCA and Department of Commerce don't have a response prepared to the ALJ's report at this time. We continue to work together to develop the state's response and will provide more information once an approach has been reviewed by the leadership of both agencies. That said, we are willing to meet and listen to your concerns and proposals.

Thanks,
Frank

Frank L. Kohlasch, Manager
Air Assessment Section
Environmental Analysis & Outcomes Division
Minnesota Pollution Control Agency
520 Lafayette Rd. N.
St. Paul, MN 55155
(651)757-2500

AFCL EXHIBIT D

frank.kohlasch@state.mn.us

Stay on top of Minnesota's Air Quality Index at www.pca.state.mn.us/air/current-air-quality-index

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From: Litchfield, Daniel <DLitchfield@inenergyllc.com>

Sent: Wednesday, May 30, 2018 8:36 AM

To: Davis, Richard (COMM) <richard.davis@state.mn.us>; Wachtler, John (COMM) <john.wachtler@state.mn.us>; Kohlasch, Frank (MPCA) <frank.kohlasch@state.mn.us>

Cc: Michael Hankard <mhankard@hankardinc.com>

Subject: Freeborn Wind and MPCA sound standards

Gentlemen:

I am seeking to convene a meeting of EERA, PCA and our team, mainly just me and Mike Hankard, our acoustic consultant. We can expand the group to include others, including attorneys, if that works for you.

I will be available to meet tomorrow between 10 am and 3 PM in the St. Paul area, or Friday morning and the earlier the better. Or we could look to next week.

Agenda-wise, I offer 3 topics of discussion and welcome your contributions/modifications:

1. We believe the PCA rules are very clearly about "noise" and not "ambient sound" and, thus, we have correctly designed our project (Freeborn Wind Energy LLC) to cause less than a 50 dBA L₅₀-one hour contribution.
2. An interpretation that the standard is about "total ambient sound" is new, whether it is correct or not. Attached is a summary of how PCA/EERA/PUC have looked at the topic of noise for all recently-permitted wind farms. Note the Palmer's Creek Site Permit was granted earlier this month with the clear understanding "When ambient sound level already approaching or exceeding the 50 dBA threshold the Total Sound level exceeds 50 dBA."
3. A "total ambient" interpretation will have absurd and far-reaching results beyond wind energy facilities. Windy spots of Minnesota routinely experience ambient sound levels above 50 dBA. If that is the new limit, then all sources of "noise" must be limited, right?

Dan Litchfield | Director, Renewable Development

Inenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606

dlitchfield@inenergyllc.com | M 312-224-1400 | D 312-582-1057 | C 773-318-1289 | @InenergyLLC

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AFCL EXHIBIT E

From: Wachtler, John (COMM)
Sent: Sunday, September 16, 2018 4:01 PM
To: Kohlasch, Frank (MPCA)
Subject: Re: [EXTERNAL] Re: Freeborn Wind and MPCA sound standards

I think they were so focused on their "it's not a total sound level" argument they didn't really focus on measuring 45

Sent from my iPhone

On Sep 15, 2018, at 6:48 PM, Kohlasch, Frank (MPCA) <frank.kohlasch@state.mn.us> wrote:

John,

How did they think the 45 db condition would work before Tuesday? I don't understand how the MPCA letter changed anything for them, since the 1 db contribution when the background is high was always relative to the 50 db standard.

I'm not familiar with the language of the condition in the draft permit. Is the trigger for a potentially high background from wind and vegetation tagged to wind speed? That would avoid the need to measure a background level, absent turbine contributions.

Thanks,
Frank

Sent on the new Sprint Network from my Samsung Galaxy S®4

----- Original message -----

From: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Date: 09/15/2018 1:54 PM (GMT-08:00)
To: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>
Cc: "Kohlasch, Frank (MPCA)" <frank.kohlasch@state.mn.us>
Subject: Re: [EXTERNAL] Re: Freeborn Wind and MPCA sound standards

John,

Thanks for your message. I'm doing some family stuff now but will email later and would be happy to take you up on your offer and chat tomorrow.

I promise it's not a general whine. I think some of the wording in the permit conditions is inconsistent with your intent (7.4.1.1 - the two sentences are incompatible, and continuous monitoring for 12 months??), and I also think demonstrating compliance at 45 dba with a 50 DBA ambient may be technically impossible when following ANSI standards. I'll share details later.

Dan Litchfield
773-318-1289

AFCL EXHIBIT E

----- Original message -----

From: "Wachtler, John (COMM)" <john.wachtler@state.mn.us>
Date: 9/15/18 2:08 PM (GMT-06:00)
To: "Litchfield, Daniel" <DLitchfield@invenergyllc.com>
Cc: "Kohlasch, Frank (MPCA)" <frank.kohlasch@state.mn.us>
Subject: [EXTERNAL] Re: Freeborn Wind and MPCA sound standards

Dan, can you tell us more details about what you want to meet about?

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Sent from my iPhone

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Sincerely,

Dan Litchfield | Director, Renewable Development
Invenergy | One South Wacker Drive, Suite 1800, Chicago, IL 60606
dlitchfield@invenergyllc.com | 773-318-1289 | @InvenergyLLC

From: Kohlasch, Frank (MPCA) [<mailto:frank.kohlasch@state.mn.us>]
Sent: Wednesday, May 30, 2018 12:47 PM
To: Litchfield, Daniel <DLitchfield@invenergyllc.com>; Davis, Richard (COMM) <richard.davis@state.mn.us>; Wachtler, John (COMM) <john.wachtler@state.mn.us>
Cc: Michael Hankard <mhankard@hankardinc.com>
Subject: RE: Freeborn Wind and MPCA sound standards

Dan,

I checked John's schedule and my schedule and we can meet tomorrow from 10-11 am at the MPCA. I have reserved Conference Room 102 at the MPCA for a potential

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meeting. If this time doesn't work, please let me know and I will see if there is time Thursday afternoon.

Also, I want to be clear that the MPCA and Department of Commerce don't have a response prepared to the ALJ's report at this time. We continue to work together to develop the state's response and will provide more information once an approach has been reviewed by the leadership of both agencies. That said, we are willing to meet and listen to your concerns and proposals.

Thanks,
Frank

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From: Litchfield, Daniel <DLitchfield@inenergyllc.com>
Sent: Wednesday, May 30, 2018 8:36 AM
To: Davis, Richard (COMM) <richard.davis@state.mn.us>; Wachtler, John (COMM) <john.wachtler@state.mn.us>; Kohlasch, Frank (MPCA) <frank.kohlasch@state.mn.us>
Cc: Michael Hankard <mhankard@hankardinc.com>
Subject: Freeborn Wind and MPCA sound standards

Gentlemen:

I am seeking to convene a meeting of EERA, PCA and our team, mainly just me and Mike Hankard, our acoustic consultant. We can expand the group to include others, including attorneys, if that works for you.

I will be available to meet tomorrow between 10 am and 3 PM in the St. Paul area, or Friday morning and the earlier the better. Or we could look to next week.

Agenda-wise, I offer 3 topics of discussion and welcome your contributions/modifications:

1. We believe the PCA rules are very clearly about "noise" and not "ambient sound" and, thus, we have correctly designed our project (Freeborn Wind Energy LLC) to cause less than a 50 dBA L₅₀-one hour contribution.
2. An interpretation that the standard is about "total ambient sound" is new, whether it is correct or not. Attached is a summary of how PCA/EERA/PUC have looked at the topic of noise for all recently-permitted wind farms. Note the

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Palmer's Creek Site Permit was granted earlier this month with the clear understanding "When ambient sound level already approaching or exceeding the 50 dBA threshold the Total Sound level exceeds 50 dBA."

3. A "total ambient" interpretation will have absurd and far-reaching results beyond wind energy facilities. Windy spots of Minnesota routinely experience ambient sound levels above 50 dBA. If that is the new limit, then all sources of "noise" must be limited, right?

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"When you have some degree of wind, noise is in the 40s; when the wind is blowing hard, noise is in the 50s"

Pre-Construction Modeling Assumptions and Outcomes	Post-Construction Monitoring Times and locations	Post-Construction Monitoring Details and Results	Outcomes
Prairie Rose (10-425) Permitted: 2011 Built: 2012			
<p>[2011-preGuidance]</p> <p>Calibration factor of 2 dBA to account for uncertainty.</p> <p>Highest "project-related" modeled turbine noise was 45 dBA. (Application at 5-5).</p> <p>Ambient sound levels ranged from 30 dBA to 60 dBA.</p> <p>Total of turbine noise and ambient sound ("Total Sound Level") not calculated.</p>	<p>November 2013</p> <p>Measurements occurred during 7-day period in spring 2013. Background noise monitored at the same time as turbine noise through use of off site locations.</p>	<p>There were two measurements above the L 10 limit when looking at Total Sound. To determine compliance with MPCA standards, non-turbine noise was deducted.</p> <p>Representative range of operational noise conditions included at least one valid measurement hour from cut-in speed (3 m/s) through 9 m/s at hub height. Two data sets – one excluding extraneous noise events and periods of precipitation "(as requested by the Minnesota Department of Commerce)." (Post-Construction Noise Study Report at 15). "Sporadic or extraneous noise events included machinery, automobiles, persons on-site, and other noise not attributed to the Project or the natural environment (wildlife, rustling of vegetation, etc.) ... The noise monitoring data was also compared to wind speed data at microphone and hub height to identify how measured noise levels are affected by wind and turbine noise emissions." (Post-Construction Noise Study Report at 15).</p> <p>A second study was completed to remove exclusions allowed by MPCA for determining compliance. Dataset 2 excludes the same extraneous noise events as dataset 1. Dataset 2 also excludes periods of precipitation and high winds at microphone height, per MPCA procedures." (Post-Construction Noise Study Report at 15).</p>	<p>Report accepted. DOC-EERA recommended approval; Commission approved Post-Construction Noise Study Methodology on April 30, 2013</p>

Meetings + Concerns:
AWEIA, Wind on the Water, Turbines Manuf., other wind developers/competitors
- existing operators

- *Sound of the wind routinely exceeds 50 dBA*
- *Guidance (MPCA) is "missing a sentence": the source noise contribution w/ background subtracted out*
- *Turbines themselves are not "causing" the exceedance of the noise stud.*

Wind + Wind Turbine noise spectrum are similar, not the same (in Hz)
 - was post-processing to try and discriminate between wind spectrum and Turbine spectrum
 - challenges when the Wind spectrum and Turbine Spectrum look the very similar

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		<p>"As demonstrated during pre-construction noise measurement, existing sound levels in the Project area already exceeded MPCA noise limits. Therefore, determining the contribution of Project-related noise plays a large role in determining project compliance with MPCA." (Post-Construction Noise Study Report at 15-16).</p> <p>ML1 – 2 hours exceeded. Excess appears to be wind related but data could not be confirmed.</p> <p>BG2 – 2 hours exceeded. Presence of wind gusts suggest wind influenced exceedance.</p> <p>BG6 (no turbines) exceeded 50 dbA in 11 hours – similar preconstruction measurements had been taken.</p> <p>Highest measured L50 after exclusions was 49.3 dBA.</p>	
<p>Pleasant Valley (09-1197) Permitted: 2010/2014 Built: 2015</p>			
<p>Added 2 dB uncertainty factor to turbine sound power levels</p> <p>The Total Noise levels at each of the 713 receptors are below 50 dBA when ambient sound is not considered. When a 35 dBA ambient sound level is considered, one receptor, 1433, has a Total Sound level of 50.0 dBA .</p>	<p>August 2016</p> <p>5 locations (4 onsite, 1 offsite) monitored for 2 weeks in May–June 2016. Week 1 all turbines operational except for maintenance; week 2 40 turbines were off during nighttime hours.</p>	<p>There were two measurements above the L 10 limit based on turbines noise plus ambient sound identified through measurements. To determine compliance with MPCA standards, non-turbine noise was deducted:</p> <p>"Assessing contribution of the Project is essential to determine attribution as described under Appendix A of the LWECs Guidance." (Post-Construction Noise Assessment at 11).</p> <p>MO1 – 4 exceedances at L10, likely due to birds. Daytime exceedance not of L10 not considered (because occurred in daytime and below daytime standard).</p>	<p>Commission approved Post-Construction Noise Measurement Study on January 27, 2016 Report accepted. No further action.</p>

Distortion issue at 11 mps has been solved w/ more microphone shielding
 still get ~~noise~~ sound from trees + vegetation at 11 mps ² → even at 4 mps _{5 meters} ^{eters}

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NY uses WHO's annual noise stud

- reg. data for : a) prot./distribution of wind speeds by distribution of wind turbine operation → noise

c) prot./distribution of atmospheric propagation characteristics (e.g. calm is high propagation)

		<p>M02- 4 hours of exceedances at L10, likely due to bird chirping.</p> <p><u>"In order to properly determine the sound contribution of the facility, the ambient sound level must be deducted from the total noise measured."</u> (Post-Construction Noise Assessment at 51).</p> <p>"Using the polynomial functions, the A-weighted Leqs are estimated for each wind speed (WS) bin for both the turbine ON and OFF periods. The logarithmic difference between the polynomial values was then calculated, as a way of estimating the facility's noise contribution to the cumulative sound levels at M04. The maximum arithmetic difference between the polynomial curves for the turbine ON and OFF periods is 5.4 dB at an average wind speed of 8.5 m/s, while the maximum logarithmic difference, which corresponds to the estimated facility noise contribution, is 44.1 dBA and occurs at an average wind speed of 9.5 m/s." (Post-Construction Noise Assessment at 52).</p> <p>"The analysis therefore indicates that the maximum facility contribution at M04 of 44.1 dBA, estimated as an Leq value which is closely equivalent to the L50 for turbine sound, is well below the maximum permissible nighttime value of 50 dBA. This confirms that any exceedance of the MPCA limits would be largely attributed to sounds from the existing environment and not the facility." (Post-Construction Noise Assessment at 53).</p>	
Odell (13-843)			

Invenez modeling uses a Ground Effect buffer of $Q = \frac{1}{3}$ all paved surfaces (hard) w/ no absorptive land cover ; other modelers will use a factor of 0.5 which will lead to a noise reduction of 3 dBA ;

OH: Ambient floor level of 42.3 dBA + wind can add no more than 6 dBA, so the ^{max.} value is 48.3 dBA

Permitted: 2014 Built: 2016			
2013	October 2017	Extraneous noises excluded. Removed high winds (<11 mph) and precipitation events.	Commission approved Post-Construction Noise Measurement Study Protocol on August 22, 2016.
<p>Observed ambient sound exceeding 50 dBA.</p> <p>Added turbine noise to multiple levels of ambient noise, 40, 50, and 60 dBA.</p> <p>Noted that Total Sound did not exceed 50 dBA assuming a 40 dBA ambient level.</p> <p>Total Sound exceed 50 dBA when ambient sound level was 50 dBA or above. (See Table 6 of Noise Analysis)</p>	<p>Measurements at 6 locations over two week period in July and August 2017. 4 on-site locations and 2 off-site locations.</p>	<p>There was one measurement of turbine noise plus ambient that was above the L10 level. To determine compliance with MPCA standards, non-turbine noise was deducted:</p> <p>ML-4 had 1 hour of exceedance at L10. To attempt to determine contribution of turbine emissions, measurement data from background locations can be logarithmically subtracted from on-site data (reference to Appendix A of Guidelines).</p> <p>"Exceedances of the MPCA noise standards for the one hour accounts for 0.4% of these 277 hours, indicating that 99.6% of the monitoring period was in compliance with the MPCA standard. This is considered acceptable in the context of regulating wind turbine noise emissions in Minnesota." (Post-Construction Noise Survey Report at 27).</p>	<p>Report accepted.</p>
Elm Creek II (09-553) Permitted: 2010 Built: 2013			
<p>Modeling of turbine noise only. Showed levels below 50 dBA.</p> <p>The maximum distances calculated where an exceedance of the 50 dBA limit would no longer occur is 190 m (623 ft) for the GE 1.5 MW turbine, 248 m (813 ft) for the Gamesa 2.0 MW turbine, 357 m (1,171 ft) for</p>	<p>2011 (pre EERA Guidance)</p> <p>Measured at 4 locations in project area and 1 outside project area. Measured over 12 days.</p>	<p>The Post-construction Study measured "Total Noise" (ambient plus Project).</p> <p>"Given the potential influence of non-Project sounds on the L10 metric, it is expected that the measured ambient-plus-Project L10 sounds levels may routinely exceed the predicted Project-only levels." (Report at 7).</p>	<p>"The measured ambient-plus-Project sound levels were found to correspond well with model-predicted levels and therefore to</p>

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<p>the Mitsubishi 2.4 MW turbine, and 240 m (788 ft) for the Vestas 3.0 MW turbine.” (Application at 5-4).</p> <p>According to the Post-Construction Noise Report, the predicted sound level at one site was 53 dBA.</p>		<p>The measured Total Noise levels were less than 50 dBA for greater than 99 percent of the noise monitoring period. (Report at 13).</p> <p>“The measured ambient-plus-Project L10 levels occasionally exceeded the predicted Project level, but ... the L10 metric is not representative of Project sound levels and these exceedances are reasonably expected given the influence of other noise sources such as agricultural activities, birds, insects, thunder, and intermittent traffic on the adjacent road. The most representative comparison of the Project levels is the provided by the nighttime L50, as sources of extraneous noise are limited at night and the L50 metric is less influenced by extraneous short-duration events. The measured ambient-plus-Project levels for nighttime L50 were within predicted levels for more than 99 percent of the study duration.” (Report at 14).</p>	<p>comply with the State noise standards for more than 99 percent of the study duration.”</p> <p>Commission approved Sound Monitoring Protocol on March 14, 2011. Report accepted.</p>
<p>Community Wind South (11-863) Permitted: 2012 Built: 2012</p>			
<p>2011 (Pre-Guidance) Ground attenuation 0.5</p> <p>Ambient L50 sound levels ranged from 49 to 55 dBA during both the daytime and nighttime.</p> <p>Modeling assumed ambient L50 sound at 40 dBA, 50 dBA, and 60 dBA.</p> <p>When assuming ambient sound levels of 50 dBA, the predicted Total Noise levels ranged from 50.0 dBA</p>	<p>Plan submitted in 2012</p>	<p>No monitoring results available on eDockets.</p>	<p>Modelling indicated no turbine noise at residence over 42 dBA</p>

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<p>to 50.7 dBA, indicating that the change in sound levels caused by the wind farm would range from 0.0 dBA to 0.7 dBA.</p> <p>The modeling estimated that the turbine noise impact from the proposed turbines on any receptor within the Project Area will not be greater than 42.7 dBA.</p>			
<p>Blazing Star (16-686) (Blazing Star 2 took similar approach not separately summarized here) Permitted: 2017 Built: est. 2019</p>			
<p>Ground attenuation 0.7 2 dB uncertainty factor used</p> <p>Daytime sound levels throughout the project area generally ranged between 27 and 47 dBA, while nighttime sound levels were generally between 22 and 44 dBA.</p> <p>Modelled receivers at 2 heights.</p> <p>Presented average, max and min L50 for turbine noise.</p> <p>Maximum Project-only noise L50 ranged from 46 to 49 dBA.</p> <p>Added average L50 ambient noise at each location to modelled turbine</p>			<p>Permit granted</p>

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<p>noise. Presented overall nighttime L50 results. Appendix provides total noise at 35, 40, 45, 50, and 55 dBA ambient conditions for each receptor. Total noise exceeded 50 dBA when ambient sound was assumed to be 50 dBA. (Appendix A to Noise Analysis)</p> <p>“When added to the overall nighttime L50 from monitored locations, sound levels remain below 50 dBA, but the background L50 does and will vary from hour to hour, as shown in the monitor results.” (Noise Analysis at 55).</p>			
<p>Red Pine (16-618) Permitted: 2017 Built: 2017</p>			
<p>4 locations monitored for ambient sound. Concluded average daytime L50 ambient was 35 dBA, nighttime 28 dBA.</p> <p>Turbines were modeled at manufacturers sound power level and in “worst case” with 2dB uncertainty factor added.</p> <p>Ambient 35 dBA added to nighttime and 40 dBA added to daytime levels.</p> <p>Maximum noise was 49.2 dBA.</p>	<p>Not yet completed.</p>		<p>Permit granted</p>
<p>Nobles 2 (17-597)</p>			

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Permitted: est. 2018			
<p>Observed average L50 daytime ambient of 37 dBA, nighttime 32 dBA.</p> <p>48.8 dBA max modelled turbine noise level representing the "loudest realistic noise from the turbines"; ambient noise assumption not specified.</p>			<p>Permit decision expected summer 2018</p>
Bitter Root (17-749) Permitted: est . 2018			
<p>Oct 2017</p> <p>Assumed Vestas with serrated trailing edge operating in Noise Mode 0 and 40 turbines when only 37 will be constructed.</p> <p>Highest modeled receptor was 46.7 dBA for Total Sound.</p> <p>Considered 35 dBA to be representative ambient nighttime noise. Added a "typical rural ambient background sound (35 dBA) to modeled results and compared to the Noise Standards."</p>			<p>Permit pending</p>
Freeborn Wind (17-410) Permitted: est. 2018			
			<p>Permit pending</p>

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<p>Observed nighttime ambient noise levels at the measurement locations ranging from 29-51 dB(A) L₉₀</p> <p>The predicted total noise level at each receptor assumed a range of ambient noise levels: (33 dB(A)), the highest ambient noise level (57 dB(A)), and three intermediate turbine noise levels (40, 45, and 50 dB(A)).</p> <p>The turbine-only noise levels chosen represent the highest single predicted turbine-only noise level on the project (~49 dB(A)), the next highest predicted turbine-only noise level (47 dB(A)), a level 3 dB(A) below this (44 dB(A)), and 40 dB(A). The range of ambient levels chosen represent ~5 dB(A) increments between the highest and lowest ambient noise levels measured at the site during wind conditions in which the turbines would have operated.</p> <p>When assuming ambient sound levels are 45 dB(A) or less, total sound levels are 50 dB(A) or less regardless of the turbine-only noise level. When ambient noise levels are in the 45 to 50 dB(A) range, turbines contribute to the total</p>			
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<p>when turbine-only noise levels are about 44 dBA or greater. The degree of contribution (attribution) is dependent on which level is greater, that of the turbines or that of all other ambient noise sources.</p> <p>Once ambient noise levels exceed 50 dB(A), the total noise level of course also exceeds 50 dB(A), but the turbines are not a significant contributor.</p>			
<p>Palmer's Creek (17-265)</p>			
<p>Feb 2017</p> <p>Monitored ambient levels at 4 locations (3 in and 1 outside Project Area) for 7 days in Jan 2017</p> <p>Several sites exceeded noise standards preconstruction. Ambient levels ranged from L50 45.1 to 60.4 dBA.</p> <p>Depicted Total Sound assuming 35, 40, 45, 50, 55 and 60 dBA ambient levels.</p> <p>When ambient sound level already approaching or exceeding the 50 dBA threshold the Total Sound level exceeds 50 dBA."</p>			<p>Site Permit granted May 10, 2018, order pending</p>
<p>Stoneray (13-216) Permitted: 2014/2018</p>			

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<p>2017 Noise Analysis for SP amendment</p> <p>Max modeled turbine-only sound level was 48.4 dBA at any receptor.</p> <p>Assumed ambient levels of 40 dba (nighttime) 55 dBA (daytime). “Using both of these values and the highest modeled sound level at any receiver (48.4 dBA) to calculate overall sound levels, the maximum sound level at night is estimated to be 49.0 dBA and 55.9 dBA during the day.” (Application at 17).</p>			<p>Permit amendment issued 2/2018</p>
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BEFORE THE

PUBLIC SERVICE COMMISSION OF WISCONSIN

APPLICATION FOR A CERTIFICATE OF)
PUBLIC CONVENIENCE AND NECESSITY OF) Docket No.
BADGER HOLLOW SOLAR FARM, LLC, TO)
CONSTRUCT A SOLAR ELECTRIC GENERATION) 9697-CE-100
FACILITY, TO BE LOCATED IN IOWA)
COUNTY, WISCONSIN)

APPLICATION FOR A CERTIFICATE OF)
PUBLIC CONVENIENCE AND NECESSITY OF) Docket No.
BADGER HOLLOW SOLAR FARM, LLC, TO)
CONSTRUCT AN ELECTRIC TIE LINE TO) 9697-CE-101
CONNECT A SOLAR ELECTRIC GENERATION)
FACILITY TO THE EXISTING TRANSMISSION)
SYSTEM, TO BE LOCATED IN IOWA COUNTY,)
WISCONSIN)

EXAMINER MICHAEL NEWMARK, PRESIDING

Tr. 45-234 PARTY HEARING SESSION

Reported By:

LYNN M. BAYER, RPR, RMR,
Halma Reporting Group
(414) 271-4466

HEARING HELD:

January 16, 2019

Public Service Commission
Madison, Wisconsin

EXHIBITS:

Hankard 2, MaRous 2,
Litchfield 20, 21
Palmer 6

10:00 a.m.

1 A I do recall that.

2 Q Do you believe that it would have been appropriate to
3 apply a ground factor of 0.2 or 0.3 to your analysis
4 of the Badger Hollow project?

5 A No.

6 Q Why not?

7 A The model that we use has been shown to predict
8 conservatively with 0.5. I mean, 0.5 ground factor
9 is used in probably -- well, with the exception
10 perhaps of wind turbine projects which are different
11 because the source is elevated. But for projects
12 like a typical power plant, a solar plant where the
13 sources are relatively close to the ground, I would
14 say 90 to 99 percent of the studies use 0.5. And
15 when consultants like myself go out and measure these
16 plants after they're constructed to verify our
17 modeling assumptions, that assumption checks out as
18 being, if anything, overpredicting the levels. So
19 there's no need to -- there would be no justification
20 to use something like a .2 or .3 which would predict
21 yet higher levels because we're already demonstrating
22 that the model is probably overpredicting. So that
23 would not be justified for those reasons.

24 MR. NOWICKI: Thank you. No further
25 questions.

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Freeborn FOF

values. All but one of the [six] closest residences meets that threshold.”¹⁹⁴ Mr. MaRous conducted a site specific assessment of the residence located 1,189 feet from the nearest turbine to determine whether there would be an effect on its value. The primary landowner lives on property in Iowa with wind turbines and stated that he believes the turbine lease and location, as proposed, will not have a negative impact on the property value. Accordingly, Mr. MaRous concluded that the Project will not adversely affect land values.¹⁹⁵

126. There is no evidence in the record that shows a Property Value Guarantee (“PVG”) is warranted for the Project. First, the record evidence demonstrates the Project will not negatively impact property values in the Project area. Further, neither DOC-EERA nor the Commission can efficiently or effectively administer a Site Permit condition that would require Freeborn Wind to establish PVGs with homeowners; nor would it be feasible to direct a local government department to implement and administer such a program.¹⁹⁶

127. The record demonstrates that the Project will not negatively impact property values or participating or non-participating landowners, within or near the Project Area.¹⁹⁷

D. Noise

128. The operation of wind turbines produces noise.¹⁹⁸ “Noise” is defined as “any sound *not occurring in the natural environment*, including, but not limited to, sounds emanating from aircraft and highways, and industrial, commercial, and residential sources.”¹⁹⁹ The level of noise varies with the speed of the turbine and the distance of the listener from the turbine.²⁰⁰

129. LWECs, along with all other sources of man-made noise, must comply with the MPCA’s Noise Standards found in Minn. R. Ch. 7030.²⁰¹ The Noise Standards regulate noise from the operation of the wind turbines and other project-related sources. The Noise Standards limit the sound pressure level, measured in decibels, using the A-weighted scale (dB(A)).²⁰² The Noise Standards specify both L₁₀ and L₅₀ limits for one hour periods for daytime and nighttime hours.²⁰³ L₁₀ is the sound pressure level exceeded ten percent of the time for a one hour survey, and L₅₀ is the sound pressure level exceeded 50 percent of the time for a one hour survey.²⁰⁴

130. The Noise Standards are specific to the type of land use adjacent to the Project. The most stringent limits are for Noise Area Classification (“NAC”) 1, which includes household

¹⁹⁴ Ex. FR-9 at 6-7 (MaRous Direct). Three times the turbine height for the V110 model is 1,329 feet and for the V116 model is 1,359 feet. *Id.* at 7.

¹⁹⁵ Ex. FR-9 at 7 (MaRous Direct). The owner of this residence, Paul Follmuth, expressed his strong support for the Project at the public hearing. *See* Public Hearing Tr. at 180-183 (Feb. 20, 2018) (Follmuth).

¹⁹⁶ *See* Ex. EERA-8 at 13 (Comments and Recommendations on a Preliminary Draft Site Permit).

¹⁹⁷ *See* Ex. FR-9 at 3-4, 7 (MaRous Direct); Ex. EERA-8 at 13 (Comments and Recommendations on a Preliminary Draft Site Permit) (citing studies and surveys of Minnesota counties showing that “neither properties hosting turbines nor those adjacent to those properties” “have been negatively impacted by the presence of wind farms.”).

¹⁹⁸ Ex. FR-5 at 4 (Hankard Direct).

¹⁹⁹ Minn. Stat. § 116.06, subd. 15 (emphasis added).

²⁰⁰ Ex. FR-5 at 4 (Hankard Direct).

²⁰¹ Minn. Stat. § § 116.07(c) and 216E.03, subd. 7(d) and Minn. R. Ch. 7030.

²⁰² Minn. R. 7030.0020 and 7030.0040.

²⁰³ Minn. R. 7030.0040.

²⁰⁴ Minn. R. 7030.0020, subp. 7 and 8.

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units, including farm houses.²⁰⁵ In NAC 1, the nighttime noise limit is 50 dB(A).²⁰⁶ The Noise Standards also contain specific measurement procedures to be used for accurately measuring the noise from the source only, while taking care not to include noise from “background noise”, which is defined as “any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc.”²⁰⁷ The MPCA provides guidance on the implementation of its Noise Standards.²⁰⁸

131. The MPCA separately defines sound occurring in the natural environment. “Background, or ambient, noise” consists of “all noise sources other than the noise source of concern.”²⁰⁹ Because wind is often a major source of background noise, it can frequently present problems when trying to isolate and monitor a specific source of noise.²¹⁰ Accordingly, MPCA’s measurement protocols and guidance state that high wind and rainy weather conditions should be avoided when measuring the noise source.²¹¹ Further, when analyzing a specific noise source along with other noise sources, correction factors can be used to isolate the noise source being monitored and calculate its individual noise level. Specifically, total noise levels from all sources are to be measured and recorded. Then the noise source being measured should be turned off, and a noise level reading taken with all other existing noise sources in operation. Then, the background noise is subtracted from the total noise level to find the noise level of the source being measured.²¹² It is the source noise that must meet the levels set in the Noise Standards.

132. DOC-EERA issued the “Guidance for LWECs Noise Study Protocol and Report” in 2012 addressing post-construction measurement protocols in an effort to standardize sound monitoring methodologies, analysis and presentation.²¹³ The Guidance document intended to assist permittees in conducting post-construction noise compliance surveys; it does not provide detailed recommendations or guidance on pre-construction noise modeling analysis.²¹⁴ Further, the Guidance document is a recommendation from DOC-EERA; it is not binding on applicants or permittees.²¹⁵

133. As part of its Application, Freeborn Wind measured background noise levels and conducted a Noise Analysis to model the predicted project-related noise to ensure that its proposed project layout will comply with the Noise Standards.²¹⁶ Freeborn Wind’s Noise Analysis measured background noise levels in the Project Area to characterize the existing

²⁰⁵ Minn. R. 7030.0050, subp. 2.

²⁰⁶ Minn. R. 7030.0040, subp. 2.

²⁰⁷ Minn. R. 7030.0060 and “A Guide to Noise Control in Minnesota; Acoustical Properties, Measurement, Analysis and Regulation,” MPCA (November 2015) available at: www.pca.state.mn.us (accessed March 8, 2018) [hereinafter “MPCA Guide”] at 13.

²⁰⁸ See, e.g., MPCA Guide.

²⁰⁹ MPCA Guide at 11.

²¹⁰ *Id.*

²¹¹ Minn. R. 7030.0060 and MPCA Guide at 11.

²¹² MPCA Guide at 12.

²¹³ Ex. EERA-9 (2012 Noise Protocol Guidance).

²¹⁴ Ex. EERA-9 (2012 Noise Protocol Guidance) and Evidentiary Hearing Tr. Vol 2 at 183, 186 (Feb. 22, 2018) (Davis).

²¹⁵ Evidentiary Hearing Tr. Vol. 2 at 184 (Feb. 22, 2018) (Davis).

²¹⁶ See Ex. FR-1, Appendix B (Application).

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acoustic environment as it relates to wind turbine operations.²¹⁷ Background noise levels vary significantly in the Project Area, depending on many factors such as the presence of traffic, wind speed, prevailing atmospheric conditions, and time of day.²¹⁸

134. Observed nighttime background noise levels ranged from 29 to 51 dB(A) L_{90} ²¹⁹ during conditions under which the turbines would have operated.²²⁰ The average background noise L_{50} levels range from 33 to 57 dB(A) under conditions during which the turbines would operate (“Critical” and “Full Power” turbine operations). The average background noise L_{10} levels range from 37 to 60 dB(A) under conditions during which the turbines would operate (“Critical” and “Full Power” turbine operations).²²¹

135. The Noise Analysis also modeled noise levels expected from the Project turbines and main transformers. Turbine noise levels expected from full operation of the Project will be 50 dB(A) (one-hour L_{50}) or less at all residences in the area at all times and under all operating and atmospheric conditions. With the exception of one residence, where maximum turbine noise levels are predicted to be 48.9 dB(A), the noise levels from the Project are predicted to be 47 dB(A) or less.²²²

136. This modeling was conducted using conservative assumptions. These are the loudest one-hour levels expected to occur, and the modeling assumes all turbines were operating and producing maximum acoustic output, these emissions propagate out fully in all directions, and that atmospheric conditions will be relatively ideal for the propagation of sound.²²³ In addition, the predicted turbine-only noise levels include the other conservative modeling inputs described in the Noise Analysis, such as a ground factor of 0.0, air temperature of 10°C, and 70 percent relative humidity, resulting in the least amount of ground and atmospheric sound absorption and the highest levels of sound reaching the receivers.²²⁴ Also, 52 of the northernmost turbines located in Iowa were included in the model.²²⁵ Accordingly, these are the loudest one-hour levels expected to occur, and much of the time turbine noise levels will be less.²²⁶ Freeborn Wind’s acoustical expert has verified these conservative assumptions through field measurements at other operating wind projects.²²⁷

137. Freeborn Wind also predicted the total sound level at receptors in the Project Area by logarithmically adding the background noise level to the turbine-only noise level.²²⁸ Estimating total noise levels pre-construction provides a data set to compare to post-construction

²¹⁷ Ex. FR-5 at 9 (Hankard Direct).

²¹⁸ Ex. FR-1, Appendix B at 4, 9 (Application).

²¹⁹ The L_{90} is the most commonly used metric used to quantify background noise levels, and represents the noise level exceeded 90 percent of the measurement interval. Ex. FR-18 at 1 (Hankard Affidavit and Noise Tables).

²²⁰ Ex. FR-1, Appendix B at 9 (Application)

²²¹ Ex. FR-18 at 2, 4 (Hankard Affidavit and Noise Tables).

²²² Ex. FR-5 at 11 (Hankard Direct); *see also* Ex. FR-18 at 5-8, 9 (Hankard Affidavit and Noise Tables).

²²³ Ex. FR-1, Appendix B at 13 (Application); Ex. FR-18 at 2 (Hankard Affidavit and Noise Tables).

²²⁴ Ex. FR-1, Appendix B at 12-13 (Application).

²²⁵ Ex. FR-1, Appendix B at 11 (Application).

²²⁶ Ex. FR-5 at 11 (Hankard Direct); Ex. FR-1, Appendix B at 13 (Application).

²²⁷ Ex. FR-5 at 12 (Hankard Direct).

²²⁸ Ex. FR-18 at 2 (Hankard Affidavit and Noise Tables).

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measured noise levels.²²⁹ Post-construction, total noise must be measured and then background noise levels must be subtracted from the total to estimate the turbine-only noise contribution.²³⁰ The degree of contribution (attribution) is dependent on which level is greater: that of the turbines or that of all other background noise sources.²³¹

138. The results of this analysis show that, when background noise levels are 45 dB(A) or less, total sound levels are 50 dB(A) or less regardless of the turbine-only noise level. When background noise levels are in the 45 to 50 dB(A) range, turbines contribute to the total when turbine-only noise levels are approximately 44 dB(A) or greater. Once background noise levels exceed 50 dB(A), the total sound level exceeds 50 dB(A), but the turbines are not a significant contributor.²³² Due to the conservative nature of the turbine-only noise modeled for the Project, it can be confidently concluded that the Project will comply with the Noise Standards once operational.²³³

139. At the evidentiary hearing and in public comment, there was some discussion of the language in Appendix A of Ex. EERA-9, specifically the sentence under modeling that reads “Developers should not propose projects where total noise is estimated to exceed the noise standards at receptor property” and whether the Noise Standards sets limits on “total noise” or “project-related (i.e., turbine) noise.”²³⁴ The MPCA comment letter to the 2012 Noise Guidance uses imprecise language throughout. That sentence and the modeling and compliance discussions that followed can only be interpreted to mean project-related noise levels cannot exceed the Noise Standards. Any other interpretation would be inconsistent with the definition of noise in Minn. Stat. § 116.06, subd. 15.

140. Public comments also raised concerns regarding LFN and infrasound.²³⁵ LFN is generally defined as having a frequency between 20 and 200 Hertz (“Hz”).²³⁶ Wind turbines also produce infrasound, which is generally defined as sound in the approximately 1 to 20 Hz frequency range. The levels of infrasound produced by wind turbines are many orders of magnitude below currently accepted thresholds of human hearing. Thus, the amount of infrasound produced by wind turbines cannot be heard at all.²³⁷

141. Limiting wind turbine noise emissions using a dB(A) standard (such as the Noise Standards) automatically limits LFN and infrasound. Wind turbine noise has a relatively consistent spectral (frequency) shape; thus, once one part of the spectrum is limited, the rest of the spectrum is limited as well.²³⁸ The 50 dB(A) limit at residences controls Project LFN levels

²²⁹ Ex. EERA-9, Appendix A (2012 Noise Guidance).

²³⁰ Ex. EERA-9, Appendix A (2012 Noise Guidance) and MPCA Guide at 12.

²³¹ Ex. FR-18 at 2-3 (Hankard Affidavit and Noise Tables).

²³² Ex. FR-18 at 2-3, 9 (Hankard Affidavit and Noise Tables).

²³³ Evid. Hearing Tr. Vol. 1B at 112 (Feb. 21, 2018) (Hankard).

²³⁴ See e.g., Evidentiary Hearing Tr. Vol. 2 at 185 (Feb. 22, 2018) (Davis) and Comment of Kristi Rosenquist (March 14, 2019) (eDockets No. 20183-140988-01).

²³⁵ E.g., Comment by Kristi Rosenquist (Oct. 6, 2017) (eDocket No. [201710-136197-01](#)); Comment by Brian Olson (Oct. 9, 2017) (eDocket No. [201710-136293-01](#)); Comment by Erik Nelson (Oct. 9, 2017) (eDocket No. [201710-136273-01](#)).

²³⁶ Ex. FR-5 at 5 (Hankard Direct). LFN is most commonly quantified using the C-weighted decibel (“dB(C)”). *Id.*

²³⁷ Ex. FR-5 at 5-6 (Hankard Direct).

²³⁸ Ex. FR-5 at 7 (Hankard Direct).

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to approximately 60 dB(C) or less at residences, and limits infrasound to levels orders of magnitude below the human hearing threshold.²³⁹ Accordingly, no additional mitigation of LFN or infrasound is supported by the record.

142. The record demonstrates that Freeborn Wind has taken steps to avoid and minimize impacts from Project-related noise. Further, the Draft Site Permit contains adequate conditions to monitor and mitigate the noise from the Project. Draft Site Permit Condition 4.3 requires turbines to be placed in appropriate locations to ensure compliance with the Noise Standards.²⁴⁰ Due to the conservative nature of the turbine-only noise modeled for the Project and, it can be concluded that the Project will comply with the Noise Standards once operational.

E. Shadow Flicker

143. Shadow flicker from wind turbines occurs when rotating wind turbine blades move between the sun and the observer. When the blades rotate, this shadow creates a pulsating effect, known as shadow flicker. For shadow flicker to occur, the sun must be shining with no clouds to obscure it, the rotor blades must be spinning and must be located between the receptor and the sun, and the receptor must be sufficiently close to the turbine to be able to distinguish a shadow created by it.²⁴¹

144. Shadow flicker intensity and frequency at a given receptor are determined by a number of interacting factors, including: sun angle and sun path, turbine and receptor locations, cloud cover and degree of visibility, wind direction, wind speed, obstacles, contrast, and local topography.²⁴²

145. While some residents may find shadow flicker annoying, there is no scientific data that suggests that shadow flicker exposure, at the rates that are anticipated from the proposed turbine models, will cause negative human health impacts.²⁴³

146. Shadow flicker from turbines is not harmful to the health of photosensitive individuals, including those with epilepsy.²⁴⁴ Seizures that occur as a result of flashes of light (a condition known as photic-stimulated epilepsy) happen as a result of frequencies greater than 5 Hz, usually substantially higher.²⁴⁵ The frequency of any shadow flicker from wind turbines will be approximately 0.5-1 Hz, which is considerably below the range that would elicit a seizure even in someone who is vulnerable to seizures as a result of flashes of light.²⁴⁶ The maximum speed of the turbines will result in 14.88 blade revolutions per minute, which equates to 0.75

²³⁹ Ex. FR-5 at 7 (Hankard Direct).

²⁴⁰ Draft Site Permit at 3 (Jan. 30, 2018) (eDocket No. [20181-139549-01](#)).

²⁴¹ Ex. FR-1, Appendix C at 2-3 (Application).

²⁴² Ex. FR-1, Appendix C at 2-3 (Application).

²⁴³ Ex. EERA-8 at 18 (Comments and Recommendations on Preliminary Draft Site Permit); *see also* Ex. FR-6, Sched. 2 at 6 (Roberts Direct); Ex. FR-6, Sched. 5 at 8-9 (Roberts Direct); Ex. FR-6, Sched. 16 at 127 (Roberts Direct); Ex. FR-6, Sched. 25 at 4 (Roberts Direct); Ex. FR-6, Sched. 26 at 16 (Roberts Direct).

²⁴⁴ Ex. FR-7 at 5 (Corrected Ellenbogen Direct); *see also* Ex. FR-6, Sched. 2 at 6 (Roberts Direct); Ex. FR-6, Sched. 6 at 14 (Roberts Direct); Ex. FR-6, Sched. 26 at 16 (Roberts Direct); Ex. FR-6, Sched. 29 at 37 (Roberts Direct).

²⁴⁵ Ex. FR-7 at 5 (Corrected Ellenbogen Direct).

²⁴⁶ Ex. FR-7 at 5 (Corrected Ellenbogen Direct).

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changes to residential properties caused by wind turbines. The county assessors all stated that wind turbines had no impact on land values in their counties.⁷² There was one report of a tax valuation appeal based on proximity to wind turbines, but it was denied due to lack of evidence.⁷³

Mr. MaRous's un rebutted testimony demonstrates that the Project will not adversely affect land values in the Project Area.⁷⁴

D. Noise.

LWECS, along with all other "sources" of man-made noise, must comply with the MPCA's Noise Standards found in Minnesota Rules Chapter 7030.⁷⁵ Draft Site Permit Condition 4.3 requires turbines to be placed in appropriate locations to ensure compliance with the Noise Standards.⁷⁶

"Noise" is defined as "any sound *not occurring in the natural environment*, including, but not limited to, sounds emanating from aircraft and highways, and industrial, commercial, and residential sources."⁷⁷ In this case, the Noise Standards regulate noise from the operation of the wind turbines and other project-related sources. The Noise Standards limit the sound pressure level, measured in decibels, using the A-weighted scale ("dB(A)").⁷⁸ The Noise Standards specify both L₁₀ and L₅₀ limits for one hour periods for daytime and nighttime hours.⁷⁹ L₁₀ is the

⁷² Ex. FR-1, Appendix E at 34 (Minnesota) at 35 (Illinois) (Application); Ex. FR-9 at 5-6 (MaRous Direct).

⁷³ Ex. FR-9 at 6 (MaRous Direct).

⁷⁴ Ex. FR-9 at 4-5 (MaRous Direct).

⁷⁵ Minn. Stat. §§ 116.07(c) and 216E.03, subd. 7(d) and Minn. R. Ch. 7030.

⁷⁶ Draft Site Permit at 3 (Jan. 30, 2018) (eDocket No. 20181-139549-01).

⁷⁷ Minn. Stat. § 116.06, subd. 15 (emphasis added).

⁷⁸ Minn. R. 7030.0020 and 7030.0040.

⁷⁹ Minn. R. 7030.0040.

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sound pressure level exceeded ten percent of the time for a one hour survey, and L₅₀ is the sound pressure level exceeded 50 percent of the time for a one hour survey.⁸⁰

The Noise Standards in Minn. R. 7030.0040 are specific to the type of land use adjacent to the Project and apply to all “sources.” The most stringent limits are for Noise Area Classification (“NAC”) 1, which includes household units, including farm houses.⁸¹ For NAC1, the noise limits are as follows:⁸²

NAC	Daytime		Nighttime	
	L ₅₀	L ₁₀	L ₅₀	L ₁₀
NAC1	60	65	50	55

The Noise Standards also contain specific measurement procedures to be used for accurately measuring the noise from the source only, while taking care not to include “background noise”, which is defined as “any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc.”⁸³ The MPCA provides guidance on the implementation of its Noise Standards and how to measure the “source” to determine compliance.⁸⁴

The MPCA separately defines sound occurring in the natural environment. “[B]ackground, or ambient, noise” consists of “all noise sources other than the noise source of concern.”⁸⁵ Because wind is often a major source of background noise, it can frequently present problems when trying to isolate and monitor a specific source of noise.⁸⁶ Accordingly, MPCA’s measurement protocols and guidance state that high wind and rainy weather conditions should be

⁸⁰ Minn. R. 7030.0020, subp. 7 and 8.

⁸¹ Minn. R. 7030.0050, subp. 2.

⁸² Minn. R. 7030.0040, subp. 2.

⁸³ Minn. R. 7030.0060 and MPCA Guide at 13.

⁸⁴ See, e.g., MPCA Guide.

⁸⁵ MPCA Guide at 11.

⁸⁶ *Id.*

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avoided when measuring the noise source.⁸⁷ Further, when analyzing a specific noise source along with other noise sources, correction factors can be used to isolate the noise source being monitored and calculate its individual noise level.⁸⁸ Specifically, total noise levels from all sources, i.e., the noise source of interest and the background noise are to be measured and recorded.⁸⁹ Then the noise source being measured should be turned off, and a noise level reading taken with all other existing noise sources in operation.⁹⁰ Then, the background noise is subtracted from the total noise level to find the noise level of the source being measured.⁹¹

Because LWECS, like the Project, are necessarily sited in windy areas of the state to most efficiently capture the wind resource, separating the wind turbine noise and background noise levels is paramount for determining compliance with the Noise Standards. Recognizing the need to standardize sound monitoring methodologies, analysis and presentation, DOC-EERA issued the “Guidance for LWECS Noise Study Protocol and Report” in 2012 addressing post-construction measurement protocols.⁹² This Guidance document is a recommendation from DOC-EERA; it is not binding on applicants or permittees.⁹³ Moreover, the Guidance is intended to assist permittees in conducting **post-construction** noise compliance surveys, it does not provide detailed recommendations or guidance on pre-construction noise modeling analysis.⁹⁴

As part of its Application, Freeborn Wind measured background noise levels and conducted a Noise Analysis to model the predicted project-related noise to ensure that its

⁸⁷ Minn. R. 7030.0060 and MPCA Guide at 11.

⁸⁸ MPCA Guide at 12.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² Ex. EERA-9 (2012 Noise Protocol Guidance).

⁹³ Evidentiary Hearing Tr. Vol. 2 at 184 (Feb. 22, 2018) (Davis).

⁹⁴ Ex. EERA-9 (2012 Noise Protocol Guidance) and Evidentiary Hearing Tr. Vol 2 at 183, 186 (Feb. 22, 2018) (Davis).

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proposed Project layout will comply with the Noise Standards.⁹⁵ Freeborn Wind's Noise Analysis measured background noise levels in the Project Area to characterize the existing acoustic environment as it relates to wind turbine operations.⁹⁶ Background noise levels vary significantly in the Project Area, depending on many factors, such as the presence of traffic, wind speed, prevailing atmospheric conditions, and time of day.⁹⁷ Observed nighttime background noise levels ranged from 29 to 51 dB(A) L₉₀ during conditions under which the turbines would have operated.⁹⁸ The average background noise L₅₀ levels range from 33 to 57 dB(A) under conditions during which the turbines would operate ("Critical" and "Full Power" turbine operations).⁹⁹ The average background noise L₁₀ levels range from 37 to 60 dB(A) under conditions during which the turbines would operate ("Critical" and "Full Power" turbine operations).¹⁰⁰

In addition to measuring background noise levels, the Noise Analysis also modeled noise levels expected from the Project turbines and main transformers. Turbine noise levels expected from full operation of the Project will be 50 dB(A) (one-hour L₅₀) or less at all residences in the area at all times and under all operating and atmospheric conditions.¹⁰¹ With the exception of

⁹⁵ See Ex. FR-1, Appendix B (Application).

⁹⁶ Ex. FR-5 at 9 (Hankard Direct).

⁹⁷ Ex. FR-1, Appendix B at 4, 9 (Application).

⁹⁸ Ex. FR-1, Appendix B at 9 (Application). The L₉₀ is the most commonly used metric used to quantify background noise levels, and represents the noise level exceeded 90 percent of the measurement interval. Ex. FR-18 at 1 (Hankard Affidavit and Noise Tables).

⁹⁹ Ex. FR-18 at 2, 4 (Hankard Affidavit and Noise Tables).

¹⁰⁰ Ex. FR-18 at 2, 4 (Hankard Affidavit and Noise Tables).

¹⁰¹ Ex. FR-5 at 11 (Hankard Direct); see also Ex. FR-18 at 5-9 (Hankard Affidavit and Noise Tables).

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one residence, where maximum turbine noise levels are predicted to be 48.9 dB(A), the noise levels from the Project are predicted to be 47 dB(A) or less.¹⁰²

The modeling was conducted using conservative assumptions. For example, the modeling assumes all turbines were operating and producing maximum acoustic output, these emissions propagate out fully in all directions, and that atmospheric conditions will be relatively ideal for the propagation of sound.¹⁰³ The predicted turbine-only noise levels include the other conservative modeling inputs described in the Noise Analysis, including, for example, a ground factor of 0.0, air temperature of 10°C, and 70 percent relative humidity, resulting in the least amount of ground and atmospheric sound absorption and the highest levels of sound reaching the receivers.¹⁰⁴ Also, 52 of the northernmost turbines located in Iowa were included in the model.¹⁰⁵ Accordingly, these are the loudest one-hour levels expected to occur, and much of the time turbine noise levels will be less.¹⁰⁶ Freeborn Wind's acoustical expert has verified these conservative assumptions through field measurements at other operating wind projects.¹⁰⁷

Freeborn Wind also predicted the total sound level at receptors in the Project Area by logarithmically adding the background noise level to the turbine-only noise level.¹⁰⁸ Estimating total sound levels pre-construction, i.e., Project noise and background noise, provides a data set

¹⁰² Ex. FR-5 at 11 (Hankard Direct); *see also* Ex. FR-18 at 5-9 (Hankard Affidavit and Noise Tables).

¹⁰³ Ex. FR-1, Appendix B at 13 (Application); Ex. FR-18 at 2 (Hankard Affidavit and Noise Tables).

¹⁰⁴ Ex. FR-1, Appendix B at 12-13 (Application).

¹⁰⁵ Ex. FR-1, Appendix B at 11 (Application).

¹⁰⁶ Ex. FR-5 at 11 (Hankard Direct); *see also* Ex. FR-18 at 5-9 (Hankard Affidavit and Noise Tables).

¹⁰⁷ Ex. FR-5 at 12 (Hankard Direct).

¹⁰⁸ Ex. FR-18 at 2 (Hankard Affidavit and Noise Tables).

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to compare to post-construction measured sound levels.¹⁰⁹ Post-construction, total sound must be measured (as that is all one can measure), and then background noise levels must be subtracted from the total to estimate the turbine-only noise contribution.¹¹⁰ The degree of contribution (attribution) is dependent on which level is greater: that of the turbines or that of all other background noise sources.¹¹¹ This is particularly true when one is dealing with logarithmic addition, which more greatly favors the loudest level. The results of this analysis show that, when background noise levels are 45 dB(A) or less, total sound levels are 50 dB(A) or less regardless of the turbine-only noise level. When background noise levels are in the 45 to 50 dB(A) range, turbines contribute to the total when turbine-only noise levels are approximately 44 dB(A) or greater. Once background noise levels exceed 50 dB(A), the total sound level exceeds 50 dB(A), but the turbines are not a significant contributor.¹¹² Due to the conservative nature of the turbine-only noise modeled for the Project, it can be confidently concluded that the Project will comply with the Noise Standards once operational.¹¹³

At the evidentiary hearing and in public comment, there was some discussion of the language in Appendix A of Ex. EERA-9, specifically the sentence under modeling that reads “Developers should not propose projects where total noise is estimated to exceed the noise standards at receptor property” and whether the Noise Standards sets limits on “total noise” or “project-related (i.e., turbine) noise.”¹¹⁴ The MPCA comment letter to the 2012 Noise Guidance uses imprecise language throughout, and that sentence and the following modeling and

¹⁰⁹ Ex. EERA-9, Appendix A (2012 Noise Guidance).

¹¹⁰ Ex. EERA-9, Appendix A (2012 Noise Guidance) and MPCA Guide.

¹¹¹ Ex. FR-18 at 2-3 (Hankard Affidavit and Noise Tables).

¹¹² Ex. FR-18 at 2, 5-9 (Hankard Affidavit and Noise Tables).

¹¹³ Evidentiary Hearing Tr. Vol. 1B at 112 (Feb. 21, 2018) (Hankard).

¹¹⁴ *See e.g.*, Evidentiary Hearing Tr. Vol. 2 at 185 (Feb. 22, 2018) (Davis) and Comment of Kristi Rosenquist (March 14, 2018) (eDockets No. [20183-140988-01](#)).

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compliance discussions can only be interpreted to mean project-related noise levels cannot exceed the Noise Standards. Any other interpretation would be inconsistent with the definition of noise in Minn. Stat. § 116.06, subd. 15, which is the subject of regulation under Minn. Stat. Chapter 116 and implementing rules, i.e., Minn. R. Ch. 7030.

A number of public comments also raised concerns regarding low frequency noise (“LFN”) and infrasound.¹¹⁵ LFN is generally defined as sound having a frequency between 20 and 200 Hertz (“Hz”).¹¹⁶ Infrasound is generally defined in the ~1 to 20 Hz frequency range.¹¹⁷ The levels of infrasound produced by wind turbines are many orders of magnitude below currently accepted thresholds of human hearing. Thus, the amount of infrasound produced by wind turbines cannot be heard at all.¹¹⁸

Freeborn Wind’s acoustical expert, Mr. Mike Hankard, testified that limiting wind turbine noise emissions using a dB(A) standard (such as the Noise Standards) automatically limits LFN and infrasound. Wind turbine noise has a relatively consistent spectral (frequency) shape; thus, once one part of the spectrum is limited, the rest of the spectrum is limited as well.¹¹⁹ The 50 dB(A) limit at residences controls Project LFN levels to approximately 60 dB(C)¹²⁰ or less at residences, and limits infrasound to levels orders of magnitude below the

¹¹⁵ *E.g.*, Comment by Kristi Rosenquist (Oct. 6, 2017) (eDocket No. [201710-136197-01](#)); Comment by Brian Olson (Oct. 9, 2017) (eDocket No. [201710-136293-01](#)); Comment by Erik Nelson (Oct. 9, 2017) (eDocket No. [201710-136273-01](#)).

¹¹⁶ Ex. FR-5 at 5 (Hankard Direct).

¹¹⁷ Ex. FR-5 at 5 (Hankard Direct).

¹¹⁸ Ex. FR-5 at 5 (Hankard Direct).

¹¹⁹ Ex. FR-5 at 7 (Hankard Direct).

¹²⁰ LFN is most commonly quantified using the C-weighted decibel (“dB(C)”). Ex. FR-5 at 7 (Hankard Direct).

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human hearing threshold.¹²¹ Accordingly, no additional mitigation of LFN or infrasound is supported by the record.

E. Shadow Flicker.

Shadow flicker from wind turbines occurs when rotating wind turbine blades move between the sun and the observer.¹²² If the blade's shadow is passing over the window of a building, it will have the effect of increasing and decreasing the light intensity in the room at a low frequency, hence the term "flicker."¹²³

Shadow flicker occurs only under a limited set of conditions. For shadow flicker to occur, the sun must be shining with no clouds to obscure it, the rotor blades must be spinning and must be located between the receptor and the sun, and the receptor must be sufficiently close to the turbine to be able to distinguish a shadow created by it.¹²⁴ Shadow flicker intensity and frequency at a given receptor are determined by a number of interacting factors, including: sun angle and sun path, turbine and receptor locations, cloud cover and degree of visibility, wind direction, wind speed, obstacles, contrast, and local topography.¹²⁵

While some residents may find shadow flicker annoying, there is no scientific data that suggests that shadow flicker exposure, at the rates that are anticipated from the proposed turbine models, will cause negative human health impacts.¹²⁶ Shadow flicker from turbines is not harmful to the health of photosensitive individuals, including those with epilepsy.¹²⁷ The maximum speed of the turbines will result in 14.88 blade revolutions per minute, which equates

¹²¹ Ex. FR-5 at 7 (Hankard Direct).

¹²² Ex. FR-1 at 36 (Application).

¹²³ Ex. FR-1 at 36 (Application).

¹²⁴ Ex. FR-1, Appendix C at 2-3 (Application).

¹²⁵ Ex. FR-1, Appendix C at 2-3 (Application).

¹²⁶ Ex. EERA-8 at 18 (Comments and Recommendations on a Preliminary Draft Site Permit).

¹²⁷ Ex. FR-1 at 39 (Application).

AFCL's legal counsel are not evidence and cannot be used to raise an issue of fact where none exists.

B. The Noise Analysis Performed for the Project Used Conservative Estimates to Ensure the Project Will Comply with the Noise Standards.

AFCL argues that Freeborn Wind has provided an insufficient noise analysis to demonstrate compliance with the Minnesota Noise Standards.¹² AFCL's arguments largely center on two concepts: a "margin of error" and the inclusion of ambient (or background) noise within the modeling.¹³ Neither argument has merit.

As discussed in Freeborn Wind's Initial Post-Hearing Brief, there are two defined terms that must be understood and used consistently to correctly apply Minnesota's Noise Standards:

Noise	"any sound not occurring in the natural environment, including, but not limited to, sounds emanating from aircraft and highways, and industrial, commercial, and residential sources." ¹⁴
Background noise	"all noise sources other than the noise source of concern." ¹⁵

The Noise Standards, by the statutory definition, regulate noise from sources not occurring in the natural environment.¹⁶ As Mr. Hankard testified, Minn. R. 7030.0040 states that the Noise Standards apply to "all sources", meaning that they apply to "any kind of source; a wind turbine, a gravel mine, a grain dryer."¹⁷

AFCL first asserts that Freeborn Wind's Noise Analysis contained an insufficient "margin of error" to demonstrate compliance.¹⁸ During the evidentiary hearing, counsel for

¹² See AFCL Initial Brief at 30-37 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

¹³ See AFCL Initial Brief at 33-34 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

¹⁴ Minn. Stat. § 116.06, subd. 15.

¹⁵ "A Guide to Noise Control in Minnesota; Acoustical Properties, Measurement, Analysis and Regulation," MPCA (Nov. 2015) available at: <https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf> (accessed March 8, 2018) [hereinafter "MPCA Guide"] at 11.

¹⁶ See Minn. Stat. § 116.06, subd. 15 and Minn. R. 7030.0040.

¹⁷ Evidentiary Hearing Tr. Vol. 1B at 104 (Feb. 21, 2018) (Hankard).

¹⁸ AFCL Initial Brief at 34 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

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AFCL asked Mr. Hankard a series of questions regarding what “margin of error” was reflected within the noise modeling he conducted.¹⁹ Mr. Hankard testified that the ISO 9613-2 method used for the modeling has a stated margin of error of +/- 3 decibels.²⁰ While AFCL appears to latch on to this number to assert that there could be as many as 40 locations out of the compliance with the Noise Standards if 3 A-weighted decibels (“dB(A)”) were added to the modeled turbine noise, that assertion is false and ignores further record evidence on this point—evidence that rejected AFCL’s mathematical theory. Specifically, Mr. Hankard testified:

Q I am asking you to explain how your margin of error could be applied to the estimated noise levels that you presented. I'm wondering, if I were to argue to you that really 48.9 should be considered actually 3 decibels higher, since you told me there was a 3-decibel margin of error, would that be a fair conclusion, based on your modeling and then what you've told me about margin of error?

A No.

Q Why not?

A Because if I had gone about my modeling with choosing, let's say, the middle factors on all of those things that I just listed, I choose a moderate ground factor and a moderate atmospheric absorption coefficient and made middle-the-road-assumptions, then, yes, I think you could add the 3 decibels onto my results and -- because there would be some uncertainty.

But I'd like to think that I have, from my professional work, taken the uncertainty somewhat out of the equation by, A, using very, very conservative assumptions; and, B, calibrating my results to real-world measurements on previous projects.²¹

Second, AFCL asserts that Freeborn Wind’s Noise Analysis was insufficient because Freeborn Wind did not provide a total noise estimate (*i.e.*, turbine noise plus background noise)

¹⁹ See, e.g., Evidentiary Hearing Tr. Vol. 1B at 64 (Feb. 21, 2018) (Hankard).

²⁰ Evidentiary Hearing Tr. Vol. 1B at 64 (Feb. 21, 2018) (Hankard).

²¹ Evidentiary Hearing Tr. Vol. 1B at 113-114 (Feb. 21, 2018) (Hankard).

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until one week after the evidentiary hearing.²² As discussed at length in Freeborn Wind's Initial Post-Hearing Brief, the Noise Standards limit noise from a source not occurring in the natural environment.²³ AFCL relies on the Minnesota Pollution Control Agency's ("MPCA") comment letter in Appendix A to DOC-EERA's 2012 Noise Guidance for LWECS Noise Study Protocol and Report ("2012 Noise Guidance") to assert that it is total noise that must be below 50 dB(A) to comply with the Noise Standards.²⁴ Agency guidance cannot be interpreted in a manner inconsistent with the statute.²⁵ The clear statutory definition of noise is directly contrary to AFCL's position.²⁶

The reason that background noise is relevant to an analysis of any source's compliance with the Noise Standards is that when measuring noise in the outdoor environment, the natural environment gets measured along with the noise source of concern.²⁷ Background noise must then be subtracted from the total recorded measurements to determine the noise from the measured source (here, wind turbines).²⁸

As described in Appendix A to DOC-EERA's 2012 Noise Guidance, one of the reasons to provide the total noise pre-construction is to set expectations in the community as to what levels of noise are likely to occur once the project is operational.²⁹ Freeborn Wind's Noise Analysis contained the underlying data sets (turbine noise and background noise), but the logarithmic math adding the two was completed in response to questions at the hearing from

²² See AFCL Initial Brief at 33-34 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

²³ See Freeborn Wind Initial Brief at 17-19 (March 20, 2018) (eDocket No. [20183-141214-02](#)).

²⁴ See AFCL Initial Brief at 33-34 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

²⁵ *State by Spannaus v. Northwestern Bell Telephone Co.*, 304 N.W.2d 872, 876 (Minn. 1981).

²⁶ See Minn. Stat. § 116.06, subd. 15 ("Noise" means any sound not occurring in the natural environment, including, but not limited to, sounds emanating from aircraft and highways, and industrial, commercial, and residential sources.").

²⁷ Evidentiary Hearing Tr. Vol. 1B at 121 (Feb. 21, 2018) (Hankard).

²⁸ See MPCA Guide at 12.

²⁹ Ex. EERA-9, Appendix A (2012 Noise Guidance).

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DOC-EERA.³⁰ These total noise numbers are relevant post-construction.³¹ Pre-construction, it is the conservative modeling Freeborn Wind conducted that is relevant for determining whether the Project will comply with the Noise Standards once operational. The record here demonstrates that Freeborn Wind included very conservative assumptions in its modeling and calibrated its modeling with real world data to ensure that modeled estimates are conservatively high and that the Project will comply with the Noise Standards once built.³²

C. Freeborn Wind has Analyzed Potential Impacts from Shadow Flicker and Proposed Appropriate Mitigation Measures.

AFCL's arguments regarding the Project's impacts from shadow flicker are based on a fundamental misunderstanding of the shadow flicker data and erroneous addition by a layperson.³³ Indeed, the source of the numbers listed in AFCL's argument is unclear. The ALJ should rely on the shadow flicker modeling contained in the Shadow Flicker Assessment in Appendix C of the Application and the additional shadow flicker assessment contained in Schedule 1 to Mr. Litchfield's Rebuttal Testimony as providing the best evidence in the record of shadow flicker levels for all residences affected by the Project.³⁴

Freeborn Wind thoroughly analyzed shadow flicker when siting wind turbines and has proposed appropriate mitigation measures to minimize impacts to all area residents.³⁵ Freeborn Wind's shadow flicker modeling is based on conservative assumptions and was performed utilizing the world's leading software tool for wind farm design and shadow flicker analysis.³⁶

³⁰ Ex. FR-1, Appendix B at 9, 14, 31-40 and 42-43 (Application); Ex. FR-18 at 5-9 (Affidavit of Mike Hankard and Noise Tables).

³¹ Ex. EERA-9, Appendix A (2012 Noise Guidance) and Evidentiary Hearing Tr. Vol. 2 at 184-185 (Feb. 22, 2018) (Davis).

³² See Evidentiary Hearing Tr. Vol. 1B at 111-112 (Feb. 21, 2018) (Hankard).

³³ See, e.g., AFCL Initial Brief at 43-44 (March 20, 2018) (eDocket No. [20183-141225-02](#)).

³⁴ See Ex. FR-1, Appendix C (Application) and Ex. FR-11, Sched. 1 (Litchfield Rebuttal).

³⁵ See Ex. FR-1 at 40 (Application); Ex. FR-1, Appendix C (Application).

³⁶ Ex. FR-1, Appendix C at 3 (Application).

AFFIDAVIT OF MIKE HANKARD

In the Matter of the Application of Freeborn Wind Energy LLC for a Large Wind Energy Conversion System Site Permit for the up to 84 MW Freeborn Wind Farm in Freeborn County

**MPUC Docket No. IP-6946/WS-17-410;
OAH Docket No. 80-2500-34633**

STATE OF WISCONSIN)
) SS.
COUNTY OF DANE)

MIKE HANKARD, being first duly sworn on oath, deposes and states as follows:

1. I am the president and principal of Hankard Environmental, Inc., and I make this affidavit on personal knowledge and records with which I am familiar.
2. I hereby affirm that the factual information contained in the following exhibit of the Applicant Freeborn Wind Energy LLC (“Freeborn Wind”) is true and correct to the best of my knowledge:

Ex. FR-18

3. Freeborn Wind’s exhibit Ex. FR-18 contains a true and correct calculation of total predicted noise based using the predicted wind turbine noise levels (FR-1 at 14 and Appendix C (Appendix B of the Site Permit Application, the “Noise Analysis”)) and the observed nighttime ambient noise levels (FR-1 at 19 and Appendix D (Noise Analysis)).
4. In late March and early April 2017, Freeborn Wind measured ambient noise levels and found that ambient levels vary significantly in the Project Area, depending on many factors, such as the wind speed, prevailing atmospheric conditions, the time of day, other noise sources, etc. Table 4-2 of the Noise Analysis presents observed nighttime ambient noise levels at the measurement locations ranging from 29-51 dB(A) L₉₀ during conditions under which the turbines would have operated. The L₉₀ is the most commonly used metric used to quantify ambient noise levels, and is the metric recommended by the National Association of Regulatory Commissioners guidance document prepared for the Minnesota Public Utilities Commission. (*Assessing Sound Emissions from Proposed Wind Farms & Measuring the Performance of Completed Projects*, October 2011.) It represents the noise level exceeded 90% of the measurement interval.
5. However, the State of Minnesota regulates noise using the one-hour L₅₀ and the one-hour L₁₀, which are the noise level exceeded 50% and 10% of the time during the measurement

interval, respectively. The average ambient L_{50} and L_{10} levels are shown in Table 1 of FR-18, and were calculated from the measured ambient noise levels using the same procedures followed to determine average L_{90} values. The average L_{50} levels range from 33 to 57 dB(A) under conditions during which the turbines would operate (“Critical” and “Full Power” turbine operations). The average L_{10} levels range from 37 to 60 dB(A) under conditions during which the turbines would operate (“Critical” and “Full Power” turbine operations). All of these values are for nighttime hours, per rule 7030.0040.

6. The one-hour L_{50} ambient levels were logarithmically added to the turbine-only noise levels to calculate the total noise levels that would be expected during turbine operations. This is an “apples to apples” comparison, as the turbine-only noise levels are equivalent to L_{50} levels. Table 2 of FR-18 lists the predicted total noise levels at each receptor included in the Noise Analysis, assuming the lowest ambient noise level (33 dB(A)), the highest ambient noise level (57 dB(A)), and three intermediate levels (40, 45, and 50 dB(A)). This calculation was not performed using the L_{10} ambient noise levels, as this would not be an “apples to apples” comparison given that turbine-only levels are, essentially, in terms of the L_{50} .
7. Consistent with Freeborn Wind’s conservative approach to noise modelling, for the purposes of the total noise calculations, Freeborn Wind added the wind turbine-related noise levels presented in Appendix C to the Noise Analysis to all ambient background levels. These predicted turbine noise levels are conservatively high because they assume all turbines were operating and produced maximum acoustic output, these emissions propagate out fully in all directions, and that atmospheric conditions will be relatively ideal for the propagation of sound. This analysis is additionally conservative because at the lower “Critical” wind speed levels, wind turbines can be expected to operate below full acoustic output. Yet, full acoustic output was assumed.
8. In addition to assuming full-acoustic output at all wind speeds, the predicted turbine-only noise levels continue to include the other conservative modelling inputs described in the Noise Analysis, including, for example, a ground factor of 0.0, air temperature of 10°C, and 70% relative humidity, resulting in the least amount of ground and atmospheric sound absorption and the highest levels of sound reaching the receivers.
9. FR-18 Table 3 is a summary of the total noise calculation results, and lists the predicted total noise level (the ambient noise level logarithmically added to the turbine-only noise level) for a range of turbine-only noise levels and a range of ambient noise levels. The turbine-only noise levels chosen represent the highest single predicted turbine-only noise level on the project (~49 dB(A)), the next highest predicted turbine-only noise level (47 dB(A)), a level 3 dB(A) below this (44 dB(A)), and 40 dB(A). The range of ambient levels chosen represent ~5 dB(A) increments between the highest and lowest ambient noise levels measured at the site during wind conditions in which the turbines would have operated.
10. As shown in Tables 2 and 3, when assuming ambient sound levels are 45 dB(A) or less, total sound levels are 50 dB(A) or less regardless of the turbine-only noise level. When ambient noise levels are in the 45 to 50 dB(A) range, turbines contribute to the total when turbine-only noise levels are about 44 dBA or greater. The degree of contribution (attribution) is

dependent on which level is greater, that of the turbines or that of all other ambient noise sources. Once ambient noise levels exceed 50 dB(A), the total noise level of course also exceeds 50 dB(A), but the turbines are not a significant contributor.

Dated this 1st day of March 2018



Mike Hankard

Subscribed and sworn to before me
this 1st day of March, 2018



Notary Public

**Notary Public
State of Wisconsin
Laura Brennan**

Table 1 Freeborn Wind Nighttime Ambient Noise Levels

Measurement Location	Measurement Period		Average 10-Min L ₅₀ (dBA)			Average 10-Min L ₅₀ (dBA)			Average 10-Min L ₁₀ (dBA)		
			Cut-In	Critical	Full Power	Cut-In	Critical	Full Power	Cut-In	Critical	Full Power
	Start	Stop									
M1	3/21/2018 17:00	4/5/2018 14:40	30	41	50	34	43	54	37	46	57
M2	3/22/2018 15:00	4/5/2018 18:00	25	36	47 [†]	27	38	48 [†]	33	43	50 [†]
M3	3/22/2018 11:00	4/6/2018 12:50	23	29	44	26	33	47	30	37	53
M4	3/22/2018 14:00	4/5/2018 16:50	29	36	50	30	40	57	34	46	60
M5	3/23/2018 10:00	4/5/2018 8:40	28	33	51	30	35	55	35	40	57

† 10 m/s @ 10 m not observed, fit from curve

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Table 2 Freeborn Wind Total Noise Levels, L₅₀

Receptor ID	Participation		Total Noise Level (dBA, L ₅₀)									
			UTM Zone 15		Ground Elevation (m ASL)	Turbine-Only Noise Level (dBA)	Ambient 33 dBA Plus Turbine Noise Level (dBA)	Ambient 40 dBA Plus Turbine Noise Level (dBA)	Ambient 45 dBA Plus Turbine Noise Level (dBA)	Ambient 50 dBA Plus Turbine Noise Level (dBA)	Ambient 57 dBA Plus Turbine Noise Level (dBA)	
			Easting (m)	Northing (m)								
R52	1	N	491123.1	4834254.3	388.8	31.5	35	41	45	50	57	
R53	1	N	491241.9	4834213.1	387.5	31.3	35	41	45	50	57	
R54	1	N	490749.6	4834865.8	388.9	30.5	35	40	45	50	57	
R55	1	N	490708.0	4834734.0	389.0	31.1	35	41	45	50	57	
R56	1	N	490414.4	4834881.4	387.9	31.3	35	41	45	50	57	
R57	1	N	490353.8	4834700.9	387.5	32.2	36	41	45	50	57	
R58	1	N	489695.4	4834897.6	386.5	33.1	36	41	45	50	57	
R59	1	N	489611.0	4834901.8	385.5	33.3	36	41	45	50	57	
R60	1	N	489297.7	4834976.7	386.3	33.3	36	41	45	50	57	
R61	1	N	489201.0	4834880.8	384.2	34.0	37	41	45	50	57	
R62	1	N	489095.3	4834878.0	384.5	34.1	37	41	45	50	57	
R63	1	N	488872.7	4834743.0	385.1	35.1	37	41	45	50	57	
R64	1	N	488547.0	4834785.4	384.6	34.4	37	41	45	50	57	
R65	1	N	488402.7	4834903.0	384.9	33.4	36	41	45	50	57	
R66	1	N	487727.7	4834885.5	384.1	32.4	36	41	45	50	57	
R67	1	N	487110.6	4834670.4	386.7	32.6	36	41	45	50	57	
R68	1	N	486699.9	4834669.5	390.6	31.9	35	41	45	50	57	
R69	1	N	486453.7	4833834.6	384.6	35.7	38	41	45	50	57	
R70	1	N	485711.7	4832179.7	380.6	38.1	39	42	46	50	57	
R71	1	N	485736.6	4832667.1	381.9	36.5	38	42	46	50	57	
R72	1	N	487896.6	4832301.7	391.6	41.8	42	44	47	51	57	
R73	1	N	487929.6	4832232.1	391.6	41.5	42	44	47	51	57	
R74	1	N	487999.4	4833133.4	390.2	41.6	42	44	47	51	57	
R75	1	N	488003.0	4833156.3	389.7	41.5	42	44	47	51	57	
R76	1	P	487929.5	4833979.9	389.1	37.6	39	42	46	50	57	
R77	1	P	488159.3	4833937.6	389.1	38.7	40	42	46	50	57	
R78	1	N	487703.9	4832994.9	391.5	45.5	46	47	48	51	57	
R79	1	N	490705.8	4834021.9	391.5	33.7	36	41	45	50	57	
R80	1	N	490667.3	4833970.6	392.0	34.0	37	41	45	50	57	
R81	1	P	491227.3	4833962.1	391.1	32.1	36	41	45	50	57	
R82	1	N	491226.5	4833797.4	391.2	32.7	36	41	45	50	57	
R83	1	N	491097.2	4833803.3	392.0	33.1	36	41	45	50	57	
R84	1	P	491371.4	4832825.4	384.6	36.4	38	42	46	50	57	
R85	1	P	490881.9	4832287.3	387.7	43.9	44	45	47	51	57	
R86	1	P	490127.4	4832569.0	392.6	43.5	44	45	47	51	57	
R87	1	P	489445.4	4832495.3	389.8	43.1	44	45	47	51	57	
R88	1	P	489252.0	4832379.2	386.2	42.6	43	45	47	51	57	
R89	1	N	488643.0	4832486.6	390.1	40.4	41	43	46	50	57	
R90	1	P	487807.7	4831759.1	388.8	43.0	43	45	47	51	57	
R91	1	P	488305.5	4831307.3	390.7	39.9	41	43	46	50	57	
R92	1	P	488025.3	4830990.6	390.4	41.1	42	44	46	51	57	
R93	1	P	488742.3	4830847.4	396.8	38.8	40	42	46	50	57	
R94	1	P	489027.2	4830750.9	391.9	39.6	40	43	46	50	57	
R95	1	N	489119.5	4830895.2	388.7	40.6	41	43	46	50	57	
R96	1	P	489845.5	4830871.3	385.7	47.6	48	48	50	52	57	
R97	1	N	491644.5	4830961.0	383.9	38.5	40	42	46	50	57	
R98	1	N	491882.3	4830026.0	380.3	34.9	37	41	45	50	57	
R104	1	N	491425.2	4829146.6	381.0	33.2	36	41	45	50	57	
R105	1	N	490812.6	4829139.3	378.2	34.7	37	41	45	50	57	
R106	1	N	490347.8	4829157.0	381.8	35.2	37	41	45	50	57	
R107	1	N	489534.4	4829244.9	389.7	34.7	37	41	45	50	57	
R108	1	N	489844.4	4828725.2	389.3	32.7	36	41	45	50	57	
R109	1	N	489338.3	4829061.4	388.5	33.7	36	41	45	50	57	
R110	1	N	488613.5	4829366.8	388.3	34.1	37	41	45	50	57	
R111	1	P	487587.7	4829959.5	391.8	37.7	39	42	46	50	57	
R112	1	P	488447.4	4830073.9	394.4	36.3	38	42	46	50	57	
R113	1	N	487565.7	4830393.4	395.2	40.2	41	43	46	50	57	
R114	1	P	487743.9	4830937.5	390.4	43.7	44	45	47	51	57	
R115	1	N	486656.5	4830605.7	384.3	43.8	44	45	47	51	57	
R116	1	P	486310.1	4829680.3	386.1	45.7	46	47	48	51	57	
R117	1	N	486435.4	4829125.4	389.2	41.2	42	44	47	51	57	

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R118	1	N	486678.0	4829278.0	387.9	40.0	41	43	46	50	57
R119	1	P	487527.4	4829082.7	389.6	35.1	37	41	45	50	57
R120	1	N	487871.0	4829342.9	386.3	34.9	37	41	45	50	57
R122	1	P	486409.1	4827770.0	387.3	34.8	37	41	45	50	57
R123	1	N	486379.9	4828148.2	384.0	36.0	38	41	46	50	57
R124	1	N	486125.4	4827902.8	388.9	36.1	38	41	46	50	57
R125	1	N	486064.3	4827547.2	392.3	35.6	38	41	45	50	57
R127	2	P	486310.4	4828379.9	387.1	37.3	39	42	46	50	57
R128	1	N	486394.8	4828457.4	385.7	37.3	39	42	46	50	57
R129	1	P	485993.1	4829249.9	388.0	46.8	47	48	49	52	57
R130	1	N	484448.1	4829649.1	385.1	42.2	43	44	47	51	57
R131	1	P	484601.6	4830442.8	381.9	47.0	47	48	49	52	57
R132	1	P	484706.5	4831066.2	382.3	43.7	44	45	47	51	57
R133	1	N	483497.8	4830757.1	381.1	44.5	45	46	48	51	57
R134	1	N	482567.2	4830728.8	381.2	34.3	37	41	45	50	57
R143	1	P	482881.7	4828998.7	381.3	33.9	36	41	45	50	57
R144	1	N	483316.0	4829217.5	381.8	35.9	38	41	46	50	57
R145	1	N	483455.0	4829144.6	383.9	36.3	38	42	46	50	57
R146	1	N	483580.4	4829459.2	383.4	37.7	39	42	46	50	57
R147	1	N	482672.0	4830086.0	383.7	34.7	37	41	45	50	57
R157	1	N	478805.8	4821087.5	370.1	40.3	41	43	46	50	57
R158	1	P	478664.4	4821178.4	370.5	39.5	40	43	46	50	57
R159	1	N	478647.1	4821112.6	370.8	39.0	40	43	46	50	57
R160	1	N	478269.4	4821160.6	371.3	35.9	38	41	46	50	57
R161	1	N	478097.7	4821320.2	371.0	34.9	37	41	45	50	57
R162	1	N	477938.8	4821351.6	371.7	33.8	36	41	45	50	57
R163	1	N	477446.5	4821472.3	377.4	30.9	35	41	45	50	57
R164	1	N	477497.1	4821175.8	373.3	31.1	35	41	45	50	57
R165	1	N	478205.3	4821084.6	371.3	35.2	37	41	45	50	57
R166	1	N	478270.2	4820910.2	371.3	35.2	37	41	45	50	57
R169	1	N	478677.6	4819587.5	371.9	33.0	36	41	45	50	57
R170	1	N	478722.3	4819550.9	371.7	33.0	36	41	45	50	57
R183	1	N	490036.5	4816332.4	368.7	43.4	44	45	47	51	57
R186	1	N	489569.2	4816363.3	367.7	43.8	44	45	47	51	57
R188	1	P	488365.5	4816989.5	374.6	46.6	47	47	49	52	57
R189	1	P	487425.1	4816361.9	377.6	48.5	49	49	50	52	58
R190	1	N	486385.8	4816496.9	375.9	48.9	49	49	50	52	58
R194	1	P	482988.8	4816361.5	383.9	36.4	38	42	46	50	57
R197	1	N	481231.9	4817992.2	386.7	34.2	37	41	45	50	57
R198	1	P	480912.1	4817974.6	384.7	33.6	36	41	45	50	57
R199	1	P	480808.9	4817981.7	383.4	33.4	36	41	45	50	57
R202	1	P	479835.7	4818614.0	379.5	33.8	36	41	45	50	57
R203	1	N	479817.5	4819314.1	380.4	37.4	39	42	46	50	57
R204	1	N	479816.5	4819887.6	381.1	41.4	42	44	47	51	57
R205	1	P	481387.9	4819516.0	389.6	45.0	45	46	48	51	57
R206	1	N	481529.2	4818591.7	386.7	37.7	39	42	46	50	57
R207	1	P	481510.6	4819469.4	389.3	46.2	46	47	49	52	57
R208	1	N	479919.6	4818496.6	377.7	33.5	36	41	45	50	57
R209	1	P	480843.9	4819595.9	392.9	43.0	43	45	47	51	57
R210	1	N	482125.0	4817998.6	389.5	35.6	38	41	45	50	57
R211	1	N	482314.1	4817878.9	388.7	35.4	37	41	45	50	57
R212	1	P	482517.9	4817958.3	387.1	35.8	38	41	45	50	57
R213	1	N	483193.4	4816759.1	384.7	37.0	38	42	46	50	57
R214	1	P	483202.8	4817284.2	386.5	36.9	38	42	46	50	57
R215	1	N	483073.1	4818358.1	389.6	37.3	39	42	46	50	57
R216	1	N	483174.5	4818814.1	390.0	38.7	40	42	46	50	57
R217	1	P	483142.7	4820544.2	388.2	40.1	41	43	46	50	57
R218	1	N	481832.0	4821123.1	390.7	39.5	40	43	46	50	57
R219	1	N	481768.2	4821490.1	391.6	38.9	40	42	46	50	57
R220	1	N	481504.9	4820122.5	392.5	46.2	46	47	49	52	57
R221	1	N	480777.8	4821245.6	392.9	42.0	43	44	47	51	57
R222	1	N	480813.7	4820952.8	396.3	42.2	43	44	47	51	57
R223	1	P	479901.5	4821098.9	377.0	46.1	46	47	49	51	57
R224	1	P	479892.2	4820682.1	377.4	43.0	43	45	47	51	57
R225	1	N	479820.4	4820309.4	377.2	42.6	43	45	47	51	57
R227	1	P	479805.6	4821315.8	376.0	48.8	49	49	50	52	58
R228	1	N	479810.2	4821948.3	376.9	47.0	47	48	49	52	57

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R229	1	P	479879.7	4821931.5	379.7	46.9	47	48	49	52	57
R230	1	P	479903.6	4822170.6	380.8	43.6	44	45	47	51	57
R231	1	N	479813.7	4822791.9	374.0	37.3	39	42	46	50	57
R232	1	N	479887.7	4822797.4	374.4	37.2	39	42	46	50	57
R233	1	N	479820.9	4822863.2	373.8	36.7	38	42	46	50	57
R234	1	N	479896.0	4823328.3	380.0	33.8	36	41	45	50	57
R235	1	N	479376.2	4822736.5	374.2	37.6	39	42	46	50	57
R236	1	N	479221.0	4822953.7	375.1	35.5	37	41	45	50	57
R237	1	N	479140.5	4822922.4	369.8	35.6	38	41	45	50	57
R238	1	N	478974.6	4823097.9	372.0	34.0	37	41	45	50	57
R240	1	N	478768.6	4823419.7	371.9	31.7	35	41	45	50	57
R241	1	N	478715.5	4823342.3	371.3	32.0	36	41	45	50	57
R243	1	N	493118.8	4822721.2	372.4	33.8	36	41	45	50	57
R245	1	N	493967.3	4822719.0	368.9	35.1	37	41	45	50	57
R246	1	N	494170.6	4822801.1	368.4	34.7	37	41	45	50	57
R247	1	P	494342.8	4822622.4	368.8	35.9	38	41	46	50	57
R248	1	P	494430.7	4822653.9	368.1	35.7	38	41	45	50	57
R249	1	N	495170.5	4822718.5	363.8	34.0	37	41	45	50	57
R250	1	N	495302.6	4822811.4	363.6	33.1	36	41	45	50	57
R253	1	N	496467.4	4821141.0	362.8	32.4	36	41	45	50	57
R254	1	N	496563.2	4821118.9	364.1	32.1	36	41	45	50	57
R257	1	N	495436.8	4819575.3	363.4	34.6	37	41	45	50	57
R258	1	N	495394.4	4819572.5	363.4	34.7	37	41	45	50	57
R259	1	N	494975.1	4819281.5	364.1	35.1	37	41	45	50	57
R260	1	N	495026.9	4819307.0	363.9	35.0	37	41	45	50	57
R278	1	N	494446.3	4820117.2	367.4	40.6	41	43	46	50	57
R279	1	N	494361.2	4820178.3	367.2	41.5	42	44	47	51	57
R280	1	P	494443.0	4820713.4	364.1	46.5	47	47	49	52	57
R282	1	N	494338.6	4821604.0	367.1	46.9	47	48	49	52	57
R283	1	N	492743.9	4822125.5	369.9	35.5	37	41	45	50	57
R285	1	N	492707.1	4821448.8	370.9	37.9	39	42	46	50	57
R286	1	N	492732.2	4820638.3	371.8	39.1	40	43	46	50	57
R287	1	N	492724.4	4819671.7	369.1	37.1	39	42	46	50	57
R288	1	P	493023.4	4819573.9	368.5	37.0	38	42	46	50	57
R289	1	N	492805.0	4819213.6	370.3	36.5	38	42	46	50	57
R293	1	N	492137.9	4817869.9	371.3	38.4	40	42	46	50	57
R295	1	N	491784.8	4818080.6	372.9	39.2	40	43	46	50	57
R296	1	P	491095.6	4817515.6	375.2	40.8	41	43	46	50	57
R297	1	N	491102.7	4817161.4	373.9	41.0	42	44	46	51	57
R299	1	P	490398.8	4817681.6	373.3	43.6	44	45	47	51	57
R300	1	P	490744.2	4818140.1	374.7	45.6	46	47	48	51	57
R301	1	N	491180.1	4817942.1	373.6	41.6	42	44	47	51	57
R302	1	P	490763.4	4819365.9	377.5	47.3	47	48	49	52	57
R303	1	P	491127.9	4820087.2	377.5	46.6	47	47	49	52	57
R305	1	P	491061.4	4820555.1	377.9	44.3	45	46	48	51	57
R306	1	N	491257.9	4821420.4	375.2	36.5	38	42	46	50	57
R307	1	N	490183.6	4821121.2	379.7	39.2	40	43	46	50	57
R308	1	N	490451.5	4821641.2	379.8	36.1	38	41	46	50	57
R309	1	N	490086.1	4821979.5	382.4	34.6	37	41	45	50	57
R312	1	N	489503.5	4821705.4	378.8	35.6	38	41	45	50	57
R313	1	N	489079.5	4821180.1	376.4	37.9	39	42	46	50	57
R314	1	N	489306.4	4820961.0	376.5	38.9	40	42	46	50	57
R315	1	N	489484.4	4819590.8	375.4	46.6	47	47	49	52	57
R316	1	N	489606.3	4819098.8	376.8	46.6	47	47	49	52	57
R317	1	N	489398.6	4818872.7	376.4	47.2	47	48	49	52	57
R318	1	N	489543.4	4817818.3	375.3	45.0	45	46	48	51	57
R319	1	P	488944.7	4817952.7	372.8	46.5	47	47	49	52	57
R320	1	N	488304.4	4817959.3	373.7	46.4	47	47	49	52	57
R321	1	N	488451.0	4817336.9	371.4	44.0	44	45	48	51	57
R322	1	N	487887.8	4817759.0	372.5	44.5	45	46	48	51	57
R323	1	N	487707.5	4818164.1	373.2	47.2	47	48	49	52	57
R324	1	N	487989.0	4819491.1	372.6	44.6	45	46	48	51	57
R325	1	N	487904.3	4819630.0	373.0	44.8	45	46	48	51	57
R326	1	N	487959.5	4819851.5	374.1	46.7	47	48	49	52	57
R327	1	N	488005.2	4821349.0	375.6	39.5	40	43	46	50	57
R328	1	P	487868.1	4821914.0	379.0	36.1	38	41	46	50	57
R331	1	N	487112.2	4822314.3	382.9	34.1	37	41	45	50	57

AFCL EXHIBIT K

R333	1	N	486328.8	4821619.1	373.8	35.5	37	41	45	50	57
R334	1	N	486420.7	4821571.0	375.4	36.0	38	41	46	50	57
R335	1	N	486766.0	4820261.5	376.1	42.2	43	44	47	51	57
R336	1	N	486358.1	4818672.9	378.7	45.4	46	47	48	51	57
R337	1	N	486275.2	4818132.2	379.5	45.3	46	46	48	51	57
R338	1	P	485063.4	4817982.7	381.2	46.7	47	48	49	52	57
R339	1	N	484302.3	4818132.0	383.8	43.4	44	45	47	51	57
R340	1	N	483562.4	4817886.0	386.9	38.2	39	42	46	50	57
R341	1	N	483529.2	4817963.4	386.7	38.0	39	42	46	50	57
R346	1	N	481696.4	4824377.1	384.7	33.1	36	41	45	50	57
R347	1	P	481492.4	4822446.4	388.7	36.6	38	42	46	50	57
R348	1	N	480817.4	4822885.5	379.4	35.3	37	41	45	50	57
R349	1	N	482052.3	4822841.4	385.4	37.3	39	42	46	50	57
R350	1	P	481497.8	4822891.8	383.0	35.4	37	41	45	50	57
R352	1	N	483051.4	4821347.9	385.3	43.5	44	45	47	51	57
R353	1	N	483783.3	4821199.5	384.8	37.8	39	42	46	50	57
R355	1	P	484240.3	4821199.5	382.8	36.0	38	41	46	50	57
R356	1	N	484341.7	4821205.2	382.9	35.7	38	41	45	50	57
R357	1	N	484639.2	4821202.9	382.6	35.1	37	41	45	50	57
R358	1	N	484870.3	4820492.5	387.1	35.6	38	41	45	50	57
R359	1	N	484746.3	4819871.7	389.1	37.2	39	42	46	50	57
R360	1	N	484675.7	4819574.2	384.4	38.5	40	42	46	50	57
R361	1	N	485426.8	4819567.4	385.6	38.7	40	42	46	50	57
R362	1	N	485631.6	4819217.8	384.6	40.3	41	43	46	50	57
R363	1	N	486054.8	4819497.9	381.1	39.5	40	43	46	50	57
R364	1	N	486289.1	4820776.0	377.4	38.0	39	42	46	50	57
R365	1	N	486384.8	4820713.8	377.7	38.7	40	42	46	50	57
R366	1	P	486273.6	4821385.3	375.7	36.1	38	41	46	50	57
R367	1	P	485609.1	4821242.8	384.1	35.0	37	41	45	50	57
R369	1	P	485572.7	4820956.7	386.9	35.3	37	41	45	50	57
R372	1	P	485095.1	4822716.5	377.7	35.3	37	41	45	50	57
R381	1	N	486120.9	4827025.8	386.7	34.4	37	41	45	50	57
R383	1	N	486019.4	4829077.4	385.4	44.2	45	46	48	51	57
R384	1	P	484438.6	4828506.7	384.7	41.2	42	44	47	51	57
R386	1	P	484976.6	4827525.0	386.3	44.6	45	46	48	51	57
R387	1	P	484713.3	4827322.2	389.9	47.5	48	48	49	52	57
R388	1	P	484712.2	4826536.9	391.8	41.8	42	44	47	51	57
R390	1	N	484698.5	4825637.6	390.7	35.7	38	41	45	50	57
R391	1	N	484836.4	4825292.3	390.5	35.4	37	41	45	50	57
R392	1	N	484918.4	4824485.5	389.3	37.9	39	42	46	50	57
R393	1	P	484991.3	4824354.0	388.2	37.8	39	42	46	50	57
R394	1	P	485129.3	4823556.0	382.0	37.1	39	42	46	50	57
R395	1	P	484461.4	4823382.1	383.9	42.4	43	44	47	51	57
R397	1	N	482937.0	4820708.0	386.6	40.4	41	43	46	50	57
R399	1	P	483455.0	4822750.8	382.4	40.9	42	43	46	51	57
R400	1	N	483632.8	4823089.2	383.5	43.5	44	45	47	51	57
R401	1	N	483134.8	4824113.8	387.5	44.9	45	46	48	51	57
R402	1	P	483657.9	4824353.2	388.6	46.7	47	48	49	52	57
R403	1	N	482658.3	4824464.8	384.0	37.8	39	42	46	50	57
R404	1	N	482544.4	4824393.0	385.1	37.3	39	42	46	50	57
R405	1	N	483168.9	4826001.9	383.6	34.9	37	41	45	50	57
R406	1	N	483085.7	4825693.5	385.1	34.6	37	41	45	50	57
R407	1	N	482726.4	4826582.5	381.0	33.9	36	41	45	50	57
R408	1	N	483180.3	4827734.7	381.9	37.1	39	42	46	50	57
R409	1	N	483516.6	4827733.6	381.7	39.9	41	43	46	50	57
R410	1	P	482870.3	4828502.9	381.0	34.0	37	41	45	50	57
R418	2	N	489526.1	4834877.3	384.7	33.6	36	41	45	50	57
R419	1	N	491131.3	4834199.2	388.7	31.6	35	41	45	50	57
R422	2	N	494847.5	4819356.5	364.0	35.5	37	41	45	50	57

Table 3 Summary of Freeborn Wind Total Noise Levels, L₅₀

Turbine-Only Noise Level (dBA)	Ambient 33 dBA Plus Turbine Noise Level (dBA)	Ambient 40 dBA Plus Turbine Noise Level (dBA)	Ambient 45 dBA Plus Turbine Noise Level (dBA)	Ambient 50 dBA Plus Turbine Noise Level (dBA)	Ambient 57 dBA Plus Turbine Noise Level (dBA)
48.9	49	49	50	52	58
47	47	48	49	52	57
44	44	45	48	51	57
40	41	43	46	50	57

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

Dan Lipschultz
Matthew Schuerger
Katie J. Sieben
John A. Tuma

Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of Freeborn
Wind Energy LLC for a Route Permit for the
Freeborn Wind Transmission Line in
Freeborn County

PUC Docket No. IP-6946/TL-17-410

LATE FILED

**ADDENDUM TO ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
MOTION FOR REMAND TO ADMINISTRATIVE LAW JUDGE**

Association of Freeborn County Landowners (AFCL), intervenor in this above-captioned wind siting docket and participant in the related and concurrent transmission docket (IP6946/WS-17-410), bring this LATE FILED Addendum to AFCL’s Motion¹ for Remand to Administrative Law Judge for additional hearing to inform the record. This Motion is late filed because the email attached to Affidavit of Overland, in Exhibit L was received from John Wachtler, Commerce-EERA yesterday afternoon, in response to AFCL Data Practices Act Request. There is good cause not to exclude this filing, as it exposes addresses the Dept. of Commerce’s failure to acknowledge its improper participation in the “agreement” which could allow Freeborn Wind to avoid compliance with the wind noise standards. Minn. R. 7030.0040. No emails were produced, instead a claim that Commerce deletes emails after 90 days. No notes were produced, despite evidence in

¹ Any opposition to the motion must be filed and served on the same list of persons within 14 days of service of the motion filing. Minn. R. 7829.0410.

MPCA of Commerce participation of at least John Wachtler and Rich Davis in meetings and discussions with Freeborn Wind in May, 2018, and from September 14-17, 2018, at the very least.

In the MPCA provided emails, there are admissions that Freeborn Wind cannot comply with the noise standards:

“Frank’s letter and its subsequent interpretation by PUC staff has resulted in Proposed Permit conditions that we feel are fundamentally unworkable...” Ex. D, 9/14/2018 5:42 PM.

“My hope is we can come to an understanding of why the proposed permit condition language will not allow for construction of wind turbines and jointly propose new language on Thursday.” Id.

“Finally, we think that demonstrating compliance with the final paragraph (showing we’re at 45 dBA or less when wind is at 50 dBA) is technically impossible, per ANSI standards and MPCA guidance. My concern is that this isn’t an “innocent until proven guilty” scenario – as I understand it, we have to demonstrate innocence, or compliance. And we will not be able to do that using prudent measuring practices...” Id., 9/16/2018 11:38 AM.

“To ensure that the turbine-only noise does not cause or significantly contribute to an exceedance of the MPCA Noise Standards, modeled wind turbine-only sound levels (NARUC ISO 9613-2 with 0.5 ground) at receptors shall not exceed 47 dB(A) L₅₀-one hour.” Id., September 17, 2018 12:47 PM (changing ground factor from 0.0 to 0.5, which reduces noise levels by 3 dB(A) – see Exhibit F chart, p. 3, notes on lower margin.).

Ex. D, emails to & fro Freeborn/Litchfield and Wachtler and Kohlasch.

This inability to comply with the noise standards was acknowledged by Wachtler and Kohlasch. Exhibit E, emails September 15, 2018 6:48 PM; September 16, 2018 4:01 PM.

Commerce-EERA is the Commission’s agent as it acts as “staff” for the Commission in siting proceedings. Commerce is also the recipient of complaints from residents and landowners affected by a given project. Commerce is the “enforcer” for noise violations. Participating in an “agreement” such as this is a conflict, and against the public interest.

The MPCA has no involvement in Commission permits or enforcement actions for noise related issues with wind projects, and has no jurisdiction:

Currently, the MPCA only engages with facilities on compliance with noise standards for facilities that have an air quality permit from the MPCA. In the case of LWECS projects, we do not have a regulatory relationship with LWECS project developers or owners, and

would have a very difficult time enforcing the state noise standards on LWECS project developers. The Commission's siting permits include a provision requiring compliance with the state noise standards, which provides a direct mechanism to ensure ongoing compliance.

See attached Exhibit M, Kohlash Letter, p. 2., September 11, 2018.

Despite this, we have Freeborn/Litchfield summing it up to Commerce's Wachtler:

Does the attached look acceptable to you? I so, I'd suggest we file this tomorrow and you file a short letter confirming you agree. Then we show up Thursday morning.

Exhibit D, email September 17 2018 5:22 PM. And show up, in orchestrated comments, they did.

Why is the MPCA involved, given a seat at the table, and why is the MPCA advocating for a wind developer that openly admits that it cannot comply with the Minn. R. 7030 noise standard? How in any way is it proper for Commerce, as PUC "staff" on this siting docket, making agreements allowing project to go forward when it cannot comply? How is it in any way proper for Commerce to agree to the backwards engineered noise modeling agreed to with 0.5 ground factor (+ 3 dB(A)), and an additional +3 dB(A) "tolerance," giving at least a 6 dB(A) increase, or production of this bogus noise modeling to a point after a permit is issued, protected from the light of day and public review? In addition to these improprieties, now Gov. Walz filed two letters of support in this docket, one claiming Invenenergy's lobbyist as a constituent, ignoring CD1, and a second "correcting" a "clerical error." Attached Exhibits N and O. This fails the smell test.

Once more with feeling, Commission ethics and integrity rules speak for themselves:

7845.0400 CONFLICT OF INTEREST; IMPROPRIETY.

Subpart 1. General behavior.

A commissioner or employee shall respect and comply with the law and shall behave in a manner that **promotes public confidence in the integrity and impartiality of the commission's decision making process.**

Subp. 2. Actions prohibited.

Commissioners and employees shall avoid any action that might result in or create a conflict of interest or the appearance of impropriety, including:

- A. using public office for private gain;
- B. giving preferential treatment to an interested person or entity;**
- C. impeding the efficiency or economy of commission decision making;
- D. losing independence or impartiality of action;**
- E. making a commission decision outside official channels; and**
- F. affecting adversely the confidence of the public in the integrity of the commission.**

Minn. R. 7845.0400 (emphasis added).

A look at the process, MPCA and Commerce's machinations for Freeborn Wind, and Commission treatment of Freeborn Wind, there are examples of lack of integrity and impartiality, of giving preferential treatment to an interested entity. The Commission has lost independence and impartiality of action. The decision has been made, for all intents and purposes, outside official channels, in private between Freeborn Wind, Commerce, and MPCA, arguably and generously assuming Commission knew nothing about these discussions and agreement. This process failure absolutely adversely affects the confidence of the public in the integrity of the Commission.

At this time, considering all of the above, AFCL requests that this LATE FILED addendum to its Motion be accepted, and that the Commission Reconsider its September 20, 2018 decision and December 19, 2018 written order, and remand the siting docket to the Administrative Law Judge for rehearing and due process, including public fact-finding regarding improper MPCA and Commerce actions, modeling and use of a 0.0 ground factor, with opportunity for discovery, cross-examination, briefing, and argument.

Respectfully submitted,

February 14, 2019



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Exhibit L

AFCL 2nd Request in writing for Notice of Pre-Construction Meeting

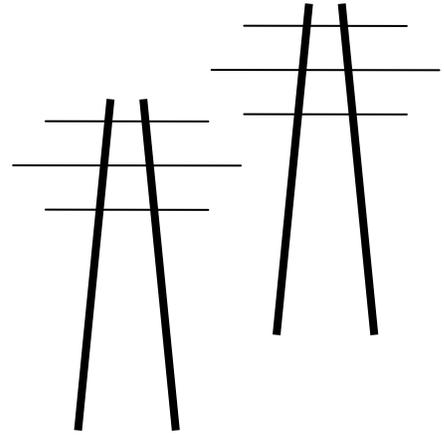
November 25, 2019

PUC Docket IP-6946/WS-17-410

Legalelectric, Inc.

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DATA PRACTICES ACT REQUEST

November 25, 2019

Daniel Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 – 7th Place East, Suite 350
St. Paul, MN 55101

via email and eDockets

John Wachtler
Energy Program Director
Commerce – EERA
85 – 7th Place East, Suite 500
St. Paul, MN 55101

via email and eDockets

RE: **DATA PRACTICES ACT REQUEST – COMMISSION AND COMMERCE**
Application of Freeborn Wind Energy, LLC for a Large Wind Energy
Conversion System Site Permit for the 84 MW Freeborn Wind Farm in
Freeborn County
PUC Docket: IP-6946/WS-17-410

Dear Mr. Wolf:

Association of Freeborn County Landowners once more requests the Commission refer the Freeborn Wind siting permit docket to OAH for a contested case hearing on the many material issues of fact, in particular the adequacy and sufficiency of Xcel Energy's Permit Amendment Request/Application filings on August 20, 2019, and its Compliance Filings on November 8, 2019. The specifics have been set forth in AFCL's Initial and Reply filings earlier this month.

In an apparent "it's better to ask forgiveness than ask permission," Xcel Energy announced in a letter Friday that it intends to begin construction on the Freeborn Wind project in December, 2019, apparently predicated on its November 8, 2019 and August 20, 2019 filings. Friday's announcement is premature. AFCL strongly objects to Xcel Energy's intent and presumptions.

The Commission has consistently prohibited “construction,” and has regarded activity including storage as construction. Further, Freeborn County’s Ordinance prohibits an O&M building in that area, relevant because the Commission appears to be shifting towards reliance on the County Ordinance as support (and distancing itself from the Small Wind Standards). The plan and profile filed in the “Compliance Filings” were filed in the WS-17-410 docket – the O&M building is incorporated into that docket.

The Commission Noticed a comment period, Initial Comments have been filed and Reply Comments were due last week. The Commission has yet to issue staff briefing papers or a meeting notice, or make its decision on what type of proceeding to utilize for this permit amendment request.

Xcel’s “asking forgiveness is easier than seeking permission” letter, announcing its intention to begin construction at this time and preparing for December work, again, is premature, because it is unknown how long it will take for the Commission to make a decision, much less complete the review process, whatever it may be. A blanket is not necessary. Gravediggers, septic installers, and others have long established practices to dig in the winter.

Yes, beginning construction at this point is “at their risk.” But is Xcel’s “forgiveness” approach one that should be sanctioned... or sanctioned? AFCL requests that the Commission instruct Xcel Energy to postpone activities until the Commission has made its decision regarding the permit amendment request, after public process, independent verification, and review of the specifics of Xcel’s permit amendment request.

Regarding start of construction in December 2019:

Per the Permit, filings are to be completed at least 14 days prior to a pre-construction meeting as set forth in Permit Sections 5.1; 5.2.1; 5.2.9; 5.2.10; 5.2.12; 5.2.16; 5.5.2; 7.2; 7.3; 7.4; 7.5.1; 8.1; 10.1; 10.2; 10.3; and 10.10. Noise modeling is to be filed at least 60 days prior to the pre-construction meeting, and the Decommissioning Plan at least 60 days prior to the pre-operational meeting. Xcel’s revised Application was filed August 20, 2019, Compliance Filings on November 8, 2019, and filings on the subjects of those Permit Sections listed above were filed on those days.

As of yet, there has been no public review, no agency independent verification and review, and no Commission determination of the sufficiency of these filings. AFCL and many others have filed comments and evidence entered by Affidavit calling the adequacy of those filings into question and raising material issues of fact, particularly regarding noise, shadow flicker, decommissioning, and the complaint process.

The Commission adopted Findings regarding Freeborn Wind’s demonstration of compliance with noise standards and the floor of public process regarding Freeborn’s noise modeling:

Finding 243

Should the Commission choose to do so, it could provide Freeborn Wind with an opportunity to submit a plan demonstrating how it will comply

with Minnesota's noise standards at all times throughout the footprint of the Freeborn Wind Project. ~~The plan should include low frequency noise measurements for evaluation in consultation with MDH.~~

Finding 244

The Administrative Law Judge further recommends that the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota's noise standards.

Order, December 19, 2018; see also Minn. Stat. §216E.08 Public Participation.

One example of the inadequacy of the filings is regarding Shadow Flicker, where the modeling provided by the Applicants shows many "receptors" will likely experience more than 30 hours of shadow flicker. The Permit states:

Permit Section 7.2 Shadow Flicker

Should shadow flicker modeling identify any residence that will experience in 30 hours, or more, of shadow flicker per year, the Permittee must specifically identify these residences in the Shadow Flicker Management Plan. If through minimization and mitigation efforts identified in the Shadow Flicker Management Plan the Permittee is not able to reduce a residence's anticipated shadow flicker exposure to less than 30 hours per year a shadow flicker detection systems will be utilized during project operations to monitor shadow flicker exposure at the residence. The Shadow Flicker Management Plan will detail the placement and use of any shadow flicker detection systems, how the monitoring data will be used to inform turbine operations, and a detailed plan of when and how turbine operations will be adjusted to mitigate shadow flicker exposure exceeding 30 hours per year at any one receptor. The results of any shadow flicker monitoring and mitigation implementation will be reported by the Permittee in the Annual Project Energy Production Report identified in Section 10.8 of this Permit.

The Applicant is to "specifically identify these residences in the Shadow Flicker Plan," and it has not done so. Further, there has been no determination of the adequacy and sufficiency of the Shadow Flicker information provided. AFCL has reviewed the shadow flicker numbers and found that many homes are recipients of a great excess of 30 hours. Do the math! Again, this review and determination must be done in a public process, at the very least, that process set out in FoF 243 and 244 above.

DATA PRACTICES ACT REQUEST TO PUC AND COMMERCE-EERA

1. AFCL requests all documentation of notice, planning, and scheduling of any and all pre-construction meetings for the Freeborn Wind project by and between the Commission and Commerce with Freeborn Wind (Invenergy and/or Xcel) and Freeborn County.

2. **AFCL AGAIN requests notice, of at least 10 days, of the time and location of any and all pre-construction meetings for the Freeborn Wind project. AFCL is a party in this proceeding.**
3. AFCL requests all documentation of review, correspondence, memos, by Commission and/or Commerce, to and/or from the Commission, and to and/or from Freeborn Wind (Xcel Energy and/or Invenergy), about Freeborn Wind's (Xcel Energy and/or Invenergy) Permit Amendment Request/revised Application of 8/20/2019.
4. AFCL requests all documentation, between 6/8/2019 and the present, of review, correspondence, memos, by Commission and/or Commerce, to and/or from the Commission, and to and/or from Freeborn Wind (Xcel Energy and/or Invenergy), regarding the subjects of, and of and to and from Freeborn Wind (Xcel Energy and/or Invenergy), about Freeborn Wind (Xcel Energy and/or Invenergy)'s filed Compliance Filings, of 11/8/2019.
5. AFCL requests all documentation, between 6/8/2019 and the present, of review, correspondence, memos, by Commission and/or Commerce, to and/or from the Commission, and to and/or from Freeborn Wind (Xcel Energy and/or Invenergy), regarding Freeborn Wind (Xcel Energy and/or Invenergy).
6. AFCL requests all documentation of review, correspondence, memos, by Commission and/or Commerce, to and/or from the Commission, and to and/or from Freeborn Wind (Xcel Energy and/or Invenergy), regarding Freeborn Wind noise monitoring and the noise modeling filed 8/20/2019, including but not limited to applicant's use of 0.5 ground factor/effect and 0.0 ground effect.
7. AFCL requests all documentation of review, correspondence, memos, by Commission and/or Commerce, to and from the Commission, and to and from about Freeborn Wind (Xcel Energy and/or Invenergy), regarding Freeborn Wind's shadow flicker modeling filed on 8/20/2019.
8. AFCL requests all documentation of review, correspondence, memos, by Commission and/or Commerce, to and from the Commission, and to and from about Freeborn Wind (Xcel Energy and/or Invenergy), regarding Freeborn Wind's decommissioning plan filed 2/11/2019.
9. AFCL requests all documentation of review, correspondence, memos, by Commission and/or Commerce, to and from the Commission, and to and from about Freeborn Wind (Xcel Energy and/or Invenergy), regarding Freeborn Wind's proposed Complaint Process filed on 11/8/2019.

If you have any questions or require anything further, please let me know.

Very truly yours

A handwritten signature in cursive script that reads "Carol A. Overland".

Carol A. Overland
Attorney at Law

cc: Association of Freeborn County Landowners
All parties via eDockets

Exhibit M

PUC Staff email acknowledging 1st Notice of Pre-Construction Meeting

April 23, 2019

PUC Docket IP-6946/WS-17-410

FW: Agency Distribution IP6946/TL-17-322 Association of Freeborn County Landowners Letter

Kaluzniak, Mike (PUC) </O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=1B04572B6C9F433F86AE8FEFA5FBAB16-MIKE KALUZN>

Tue 4/23/2019 12:47 PM

To: Barlow, Ryan (PUC) <ryan.barlow@state.mn.us>; Eknes, Bret (PUC) (bret.eknes@state.mn.us) <bret.eknes@state.mn.us>

 1 attachments (130 KB)

17-322 Public Info Request 4-23-19 20194-152242-01.pdf;

Here's a companion piece on the project's transmission line docket. It's unusual as Andrew Levi was staff lead and John only showed up at a couple of the public pieces. Also worth noting is the potential for having AFCL "pop in" for preconstruction hearing(s).

From: eService.admin@state.mn.us <eService.admin@state.mn.us>

Sent: Tuesday, April 23, 2019 11:46 AM

To: Bruce, Charley (PUC) <charley.bruce@state.mn.us>; Kaluzniak, Mike (PUC) <mike.kaluzniak@state.mn.us>; Levi, Andrew (COMM) <andrew.levi@state.mn.us>; Eknes, Bret (PUC) <bret.eknes@state.mn.us>; Davis, Richard (COMM) <richard.davis@state.mn.us>; linda.s.jensen@ag.state.mn.us

Cc: MN_PUC_Docketing <docketing.puc@state.mn.us>

Subject: Agency Distribution IP6946/TL-17-322 Association of Freeborn County Landowners Letter

You are listed as assigned staff and/or a manager for this docket. A new document has arrived.

Submission Number: 20194-152242 has been accepted.

Docket Number: IP6946/TL-17-322

Docket Description: In the Matter of the Application of Freeborn Wind Energy LLC for a Route Permit for the 161 kV Freeborn Wind Transmission Line in Freeborn County

Document Type: Letter

Received Date: 04/23/2019

On behalf of: Association of Freeborn County Landowners

[Click here to view the document](#)

For questions contact [eService.admin@state.mn.us]eService.admin@state.mn.us

Exhibit N

London Township Ordinance 17-1

See p. 5-6

AN ORDINANCE RELATING TO OVERSIZE TRUCK USE

London Township Minnesota

Ordinance No. 17-1

Preamble:

Pursuant to federal law, the state legislature is granted a set of police powers to local municipalities to utilize or distribute as they choose. In accordance with these powers, the legislature has granted local municipalities certain police powers via state statutes to undertake or regulate certain activities including transportation activities. Minn. Stat. §169.04 provides power and authority for local municipalities to regulate and restrict transportation in respect to local streets and highways. In addition, Minn. Stat. §§169.80-169.88 extends this same power to allow the local municipalities to regulate or prohibit access to highways based on weight and size as, in the discretion of such local municipality, to best serve the traffic for which the highway is intended. Lastly, subject to Minn. Stat. §169.87, a town board is granted the power to impose road and load specific restrictions upon township roads.

Findings:

Based on the facts, studies and evidence submitted and accepted on the record at its regular meeting on June, 8, 2017, the Town Board of Supervisors by and for London Township, Minnesota (hereafter, the "Board") makes the following findings of fact:

1. The Board is concerned about the potential for significant environmental effects associated with oversized and overweight trucks defined as any vehicle or vehicles of a size or weight exceeding the limitations stated in Minn. Stat. §§169.80-169.88, or otherwise in violation of Minn. Stat. §§169.80-169.88, and the maximum size and weight of vehicles as prescribed in Minn. Stat. §§169.80-169.88 ("OS/OW Trucks") traffic over and on the roads which London Township, Minnesota (the "Township") is responsible to regulate, maintain and manage.
2. Oversized trucks negatively impact traffic, congestion and cause additional emissions of air pollutants as a result of such traffic and congestion; and
3. Larger, heavier trucks are less maneuverable and have less horsepower in relation to their weight and therefore are likely to have trouble speeding up or slowing down causing yet more traffic congestion.
4. These large OS/OW Trucks have inferior traction capabilities, speed maintenance on inclines, and merging, turning, lane changing and will increase congestion for other citizens. Increased congestion leads to production of additional vehicle exhaust and pollution.
5. Larger, heavier OS/OW Trucks are also associated with increased crash rates and severity. The higher center of gravity also increases potential for rollover and turn-related

crashes. In the event that an accident does occur, the heavier weight of oversized trucks will cause additional monetary damage and human injuries and potential fatalities.

6. Additionally, the traffic of OS/OW Trucks will be a disturbance for local residents, flora and fauna. The OW/OW trucks produce louder sounds than smaller trucks including engine noises and engine braking. These noises are offensive and disruptive, especially during the quiet hours of the night.
7. OS/OW Trucks cause visual and aesthetic pollution and are also unappealing to the eye and will rid London Township of its small town feel. The trucks will cause additional damage to the roadways which have a direct negative impact on current citizens' vehicles and the OS/OW trucks will reduce the usability of the shoulders by making them increasingly more dangerous.
8. Minn. Stat. §169.86, *et. seq.* gives the Board authority to regulate OS/OW Trucks on streets, roads or highways for which the Township is responsible to regulate, maintain or manage (collectively, the "Township Roads").
9. The Board finds that to identify, minimize and mitigate any potential for significant environmental effects a permitting, which incorporates Environmental Review of such effects, for OS/OW Truck use on Township Roads is necessary.

Now WHEREFORE the Board does hereby ordain:

As a preliminary matter, the Board does hereby adopt and incorporate in full into this Ordinance, the definitions, rules and requirements of Minnesota Rules 4410, *et. al.*, as the environmental review operating procedures London Township will follow in implementing the provisions of the Minn. Stat. §116D relating to Minnesota's environmental review policy and any rules adopted thereunder by the Minnesota Environmental Quality Board. All terms used in this Ordinance shall have the same meaning as the terms used in Minn. Stat. §116D and the rules adopted thereunder.

Section I. Application.

This ordinance shall apply to any project or action which anticipates the use of any OS/OW Trucks on Township Roads (collectively, "Action" hereafter) and:

- A. involves the physical manipulation of the environment, directly or indirectly (see definition of action at Minn. Rule 4410.0200, subpart 65);
- B. that requires at least one governmental approval; and
- C. is listed in a mandatory EAW or EIS category of the state environmental review program, Minn. Rules, 4410.4300 and 4410.4400, one copy of which is on file with the town clerk.

- D. This ordinance shall not apply to actions which the Board determines are so complex or have potential environmental effects which are so significant that review should be completed under the state environmental review program, Minnesota Rules, parts 4410.0200 to 4410.6500. Nor shall this ordinance apply to any action for which the Board determines by written action that such actions do not have the potential for significant environmental effects.
- E. Any Action shall require a special permit (“Township OS/OW Truck Permit”), issued by the Board. Such Township OS/OW Permits may be issued by the Board based on the following requirements.

Section 2. Preparation.

Prior to or together with any request or application for a Township OS/OW Truck Permit, the Board shall require the preparation, review and completion of an environmental review consistent with the requirements of Minn. Stat. §116D, any rules adopted thereunder by the Minnesota Environmental Quality Board and this Environmental Review Program (hereafter, the “Environmental Review”). This Board shall be designated as the Responsible Governmental Unit (“RGU”) for any Environmental Review conducted pursuant to this ordinance or Minn. Stat. §116D.

Section 3. Cost of Preparation and Review.

- A. Information to be Provided. The applicant for a Township OS/OW Truck Permit which requires Environmental Review pursuant to this ordinance shall supply, at no cost to, in the manner prescribed in writing by the Board all unprivileged, Public data or information reasonably requested by the Board that the applicant has in its possession or to which it has reasonable access.
- B. Environmental Review. The applicant for Township OS/OW Truck Permit for which Environmental Review is required either by Minn. Stat. §116D, any rules adopted thereunder by the Minnesota Environmental Quality Board or by the this ordinance shall pay all costs incurred by the Township and Board for the preparation, review and completion of such Environmental Review.
- C. Deposit. The applicant shall be required to deliver to the Board a cash deposit of no less than fifty percent (50%) of the Board estimated cost of completion of the Environmental Review and adequate security, as determined solely by the Board, for the payment of the total cost of preparation, review and completion of the Environmental Review prior to commencement of any work or preparation the Environmental Review by the Township or the Board.
- D. Completed Environmental Review. The Board and the applicant for Township OS/OW Truck Permit for any Action f shall comply with the provisions of the

Minnesota Rules governing assessment of costs for Environmental Review. One copy of the completed Environmental Review shall be kept on file in the office of the Township Clerk, unless the applicant and the Board, provide otherwise by a written agreement.

- E. Payment of Costs. No Township OS/OW Truck Permit for which an Environmental Review is required by this Ordinance shall be issued until all costs or preparation and review which are to be paid by the applicant are paid in full, and all information required is supplied, and until the Environmental Review process has been completed as provided in this Ordinance and pursuant to any written agreement entered into by the applicant for the permit or permits and the Board under the provision of Paragraph E of this Subdivision.
- F. Agreements Concerning Cost of Preparation of the Environmental Review. The applicant for a Township OS/OW Truck Permit for any Action for which Environmental Review is required by this Ordinance and the Board may, in writing, agree as to a different division of the costs of preparation of the Environmental Review.

Section 4. Review.

Upon completion and filing of the Environmental Review by the Township with the Minnesota Environmental Quality Board (the "EQB") as required by Minnesota Statute 116D, *et. al.*, The applicant shall take all actions necessary to cause the EQB publish notice of the availability of the Environmental Review in the EQB Monitor including solicitation of comments. Comments received shall be submitted to the Board within 30 days following the publication of the notice of availability in the EQB Monitor. The Board may hold a public meeting to receive comments on the Environmental Review if it determines that such a meeting is necessary or useful. The meeting may be combined with any other meeting or hearing. Public notice of any such public hearing to receive comments on the Environmental Review shall be published in a newspaper of local circulation no less than ten (10) working days before such hearing.

Section 4. Decision. In granting Township OS/OW Truck Permit subject to review under this ordinance, the Board shall consider the Environmental Review and comments received regarding the same. The Board shall, whenever practicable and consistent with other laws, require that mitigation measures identified in the Environmental Review be incorporated into the requirements for the Township OS/OW Truck Permit.

Section 5. Administration. The London Township Clerk shall be the person responsible for the administration of this Environmental Review Ordinance and the statutes and rules adopted by reference in this Ordinance.

Section 6. Enforcement and Penalty.

- A. No Township OS/OW Truck Permit shall be issued for which an Environmental

Review is required until all requirements of this ordinance are completed.

- B. Any person who violates any provision of this Ordinance is guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine not exceeding \$500 or imprisonment for 90 days or both. Each day that the violation exists constitutes a separate offense.

Based on these findings of fact, other data and facts which are part of the official record of London Township, the Board hereby adopts the preceding ordinance regarding the requirements for application, review or issuance for any Township OS/OW Truck Permit as necessary for the use of the streets, roads and highways for which London Township has jurisdiction and maintenance responsibilities.

Adopted this July 13th day of July, 2017

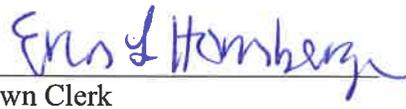
Attested:



Town Board Supervisor

7-13-17

Date



Town Clerk

7.13.17

Date

Exhibit O

Commerce-EERA – Permit Amendment Recommendation

November 12, 2019

November 12, 2019

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
127 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: Department of Commerce, Energy Environmental Review and Analysis
Request for Site Permit Amendment – Turbine Technology and Turbine Layout Changes
Freeborn Wind Farm – LWECs Site Permit
Freeborn County, Minnesota

PUC Docket No. IP-6946/WS-17-410

Dear Mr. Wolf:

Attached are the comments and recommendations of the Minnesota Department of Commerce, Energy Environmental Review and Analysis (EERA) staff in the above stated matter.

Northern States Power Company, doing business as Xcel Energy, has requested an amendment to the Freeborn Wind Farm's site permit originally issued on December 19, 2018 and amended by the Commission on May 10, 2019. The permit amendment requested is primarily driven by the permittee's selection of turbine technology that was not included in the issued site permit, and also the resulting modifications made to the project's turbine layout.

Permittee Contact Information:

Bria E. Shea
Xcel Energy
Director, Regulatory and Strategic Analysis
414 Nicollet Mall, GO-2
Minneapolis, MN 55401

Email: bria.e.shea@xcelenergy.com

EERA staff is available to answer any questions you or the Commission may have.

Sincerely,



Richard Davis
Environmental Review Manager

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AFCL Exhibit O

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

COMMENTS AND RECOMMENDATIONS OF
MINNESOTA DEPARTMENT OF COMMERCE
ENERGY ENVIRONMENTAL REVIEW AND ANALYSIS STAFF

DOCKET No. IP-6946/WS-17-410

Date: November 12, 2019

EERA Staff: Richard I. Davis 651-539-1846

In the Matter of the Application of Freeborn Wind Energy, LLC for a Large Wind Energy Conversation System Site Permit for the 84 MW Freeborn Wind Farm in Freeborn County, Minnesota.

Issue(s) Addressed:

1. Should the Commission amend the Freeborn Wind Farm site permit to change the number, type, size, and layout of the turbines to be used, as well as the layout of certain associated facilities?
2. Should any permit conditions be modified or added if the requested amendments are approved?

Additional documents and information can be found on the EERA website
<https://mn.gov/eera/web/project/592/> or on eDockets
<https://www.edockets.state.mn.us/EFiling/search.jsp> (Year "17" and Number "410").

This document can be made available in alternative formats; i.e. large print or audio tape by calling (651)539-1530.

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Introduction and Background

Freeborn Wind Energy, LLC, the original permittee, received a Large Wind Energy Conversion System (LWECS) Site Permit issued by the Commission on December 19, 2018. The Commission amended the site permit on May 10, 2019. On June 18, 2019, Northern States Power, doing business as Xcel Energy, purchased the Freeborn Wind Farm. Xcel Energy requested a LWECS permit transfer, and the Commission verbally approved the permit transfer on September 5th. The written order authorizing the permit transfer was issued on October 22, 2019. Xcel Energy, the current permittee, has requested an amendment of the site permit, which will reflect the Permittee's selection of different turbine technology than what is identified in the original site permit. The permittee is requesting to use 10 Vestas V110 turbines and 31 Vestas V120 turbines. The originally permitted Project included the use of 10 Vestas V110 turbines and 32 Vestas V116 turbines. The Vestas V120 turbine does have a larger rotor swept area than the Vestas V116, which gives the machine a greater capacity factor, but it will also result in greater turbine setback distances when rotor diameter determines the distance. The Permittee has also proposed an amendment to the permitted turbine layout, which has been modified to accommodate the Permittee's new turbine technology selected for this project.

The Permittee's amendment request has addressed a number of sections within the site permit which identify turbine setbacks, necessary modeling efforts, coordination with DNR, wildlife monitoring efforts, and provided a project turbine layout map with the updated turbine layout.

The Permittee has provided updated environmental analysis to allow for comparison of the proposed amendment to the turbine technology, as well as the proposed amended turbine layout, to the original turbine technology and layout applied for and permitted by the Commission.

The Permittee has analyzed impacts to numerous resources in the project area, including; demographics, land use, noise, visual impacts, public services and infrastructure, cultural and archaeological, recreational lands, public health and safety, hazardous materials, land-based economies, tourism, local economies, topography, soils, geologic and groundwater resources, surface water and floodplain resources, wetlands, vegetation (including land cover types and native plant communities), wildlife, and rare and unique resources.

The Permittee has indicated no change to anticipated Project impacts for a number of resources in the project area when comparing the originally planned and permitted turbine technology and turbine layout, with the proposed amendment to turbine technology and the amended 2019 turbine layout.

Resources not anticipated to experience any changes in impacts with the proposed amendments, include the following;

- demographics
- land use
- public services and infrastructure
- hazardous materials
- local economies
- topography
- soils
- geologic and groundwater resources

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- surface water and floodplain resources
- wildlife
- rare and unique features.

Updated information on a number of resources has been provided by the Permittee in the 2019 Amendment Request. This updated information is in relation to the Project's 2017 Permit Application.

Updated resource information has been indicated as follows;

- Recreation
 - o Renaming of a portion of the Goose Lake Waterfowl Production Area (WPA) to Bhagyam WPA.
 - o Updated designated snowmobile trail location.
- Public Health and Safety
 - o One new airport, Radloff's Cedar View Farms, was identified 1.6 miles to the east of the project area
- Cultural and Archaeological Resources
 - o Five new archaeological sites were identified during the June 2019 literature review.
 - All five of these sites were identified in a 2018 field site evaluations conducted for the Project, and then were reported to the Minnesota State Historical Preservation Office (SHPO)
 - o Architectural resource site FE-OAK-001, which was identified in the 2017 Permit Application, was determined to be a half mile outside the 1 mile study area.
 - Removed from updated Table 8.6-1
 - o Architectural resource sites FE-GLE-002 and FE-GLE-003 were both determined to be within the 1 mile study area.
 - Both added to updated Table 8.6-1
- Land-based Economies
 - o 2019 Project Layout will permanently impact 30.3 acres of agricultural land, and the 2017 Project Layout would permanently impact 33.3 acres of agricultural land.
 - o 2019 Project Layout will permanently impact approximately 7.9 acres of prime farmland, and the 2017 Project Layout would permanently impact approximately 8.5 acres of prime farmland.
- Tourism
 - o 2019 Project Layout documents identify a snowmobile trail that crosses the southwest corner of the project area.
 - o 2019 and 2017 Project Layouts both place turbines further than 500 feet from designated snowmobile trails.
- Wetlands
 - o 2019 Project Layout documents identify a new, approximately 2.9 acres of freshwater pond/riverine wetland as indicated on the National Wetland Inventory (NWI) maps.
 - o The 2019 Project Layout will impact no wetlands identified on the most recent version of the NWI maps, and field surveys will be conducted prior to construction to provide verification of all wetland boundaries that may be impacted by the Project.
- Vegetation
 - o Land cover types have been updated in the 2019 Project Layout documentation, and these updates reflect the most recent National Land Cover Designation (NLCD).

- The 2019 Project Layout will permanently impact approximately 38.3 acres of land, versus the 38.2 acres of land permanently impacted by the 2017 Project Layout.
- 2019 Project Layout documents identify an additional 2.4 acres of native prairie mapped by the MN DNR within the project area.
 - The additional 2.4 acres of native prairie are not impacted by the proposed project facilities.

The Permittee has specifically provided an updated noise assessment and updated shadow flicker assessment for the proposed 2019 Project Layout.

The noise assessment of the 2019 Project Layout also indicates the utilization of Serrated Trailing Edge (STE) blade technology on some of the turbines. The updated noise assessment indicates that the loudest noise levels experienced at any residence would be 45.4 dBA (turbine noise only) and less than 47 dBA (turbine and background noise).

The Shadow Flicker Assessment has been updated to incorporate the larger Vestas V120 turbine technology and the 2019 Project Layout. The updated assessment indicates that under the realistic modeling scenario the participating residents with the highest shadow flicker would experience 42 hours and 31 minutes per year, and the non-participating residents with the highest shadow flicker would experience 41 hours and 57 minutes per year. Six residences, three participating and three non-participating, are anticipated to experience greater than 30 hours of shadow flicker per year. The Permittee also noted that this analysis does not include any shadow flicker blockage caused by trees, building, or specific building designs.

The Permittee has specifically requested an amendment to the Site Permit language for Section 2.0 Project Description and Section 3.0 Designated Site, and inclusion of an updated map to reflect the 2019 Project Layout referenced in Section 3.1 Turbine Layout. Additionally, the Permittee has indicated how their amendment request has addressed various sections of the site permit; Section 4.1 Wind Access Buffer, Section 4.2 Residences, Section 4.3 Noise, Section 4.9 Wind Turbine Towers, Section 5.2.26 Tower Identification, Section 5.4 Electrical Collector and Feeder Lines, Section 7.2 Shadow Flicker, Section 7.5.1 Avian and Bat Protection Plan, and Section 10.3 Site Plan.

EERA Comments and Recommendation

The Permittee has been coordinating with Department of Commerce, Energy Environmental Review and Analysis (EERA) staff to insure that necessary documentation was provided, and to make sure the necessary permit conditions were addressed when requesting the amendment of permitted turbine technology and the amendment of the permitted turbine layout. EERA has reviewed the permit amendment request, and the additional documents provided by the Permittee.

EERA has reviewed the Permittees environmental analysis of the potential resource impacts that may be the result of proposed amendments, which provided a comparison of the 2019 amendments requested and the project layout and details provided in the Project's 2017 permit application and issued site permit.

The following resources have been analyzed and reviewed;

- demographics
- land use
- noise
- visual impacts
- public services and infrastructure
- cultural and archaeological
- recreation
- public health and safety
- hazardous materials
- land-based economies
- tourism
- local economies
- topography
- soils
- geologic and groundwater resources
- surface water and floodplain resources
- wetlands
- vegetation (including land cover types and native plant communities)
- wildlife
- rare and unique resources

EERA has determined the anticipated resource impacts of the Project's 2019 requested amendments are comparable to the impacts identified in the Project's 2017 permit application.

The Permittee's primary reason for requesting a permit amendment is to utilize different turbine technology than what is identified in Section 2.0 – Project Description of the site permit, amend the quantity of land currently under lease in Section 3.0 Designated Site of the site permit, and to amend the permitted turbine layout identified in Section 3.1 – Turbine Layout of the site permit.

EERA believes the requested change in turbine technology is appropriate. The Permittee will be utilizing Vestas V110 and Vestas V120 turbine models, which are both 2.0 megawatt (MW) machines and are comparable in size and dimension to the turbines, Vestas V110 and Vestas V116, which were reviewed in the initial permit application process and are currently identified in the original site permit.

EERA recommends the site permit be amended to include the Permittee's proposed changes to the language in Section 2.0 – Project Description to reflect the change in turbine technology, proposed changes to the language in Section 3.0 Designated Site to indicate the accurate acreage of lands held under easement by the Permittee, and the turbine layout maps identified in Section 3.1 – Turbine Layout of the site permit be amended to include the updated turbine layout maps provided by the Permittee.

Based on EERA's review, the Permittee's requested turbine technology change, updated easement land quantities, and turbine layout amendments comply with all conditions of the site permit, except Section 2.0, Section 3.0, and Section 3.1, which are currently requested for amendment.

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Specifically identified by the Permittee, in the permit amendment request, EERA believes the amended turbine technology, easement land quantities, and turbine layout will meet the requirements in the following site permit sections:

- Section 4.1 Wind Access Buffer
- Section 4.2 Residences
- Section 4.3 Noise
- Section 4.9 Wind Turbine Towers
- Section 5.2.26 Tower Identification
- Section 7.2 Shadow Flicker

The Permittee's request to amend the site permit also identified sections of the site permit that will be addressed and satisfied as the project proceeds with required pre-construction coordination and compliance:

- Section 5.4 Electrical Collector and Feeder Lines (will be included in the site plans)
- Section 7.5.1 Avian and Bat Protection Plan (coordinating with DNR and EERA)
- Section 10.3 Site Plan (pre-construction filings)
- Section 11.1 Decommissioning Plan

EERA recommends the Commission approve the Permittee's requested amendments to the Freeborn Wind Farm site permit Section 2.0, Section 3.0, and Section 3.1. The anticipated environmental and human impacts associated with the change in turbine technology and change in turbine layout, including a change in location of certain infrastructure, appear to be comparable, or less than, the potential impacts associated with the originally permitted wind turbine models and turbine and infrastructure layouts.

At this time EERA does not recommend the modification or addition of any other permit conditions/sections.

EERA recommends that the Permittee file maps that will more clearly display that turbine locations are appropriately sited to satisfy the 5 RD x 3 RD setback from non-participating property boundaries, as displayed on updated Figure 4 in Attachment D of the Amendment Request. Specifically, providing a zoomed-in view of turbines 3, 6, 13, 14, 18, 19, 24, 25, 27, 29, 42, and 48, would provide additional reassurance that the appropriate setbacks from non-participating property boundaries are being satisfied.

Exhibit P

Invenergy Application – Freeborn Wind

Appendix B, Noise Modeling

p. 12, Use of 0.0 ground factor for modeling

PUC Docket IP-6946/WS-17-410

The Vestas sound power levels were determined according to International Electrotechnical Commission standard IEC 61400-11:2012 *Wind Turbines – Part 11: Acoustic noise measurement techniques*. This standard requires sound power levels to be reported for a number of wind speed bins across the operating range of the turbine. In general, emitted sound levels increase with increasing winds speeds, up to approximately 10 meters per second at hub height (approximately 7 meters per second when measured at the standard height of 10 meters). Noise levels do not further increase above this wind speed because the turbines reach a maximum rotational speed.

Note that the IEC 61400-11 standard requires the measurement of noise levels using a one- to 10-minute average noise level, which in acoustics is called the equivalent level (L_{eq}). Thus, in effect, the noise levels predicted using this input data are also in terms of the L_{eq} . However, the Minnesota noise standards are in terms of statistical levels (L_{50} and L_{10}). In theory, for a continuously operating wind turbine, the L_{eq} and L_{50} are almost identical over the time period of interest (one minute in the case of the IEC 61400-11 measurements, and one hour in the case of the Minnesota regulation). Thus, one-hour L_{eq} and L_{50} wind turbine noise levels are considered equivalent for the purposes of this analysis.

Collector Substation

The Project's collector substation will contain transformers, switch gear, metering, electrical control and communication systems, and other equipment required to transform Project wind generated power from 34.5kV to 161kV. The only significant noise-producing equipment are the transformers (estimated be two 120 MVA transformers). The analysis assumed the simultaneous operation of both 120 MVA transformers at the substation. The substation location is shown in Figure A-2, and transformer coordinates are listed in Appendix B. Ground elevations for the transformers were determined using the USGS National Elevation Dataset. The transformers were modeled as point sources located 3 meters (10 feet) above the ground, with no barriers or directivity reductions. The spectral shape of transformer noise emissions was estimated using published data and adjusted to match the overall sound power level of 93 dBA, which is a typical level estimated by major utility-scale transformer suppliers. The resulting octave band sound power levels are listed in Table 5-1.

Terrain and Ground Effect

Terrain in the Project area was modeled by importing ground elevations contained in National Elevation Dataset digital elevation model files. However, all long-distance terrain barrier effects were removed to keep the analysis conservative and predict the loudest potential noise levels. The acoustical effect of the ground material was modeled using the ISO 9613-2 General Method. This method requires the selection of ground factors for the ground near the source, near the receiver, and in between. A ground factor of 0.0 represents a completely reflective surface such as pavement, which would result in a higher level of sound reaching a receiver. A ground factor of 1.0 represents absorptive ground such as thick grass or fresh snow, resulting in a lower level of sound reaching the receiver. For this Project, a ground factor of 0.0 (completely reflective) was used to be conservative. Actual ground conditions could, at rare times, be 0.0 when the ground is completely frozen and bare, but would generally be closer to 0.5 when the ground is covered with vegetation or is bare and unfrozen.

Exhibit Q

AFCL Comment and Motion for Contested Case

Material Issues of Fact and Significant Environmental Effects

November 12, 2019

PUC Docket IP-6946/WS-17-410

**BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

**Katie Sieben
Dan Lipschultz
Valerie Means
Matt Schuerger
John A. Tuma**

**Chair
Commissioner
Commissioner
Commissioner
Commissioner**

In the Matter of the Application of Freeborn
Wind Energy, LLC for a Large Wind Energy
Conversion System Site Permit for the 84
MW Freeborn Wind Farm in Freeborn County

PUC Docket No. IP6946/WS-17-410

**ASSOCIATION OF FREEBORN COUNTY LANDOWNERS
COMMENT ON AMENDMENT OF FREEBORN WIND SITE PERMIT
AND
REQUEST FOR CONTESTED CASE**

Northern States Power Minnesota (NSPM) d/b/a Xcel Energy as owner of Freeborn Wind, LLC (hereinafter “Freeborn Wind”) has requested that the Freeborn Wind, LLC site permit be amended. Applicants have both the burden of production and the burden of proof. The Commission accepted the request for amendment of the permit and on October 23, 2019, the Commission issued “Notice of Comment Period,” requesting comments on the following questions:

- Should the Minnesota Public Utilities Commission amend the Freeborn Wind Farm Site Permit to change the number, type and layout of the turbines to be used, as well as additional participating land?
- Should the Commission accept the supplemental environmental impact analysis?
- Should any permit conditions be modified or added if the requested amendments are approved?

- Are there other issues or concerns related to this matter?

Association of Freeborn County Landowners (hereinafter “AFCL”), an intervenor with full party status, offers these initial comments. Because Xcel Energy filed over 20 line item filings, hundreds of pages, in this docket on Friday, November 8, 2019, AFCL has requested an extension of time for comment. Xcel objected, stating “AFCL’s request is premised solely on the Company making pre-construction filings today for project substation and O&M building site preparation (grading in a row crop agricultural field on land owned by Xcel Energy) and pouring of an associated concrete pad.” Xcel’s Friday 26 line item filings go far beyond what Xcel in its Objection states are substation and O&M plans. AFCL again requests a two week extension for filing comments to address these filings, with a 2 week extension for reply comments.

Addressing the Commission’s question of whether the Minnesota Public Utilities Commission amend the Freeborn Wind Farm Site Permit to change the number, type and layout of the turbines to be used, as well as additional participating land, that cannot be determined without a contested. The need for a contested case and public hearings is clear, from the Commission’s adoption of the ALJ’s Findings 243 and 244, and the allowance of time to demonstrate that it could comply with requirements, and in response to the many filings of Xcel Energy with its permit amendment request, and the need for public, party, and agency review. To date, the record does not support, and Freeborn Wind has not demonstrated, that it can comply with permit requirements.

In the original contested case for this project, the Administrative Law Judge found that Freeborn Wind had not demonstrated that it could comply with the MPCA’s noise standard.

Based upon these Conclusions of Law, the Administrative Law Judge respectfully recommends that the Commission deny the site permit to Freeborn Wind Energy, LLC to construct and operate the up to 84 MW portion of the Freeborn Wind Farm in Freeborn

County, Minnesota. In the alternative, the Administrative Law Judge respectfully recommends that the Commission provide Freeborn Energy, LLC with a period of time to submit a plan demonstrating how it will comply with Minnesota's Noise Standards at all times throughout the footprint of the Freeborn Wind Project.

ALJ's Recommendation of Denial, p. 118-119, #5 Conclusions of Law¹; see also Minn. R. 7030.0400.

The Findings of Fact amended and adopted by the Commission include FoF 243 and 244:

Finding 243

Should the Commission choose to do so, it could provide Freeborn Wind with an opportunity to submit a plan demonstrating how it will comply with Minnesota's noise standards at all times throughout the footprint of the Freeborn Wind Project. ~~The plan should include low frequency noise measurements for evaluation in consultation with MDH.~~

Finding 244

The Administrative Law Judge further recommends that the plan be made available for public and agency comment and a hearing held with a summary report. The Commission should then review and approve a pre-construction noise mitigation plan that best assures that turbine noise will not cause noise levels that exceed Minnesota's noise standards.

Order, December 19, 2018. Those Findings as amended above have not been amended or deleted in subsequent orders.

Regarding the Commission's second question, as to whether the Commission accept the supplemental environmental impact analysis, again, the Commission should "accept" it for filing, but a contested case is required to review the information presented by parties, the public, and agencies.

The Xcel Energy Request for Amendment is extensive², over 500 pages, and it requires thorough analysis by parties, the public, and agencies. AFCL hereby requests referral to the Office of Administrative Hearings for a contested case and public hearings to address the many

¹ Initial Filing 5/14/2018 (PUC Unique ID ([20185-143018-01](#)), refiled separating Recommendation from a denial of an AFCL Motion (PUC Unique ID [20185-143479-02](#)).

issues of material fact, including, but not limited to, those presented below.

Based upon this Application for Permit Amendment, the material issues of fact and AFCL’s comment and supported by the Affidavit of Overland and documents attached thereto, comments from the public, AFCL requests a Contested Case addressing the material issues of fact, including, but not limited to:

- Whether the project can and will comply with the noise standard. Minn. R. 7030.0400.
- Whether 3 dB(A), a doubling of sound pressure, is a “non-significant increase.”
- Whether the 3 dB(A) modeling margin of error should be accounted for in determination of likely compliance.
- Whether use of a 0.5 ground factor is supported by the science of wind noise modeling.
- Whether use of 0.0 ground factor is the standard ground factor for wind noise modeling due to height of turbine and direct line to receptors on ground.
- Whether use of a 0.5 ground factor lowers modeled noise by 3 dB(A) from modeling results using 0.0 ground factor.
- Whether failure to include 3 dB(A) margin of error and 3 B(A) impact of use of 0.5 ground factors skews modeling results by predicting lower noise levels.
- Whether addition of 3 dB(A) margin of error and/or 3 dB(A) 0.5 ground factor decrease to the values of Table 5.1 demonstrates likelihood of noise levels above standard.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for wind noise modeling.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling noise where noise source is high above ground level.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling ground noise generation and ground receptors.
- Whether ambient sound measurements are to be included in modeling under 2015 Commerce and MPCA Comments and/or 2012 MPCA Guidelines.
- Whether cumulative impacts of outstate portion of this project and/or other nearby projects are to be included in modeling.
- Whether the increase in size of blades increases noise emitted, and if so, how much.
- Whether use of feathered blades decreases noise emitted, and if so, how much.

2

20198-155331-01	PUBLIC	17-410	WS	XCEL ENERGY	OTHER--SITE PERMIT AMENDMENT APPLICATION-PART 1 OF 4 – Narrative → Attachment C	08/20/2019
20198-155331-02	PUBLIC	17-410	WS	XCEL ENERGY	OTHER--SITE PERMIT AMENDMENT APPLICATION-PART 2 OF 4 – Attachment D (p. 1-10)	08/20/2019
20198-155331-03	PUBLIC	17-410	WS	XCEL ENERGY	OTHER--SITE PERMIT AMENDMENT APPLICATION-PART 3 OF 4 – Attachment D (p. 11-20)	08/20/2019
20198-155331-04	PUBLIC	17-410	WS	XCEL ENERGY	OTHER--SITE PERMIT AMENDMENT APPLICATION-PART 4 OF 4 – Attachment E → J	08/20/2019

- Whether ISO 3613-2 and Minn. R. 7030.0400 address the expected sound power levels at lower bandwidths (i.e., 125, 63, 31.5, and lower).
- Whether participants and non-participants are afforded different treatment under the noise rule.
- Whether permit language and amended permit language and removal of Section 7.4.1 is consistent with requirements of Minn. R. 7030.0400.
- Whether setbacks proposed are sufficient to meet the noise standard.
- Whether small wind standards for noise and noise setbacks, are appropriate to use for LWECS.
- Whether the Commission’s/EERA’s draft site permit and site permit template sections regarding noise has a basis in law or rule.
- Whether shadow flicker modeling accurately depicts potential for impacts.
- Whether 30 hours annually is reasonable limit for shadow flicker.
- Whether project as proposed will limit shadow flicker to 30 hours annually, the ceiling for shadow flicker under both the permit and the Freeborn County ordinance.
- Whether project proposes different shadow flicker limits for participants and non-participants, and if so, whether that is a legitimate distinction.
- Whether reliance on complaints of the affected public to trigger investigation and mitigation of shadow flicker is reasonable.
- Whether applicant has provided all the required decommissioning information for Minn. R. 7854.0500, Subp. 13.
- Whether shifting timing of production of Decommissioning information out beyond granting of permit removes it from public participation and scrutiny, a limitation of due process.
- Whether lease clause allowing shift of decommissioning and cost to landowners, “allowing” landowners to then collect from owner is permissible.
- Whether financial assurance is adequate.
- Whether decommissioning costs are accurate given Xcel and other cost estimates.
- Whether Invenergy’s Dan Litchfield should be the pre-construction contact person.
- Whether the Complaint Procedures filed by Xcel Energy are adequate.

A contested case is necessary to address these issues of material fact.

I. WHETHER THE PROJECT IS LIKELY TO COMPLY WITH THE MPCA’S NOISE STANDARD IS AN ISSUE OF MATERIAL FACT.

In the original contested case for this project, as above, the Administrative Law Judge found that Freeborn Wind had not demonstrated that it could comply with the MPCA’s noise standard. ALJ’s Recommendation of Denial, p. 118-119, #5 Conclusions of Law³; see also

³ Initial Filing 5/14/2018 (PUC Unique ID ([20185-143018-01](#)), refiled separating Recommendation from a denial of an AFCL Motion (PUC Unique ID [20185-143479-02](#)).

Minn. R. 7030.0400. To date, there has been no demonstration that the project can or will comply with the state's noise rule, and there is much in the record to suggest that it will not.

The following are material noise-related issues that are not settled and must be addressed in a contested case, including but not limited to:

- Whether the project can and will comply with the noise standard. Minn. R. 7030.0400.
- Whether 3 dB(A), a doubling of sound pressure, is a “non-significant increase.”
- Whether the 3 dB(A) modeling margin of error should be accounted for in determination of likely compliance.
- Whether use of a 0.5 ground factor is supported by the science of wind noise modeling.
- Whether use of 0.0 ground factor is the standard ground factor for wind noise modeling due to height of turbine and direct line to receptors on ground.
- Whether use of a 0.5 ground factor lowers modeled noise by 3 dB(A) from modeling results using 0.0 ground factor.
- Whether failure to include 3 dB(A) margin of error and 3 B(A) impact of use of 0.5 ground factors skews modeling results by predicting lower noise levels.
- Whether addition of 3 dB(A) margin of error and/or 3 dB(A) 0.5 ground factor decrease to the values of Table 5.1 demonstrates likelihood of noise levels above standard.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for wind noise modeling.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling noise where noise source is high above ground level.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling ground noise generation and ground receptors.
- Whether ambient sound measurements are to be included in modeling under 2015 Commerce and MPCA Comments and/or 2012 MPCA Guidelines.
- Whether cumulative impacts of outstate portion of this project and/or other nearby projects are to be included in modeling.
- Whether the increase in size of blades increases noise emitted, and if so, how much.
- Whether use of feathered blades decreases noise emitted, and if so, how much.
- Whether ISO 3613-2 and Minn. R. 7030.0400 address the expected sound power levels at lower bandwidths (i.e., 125, 63, 31.5, and lower).
- Whether participants and non-participants are afforded different treatment under the noise rule.
- Whether permit language and amended permit language and removal of Section 7.4.1 is consistent with requirements of Minn. R. 7030.0400.
- Whether setbacks proposed are sufficient to meet the noise standard.
- Whether small wind standards for noise and noise setbacks, are appropriate to use for LWECS.
- Whether the Commission's/EERA's draft site permit and site permit template sections regarding noise has a basis in law or rule.

Since the ALJ's Recommendation of Denial, no follow up noise studies were submitted for the record until NSP d/b/a Xcel Energy as owner of Freeborn Wind filed its amendment request on August 20, 2019, which contained, among other things, Attachment E, "2019 Updated Pre-Construction Noise Analysis."

Noise monitoring is a material issue, particularly in light of Freeborn Wind's initial failure to demonstrate it could comply with the MPCA noise standard, and Freeborn Wind's failure to provide such demonstration prior to issuance of the site permit. The Bent Tree noise studies showing exceedences shows how important this is when those studies showed noise exceedences of smaller wind turbines at 1,150 and 1,525 feet.

A fundamental issue of material fact is the applicants use of 0.5 ground factor in noise modeling after use of the 0.0 ground factor failed to demonstrate compliance. Use of a 0.5 ground factor following failure of a demonstration of compliance is "moving the goalposts" and needs to be carefully scrutinized and whether use of that ground factor is appropriate for wind noise modeling must be addressed. Hankard's testimony in the Badger Hollow docket was that wind was an exception to use of a 0.5 ground factor due to the elevation of the noise source:

The model that we use has been shown to predict conservatively with 0.5. I mean, 0.5 ground factor is used in probably -- well, with the exception perhaps of wind turbine projects which are different because the source is elevated. But for projects like a typical power plant, a solar plant where the sources are relatively close to the ground, I would say 90 to 99 percent of the studies use 0.5.

Exhibit A, Hankard, Tr. p. 122, WI PSC Badger Hollow Docket 9697-CE-100.

Wind developers have been found to utilize a 0.5 ground factor when 0.0 produces results predicting noise exceedences, in this docket, and in at least one docket in Wisconsin. 0.0 is the appropriate ground factor for a turbine hundreds of feet in the air with direct access to the receptors, and 0.5 is intended for modeling ground source noise, not wind noise, a greatly

elevated source.⁴ AFCL Exhibit B, Testimony of Schomer, Wisconsin PSC Docket 2535-CE-100; see Exhibit A, Testimony of Hankard (selected), Wisconsin PSC Docket 9697-CE-100⁵. Wind, because it is elevated with a direct path to “receptors,” and not impaired by terrain, vegetation, and/or buildings. The International Standard ISO 9316-2, the noise modeling standard was not developed for wind turbine noise emanating 300+ feet in the air. See Schomer, *id.* ISO 9316-2 and the 1996 revision, ISO 9316-2 (1996) were developed for noise modeling of a facility that is located on the ground and to measure noise impact on “receptors,” also on the ground, and the impact of ground absorption. *Id.* It was not designed for modeling of noise impacts of sources 300+ feet in the air. *Id.* Use of the 0.5 ground factor rather than the 0.0 ground factor as a modeling assumption underpredicts noise by 3dB(A), a doubling of noise, and when added to the modeling 3 dB(A) margin of error, there is a resulting increase by a factor of 2-4 – the amount of the increase in noise depends on the frequency. See Exhibit B, Schomer, 577-578); see *Id.*, Hessler 519-520, 524-525 re: 10 dB(A) margin to allow for compliance.

Wind developers have also failed to include ambient noise studies in conjunction with their project noise modeling, failing to comply with the Minnesota Department of Commerce Wind Noise Guidance and MPCA’s interpretation of noise rules.⁶ For this reason, the Freeborn Invenergy applicant, utilizing Hankard, was ordered to provide that modeling within one week after the close of the hearing to correct that omission, and filed that exhibit on March 1, 2018 (FR-18, Affidavit of Hankard and Noise Tables, [20183-140712-03](#)). This requirement, found in the 2015 Commerce Guideline is reinforced by MPCA’s comment, as above, and further when MPCA’s Frank Kohlasch filed a letter in the Freeborn Wind docket. See Freeborn Wind Hearing

⁴ Exhibit B, Testimony of Schomer, Affidavit of Overland (Wisconsin PSC Docket 2535-CE-100).

⁵ Exhibit A, Testimony of Hankard, Affidavit of Overland (WSPC Docket 9697-CE-100).

⁶ Online at <https://mn.gov/eera/web/project-file?legacyPath=/opt/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20JULY%209%202013.pdf> See MPCA’s Comment, Appendix A (p. 12 of 13).

Exhibit EERA-9, Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report (20183-140949-02); see also MPCA Comments (20189-146351-01). The MPCA Kolasch letter stated expressly that ambient noise was to be included – that “the MPCA has historically, and consistently, interpreted and applied said noise standards for *total* sound⁷.

There is a 3 dB(A) margin of error incorporated into modeling. In the original contested case, when asked about the margin of error, whether it is ± 2 dB(A), Hankard stated:

NO, it's 3.

Tr., Vol 1 B p. 64 l. 2-24 – p. 65 l 1-8; see also Tr., p. 112 l. 15 – p. 113 l. 12; referenced in Permit Order Finding 241 fn 1.

The modeling for the new turbines and disclosure of locations has now been produced by NSP/Xcel, and there must be an opportunity for vetting of this information, in particular because the previous modeling in the record, all modeled using a 0.0 ground factor, was not sufficient to demonstrate compliance. The reliability and credibility of the new noise modeling is a material issue to be established in a contested case hearing.

Xcel Energy/NSPM/Freeborn Wind LLC has yet to demonstrate that it can and will comply, and while it may be possible for Xcel to comply, as of this date, compliance is not supported by fact or the record. Compliance has not yet been demonstrated. The project has changed, and potential for compliance must be demonstrated in a contested case.

II. WHETHER SETBACK DISTANCES PROPOSED ARE ADEQUATE IS A MATERIAL ISSUE OF FACT

Whether the setbacks proposed by the applicants are adequate is a material issue of fact. The movement of turbines proposed in Xcel's plan, and the noise and shadow flicker impacts based on the increased turbine size and placement, must be reviewed in a contested case.

⁷ MPCA's Frank Kolasch letter, September 11, 2018, Freeborn Wind docket IP-6946/WS-17-410. https://legalelectric.org/f/2019/02/Exhibit-M_Kohlasch_Letter_20189-146351-01.pdf

Whether the setbacks for noise, shadow flicker, or other purposes that are proposed by the applicants are sufficient is an issue of material fact. Whether setbacks for these larger turbines that are less than 1,150 and 1,525, the setbacks in the Bent Tree Noise Studies that showed exceedences, are adequate for this project is a material issue of fact. As above, noise monitoring is a material issue, particularly in light of Freeborn Wind’s initial failure to demonstrate it could comply with the MPCA noise standard, and Freeborn Wind’s failure to provide such demonstration prior to issuance of the site permit.

For example, Applicants state that turbine #47 was removed due to noise. Turbines 16, 23, and 37 (participants) and 20, 30 and 40 (non-participants) appear to be the same distance and direction of #47, which was removed. See Amendment Application, part 4 of 4. Why are these other similarly situated turbines not removed? Using google earth and the coordinates of turbines and homes found in Attachment G, turbine #29 appears to be 1370’ from a home. Turbine # 47 appears to be 1,342 feet from a home. It is difficult to tell, but there is a question regarding the distance from turbines to homes, and the information provided is not specific. Mindful that a turbine at 1,342 feet was, by applicant’s admission, removed for “noise,” and that in Bent Tree, one of the homes bought out was 1,525 from the nearest turbine, and with demonstrated exceedences at 1,525 feet, it is an issue of material fact whether the project can comply with the noise standard at less than 1,525 feet.

Table 3-1 Final Measurement Point Locations

Final Measurement Point	Easting	Northing	Distance to nearest turbine, ft
Langrud (BT-M01)	462985	4841921	1150 – Turbine 362
Hagen (BT-M02)	462949	4847019	1525 – Turbine 132

Table 3-1, p. 11, AFCL-11 ([201712-138411-07](#)), Bent Tree Noise Monitoring and Noise Study Phase I, Appendix A; see also Bent Tree Noise Report, Phase II, p. 10 of Comment of Stephanie Richter, 3/15/2019 ([20183-141042-01](#)).

The Bent Tree noise studies showing exceedences of the noise standard at 1,150 and 1,525 feet shows how important this is when those studies demonstrated noise exceedences of turbines smaller than those proposed for this project at 1,150 and 1,525 feet.⁸ Larger, noisier turbines, such as the V120s proposed to replace V116s in this project, would likely require greater setback distances for compliance.

III. SHADOW FLICKER MODELING SHOWS POTENTIAL FOR IMPACTS

There are multiple material issues of fact regarding shadow flicker, including but not limited to:

- Whether shadow flicker modeling accurately depicts potential for impacts.
- Whether 30 hours annually is reasonable limit for shadow flicker.
- Whether project as proposed will limit shadow flicker to 30 hours annually, the ceiling for shadow flicker under both the permit and the Freeborn County ordinance.
- Whether project proposes different shadow flicker limits for participants and non-participants, and if so, whether that is a legitimate distinction.
- Whether reliance on complaints of the affected public to trigger investigation and mitigation of shadow flicker is reasonable.

Shadow flicker is at issue, and the above points are material issues of fact that must be settled. The applicant has provided over 300 pages of shadow flicker data and predictions. After a review of these pages, Dorenne Hansen of AFCL stated in her comment:

The highest shadow flicker occurs for a participant at 6,412 minutes or more than 106 hours. The highest shadow flicker for a non-participant is 7,416 minutes or more than 123.6 hours.

There are 19 participants and 18 non-participants showing over 30 hours of shadow flicker to their receptor.

Hansen Comment, November 11, 2019 (201911-157410).

IV. DECOMMISSIONING PLAN MUST BE REVIEWED AND VETTED.

There are several aspects of decommissioning that constitute material issues of fact,

⁸ See Bent Tree Noise Monitoring Study, p. /, PUC Unique ID #/.

factors not addressed in the contested case proceeding, including but not limited to:

- Whether applicant has provided all the required decommissioning information for Minn. R. 7854.0500, Subp. 13.
- Whether shifting timing of production of Decommissioning information out beyond granting of permit removes it from public participation and scrutiny, a limitation of due process.
- Whether lease clause allowing shift of decommissioning and cost to landowners, “allowing” landowners to then collect from owner is permissible.
- Whether financial assurance is adequate.
- Whether decommissioning costs are accurate given Xcel and other cost estimates.

First is whether the decommissioning plan filed in February, 2019, after granting of the site permit and with no review or vetting in the contested case, is adequate. Under the rules, a plan and decommissioning information including cost and financial assurance plan must be provided in the Application, and it was not. The Commission, Commerce, and the Administrative Law Judge all failed to require that the application comply with the rules. A decommissioning plan was provided after the permit was issued by the Commission, but it has had no review by the public, parties, or agencies.

The decommission plan and financial assurance must be reviewed and vetted in a contested case hearing to establish whether the plan is adequate and whether the applicant has provided all the information required by rule; whether cost estimates are accurate and consistent with other cost estimates; whether the applicant sufficiently takes responsibility for decommissioning; and whether the process for review of the decommissioning plan provides sufficient due process to parties and the public.

The rule regarding application content is specific, and without question, this information was not included in the original application, nor was it included in response to discovery or in testimony in the contested case:

7030.0500, Subp. 13. Decommissioning and restoration.

The applicant shall include the following information regarding decommissioning of the project and restoring the site:

- A. the anticipated life of the project;
- B. the estimated decommissioning costs in current dollars;
- C. the method and schedule for updating the costs of decommissioning and restoration;
- D. the method of ensuring that funds will be available for decommissioning and restoration; and
- E. the anticipated manner in which the project will be decommissioned and the site restored.

Minn. R. 7854.0500, Subp. 13.

No permit should have been granted before this information has been provided, opened for comment, and reviewed by Commerce, the public, parties, and the Commission, as contemplated by the requirement that decommissioning information be included in the application. This is the Commission's responsibility to assure an application, and as agent for the Commission, it is also the Department's responsibility.

Decommissioning is particularly important, because in the project leases, there is a clause which would transfer responsibility for decommissioning to the landowner, who would then need to attempt to collect costs from the project owner:

If Grantee fails to remove such Windpower Facilities within twelve (12) months of termination of the Easement, or such longer period as Owner may provide by extension, Owner may do so, in which case grantee shall reimburse Owner for reasonable and documented costs of removal and restoration incurred by Owner.

Exhibit C, AFCL-35, Wayne Brandt Public Comment from Public Hearing, p. "15" [20183-140948-08](#)

see also Brandt, Public Hearing, p. 133-139. Xcel's response to AFCL's Information Request 9 was that it would not remove this clause allowing a shift of decommissioning responsibility to the landowner, stating it was a standard clause in a wind lease. Exhibit D, AFCL IR 9. Xcel also stated in an Information Request response that it would not add a statement that "*As owner and operator of Project facilities, Xcel Energy will bear the financial responsibility for*

decommissioning activities and Project area restoration.” as it deemed that was “unnecessary.”

Exhibit E, AFCL IR 10.

The Lake Benton II project demonstrates financial assurance through a performance bond:

4.0 DECOMMISSIONING SECURITY

LBII will establish performance bonds with Pipestone County for the total amount of infrastructure located within those communities.

Exhibit H, Lake Benton II (IP-6903/WS-18-179). Freeborn Wind has not established performance bonds with Freeborn County for decommissioning.

The lease clause above, described as a discussed at the hearing, and Xcel’s responses to Information Requests reiterated in Permit Amendment discovery, should be sufficient to trigger scrutiny, production of decommissioning information, and demonstration of financial assurance.

The Commission did not “acknowledge its error in finding the application substantially complete without a decommissioning plan.” Order Amending, p. 11. “[t]he Commission noted that parties had the authority to request the relevant information via discovery.” *Id.* AFCL did request this information, attempting to assure that decommissioning information was in the record, and the response to AFCL IR 16 requesting specifics to sections 10.10 2 and 10.10.3 was:

Freeborn Wind will comply with the terms of the Site Permit as it relates to the preparation, content and distribution of a decommissioning plan. See Section 11.0 of the Draft Site Permit.

Exhibit J, Freeborn Wind Hearing Exhibit AFCL 21, IR 16, Dan Litchfield (January 12, 2018).

That pushes compliance to “after-the-fact” production, and there is no opportunity for public and party review.

Commerce and the Commission have thus far disregarded the application filing requirements of Minn. R. 7845.0500, and did not correct this error prior to issuing a permit. The

Commission claims that it has taken “remedial measures,” but “after-the-fact” production is not sufficient. Now is the time to correct these errors.

The Commission’s Order did not require provision of decommission information prior to granting of the permit, a production which is required under the rules for LWECS applications. Minn. R. 7845.0500, Subp. 13. Whether the decommissioning plan proposed is adequate is an issue of material fact, as the plan has not been reviewed and vetted by parties, the public, or agencies. Another issue of material fact is whether the company is sufficiently locked in to do the decommissioning in light of the “out” in the lease contracts whereby if the owner does not decommission, the landowner would decommission the equipment on that parcel and seek compensation from the project owner. Also an issue of material fact is whether the cost estimate is adequate, particularly where it is roughly one-half of the cost estimate of other Xcel Energy decommissioning estimates. How specifically will decommissioning be funded, and the financial assurance for decommissioning is another issue of material fact.

The Commission’s rules have, for over 20 years, required that decommissioning information be included in any application for a wind site permit. Minn. R. 7854.0500, Subp. 13. In practice, however, the Commission and the Environmental Quality Board before it, and the Department of Commerce, have for over 20 years abjectly ignored this rule! The Commission has declared applications complete without the information required. Commerce has written into its draft Permit provisions allowing this information to be provided after issuance of a permit, contrary to the rule. For the Freeborn Wind siting docket, in both the contested case and the PUC’s consideration, both the ALJ and PUC staff tried to shift this burden of production to AFCL, and allowed the project to be permitted without it. At this point, the decommissioning plan should be carefully reviewed by the parties, public, and agencies.

The cost of decommissioning is an issue of material fact. The Freeborn Wind decommission estimate stated in the February 2019 “Decommission Plan” is not consistent with other wind project decommissioning estimates:

Freeborn Decommissioning Plan Cost Estimate Breakdown (February 2019)	
Turbine sites (100 sites)	
Dismantle turbines	\$ 7,251,413
Trucking/Haul Off	\$13,514,800
Foundation removal (4' depth)	\$ 1,074,267
Site Civil Work Removal	\$ 3,480,635
Cement Stabilized Material Haul Off (replace with black dirt)	<u>\$ 2,494,706</u>
	Total \$27,815,821
Collection System	
Remove MV cable (≥ 4 ft below grade)	\$ 1,016,100
Other Misc.	
Repairs to drain tile & ditches from crossings	\$ 270,000
O&M Building removal	\$ 89,700
Mobilization	\$ 797,339
General conditions	<u>\$ 1,626,408</u>
	Total \$ 2,783,447
Alternates	
Scrap Value of Components	-\$5,507,080
Final estimate:	\$26,108,288
	\$261,083 per turbine

Xcel Application, Appendix J, p. 7 of 8.

For Palmers Creek, the Commission accepted a cost estimate that was not itemized, with a cost estimate for decommissioning:

Based on the current estimate, the cost of decommissioning is \$7,385,822 with a potential scrap return value of \$445,500. These anticipated costs shall be reviewed and updated every five years by the Applicant.

Exhibit F, p. 2 of 3, Palmers Creek Decommissioning Plan, 18 turbines (IP-6979/WS-17-265).

For the Nobles wind project, now owned by Xcel, the decommissioning estimate is:

In the 2010 Remaining Lives Filing, E002-D-10-173, the Commission approved a net salvage rate of -8.7% to be used for the project. This means that an additional 8.7% of the value of all the project’s assets will be recovered as part of the ratepayers’ service rate. These funds collected for removal and restoration are included in the accumulated reserve for the project, but tracked separately from the reserve for the asset itself. A conservative estimate for a decommissioning expense is approximately four-hundred forty-five thousand dollars (\$445,000) per turbine (2009 dollars).¹

Exhibit G, Nobles decommissioning cost. (IP-6646/WS-09-584).

For Next Era’s Lake Benton decommissioning, the cost estimate is:

3.0 COST ESTIMATE

1.0 Turbines and Towers	Cost Estimate
1.1 Dismantle Turbine & Towers	\$ 5,000,000
1.2 Removal of Transformers	\$ 200,000
2.0 Tower Foundations	
2.1 Foundation Removal, Disposal and Grading	\$ 1,200,000
2.2 Transformer Pad Removal and Disposal	\$ 125,000
3.0 Other Structures	
3.1 MET Towers, O&M Building Salvage, Fence Removal	\$ 50,000
3.2 Grading	\$ 100,000
4.0 Tower Access and Site Roads	
4.1 Remove Access Roads	\$ 1,000,000
5.0 Collection System	
5.1 Remove Collection System Terminations	\$ 200,000
6.0 Substation	
6.1 Substation Foundations, Fence, Steel and Grading	\$ 300,000
6.2 Substation Equipment	\$ 200,000
7.0 Mobilization/Demobilization	
7.1 Mobilization/Demobilize	\$ 300,000
8.0 Project Salvage Value	
8.1 Project Steel Salvage Value	(\$ 2,200,000)
TOTAL:	\$ 6,475,000

Exhibit H, p 4 of 8, Lake Benton Decommissioning Plan (IP-6903/WS-18-179).

For Pleasant Valley, another Xcel owned project”

A conservative estimate for a decommissioning expense is approximately two-hundred ninety thousand dollars (\$290,000) per turbine (2015 dollars).

Exhibit I, p. 2 of 3, Pleasant Valley decommission cost estimate (IP-6828/WS-09-1197).

The Freeborn Wind decommissioning cost estimate is quite different than other decommissioning cost estimates. Financial assurance also must be carefully vetted.

All aspects of the decommissioning plan should be fully reviewed in a contested case proceeding. The adequacy of decommissioning plans is a material issue of fact, the manner in which it will be done, whether the land will be restored to its previous condition, how much it will cost, and financial assurance, particularly because leases include potential shifting of responsibility to lessors, all are material issues of fact. The Commission now has some

experience with decommissioning of wind project, and should review this plan in light of that experience.

V. COMPLAINT PROCESS PROPOSED IS INADEQUATE

The Commission’s complaint process is broken. The Commission has long been aware that there have been problems with the standard complaint process and has dealt with the Bent Tree, Big Blue, and other projects for years, including the MinnCan pipeline which had numerous complaints filed. Complaints are often not addressed, and it has taken too many years for complaints that are not resolved to work their way to a meeting before the Commission. See Testimony of Bernie and Cheryl Hagen, Public Hearing Tr. p. 108-111; p. 112-115.

The complaint process proposed in the draft permit for this project is the same boilerplate language used in every wind project, and there have only been nominal revisions over time. Davis, Tr. Vol. 2, p. 180, l. 14-17. The Draft Site Permit includes the complaint process, located at the very end of the document. Freeborn Wind Hearing Exhibit EERA-8, Draft Site Permit – p. 72 of 77. This complaint process is found at the end of each permit issued and if a permit is issued in this docket, a copy of the permit is mailed to “everyone that is notice of the issuance of the permit.” Freeborn Hearing Transcript, Davis, Vol. 2, p. 179-180.

The complaint process is complex and ostensibly is subject to revision:

Q: What would it take to initiate a review of the complaint process?

A: This is when you would provide a comment on it. It’s part of the draft site permit, so—

Q: So right now?

A: So this is when comments should be submitted, yeah.

Davis, Freeborn Wind Tr. Vol 2, p.180. Comments were submitted, but apparently ignored.

A complaint system reliant on a person’s knowledge of how to make a complaint is

inadequate. Commerce did not engage the public and produce a workable complaint process, and in this Freeborn case, Freeborn proposes the process, with no changes.

Complaints regarding interference with over-the-air signal are even more problematic, hence KAAL's intervention in the initial hearing, because unless someone identifies the wind project as the source of the interference and knows how to and does in fact make a complaint under the permit's complaint process, there may be no record of the problem. Commerce is not the recipient of complaints from the television signal, and people experiencing over-the-air interference may not know why they have interference. Freeborn Evidentiary Hearing, Davis, Tr. Vol. 2, p. 181, l. 13- p. 183, l. 8. Although Davis does not know of any complaints, Cheryl Hagen testified regarding their trouble with over-the-air TV reception due to Bent Tree at the Public Hearing. Testimony of Cheryl Hagen, Freeborn Public Hearing Tr. p. 108-109.

Xcel filed its "Complaint Handling Procedures" late Friday, November 8, 2019, claiming that it is in response to permit "Section 9.0 Complaint Procedures" but it is nothing more than a cut and paste of Attachment A to the Permit, and lists Dan Litchfield (of Invenergy) as the party to be contacted prior to construction! See COMPLIANCE FILING--SECTION 9.0-PRE-CONSTRUCTION-COMPLAINT PROCEDURES , November 8, 2019 ([201911-157375-01](#)). Xcel Energy is now the owner – how is this reference to Invenergy personnel as a contact person correct?

No permit amendment should be issued without thorough review and revision of the complaint process by the public, parties, and agencies.

VI. AFCL REQUESTS A CONTESTED CASE PROCEEDING

Amendment of the Freeborn Wind permit should not be approved until the permit amendment request has been reviewed and vetted, with newly provided noise studies, shadow

flicker, site plan, and decommissioning plans, and other Xcel Energy filings are made public and subject to a contested case proceeding. Freeborn Wind, has provided new information regarding noise and shadow flicker modeling, new layout/site plan, 2019 project setbacks, “updated SPA Figures 1-17,” and the new application, together with “Compliance Filings” filed since, must be vetted as the initial application was – this can only be done in a contested case proceeding.

Freeborn Wind thus far has not demonstrated that it could comply with the permit. As the permit amendment applicant, Xcel Energy has the burden of production and the burden of proof. Freeborn via Xcel has now provided additional information that was not available at the time of the initial application and the initial contested case. Freeborn is proposing to increase the size of the turbines and move many turbines. No decommissioning information was provided in the initial application, and some decommissioning information was provided in February 2019, subsequent to the initial granting of the site permit, long after the public hearing had ended. Cost estimates vary considerably from that of other decommissioning cost estimates that Xcel and other developers have produced. While it has provided information and made assertions of compliance, the assertions have not been vetted. Freeborn Wind has not demonstrated that it can build the project when considering the many terminated leases, the project as originally proposed, and the planned permit amendment changes.

AFCL requests an extension of two weeks to address the many filings of Xcel Energy on Friday, November 8, 2019 which do address substantive issues regarding this permit.

AFCL asks that the Commission refer this permit amendment request to the Office of Administrative Hearings for a continuation of the contested case to review the many issues of material fact. The Commission should not amend the permits until this new information has been vetted and reviewed, discovery propounded, necessary land rights shown to be acquired,

and the dockets opened for comment to be reviewed by parties, Commerce, and the public, in a contested case hearing. Freeborn Wind has the burden of proof and production and must make its demonstration that it can comply with the permit. This must be done in a public process, a hearing held, and then deliberated the Commission, all as contemplated by the Commission's adoption of ALJ Recommendation Findings 243 and 244.



November 12, 2019

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factor and 0.5 ground factor (Schomer). Wisconsin PSC Docket 2535-CE-100, Transcript, Vol. 4, October 12, 2012 (PSC REF #[175015](#)).

4. Attached as Exhibit B is a true and correct copy of Testimony of Hankard (selected), Tr. p. 122, regarding use of ground factor of 0.5 for most projects with the exception of wind, where he stated:

The model that we use has been shown to predict conservatively with 0.5. I mean, 0.5 ground factor is used in probably -- well, with the exception perhaps of wind turbine projects which are different because the source is elevated. But for projects like a typical power plant, a solar plant where the sources are relatively close to the ground, I would say 90 to 99 percent of the studies use 0.5.

Testimony of Hankard, p. 122, Wisconsin PSC Docket 9697-CE-100, January 16, 2019, (PSC REF #[358548](#)).

5. Attached as Exhibit C is a true and correct copy of AFCL 35 ([20183-140948-08](#)), p. "15" of Wayne Brandt lease with Invenergy.
6. Attached as Exhibit D is a true and correct copy of AFCL IR-9 to Xcel Energy, Xcel's response regarding language that Xcel Energy assume responsibility for decommission be added to permit.
7. Attached as Exhibit E is a true and correct copy of AFCL IR-10 to Xcel Energy, Xcel's response, where Xcel states that it would not change language in leases regarding landowner responsibility regarding decommissioning.
8. Attached as Exhibit F is a true and correct copy of the decommissioning cost estimate for the Palmers Creek wind project, \$7,355,822 for 18 turbines (IP-6979/WS-17-265).
9. Attached as Exhibit G is a true and correct copy of the decommissioning cost estimate for Nobles Wind Project decommissioning cost. (IP-6646/WS-09-584).
10. Attached as Exhibit H is a true and correct copy of the Exhibit H, p 4 of 8, Lake Benton Decommissioning Plan (IP-6903/WS-18-179).
11. Attached as Exhibit I is a true and correct copy of the Pleasant Valley decommission cost estimate, see p. 2 of 3 (IP-6828/WS-09-1197).
12. Attached as Exhibit J is a true and correct copy of the Freeborn Wind Hearing Exhibit AFCL 21, IR 16, Dan Litchfield (January 12, 2018).

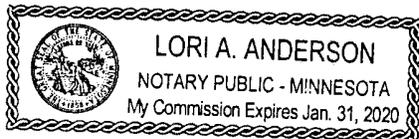
Based on the Application for Permit Amendment, and the above Exhibits, AFCL has identified issues of material fact that should be addressed in a contested case, including but not limited to:

- Whether the project can and will comply with the noise standard. Minn. R. 7030.0400.
- Whether 3 dB(A), a doubling of sound pressure, is a “non-significant increase.”
- Whether the 3 dB(A) modeling margin of error should be accounted for in determination of likely compliance.
- Whether use of a 0.5 ground factor is supported by the science of wind noise modeling.
- Whether use of 0.0 ground factor is the standard ground factor for wind noise modeling due to height of turbine and direct line to receptors on ground.
- Whether use of a 0.5 ground factor lowers modeled noise by 3 dB(A) from modeling results using 0.0 ground factor.
- Whether failure to include 3 dB(A) margin of error and 3 B(A) impact of use of 0.5 ground factors skews modeling results by predicting lower noise levels.
- Whether addition of 3 dB(A) margin of error and/or 3 dB(A) 0.5 ground factor decrease to the values of Table 5.1 demonstrates likelihood of noise levels above standard.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for wind noise modeling.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling noise where noise source is high above ground level.
- Whether ISO 3613-2 and Minn. R. 7030.0400 were designed for modeling ground noise generation and ground receptors.
- Whether ambient sound measurements are to be included in modeling under 2015 Commerce and MPCA Comments and/or 2012 MPCA Guidelines.
- Whether cumulative impacts of outstate portion of this project and/or other nearby projects are to be included in modeling.
- Whether the increase in size of blades increases noise emitted, and if so, how much.
- Whether use of feathered blades decreases noise emitted, and if so, how much.
- Whether ISO 3613-2 and Minn. R. 7030.0400 address the expected sound power levels at lower bandwidths (i.e., 125, 63, 31.5, and lower).
- Whether participants and non-participants are afforded different treatment under the noise rule.
- Whether permit language and amended permit language and removal of Section 7.4.1 is consistent with requirements of Minn. R. 7030.0400.
- Whether setbacks proposed are sufficient to meet the noise standard.
- Whether small wind standards for noise and noise setbacks, are appropriate to use for LWECS.
- Whether the Commission’s/EERA’s draft site permit and site permit template sections regarding noise has a basis in law or rule.
- Whether shadow flicker modeling accurately depicts potential for impacts.
- Whether 30 hours annually is reasonable limit for shadow flicker.
- Whether project as proposed will limit shadow flicker to 30 hours annually, the ceiling for shadow flicker under both the permit and the Freeborn County ordinance.
- Whether project proposes different shadow flicker limits for participants and non-participants, and if so, whether that is a legitimate distinction.
- Whether reliance on complaints of the affected public to trigger investigation and mitigation of shadow flicker is reasonable.

- Whether applicant has provided all the required decommissioning information for Minn. R. 7854.0500, Subp. 13.
- Whether shifting timing of production of Decommissioning information out beyond granting of permit removes it from public participation and scrutiny, a limitation of due process.
- Whether lease clause allowing shift of decommissioning and cost to landowners, “allowing” landowners to then collect from owner is permissible.
- Whether financial assurance is adequate.
- Whether decommissioning costs are accurate given Xcel and other cost estimates.
- Whether Invenergy’s Dan Litchfield should be the pre-construction contact person.
- Whether the Complaint Procedures filed by Xcel Energy are adequate.

Further your affiant sayeth naught.

November 12, 2019



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Signed and affirmed before me this
 12th day of November, 2019.

Lori A. Anderson
 Notary Public

Exhibit A

Testimony of Hankard (selected)

Wisconsin PSC Docket 9697-CE-100

January 16, 2019

PSC REF# [358548](#)

1 A I do recall that.

2 Q Do you believe that it would have been appropriate to
3 apply a ground factor of 0.2 or 0.3 to your analysis
4 of the Badger Hollow project?

5 A No.

6 Q Why not?

7 A The model that we use has been shown to predict
8 conservatively with 0.5. I mean, 0.5 ground factor
9 is used in probably -- well, with the exception
10 perhaps of wind turbine projects which are different
11 because the source is elevated. But for projects
12 like a typical power plant, a solar plant where the
13 sources are relatively close to the ground, I would
14 say 90 to 99 percent of the studies use 0.5. And
15 when consultants like myself go out and measure these
16 plants after they're constructed to verify our
17 modeling assumptions, that assumption checks out as
18 being, if anything, overpredicting the levels. So
19 there's no need to -- there would be no justification
20 to use something like a .2 or .3 which would predict
21 yet higher levels because we're already demonstrating
22 that the model is probably overpredicting. So that
23 would not be justified for those reasons.

24 MR. NOWICKI: Thank you. No further
25 questions.

Exhibit B

Testimony of Hessler and Schomer

Wisconsin PSC Docket 2535-CE-100

October 10, 2012 - Volume 4 ([PSC REF # 175015](#))

1 wondering if he's looked at these.

2 EXAMINER NEWMARK: Follow-up on what?

3 MR. REYNOLDS: Follow-up on the question
4 of recent science. He's reviewed the literature. I
5 want to know if he's reviewed these two articles.

6 MR. WILSON: You already released him.

7 EXAMINER NEWMARK: He's answered the
8 question. You've had your chance to cross him.

9 MR. REYNOLDS: Well, this is in response
10 to the redirect. Just two articles.

11 EXAMINER NEWMARK: You had your chance to
12 cross him. You're excused. Thanks.

13 (Witness excused.)

14 EXAMINER NEWMARK: Is that the balance of
15 the applicant's witnesses?

16 MR. WILSON: They're all done.

17 EXAMINER NEWMARK: Okay. Believe it or
18 not, hm? All right. I think we have time for
19 Mr. Hessler.

20 MS. NEKOLA: Clean Wisconsin would like to
21 call Mr. Hessler.

22 DAVID HESSLER, CLEAN WISCONSIN WITNESS, DULY SWORN

23 EXAMINER NEWMARK: Thanks for your
24 patience.

25 DIRECT EXAMINATION

1 BY MS. NEKOLA:

2 Q Good morning, Mr. Hessler.

3 A Good morning.

4 Q Please state your name and business address for the
5 record.

6 A My name is David Hessler. My business is located at
7 3862 Clifton Manor Place in Haymarket, Virginia.

8 Q Did you prepare 12 pages of direct testimony, nine
9 pages of rebuttal testimony, five pages of
10 surrebuttal testimony, and three exhibits in this
11 proceeding?

12 A Yes, I did.

13 Q And is the information in your testimony and exhibits
14 true and correct to the best of your knowledge?

15 A Yes, it is.

16 Q Mr. Hessler, have you had the opportunity to review
17 Mr. Schomer's surrebuttal testimony?

18 A Yes, I have.

19 Q Mr. Schomer states that low frequency pulse will be
20 audible to many residents of Forest. Do you agree
21 with that?

22 A No, I don't think that's an inevitable or foregone
23 conclusion. The --

24 MR. McKEEVER: Excuse me, Mr. Hessler.

25 Could you speak up.

1 THE WITNESS: I'm as close as I can get to
2 this thing without eating it.

3 MR. McKEEVER: Thank you.

4 A No, I don't think that conclusion is inevitable.
5 That research that his testimony is based on is 30
6 years of experience evaluating health effects from
7 low frequency noise associated with military sources
8 like artillery and tanks. And he has just taken that
9 result and just applied it wholesale to wind turbines
10 without considering the dramatic difference in the
11 magnitude of the two sources.

12 An artillery shot is, I think everyone
13 realizes, much, much louder than any wind turbine
14 could be. There are many studies that show that wind
15 turbines -- the low frequency content of wind turbine
16 noise is very, very low and is around the -- at or
17 under the threshold of hearing. So tanks and
18 artillery are not -- I wouldn't describe them as
19 being near the threshold of (inaudible).

20 THE REPORTER: Near the threshold of what?

21 THE WITNESS: Hearing. (Laughter.) How
22 about that?

23 BY MS. NEKOLA:

24 Q Mr. Hessler, is there a particular recent study that
25 you can point to that assesses the magnitude of low

1 frequency wind turbine noise?

2 A Yeah. There's many, many studies that have been
3 done, I've taken my own measurements. But there is
4 one that I think kind of epitomizes the research on
5 this topic, and it's a study that was undertaken
6 specifically to try to address this issue of what is
7 going on with low frequency noise in wind turbines.
8 It's a study that was published in the Noise Control
9 Engineering Journal April of last year by O'Neal.
10 And just to very briefly summarize it, they kind of
11 went through the literature and found all of the
12 existing -- all the ones they could, all the existing
13 thresholds for the perception of low frequency noise
14 worldwide.

15 They did a literature review of all the
16 papers that have -- that they could find that were
17 ever written on the subject and they summarized the
18 results of all of those. All of those results
19 essentially say that it's so low in magnitude that
20 it's pretty much inconsequential.

21 And then the last part of this study is
22 that they went out and did their own field
23 measurements on two different types of turbines; and
24 then they compared those findings to all of the
25 thresholds that they had found, and found that the

1 levels were under the threshold of hearing in every
2 instance, every ANSI standard, every threshold they
3 could find.

4 (Hessler Exhibit No. 4 was marked.)

5 Q I'd like to hand you this. Is this a true and
6 correct copy of the study that you were just talking
7 about?

8 A Yes, it is.

9 MS. NEKOLA: Your Honor, we'd like to move
10 this study into the record as Hessler Exhibit 4.

11 MS. BENSKY: We object, Your Honor.

12 EXAMINER NEWMARK: Okay. Go ahead.

13 MS. BENSKY: Well, I haven't seen it. I
14 haven't had a chance to look through it. I'm paging
15 through his testimony now to see if he did talk
16 extensively about low frequency noise. I don't
17 recall that he did. I don't believe this was cited
18 in his testimony. So our witness can't see it and I
19 don't have the ability to read it now and ask
20 questions. So that's why I object.

21 EXAMINER NEWMARK: Response?

22 MS. NEKOLA: Your Honor, this is in
23 response to surrebuttal testimony that referenced
24 low frequency noise, and Mr. Hessler contemplated
25 addressing low frequency noise all along in this

1 case. I think it's highly appropriate to add this
2 to the record. It's a more recent study than
3 anything else that we have so far in the record.
4 And if we -- we could give parties a chance to read
5 it and perhaps decide later. We think it's --

6 EXAMINER NEWMARK: And just -- I didn't
7 catch who he was responding to.

8 MS. NEKOLA: Mr. Schomer.

9 EXAMINER NEWMARK: Schomer's surrebuttal?

10 MS. NEKOLA: Surrebuttal, um-hmm.

11 MS. BENSKY: I guess there is no reason
12 this couldn't have been part of Mr. Hessler's direct
13 testimony. His work for Clean Wisconsin, as I
14 understand it, is quite extensive on this case. And
15 if this was going to be an issue that he wanted to
16 address all along, then -- this is a 2011 study,
17 there is no reason this couldn't have come in
18 earlier. It'll take me more than ten minutes to
19 read this and understand it.

20 We don't have any ability to put any
21 information in the record to rebut it. So that's
22 where the prejudice is.

23 MS. NEKOLA: Your Honor, this is a 2011
24 study that reviewed over 100 scientific papers
25 worldwide on this topic, and also included a field

1 study to measure wind turbine noise outside and
2 within nearby residences. I think it would add to
3 the record.

4 EXAMINER NEWMARK: Yeah, it looks like,
5 from what I can see on direct, Schomer does
6 reference studies about low frequency noise. And so
7 I don't see why this couldn't have come in earlier.
8 I'm going to have to leave it out as prejudicial.
9 It's just too late to go through all of this and to
10 have another witness come in.

11 MS. NEKOLA: One more thing that is
12 relevant here, I think, is that we anticipated that
13 Mr. Hessler would be able to do his own study of low
14 frequency noise in another wind farm in Wisconsin.
15 And he was -- he has so far been unable to do that
16 because we haven't been able to get access to any
17 wind farms. And so I think this is also his attempt
18 to put in the best recent information on low
19 frequency noise that he has available to him.

20 EXAMINER NEWMARK: I understand. Does
21 staff have any opinion on this?

22 MR. LORENCE: I was just paging through
23 his testimony. I see a reference to low frequency
24 in his surrebuttal. But can you tell me where it is
25 in his direct?

1 EXAMINER NEWMARK: Yeah, Schomer page 3,
2 that first top of the page, there's been a multitude
3 of literature published over the last 40 to 50 years
4 that indicates that low frequency, and it continues
5 on from there.

6 MR. LORENCE: Page 2 or 3?

7 EXAMINER NEWMARK: 3.

8 MR. LORENCE: I guess the only thought I
9 have is if this is the only reference, I don't think
10 he was really asserting anything other than the
11 statement saying that there is publications. I
12 thought his testimony was more direct in the
13 surrebuttal with respect to low frequency. And I
14 guess I thought -- and that was at least on page 16
15 of his sur-sur where he draws his last conclusion.
16 Maybe it's the same thing. And so that's why I
17 noticed that the -- the most as opposed to in his
18 direct.

19 EXAMINER NEWMARK: And what pages on his
20 surrebuttal? He just has surrebuttal, right? Does
21 he have a third round?

22 MR. LORENCE: I saw it on surrebuttal
23 page 16. And there may be other places. But I was
24 looking at his last conclusion which is lines 12
25 through 22.

1 EXAMINER NEWMARK: I don't see that much
2 difference in those two passages. But let's back up
3 a little bit because I am aware that there is an
4 attempt to do a study, is that the Glacier Hills
5 farm? Is that the case?

6 MS. NEKOLA: Or the Shirley site.

7 EXAMINER NEWMARK: Or Shirley.

8 MS. BENSKY: He was denied access several
9 months ago; isn't that correct?

10 MS. NEKOLA: No. They have not made a
11 decision, final decision. But it has the same
12 effect of being denied, actually.

13 MS. BENSKY: But in his direct testimony,
14 doesn't he say he was denied?

15 MS. NEKOLA: Well, I'm not sure, but
16 the -- the truth is that he has not been able to get
17 access.

18 MR. REYNOLDS: Has there been any reason
19 given for that?

20 MS. NEKOLA: No. Right, his direct
21 testimony just says that we have not been granted
22 access to the site. So thus far, we haven't been
23 able to -- he hasn't been able to do the study.

24 EXAMINER NEWMARK: Okay. Well, the
25 problem with this is I don't think this is enough of

1 a substitute for a study at the other wind farms,
2 and I know that the access question has not been
3 fully determined.

4 MS. NEKOLA: That's right.

5 EXAMINER NEWMARK: And I would be prepared
6 to reopen the hearing if we could have a study
7 developed on that specific -- on those locations,
8 one of those locations, if access is granted. But
9 that would mean scheduling that and having a process
10 for it.

11 But at this time in the game and at this
12 hearing, I don't think we can admit this -- this
13 study because the parties have not had a chance to
14 review it and their witnesses aren't available. You
15 know, if there is a point in time when we know
16 access cannot be given, I can consider reopening the
17 hearing to take a look at these late exhibits as a
18 substitute. But I would like to, you know, try
19 to -- I don't want to do that now and I don't want
20 to thwart any attempts to get the studies done. I
21 think that's much better evidence. So -- or it
22 would be evidence rather than, you know, literature
23 review.

24 So are there any other exhibits that
25 relate to this? I saw you had a number of items

1 there.

2 MS. NEKOLA: Not on low frequency noise.
3 We have one other that we want to offer on another
4 matter.

5 EXAMINER NEWMARK: Okay. All right. So
6 are we okay with that?

7 MS. NEKOLA: We just want to point out
8 that the study that we're -- tried to move in was
9 not just a literature review, but that there were
10 also actual sound measurements at wind farms.

11 EXAMINER NEWMARK: Okay. Thanks for
12 clarifying that. So for now we will hold off on
13 that.

14 MR. WILSON: Your Honor, for what it's
15 worth, I had a discussion with Cindy Smith yesterday
16 morning where this topic came up about the inability
17 to do the low frequency testing --

18 EXAMINER NEWMARK: Let's go off the
19 record.

20 (Discussion off the record.)

21 EXAMINER NEWMARK: Let's get back on.

22 BY MS. NEKOLA:

23 Q Okay. So do you think that low frequency noise
24 problems can be ruled out?

25 A No. Despite the findings in that study, no, I don't

1 think we can just assume that there won't be any
2 problems. And I say that with respect to the
3 testimony we heard yesterday from those three
4 homeowners that had to leave their house -- houses at
5 Shirley. That was very compelling and I think
6 irrefutable evidence that there is a problem at that
7 site. The question is why is that? And that's what
8 we were hoping to explore with that field survey.

9 So I think what's happening is that there
10 is a low frequency noise that is associated with very
11 specific turbine models or types of blades or blade
12 control mechanisms that results in, according to the
13 studies that I've seen recently, results in inaudible
14 low frequency sounds that can produce adverse
15 symptoms and problems in certain people in rare
16 cases. But it needs to be investigated. And that's
17 really the state of knowledge on that.

18 Q You say that these instances are rare. Can you give
19 an example of a more typical situation?

20 A Yeah. Yesterday we also heard from Jeff Bump who
21 lives at the Glacier Hills site. And I'm familiar
22 with Glacier Hills. And I know -- I met Jeff Bump.
23 My brother and I set up instruments at his house last
24 winter, and we measured day and night at his house
25 for about 18 days I think at his house, and ten other

1 houses around that site. All the ones with the
2 closest possible exposure to turbines. We measured
3 off of the site to get the background conditions on
4 a -- kind of a running time history of background
5 throughout the survey.

6 And, you know, he said he was bothered by
7 this horn sound and that's -- I heard that, that's
8 associated with the hydraulic system in the Vestas
9 V90 turbine that's at that site. He said he was kept
10 awake by a swishing noise. That's mid-frequency
11 oscillation, around 500 hertz, due to the blades.
12 But what he didn't complain about is low frequency
13 issues and any of these adverse health effects. He
14 said, well, he might have got a headache once, but
15 really it was all about the fact that he was bothered
16 at night.

17 But the point is that this project,
18 Glacier Hills, has over -- I think it's over 120
19 turbines that are distributed over an area that's
20 about, very roughly, 40 square miles. There are
21 hundreds and hundreds of people that live in close
22 proximity to turbines at that project. Yet the only
23 people that are complaining are Mr. Bump and another
24 fellow that lives next -- or nearby him. Those two
25 people are the only ones that have any problem with

1 noise out of many, many hundreds. And that is the
2 typical situation based on all of the
3 post-operational surveys that I've done. The number
4 of people that are actually complaining or bothered
5 by it is very, very low compared to the total
6 population.

7 Q Thank you. Mr. Schomer also mentioned that the data
8 contained in your Exhibit 1 is artificially elevated
9 by pseudo-noise or instrument error. Do you have a
10 response to that?

11 A Yeah. What we did in our analysis of the applicant's
12 sound study was to look at the data, the sound data,
13 as a function of wind speed. And that's been
14 criticized as, well, the sound levels are elevated
15 because the wind was blowing over the microphone.
16 But the fact of the matter is that the winds were
17 very light during that survey; and the peak wind, the
18 highest wind, at the microphone during that entire
19 two-week period was only seven miles per hour.

20 We have -- some years ago, I think it was
21 about 2008, we did study, a wind tunnel study, to
22 evaluate that phenomenon of wind blowing over the
23 microphone to quantify what that error is. And in
24 that study, what we found was for a
25 seven-mile-per-hour wind, the self-generated noise or

1 pseudo-noise would be only around 20 dB, whereas in
2 the field survey at Highland, the levels being
3 measured under those conditions was in the
4 neighborhood of about 45 dBA. So there wouldn't be
5 any effect at all from a pseudo-noise. I believe the
6 data is perfectly valid.

7 (Hessler Exhibit No. 5 was marked.)

8 Q You've been handed a copy of a study that you just
9 referred to and described. Is that a true and
10 correct copy of that study?

11 A Yes, it is.

12 MS. NEKOLA: We'd like to enter this into
13 the record as Exhibit 5.

14 EXAMINER NEWMARK: Any objections?

15 MS. BENSKY: No objection.

16 EXAMINER NEWMARK: All right.

17 (Hessler Exhibit No. 5 received.)

18 BY MS. NEKOLA:

19 Q Turning to the surrebuttal testimony of
20 Mr. Horonjeff, have you had an opportunity to review
21 that testimony?

22 A Yes, I have.

23 Q Mr. Horonjeff points out that your comparison of the
24 Highland sound data with the met mast wind speed
25 shows considerable scatter at any given wind speed,

1 and he suggests that the mean value should not be
2 used. Do you have a response to that?

3 A Yeah. It's not really a matter of where you draw the
4 line, the mean trend line, in that data. What it
5 shows is that the vast majority of the sound levels
6 that were measured during the survey were measured
7 under very low wind conditions that -- below the
8 point, generally speaking, where the turbines would
9 begin to operate. And the principal point is that
10 during the windier conditions when the project would
11 be operating, there are very, very few measurements
12 of low sound levels during those wind conditions,
13 only about six to a dozen ten-minute samples out of
14 roughly 2,000 measurements that were taken.

15 Mr. Horonjeff is saying that, well,
16 sometimes it's quiet when it's windy, but that is a
17 rarity and that's what that figure shows.

18 Q You were present yesterday when Mr. Reynolds
19 questioned Ms. Blank about the sound modeling for the
20 project, correct?

21 A Yes.

22 Q And do you recall that Mr. Reynolds quoted your
23 direct testimony at page 11 as saying that sound
24 models should have an ideal target level of 40
25 decibels? Do you recall him saying that?

1 A Well, I think what he said was that the project
2 should be designed to 40. 40 is the recommended
3 level. My view on that is -- and what we've asserted
4 in papers and things that we've published based on
5 our field studies of completed projects -- is that if
6 possible, projects should use 40 dBA as an ideal
7 design goal if at all feasible because what we find
8 is that below 40 there's very few, if any,
9 complaints. But as a regulatory limit, we've put
10 forward a level of 45 because the regulatory limit is
11 different from an ideal design goal. A regulatory
12 limit has to balance everybody's best interest. So
13 the 40 we weren't saying was a suggested regulatory
14 limit but rather an ideal design goal.

15 Q So just to be clear, is it your position that the
16 Highland wind project should meet the 40 decibel
17 noise standard?

18 A Should it meet the 40?

19 Q Right, is that your position?

20 A No. I think it -- I would be satisfied or I would
21 recommend that it meet the 45 limit as currently it's
22 obligated to do.

23 MS. NEKOLA: Mr. Hessler is available for
24 cross-examination.

25 EXAMINER NEWMARK: All right. Do you have

1 questions?

2 CROSS-EXAMINATION

3 BY MS. BENSKY:

4 Q Good afternoon, Mr. Hessler.

5 A Good afternoon.

6 Q In your papers, you have a very distinct talent in
7 taking complicated information and making it
8 understandable for everyone, so I commend you on that
9 and I ask that you do your best to keep it at that
10 level here.

11 A We'll see how it goes.

12 Q Let's start with page 2, I'm just going to go through
13 your testimony. So direct testimony page 2. At line
14 2, you say, "Typical projects involve field surveys
15 to establish baseline background sound level
16 conditions..." Is that the same way of saying
17 ambient sound?

18 A Yeah. It's essentially the same thing.

19 Q And why is it important to establish that baseline?

20 A Well, the way most projects -- not just wind
21 projects, but any fossil plant or any project --
22 would be evaluated is to see how its noise is going
23 to compare to the sound level that already exists at
24 that location. If the facility noise is going to
25 greatly exceed the existing level, then there's

1 likely to be an adverse impact. If it's below the
2 background, you might not even hear it. So it gives
3 you a baseline to make a judgment on what the
4 impact's going to be.

5 Q And in your view, is establishing that baseline an
6 important thing to do?

7 A Yeah. We typically do do that for wind projects or
8 any power plant.

9 Q Turning to page 3. You have your testimony up there
10 with you?

11 A Yes, I do.

12 Q Now, page 3, and correct me if I'm wrong, it looks
13 like you are first reviewing the initial predictions
14 that were listed in the application using the zero
15 coefficient assuming a total reflective ground?

16 A Where is it that you're at there?

17 Q On page 3, question number 7 -- or line 7. Your
18 overall impression of the studies. I just want to
19 clarify that what you're talking about right there is
20 the modeling results where a zero coefficient was
21 used; is that correct?

22 A Yeah, yeah. That's correct.

23 Q And looking at those results, if the average
24 background noise was between 29 and 34 decibels and
25 the project level was 45 decibels, your opinion is

1 that the project would be quite audible; is that
2 correct?

3 A Yes, that's right.

4 Q If those were the actual numbers. And is the reason
5 why the project would be quite audible is because you
6 have that 11 to 16 above ambient level?

7 A That's right.

8 Q And do you have an opinion as to whether an ambient
9 level of between 12 and 16 decibels -- or an actual
10 level above -- let me start over.

11 Do you have an opinion as to whether that
12 relative noise level would result in adverse
13 community reaction?

14 A Yeah. If those were the actual levels, then we would
15 conclude in any assessment that the project was
16 likely to have a pretty significant adverse impact.

17 Q So it's not necessarily that 45-decibel level you're
18 concerned about, you're more concerned about the
19 relative difference, that 11 to 16 decibel
20 difference; is that correct?

21 A Yeah. That's what I'm talking about in that
22 particular paragraph.

23 Q Now, on page 4, going down to line number 12, you're
24 talking about your review of the met tower data, and
25 you had requested a site plan that you did not

1 receive?

2 A That's right.

3 Q And I understand later in your testimony that you
4 kind of reverse engineered a site plan based on the
5 available information?

6 A Yeah. It was possible to import into our modeling
7 software the -- I guess the sound contour map from
8 the application. It wasn't absolutely necessary to
9 get the site plan in the first place. It was just --
10 it would have helped things. That's all.

11 Q So what information would you have expected the site
12 plan to contain that would have been helpful to you?

13 A Just a particular kind of computer file that is
14 easily imported into the modeling program. Just more
15 to save time. What we had to do was just take the
16 PDF and work with it.

17 Q So you feel that you obtained all of the information
18 that you needed?

19 A Yeah. We made do.

20 Q The information that you used in your gathering of
21 that data, do you know if that's the exact data that
22 would have been contained in the site plan?

23 A We used the actual site plan from the application.

24 Q But you said you didn't receive the site plan.

25 A We used the site plan that was published in the

1 environmental assessment. It was just a matter of
2 convenience to get the computer file. It wasn't
3 germane to anything really.

4 Q So the actual data would have been the same? What
5 I'm --

6 A That's right.

7 Q What I'm getting at is do you think that you input
8 the right numbers based on the information that you
9 had?

10 A Yes.

11 Q Now, let's talk about the met tower. The met tower
12 was 49.5 meters, 162 feet. And is it your
13 understanding that the hub height of the proposed
14 turbines is between 299 to 328 feet?

15 A Right. Yeah. This met tower anemometer puts it
16 within the rotor plane, not exactly at the hub
17 height. It's very rare to have a met tower high
18 enough that it goes all the way up to 80 or so
19 meters.

20 Q So it's at the bottom of the rotor plane, 162 feet
21 would be at the very bottom assuming the blade
22 lengths are between 160 and 180 feet?

23 A Right.

24 Q Is there some sort of formula that you applied to
25 that 49 meters to estimate the wind speed at the hub

1 height?

2 A The hub height wind speed wasn't needed for anything.
3 What we did do was take the met tower wind speed at
4 49 and a half meters and then normalize that to 10
5 meters because you have to put the wind speed data on
6 an even footing with the turbine sound power level
7 data which is also -- which is always expressed as a
8 function of the wind speed of 10 meters.

9 Q But that's something different than estimating what
10 the wind speed would be at the hub height?

11 A Yes. The hub height, whether it's near the bottom of
12 the rotor plane or at the hub height, it doesn't make
13 any difference here, to what we were shooting for
14 here.

15 Q But wouldn't it be -- if you want to know how fast
16 the blades are going to turn, wouldn't you want to
17 know the wind speed at the hub height? Wouldn't that
18 be ideal?

19 A No. It's really -- it's all about the wind speed at
20 this normalized height of 10 meters that's relevant
21 to this whole thing. Even if we had a met tower that
22 was -- met mast that was 80 meters, we would have
23 just taken that value and normalized it to 10 meters.
24 It would have been the same.

25 Q But if you had a met tower at 100 meters, you would

1 not have had to apply that formula?

2 A No. We would have had to apply it to any elevation
3 anemometer. We want to bring it down to 10 meters
4 from whatever height, the highest possible height.

5 Q So based on the met tower data, you don't know the
6 actual speed of the wind at the hub height; is that
7 correct?

8 A We could easily infer it from this 49 and a half
9 meter data if we wanted to know it.

10 Q So you didn't -- is your answer you did not have the
11 actual wind speed at the hub height?

12 A Met mast wasn't high enough.

13 Q And you did not have the actual speed at the rotor
14 tip of 500 feet?

15 A We could have inferred that if we needed to know.
16 The ideal thing would have been to have anemometers
17 over the whole diameter of the blade, but you never
18 have that.

19 Q So you have to make some approximations?

20 A Oh, yeah.

21 Q Is there generally a difference -- or can there be a
22 difference in wind speed at 500 feet as opposed to
23 162 feet?

24 A Yeah. It is typically higher with elevation.

25 Q What happens when there's a very -- there's a higher

1 wind at the rotor tip than at the bottom of the
2 rotor?

3 EXAMINER NEWMARK: In what sense? What do
4 you mean what happens? In terms of what?

5 A Yeah, in terms of what?

6 BY MS. BENSKY:

7 Q When there is a higher -- when there's a higher wind
8 at the top than there is at the bottom of the rotor,
9 does that have any effect on the sound produced?

10 A Yeah. Yeah. The wind speed is typically always
11 higher at the top than it is at the bottom. It's
12 very rarely perfectly flat, although that does
13 happen. The degree to which the wind speed varies
14 from the top to the bottom or from -- between any two
15 heights is the wind sheer, and the higher the sheer
16 the more slanted that -- the greater the difference
17 between the wind speeds at different heights, the
18 greater the noise generation generally is.

19 Q Is there a particular season where the wind sheer is
20 greater?

21 A Yeah, at most sites it's typically in the summertime.

22 Q The wind sheer is greater in the summertime?

23 A Yeah.

24 Q Are there any other weather conditions where the wind
25 sheer would be greater?

1 A It's typically higher at night than it is during the
2 day.

3 Q Now, looking at the bottom of page 4, is it your
4 testimony that when the near ground level wind speed
5 is very low, that does not necessarily mean that the
6 hub height wind speed is the same; is that correct?

7 A Right. You -- it's hard to tell anything from the
8 wind speed measured at a meter above the ground.
9 That generally remains pretty low even when it gets
10 really windy out. That's why we wanted to use the
11 met mast that -- at the highest possible anemometer
12 to get a sense of what's going on up at the elevation
13 that the turbines would see that wind.

14 Q Just so we're all on the same page, what's an
15 anemometer?

16 A A device for measuring wind speed.

17 Q And that's the thing that sits on top of that met
18 tower?

19 A Yeah.

20 Q Let's turn to page 5. Looks like I already covered
21 that. Let's go to page 10. Starting on line 6 and
22 just follow along. Is it correct that you state, "A
23 common design theory for new industrial projects of
24 all kinds is to design the project so that its sound
25 level does not exceed the background level by more

1 than 5 decibels..." Did I read that correctly?

2 A That's right.

3 Q Then you state, "...the logic being that such an
4 increase is not particularly noticeable, at least
5 when the character of the noise is rather bland and
6 free of any prominent tones or other identifiable
7 characteristics. Because wind turbine noise often
8 has a variable, churning, sometimes periodic
9 character to it, this approach is somewhat tenuous
10 for wind projects, but nevertheless it is commonly
11 used..."

12 Is it your testimony that wind turbines
13 create a sound of such a characteristic that the 5
14 decibel above ambient is too much?

15 A Yeah. Yeah. The 5 increase would -- makes the most
16 sense when you have a, for example, a very constant
17 source that has a bland character to it like a
18 conventional power plant. That sound 5 above the
19 background is usually -- or usually results in a
20 negligible impact, people don't really notice it.
21 Now, wind turbines don't have a particularly steady
22 sound so that they are more audible than other
23 sources relative to the background. So even a 5
24 increase is generally pretty noticeable.

25 Q Thank you. Now, at the bottom of the page, you state

1 that assuming a background noise of 34 to 36
2 decibels, your recommendation in an ideal world is
3 that the project noise be limited to between 39 to 41
4 decibels; is that correct?

5 A Yeah. That would be a 5 increase over this
6 background level that I'm coming up with.

7 Q Okay. Now, on the next page, and I'm going to hand
8 out an article that you reference and footnote on
9 page 11.

10 EXAMINER NEWMARK: That's Hessler 5,
11 right?

12 MS. NEKOLA: 6.

13 MS. BRANT: No, Your Honor. It's the same
14 scientific journal, I believe, or a very similar
15 format.

16 MS. BENSKY: No, it's a different article.

17 MS. NEKOLA: It's a different article,
18 right.

19 BY MS. BENSKY:

20 Q And the first question is looking at the publication
21 that I just gave you, is this indeed the publication
22 that you reference in footnote 3 on page 11 of your
23 direct testimony?

24 A Yeah, yeah. I'm glad you handed it out to everybody.

25 Q Now, let's turn to page 96, it's just this third page

1 in. And you're talking about the World Health
2 Organization target noise level to protect the
3 public. And that is listed at 40 decibels day or
4 night; is that correct?

5 A I think they specifically call that the nighttime
6 target.

7 Q Okay. Oh, you're right, nighttime sound levels.

8 And has that changed since this paper was
9 published?

10 A Not to my knowledge, no.

11 Q And turning to page 98, first full paragraph
12 beginning with Considering the EPA guidelines. And
13 there's some discussion of day and night levels; and
14 then you state -- first of all, did you author this
15 paper?

16 A Yeah. I was a co-author on it.

17 Q Co-author with George Hessler?

18 A Yeah.

19 Q So you state, "A 45 decibel composite noise
20 equivalent level with a 5 decibel evening weighing
21 would be even more ideal at 45, 40 and 35 decibels
22 for day, evening and nighttime levels, respectively."

23 EXAMINER NEWMARK: Can you point to that
24 for the record.

25 MS. BENSKY: It is on -- it is a

1 publication which is footnote 3 of Hessler Direct
2 11. It's called, "Recommended noise level design
3 goals and limits at residential receptors for wind
4 turbine developments in the United States," and it's
5 on page 98 of that publication.

6 EXAMINER NEWMARK: And where on page 98?

7 MS. BENSKY: It's in the middle of the
8 page. There's a first -- full paragraph begins with
9 Considering the EPA.

10 EXAMINER NEWMARK: Okay. Thanks.

11 MS. BENSKY: And I'm looking at the last
12 sentence.

13 EXAMINER NEWMARK: Um-hmm. Okay.

14 BY MS. BENSKY:

15 Q So my question is, is it correct that in this paper,
16 you recommend an ideal design target of 45, 40 and 30
17 decibels respectively during the day, evening and
18 nighttime?

19 A No. What we're doing in that part of the paper is
20 going through all of the regulations that pertain or
21 could possibly pertain to wind projects and just
22 summarizing each one. At the end of the section,
23 then draw a conclusion on what we recommend based on
24 all these various standards.

25 Q And your conclusion is that a composite noise

1 equivalent level would be even more ideal at 45, 40
2 and 35; is that your conclusion in this paper?

3 A It's not a conclusion. It's just a comment on this
4 particular measure.

5 Q But it's correct that -- I'm reading it correctly,
6 right, that, "A 45 dBA composite noise equivalent
7 level with the 5 dBA evening weighing would be even
8 more ideal at 45, 40 and 35 decibels for day, evening
9 and nighttime levels, respectively." Am I reading
10 that correctly?

11 A Yeah, yeah. The lower the level the better. But we
12 end up concluding later that as a practical matter 40
13 is -- seems to make sense.

14 Q But taking out -- you're not a state regulator,
15 correct?

16 A That's right.

17 Q So -- you're a noise engineer, correct?

18 A Right.

19 Q And based on your very extensive expertise as a noise
20 engineer, your opinion is that it would be ideal to
21 have a 45, 40 and 35 dBA level for day, evening and
22 nighttime?

23 A I'll always say it's more ideal.

24 Q Let's move on. Tell me, did you make any differen --
25 what hours are we talking about? What's daytime?

1 What are daytime hours as you're talking about here?

2 A It's usually 7 in the morning to 10:00 (sic) at
3 night.

4 Q And what's evening?

5 A Then that goes to -- I'd say it's 7 to 10 p.m. or
6 something.

7 Q So daytime would be 7 to 7, evening would be 7 to 10?

8 A Yeah.

9 Q And then nighttime would be 10 to 7 in the morning?

10 A Right.

11 Q Now, please turn to the next page, page 99, first
12 full paragraph on that page says -- starts The States
13 of New York, Massachusetts and California. Are you
14 there?

15 A Okay. Yeah.

16 Q The first -- or the second sentence reads, "An
17 ambient-based method is based on the perception of
18 the new sound in a specific residential community. A
19 perception-based method is clearly a better approach
20 than a single absolute limit, and, in fact, many
21 years of experience have shown this approach is
22 working well in all these three states."

23 Did I read that correctly?

24 A Yes, that's right.

25 Q And you're talking about three states that have an

1 ambient-based guideline; is that correct?

2 A Right.

3 Q And the words that I just read, are those your
4 recommendations in this article? You're not quoting
5 anyone else. I want to know if that is your work
6 right there?

7 A Yeah, yeah. We're talking about how they do things
8 in New York, Massachusetts and California. And how
9 that is, how that works, is that you measure the
10 background, you add some factor to it, in
11 Massachusetts it's 10, and essentially what you come
12 up with is an absolute limit that is derived from the
13 background. But the final answer is an absolute
14 number.

15 Q But your opinion, is it correct that your opinion
16 here is a perception-based method, which is this
17 ambient relative standard, is clearly a better
18 approach than a single absolute limit; is that your
19 opinion?

20 A It's what's -- that's what it's saying here. But the
21 end result of the paper is that it's better to go
22 with absolute numbers.

23 Q So you contradict yourself in this publication?

24 A I suppose so. I think my father wrote that part,
25 but -- in fact, I'm sure he did.

1 Q I'm going to tell him you said that.

2 A I'm always -- I'm used to that.

3 Q Now, on page 11 of your testimony, you're still
4 discussing this article and you're discussing the
5 results of it looks like a survey that you conducted?
6 Is that correct?

7 A Okay. We're back in the direct testimony again?

8 Q Yeah. The direct testimony on line 12 --

9 A Yeah, okay.

10 Q -- you're referring to a study, and the study that
11 you're referring to is still in this article?

12 A Yeah. It's just later on in the same article, yeah.

13 Q And you state at least 95 percent of residents were
14 apparently satisfied with or unfazed by the sound
15 emissions of the new wind project, even when sound
16 levels were around or above 45 decibels. Was that
17 your conclusion based on this study?

18 A Yes, it was. And what that study is all about is
19 we're --

20 Q I'm sorry. Let me ask you the questions, keep this
21 moving along.

22 A Okay. Go ahead.

23 Q Please look at Table 4 of your paper, it's on page
24 101, and it looks like those are the results of this
25 study that you're talking about in your direct

1 testimony?

2 A Yes, that's right.

3 Q So looking at site A, there are approximately 107
4 households that are within this kind of target area
5 near wind turbines; is that correct?

6 A Um-hmm. Yes.

7 Q And you found that when noise decibel levels were
8 below 40, there were no complaints --

9 A That's correct.

10 Q -- correct? No sound complaints or no complaints at
11 all?

12 A No complaints related to noise.

13 Q Okay. So the survey didn't ask about did people have
14 problems with nausea or sleeplessness, it just said
15 are you bothered by the sound?

16 A Well, there was no official survey. These houses
17 that are in the table or are counted in the table,
18 what those are are all of the houses where the
19 project operations ever received a call with any kind
20 of concern about the noise from the project. Some
21 were definite complaints, others were just kind of
22 mild concern. But they're all included here. When
23 we do these surveys, we'll ask, you know, who has
24 ever called about a problem; and then we will put
25 instrumentation at that house and include them in the

1 compliance study. So we know how many complain and
2 we know what the level was there.

3 Q Okay. So you had 107 homes where there were noise
4 complaints --

5 A No.

6 Q -- correct?

7 A No, that's incorrect. The 107 is the total number of
8 households that are within 2,000 feet of a turbine at
9 that project.

10 Q I'm sorry, I didn't hear you. My colleague was
11 talking to me.

12 A Yeah, the -- all the numbers in that column, the 107
13 is how many houses there were within 2,000 feet of a
14 turbine in that project. In other words, it's the
15 total population essentially.

16 Q Okay. And this -- to obtain the complaint data, you
17 went to the company to get their records, correct?

18 A Well, it was just a matter of talking with the
19 operations people. No records per se.

20 Q So you didn't receive anything saying here's our
21 stack of written complaints?

22 A We asked who has ever called with any kind of concern
23 about noise. And they -- then they told us. There
24 may be more. That's possible.

25 Q So it's -- you called up Bob who runs this project

1 and said who's complained and he said, well, I think
2 this guy, this guy and this guy; that's what it was?

3 A Well, it's whoever called up at any time. And I
4 think this is -- it seemed to be pretty accurate.

5 Q But you didn't go to every -- you didn't send out a
6 survey to 107 residences --

7 A No, no, not at all. This -- the purpose of these
8 surveys was never to -- was not primarily to evaluate
9 the impact. It was to carry out a compliance survey
10 to see whether the project was meeting its
11 requirements. And we just were able to draw out of
12 that this information.

13 Q And that obviously is a very important distinction.

14 A Yeah. Yeah. None of these surveys were undertaken
15 with the primary purpose of counting how many people
16 complained.

17 EXAMINER NEWMARK: Let me just note, on
18 your direct, you label this study, not a survey. So
19 I don't know if that makes a difference as to what
20 we're really getting at. You weren't intending to
21 do a survey here, you were doing a study?

22 THE WITNESS: Well, all of the examples in
23 this table, they're all field surveys of actual
24 projects.

25 EXAMINER NEWMARK: Okay. So it did make a

1 difference. All right.

2 BY MS. BENSKY:

3 Q So I just want to make a very important
4 clarification. You did not go -- for site A, you did
5 not go to 107 residences, personally ask somebody do
6 you have a problem with the noise, yes or no, and
7 then get a result, correct?

8 A Yeah, that's correct.

9 Q So if somebody didn't complain to the company -- even
10 if they did complain to the company, they might not
11 be included in this?

12 A Oh, yeah. There could be more. We're not claiming
13 that it is the definitive number, but this was what
14 we were able to find out.

15 Q Right. So you're not saying that 95 percent of 107
16 households are -- don't have any noise complaints
17 related to this project? That's not what this is
18 saying?

19 A Well, what it's saying is that we know how many
20 definitely did complain and there may be some more,
21 but in general it shows that the vast majority did
22 not complain.

23 Q All right. Now, you were here and -- you had the
24 great pleasure of sitting here all day yesterday,
25 correct?

1 A Yes, I did.

2 Q And you heard some people come up and testify that
3 they had various complaints about noise, correct?

4 A Um-hmm. Yes.

5 Q Did you hear anybody say that they didn't go off and
6 complain to the company?

7 A It seemed like when asked, most of them said they did
8 call the company and made various progress.

9 Q Did you -- do you remember hearing anybody say they
10 did not complain to the company?

11 A I don't specifically remember any examples.

12 Q Okay. That's fine. Going back to the actual text of
13 your testimony, at line 11, the text reads, "In fact,
14 an interesting finding of the study was that at least
15 95 percent of residents were apparently satisfied
16 with or unfazed by the sound emissions of the new
17 wind project, even though sound levels around and
18 above 45 dBA were observed..." That's what it says,
19 correct?

20 A Yes, that's right.

21 Q But that's really not a conclusion that we can draw
22 because you're assuming that at no -- that if a
23 person did not complain to the company, that they are
24 satisfied or unfazed by the noise, correct?

25 A That's why I used the word "apparently."

1 Q But that's an assumption that you're making in that
2 statement?

3 A Yes. But this is -- as you can see from the table,
4 this is repeatable over five sites in this study and
5 several more after it.

6 Q I'm not concerned about the decibels right now. I'm
7 just talking about the data, the number of
8 complaints. So one big assumption of this study is
9 that if a person was upset about the noise to any
10 degree, that they complained to the company. Would
11 you agree that that's an assumption that you're
12 making in that statement?

13 A Yes.

14 Q Now, the second assumption that we're making is that
15 the company gave you all of the complaints that they
16 received?

17 A Yes.

18 Q And we don't know -- those are big assumptions. We
19 just don't know if -- we don't know the answers, you
20 never went back and double-checked that?

21 A They're assumptions, but I think they're fairly
22 accurate.

23 Q But you really don't have a basis for thinking that
24 they're accurate?

25 A I can't imagine that -- you know, in this first site

1 there was three complaints. I can't imagine there
2 was 50 complaints there. I don't think that's the
3 case.

4 Q But --

5 A And part of the reason for believing that is that we
6 measure -- when we do these surveys, we measure in
7 this example these three houses; but then at -- many,
8 many others throughout the project area all have the
9 houses that are closest to turbines. And not only do
10 we measure, but I personally have talked to all these
11 people, the ones that have complained and then the
12 other ones elsewhere. And it's -- it's surprising to
13 me, it was surprising to me how many people just
14 don't -- it's not the noise, even though the levels
15 are fairly high.

16 Q But that information that you just gave us is not
17 reflected in this survey? You said you went out and
18 you talked to people.

19 A Yeah.

20 Q But we don't know, based on this survey here, how
21 many people you talked to, what they said, there's no
22 written survey; is that correct?

23 A No. This is what I've gathered in the course of
24 doing this work.

25 Q Okay. Just a couple follow-up questions, one having

1 to do with this. So let's turn to page 97. And
2 there's two columns on the right-hand column, first
3 full paragraph, that begins with, "In addition, the
4 report clearly indicates."

5 A Yeah. Okay. I'm there.

6 Q Okay. About -- looking at the very last sentence of
7 that paragraph beginning with Schomer. Do you see
8 that?

9 A Yes, um-hmm.

10 Q And you state, "Schomer suggests that an adjustment
11 of 10 decibels should be subtracted for quiet rural
12 environments and perhaps another 5 decibels if the
13 project is newly introduced into such a long-standing
14 quiet setting." Is that what this says?

15 A Um-hmm.

16 Q And getting into this issue of day and night levels.
17 Is there anywhere in this paper that you criticize
18 Mr. Schomer's suggestion?

19 A No. This is just saying that we're taking onboard
20 what he has to say about it and figured it into this
21 overall analysis.

22 Q But you agree that you're not critical of that
23 particular suggestion in this paper?

24 A No. That's why it's in there.

25 Q Now, you spent the day here yesterday and you heard

1 Mr. Hankard say that if you measure at very close to
2 a wall, you're going to get a result that's three
3 decibels higher and that's not a good thing to do to
4 measure sound in a wall. Do you agree with that?

5 A Yes, yes. You don't want to put the microphone right
6 on a vertical surface, no.

7 Q My question is, what's the decibel level on the other
8 side of the wall? Does sound -- can sound waves go
9 through the wall?

10 A Yes. To some extent. Depends on the wall
11 construction and so on, frequency content of the
12 noise.

13 Q I hear some laughing behind me from Mr. Schomer, so I
14 don't know if that was a question showing a lot of
15 naivety.

16 But what I'm getting at is when there's a
17 45-decibel level outside a home, what's going on
18 inside the home? Does the sound travel through the
19 wall such that the walls can create some sort of
20 reverberation and make it even louder indoors than it
21 is outdoors?

22 A No. What typically happens is the level inside is
23 substantially lower than what you're measuring
24 outside.

25 Q With any frequency of sound?

1 A Yeah, as a general rule.

2 Q Are there any frequencies that travel better through
3 walls than other frequencies?

4 A Sure, sure. The lower frequencies pass through a
5 given construction much more easily than high
6 frequencies.

7 Q And when you say low frequency, what is the kind of
8 baseline low frequency that's going to make it
9 through the wall?

10 A Any frequency down to 1 hertz.

11 Q But up to what hertz level?

12 A Well, let's say from 20 hertz down.

13 Q Okay. I'm almost done. Can you please turn to your
14 rebuttal testimony, and pull out Exhibit 3 from that
15 testimony, please.

16 Now, Exhibit 3 looks like it's a
17 comparison between the model predictions and the
18 actual noise levels measured; is that correct?

19 A Is it this figure, you mean?

20 Q Yeah.

21 A Okay. Yeah. What that's showing is the black
22 figures in the middle of the chart are the sound
23 level at 1,000 feet from an isolated wind turbine in
24 three different directions measured over 14 days.

25 Q So there are actually three black lines in here?

1 A Yeah. They all kind of are similar.

2 Q And the -- I guess it would be the Y axis at the
3 bottom, that represents a total of 14 days?

4 A That's right.

5 Q So my first question is we see some peaks, correct?

6 A Yes.

7 Q What length of time is one of those peaks? Is it an
8 hour, a minute, a second?

9 A This data was measured in ten-minute increments, and
10 there's a couple of -- well, there is a very
11 prominent spike right in the middle of the survey,
12 that was probably 20 to 30 minutes in duration.

13 Q That spike?

14 A Yeah.

15 Q Is every spike -- is every little point a ten-minute
16 average or 30-minute average?

17 A Well, the sound level data appears as a continuous
18 line; but it's actually made up of many, many
19 thousands of ten-minute samples all strung together.

20 Q What I'm trying to figure out is for how long was it
21 that loud when we see a peak? Does this graph give
22 us that information?

23 A Well, from having looked at graphs like this a lot, I
24 can tell there's -- this peak in the middle is, like
25 I said, probably 20 to 30 minutes long.

1 Q And where was this measurement taken? What state?

2 A This is at a site in Minnesota that was in an
3 extremely rural area, not near any roads or towns or
4 anything. And it was just in a wide open field.

5 Q And near what wind farm?

6 A Prairie Star, I believe it's called.

7 Q And do you know the make and model of the turbine?

8 A I think it was a Vestas V90.

9 Q And do you know what the power output was?

10 A The electrical power output? It was 2 megawatt, I
11 think.

12 Q And do you know how tall the turbine was?

13 A I think it was on a typical 80 meter mast. This is
14 just taken as an example just to compare modeling
15 versus what you measure.

16 Q So with an 80 meter mast it would be probably around
17 400 -- 360, 370 feet?

18 A Right, right.

19 Q And this 14-day period was in August?

20 A That's correct.

21 Q Is there a certain month of the year where the winds
22 are stronger?

23 A Well, it varies at every site. I don't know what the
24 wind rose was at this particular site, I don't
25 recall.

1 Q As a general matter in Minnesota, is it windier in
2 the winter or in the summer?

3 A I think it's the wintertime there.

4 Q And you agree that in August there are generally more
5 leaves on the trees, more grass on the ground, more
6 birds?

7 A Yes.

8 Q Now, looking at this, we do see several points where
9 there are exceedances over 40 decibels; is that
10 correct?

11 A Yes. Remember, this is only a thousand feet away.

12 Q Right. But there are exceedances over 40 decibels?

13 A That's right.

14 Q Now, this bold red line looks like it is -- the first
15 bold line at the top is using that 0.0 coefficient --

16 A Yes, that's right. Um-hmm.

17 Q -- modeling? And the second line down is using the
18 .5 coefficient?

19 A Right.

20 Q And then there's a very, very faint red line down
21 below and that's the 1.0 coefficient?

22 A Right.

23 Q Now, if the standard was you may not exceed 40
24 decibels at night, looking at this graph, would you
25 think that there are exceedances?

1 A Yeah. It does go over 40 for this particular
2 measurement setup, these distances and so on.

3 Q On average it doesn't, but it does go up there, it
4 goes above it?

5 A Right. Well, that's typical.

6 Q So it is typ -- are you saying that it's typical that
7 there are -- that the actual sound does exceed the
8 modeling at certain times? Would that be a correct
9 assumption?

10 A Oh, most definitely, yes.

11 MS. BENSKY: That's all I have.

12 MR. REYNOLDS: Could we take a break?

13 EXAMINER NEWMARK: It will be short if we
14 do it now. It will be longer if we wait 'til after
15 he's done.

16 MR. REYNOLDS: I'd rather take a short
17 break. It's going to be at least a half hour.

18 EXAMINER NEWMARK: All right. Let's take
19 20 minutes.

20 (Recess taken from 12:15 to 12:43 p.m.)

21 (Change of reporters.)

22 EXAMINER NEWMARK: Okay. There's a motion
23 to move Mr. Hessler's study that he footnoted in his
24 testimony, and that would be --

25 MS. BENSKY: Footnote 3, page 11 of

1 direct.

2 EXAMINER NEWMARK: Okay. And his --
3 Exhibit 5 it would be, we would mark it as 5.

4 Any objections to that?

5 MS. BRANT: I'm sorry, Your Honor, would
6 it be 5 or 6? We have a pending with 4 that was
7 denied, but potentially to be admitted later.

8 MS. NEKOLA: And then we have 5.

9 MS. BRANT: Exhibit 5, which is his pseudo
10 notice.

11 MS. BENSKY: So 6. 4 was marked.

12 EXAMINER NEWMARK: So 5 is still pending.
13 Let's go off the record.

14 (Discussion off the record.)

15 EXAMINER NEWMARK: So Hessler 6, any
16 objections? No. Okay. It's in the record.

17 (Hessler Exhibit No. 6 marked and received.)

18 EXAMINER NEWMARK: All right. I think,
19 Mr. Hessler, remember you're under oath, and you're
20 available for cross.

21 CROSS-EXAMINATION

22 BY MR. REYNOLDS:

23 Q Mr. Hessler, I have a couple of questions for you.
24 You testified that you were struck by the testimony
25 of the Shirley Wind people.

1 A Yes. That's correct.

2 Q Why is that?

3 A Because of the -- because it's completely credible,
4 and I don't doubt it at all.

5 Q And do you doubt -- is it significant to you that the
6 residents testified that they had no problems before,
7 and when they left the site, their symptoms
8 disappeared?

9 A Yeah. That's very simple. It appears to be due to
10 the project there.

11 Q And what -- was that one of the reasons you wanted to
12 do some testing of Glacier Hills? Sorry, at Shirley.

13 A Yes. And I think what's needed is to get to the
14 bottom of why that is.

15 Q And what -- is it fair to say that the symptoms that
16 they complained of, such as headache, nausea, ear
17 problems, are consistent with exposure to low
18 frequency sound?

19 A Yeah, I think that's true. Of course it depends on
20 the magnitude of the sound, whether you're affected
21 or not, but because specifically one fellow said he
22 lived one mile away, that means that it's the only
23 possible sound that could travel that far would be
24 low frequency noise.

25 Q And so what -- what has -- what's been the result of

1 your effort to test up there? What would you have to
2 do and what request did you make, and what were the
3 results?

4 A Well, we came up with a preliminary test plan where
5 we had identified one or two units that were kind of
6 isolated so we could kind of more or less
7 scientifically measure them, and I think we submitted
8 that to the project up there so they would know they
9 were abound. But at first we didn't hear anything,
10 and I think they finally said, well, they don't want
11 to -- we're welcome to participate, but they don't
12 want to do it.

13 Q And what were you planning to actually test for?

14 A Well, low frequency specifically. And what we had in
15 mind was to test using a procedure that's outlined in
16 IEC standard 61400, which is a procedure for
17 measuring the sound power of wind turbines. It's
18 what all manufacturers use. But the point is that
19 that methodology uses a reflecting board that you put
20 on the ground and then you lay the microphone right
21 on the board, and the reason for that is that the
22 wind speed is theoretically zero at the surface. So
23 you're largely eliminating self-contamination from
24 pseudo-noise that we talked about a bit earlier
25 because it's very, very difficult to measure low

1 frequency noise because it's covered up by cell noise
2 of wind. It's a real technical challenge.

3 Q And let me ask you this. You've noted that there are
4 significant differences. There's -- there's a
5 significant difference between, say, Mr. Bump's
6 testimony and the three individuals who abandoned
7 their homes at Shirley?

8 A Right.

9 Q Now, there are different machines at the farms,
10 right?

11 A That's right.

12 Q What's at Glacier Hills?

13 A Those are Vestas V90.

14 Q And what's the output?

15 A I think they're 2 megawatt.

16 Q All right. And what are the ones at Shirley?

17 A They're the Nordex N100, and that's two and a half --
18 I don't remember.

19 Q And the -- that's one of the machines that's proposed
20 at this Highland project; is that right?

21 A One of the three that are being considered. It's
22 prominent in these analyses I think just because it
23 has a slightly higher sound power level, but that's
24 the only reason it's really being looked at
25 carefully.

1 Q All right. Are you aware of recent low frequency
2 noise from large turbine literature that describes
3 findings of higher low frequency noise from larger
4 turbines, those in the 2.3 to 3.6 megawatt category?

5 A Yeah. I have heard that, but my sense is that --
6 well, what strikes me is how remarkably similar the
7 sound power level is of all the turbines that are in
8 current use all the way from one-and-a-half-megawatt
9 units up to 3-megawatt units. They're all remarkably
10 similar in my view.

11 Q Well, are you familiar with a 2010 low frequency
12 noise from large turbines work by Henrik Moller and
13 Christian Pedersen on the subject?

14 A Yeah. Yeah, I've read that, but some time ago. And
15 I think they do some sort of analysis, and it appears
16 that it maybe is a little bit louder in the lower
17 frequencies for larger turbines, but that may be true
18 slightly.

19 Q So you would point to the potential cause of the
20 Shirley complaints to the machine itself?

21 A Yeah. I think -- I think this sort of problem is
22 related to the specific turbine. Now, before
23 yesterday when I heard that testimony, my view is
24 that those kinds of problems were principally
25 associated with the Vestas V82 in its early form that

1 had stall-regulated blades instead of pitch-regulated
2 blades. But this is the first I've heard of a
3 problem with a N100 site. I've worked with project
4 that put in N90s and N100s and there aren't any
5 problems at that site, so it's puzzling.

6 Q Let me ask you this. You have -- you heard testimony
7 about your recommended noise level design goals,
8 right? That's a paper that you and your dad and --
9 you and your dad put together?

10 A Yeah.

11 Q All right. And would you -- your findings indicate
12 that a 40-decibel level in the A range, that's the
13 audible range, is ideal?

14 A Yeah. And the reason for that is that we found that
15 there are few, if any, complaints at houses where the
16 outside level was 40 or less.

17 Q And so in an ideal world, if it would be possible to
18 have a project where the maximum level is 40 --

19 A Uh-huh.

20 Q -- is it fair to say that we probably wouldn't see
21 the citizens come in here and talk about the need to
22 abandon their homes?

23 A I think what you would see is a lack of complaints
24 about audible noise and amplitude modulation, things
25 like that, but that 40 dBA level really is not

1 connected in any way to this infrasonic situation.

2 Q The dBA level would be connected with sleep
3 disturbance?

4 A Yeah. It's the audible noise, the swishing sound
5 that you can hear, you know, as Mr. Bump said
6 yesterday.

7 Q Well, let me ask you this. There have been some
8 references to the sound of these turbines being at 40
9 dBA being like the sound of a refrigerator. Do you
10 agree with that?

11 A No. There's no -- nothing that you can compare it
12 to. It's not a constant sound. It's not
13 particularly loud, but it does have a time variance
14 to it that kind of calls attention to itself, and it
15 depends on the specific wind conditions and how much
16 turbulence there is and time of day. All kinds of
17 factors go into it so, yeah, it's more noticeable
18 than other things.

19 Q So that that you're referring to is the swishing
20 sound or the noise amplitude?

21 A Yeah. And that -- that does occur, but that is not
22 always the principal characteristic. In fact, I
23 spent a lot of time at wind projects, and it's more
24 or less a steady kind of -- I use the word churning
25 sound. It's -- but there's not -- you don't always

1 or often see pronounced swishing or amplitude
2 modulation.

3 Q Would you -- is it fair to say then that the sound
4 from turbines combines three separate variables or
5 parameters: one is audible sound in the dBA range;
6 two is low frequency or infrasound in the very low to
7 nonaudible range; and three would be the amplitude
8 modulation from the -- from the pulsating action of
9 the turbine blades?

10 A Yeah. I think the first and the third one are kind
11 of related, but --

12 Q Well, is it fair to say that there's a difference in
13 the ability of folks to sleep, for instance, if the
14 sound is like white noise, just steady, as opposed to
15 pulsating noise?

16 MR. SCRENOCK: I'm going to object, Your
17 Honor. I'm not sure that Mr. Hessler's been
18 qualified as an expert on sleep disorders.

19 EXAMINER NEWMARK: He has testified on
20 people's reactions to sound, I think. Isn't that
21 what he's been saying?

22 MS. NEKOLA: No, I don't think that's
23 accurate.

24 EXAMINER NEWMARK: No? People complain,
25 certain distances and --

1 MS. NEKOLA: Well, that's correct, but not
2 specific health or sleep reactions, just complaints.

3 MR. REYNOLDS: Well, he's done
4 investigation on complaints. He's analyzed ideal --
5 I mean, it's a pretty simple question. I mean, I'm
6 not calling him to ask him an opinion to a
7 reasonable certainty, but just a correlation between
8 this aspect of wind turbine noise and sleep
9 disturbance.

10 EXAMINER NEWMARK: Yeah.

11 MR. SCRENOCK: I understood his question
12 to be asking the witness whether a particular
13 parameter as he described it, wind turbine noise,
14 what would cause someone to have difficulty
15 sleeping, and I don't believe that is within the
16 realm of what Mr. Hessler's been testifying on.

17 EXAMINER NEWMARK: Well, I'm going to let
18 him answer. He can say he doesn't know.

19 THE WITNESS: You know what I would say to
20 that is, I think it's the highly variable nature of
21 wind turbine noise that appears to lead to sleep
22 disturbance because you can be standing next to a
23 turbine and it makes -- it will be making a certain
24 sound, and then the next minute it will suddenly get
25 louder and then get quieter again. And I think

1 those changes, I think, may be associated with
2 people waking up and having problems sleeping.

3 BY MR. REYNOLDS:

4 Q How about the whistling sound that Mr. Bump talked
5 about?

6 A You know, that -- well, I think he said it was a
7 foghorn sound. That's the way I would describe it.
8 That's with a hydraulic pump that's in the nacelle of
9 every one of those turbines, and it is a constant
10 mechanical noise. He mentioned that it varied, but
11 what he's really talking about is the yaw mechanism
12 to move the nacelle back and forth, that's variable,
13 that comes and goes, but the hydraulic noise is
14 constant. That's just a feature of that particular
15 model turbine.

16 Q All right. You have made a recommendation -- well,
17 let me ask you this first. With respect to the
18 modeling, you took a look at the Applicant's model,
19 which predicted using the N100 predicted 45 residents
20 would be potentially over 45 dBA, right? You saw
21 that info?

22 A Yeah. That was with the -- I think the initial
23 application where they were using a ground absorption
24 coefficient of zero.

25 Q That's right. And when you used a ground absorption

1 coefficient of .5, you found that it would be 45 --
2 four houses above 45 dBA?

3 A Yes. That's correct.

4 Q And would you agree with me that if you're going to
5 err on the side of public safety, that a more
6 conservative model is probably a better way to plan a
7 prospective wind farm?

8 A Well, when we first started analyzing wind projects
9 10 years ago or more, and we didn't know if the model
10 was accurate or not, they would put on a safety
11 factor and so on. Now since that time, we've had the
12 opportunity to do a lot of testing and compared
13 what's actually measured to what's predicted, and we
14 found the best agreement, the most realistic
15 agreement, is when you use .5 ground absorption.
16 That gives the closest correlation to what's actually
17 found out there.

18 Q All right. But you agree with me that models -- your
19 data shows that the models are generally consistent
20 but not perfectly on track with reality?

21 A Yeah. What the model gives you is the long-term
22 average level from the project at a given point, and
23 what we always made clear in our reports is that that
24 is the average, and the actual level is going to vary
25 commonly by plus or minus 5 dBA, sometimes by more.

1 It will get noise spikes like we were looking at a
2 few minutes ago in that example. That's just the
3 nature of a wind turbine.

4 Q So the 45 dBA which you're advocating for is not a
5 maximum, it's an average?

6 A Yeah. That's a given. I'm glad you brought that up.
7 Yeah. In this paper where we recommend that, we say
8 what should be limited to 45 is the main long-term
9 average level at each house. There's no practical
10 way to maintain a level below a threshold like 45 or
11 even 50 all of the time. That never happens.
12 There's always spikes due to weather conditions and
13 things. They're short-lived, but they're almost
14 unavoidable.

15 Q All right. So then for a 45 dBA average, then you
16 might have spikes up to, say, 45, but probably not
17 over 50?

18 A I got mixed up in that. Can you --

19 Q All right. If you had the ideal target of 40 dBA, if
20 that were -- if that were basically the target here
21 measured by the model, and that would mean that there
22 would be levels at the farm of up to 45 but probably
23 not beyond 50 dBA?

24 A Yes. Yeah, it would go -- if you say designed to 40
25 at a particular point, the actual level would vary

1 above and below that up to 45, within the 35-45
2 range, and there would be probably rare spikes to 50,
3 even more than 50.

4 Q So with respect to your ideal level, that's based
5 upon your evaluation of various venues and examining
6 available complaints from residents?

7 A Right, right. And those levels -- well, you know,
8 those -- that phenomenon where the level varies
9 happens at every site. So what we did was we
10 measured the main long-term level at all of these
11 houses, and that's what's tabulated there is how many
12 people were complaining between 40 and 44. That's
13 the main long-term level between that range. You
14 know, so at any given house they might be exposed to,
15 let's say, a level 43, but the actual level might
16 have gone up to 50 at times and down to 35. That
17 happens everywhere. So I'm trying to keep everything
18 on a level playing field.

19 Q All right. Now, assuming that the project could be
20 redesigned for a 40 dBA, making that assumption, that
21 would be your preferred dBA limit, would it not?

22 A Well, it would be better for everyone if that were
23 the actual performance of the project, but typically
24 it's not practical or feasible to achieve that level
25 at most projects. I would say 90 percent.

1 Q So are we talking about economic development versus
2 the public interest to be free of noise complaints?

3 A I think it's just fundamental economics of the
4 project. To make 40 at a given site, you may --
5 oftentimes you have to remove so many turbines that
6 the project just becomes not viable.

7 Q All right. But assuming for the sake of this
8 question that this project could be redesigned for 40
9 dBA.

10 A Uh-huh.

11 Q You would recommend that based upon your work, right?

12 A That would be a good thing if that were possible,
13 yes.

14 Q And there are other jurisdictions such as New York
15 that have 38 to 40 dBA; isn't that right? I think
16 these are noticed in your paper. California, New
17 York. Page 98.

18 A Yeah. Now there that's what we talked about a little
19 while earlier. Those are relative limits that are,
20 like, converted to an absolute number. In New York
21 the methodology for years has been to measure the
22 background and then you could go over that by 5. So
23 I think the 38 is just based on a typical background
24 level of 33, plus 5. That's where that number comes
25 from.

1 Q All right. I think you testified to this earlier
2 that there is a significant impact with respect to
3 noise if the ambient level is very low and with wind
4 turbines coming in with a higher noise threshold; is
5 that right?

6 A Yeah. If you had a -- in the specific example there,
7 if the project level were higher than 45 and the
8 background level were 16 below that, that means that
9 the project would be dominant, the only thing you
10 could hear pretty much. That's that situation. But
11 the absolute limits that we're putting forward of
12 40-45 are based on the -- the typical setting that
13 all of these projects normally are in. In other
14 words, rural farm country. Those levels appear to be
15 to our mind satisfactory given that sort of an
16 environment.

17 Q This is -- is it fair to say that the Town of Forest
18 is unique because of its very quiet background
19 levels?

20 A No, I wouldn't agree with that at all. That project
21 site is very similar to dozens and dozens of other
22 ones that I could think of.

23 Q Well, but we're talking about -- what areas where
24 people live in are quieter than these at the 20 dBA
25 level for ambient noise?

1 A Well, those are the kind of levels we find in every
2 one of these sites that's in rural farm country.
3 When the wind is calm, the level is always 20, 25
4 dBA, and that happens everywhere. It's really the
5 wind. It's really the background level when the wind
6 is blowing that has some relevance.

7 Q So with respect to -- back to the Shirley Wind
8 Project. Given the fact that the applicant here is
9 recommending the potential use of the same machines,
10 of the same kind of configurations at the Highland
11 Project as the Shirley Project, would you have
12 concerns about potential impacts in the Town of
13 Forest that have been reported in Shirley?

14 A Yeah. As I think I mentioned earlier, I think the
15 issues there are related specifically to the -- to
16 that model turbine, and I think until that's better
17 understood, I don't see any reason why it wouldn't
18 repeat itself if that same turbine were used
19 somewhere else.

20 Q Do you -- now, with respect to the difficulty of you
21 being able to test at Glenmore -- are you having the
22 same problem at Glacier Hills?

23 A Yeah. We asked for permission, and same sort of no
24 response thing. Went on for a long time, and then I
25 think, oh, what was it, the other day they officially

1 said, no, we don't want to do that.

2 Q All right. And do you think that it's -- that the
3 Applicants would be -- that it's in the nature of
4 good science to prevent scientists like you from
5 gathering data?

6 A Yeah. You know, I think what needs doing is -- is
7 some field testing to understand this thing.

8 Q And we agree that it's not completely understood?

9 A That's correct. Yeah.

10 Q And do you agree with the environmental assessment
11 here that a certain percentage of -- of Town of
12 Forest residents will suffer a decrease in quality of
13 their life if this project is approved?

14 MR. SCRENOCK: I object to that, Your
15 Honor. I'm not sure that Mr. Hessler's been
16 qualified as a quality of life expert.

17 EXAMINER NEWMARK: Yeah. I think it's too
18 ambiguous of a question.

19 BY MR. REYNOLDS:

20 Q All right. Have you read the environmental
21 assessment?

22 A Yes. Uh-huh.

23 Q All right. And you -- do you remember a part in
24 there where the environmental assessment assumes that
25 if this project goes forward, there will be a small

1 percentage of Town of Forest residents who will be
2 adversely affected as designed?

3 A Yeah. I would say that's a very typical conclusion
4 at least. I mean, there's hardly any site where you
5 can sit back and comfortably say everybody's going to
6 be fine. I don't -- there's hardly any situation
7 that falls into that. I can only think of one
8 project, and it was on an island and nobody lived
9 there, but -- but for most projects, the norm is to
10 conclude there will probably be some small impact.

11 Q And so especially if the same turbines are used at
12 Shirley, you would expect the same result in the Town
13 of Forest?

14 A Well, I don't have any reason to believe that it
15 wouldn't -- that whatever is going on there would not
16 repeat itself.

17 MR. REYNOLDS: That's all I have.

18 EXAMINER NEWMARK: Okay. Other cross?

19 MR. SCRENOCK: I do, Your Honor.

20 EXAMINER NEWMARK: Oh, go ahead.

21 MR. SCRENOCK: Just a few questions.

22 CROSS-EXAMINATION

23 BY MR. SCRENOCK:

24 Q Mr. Hessler, I note that in your testimony, I don't
25 need to point to any specific points, but you refer

1 throughout, or at least at different points, about
2 the incidence of complaints. And in response to one
3 of Ms. Bensky's questions earlier, you used the
4 phrase pretty significant adverse impact. By that
5 were you referring to the same thing in terms of
6 incidence of complaints?

7 A Yeah. I'm talking about complaints and that study we
8 were talking about before.

9 Q Thank you. And you had a lengthy discussion about
10 the wind speed monitor and the level from ground
11 where those measurements were taken. You were
12 talking about normalizing the wind speeds to 10
13 meters. Was the purpose of that to essentially
14 equate a -- excuse me -- that I'm assuming, and I
15 guess I want to know if my assumption is correct,
16 that the way that the model works or the reason that
17 you normalize the time of year is that there's
18 assumed sort of graduation of wind speed throughout
19 the elevations and that a wind speed at 50 meters
20 normalized to 10 meters will equate to a specific
21 wind speed up at the hub height. Is that the purpose
22 of the normalization?

23 A Yes. The -- the primary reason that I normalized it
24 to 10 meters is because that's what we always do in
25 these assessments. So I wanted to look at it in the

1 way that we normally look at field data.

2 Q Okay.

3 A I wanted to keep it consistent so I can tell what it
4 meant relative to other sites and other situations.

5 Q Okay. Now, you had talked with Mr. Reynolds a little
6 bit about the 0.0 ground absorption coefficient
7 versus the 0.5, and I think you indicated that you
8 used that process frequently; is that right, that
9 type of modeling with those coefficients?

10 A Well, what we always do is assume .5 ground because,
11 as I mentioned, we get the best agreement between
12 modeled and measured results in a particular point.

13 Q So you don't do that for the purpose of skewing the
14 results?

15 A Oh, no. No. What I'm after is, I want to know what
16 it's really going to be at a given house.

17 Q And you had indicated that when you ran your model
18 with the 0.5 ground absorption coefficient for the
19 Highland Project, that you found that there were four
20 houses that you identified that would be within --
21 above the 45 decibels. Do you know whether those
22 houses represent participating or nonparticipating
23 landowners?

24 A I didn't at the time. I have heard recently that
25 they are all participants.

1 Q Okay.

2 A Not sure about that, though.

3 Q And with -- Mr. Reynolds asked you about the use of
4 the similar model turbines from the Shirley Project,
5 I believe that's the N100 here, and you indicated
6 that you don't have any reason to think that the
7 problems -- the experiences of folks wouldn't
8 reoccur. Do you have any reason to believe that they
9 would?

10 A Well, I would say we don't fully understand why
11 there's problems at Shirley, but my belief is that
12 it's associated with a specific turbine model and
13 possibly the blade regulation, whether it's pitch or
14 stall regulated. I think I would be leery about
15 using that turbine again before more is known about
16 it.

17 Q If one of the other two turbine models that were
18 discussed being used for this project were being
19 used, what would be your perception?

20 A I would be more comfortable with that because I think
21 the other ones are the Siemens. I don't know of any
22 other model, Siemens and one other one, but I
23 don't -- I've never noticed any problems with those.

24 Q So based on whatever is going on at Shirley that
25 we're not sure what it is, you wouldn't have reason

1 to expect those issues to reoccur with either of the
2 other two models?

3 A That's right.

4 MR. SCRENOCK: Thank you. I have nothing
5 further.

6 EXAMINER NEWMARK: Okay. Other questions?
7 I believe staff goes first.

8 CROSS-EXAMINATION

9 BY MR. LORENCE:

10 Q Mr. Hessler, are you familiar with the PSC noise
11 measurement protocol?

12 A Yes.

13 Q Is any part of that protocol oriented towards
14 infrasound?

15 A Well, I believe the intent of it was to try to
16 quantify low frequency sounds by involving the
17 C-weighted sound level and pre-construction
18 measurements and post-construction measurements.
19 That sounds good on paper, but the problem with
20 C-weighted levels is that they're extremely sensitive
21 to wind induced pseudo-noise that we talked about
22 earlier. That wind blowing over the microphone
23 affects only the lower -- the low end of the
24 frequency spectrum, and the C-weighted level is
25 directly dependent on what's going on in the low end

1 of the frequency spectrum. So any little breeze
2 blowing over the microphone gives you a very high
3 obstensible C-weighted sound level.

4 So to answer your question, the protocol
5 has -- calls for C-weighted measurements, but -- and
6 we've taken that data, and what we found is that the
7 levels before the project and after the project are
8 identical because they're purely a function of how
9 fast the wind was blowing.

10 Q So the pre-construction measurements of the protocol
11 are you saying are not capable of measuring
12 infrasound?

13 A Yeah. That's right. That you get a result from
14 taking those measurements, but it has no actual
15 meaning. It's a false signal that's almost purely a
16 function of the wind speed of the microphone.

17 MR. LORENCE: No further questions. Thank
18 you.

19 EXAMINER NEWMARK: Go ahead.

20 MS. BENSKY: I have a follow-up.

21 RECROSS-EXAMINATION

22 BY MS. BENSKY:

23 Q How do you solve that problem? How should the
24 protocol be different to account for that?

25 EXAMINER NEWMARK: I think he answered

1 that. You lay the microphone down on the ground
2 with a board, is that --

3 THE WITNESS: Can I answer?

4 EXAMINER NEWMARK: Well, did you answer
5 that already?

6 THE WITNESS: Not exactly.

7 EXAMINER NEWMARK: Okay.

8 THE WITNESS: No. You could use that
9 technique that I referred to, but the problem with
10 it is a practical nature. These surveys last -- or
11 need to last for a period of weeks to get -- catch
12 all kinds of wind speeds and times of day, and you
13 can't leave a microphone sitting on the ground. You
14 know, if it rains or snows, it destroys the
15 equipment. So those kinds of measurements have to
16 be attended. So to -- I suppose if you wanted to
17 document the pre-existing conditions, you would take
18 much shorter term measurements using -- perhaps
19 using that technique and taking short band sample,
20 but it's very -- it's a very challenging thing to
21 measure.

22 BY MS. BENSKY:

23 Q And are you aware of any -- switching gears a little
24 bit. Are you aware of any study that correlates wind
25 turbine make and model with a particular number of

1 complaints? Is there anything that the Commission
2 can look at that would be helpful in deciding the
3 turbine model that would likely produce the least
4 amount of complaints?

5 A No. Most turbine models have no known noise issues
6 associated with them. The only ones -- there's only
7 one or two that I'm aware of that have -- that are
8 kind of special cases and have issues. I mentioned
9 the Vestas V82, or at least in the format what used
10 to be built five years ago. That -- I think that
11 one's a problem. But -- but of the ones being
12 considered here, only the Nordex appears to have
13 possibly something going on with it.

14 Q So is the answer that you're not aware that that has
15 been studied?

16 A No, it hasn't been specifically studied.

17 Q And one last question. To maintain absolute limit of
18 45 dBA that is never exceeded, what would -- what
19 should the project be designed at?

20 A Yeah, that's a good question. It has to be
21 substantially lower than that to allow for temporary
22 noise spikes, up to 10 dBA below. Now, that issue
23 has been around for a while of these temporary
24 exceedances. What I suggested, and I wrote some
25 siting guidelines for Minnesota Public Utilities

1 Commission, and what I say in there is that, well, if
2 the measured level is in compliance 95 percent of the
3 time or more, then I would consider it in compliance.
4 So there has to be some allowance for these temporary
5 excursions because they're essentially unavoidable.

6 Q But that -- but that 10 decibel drop is consistent
7 with your recommendation in your paper that 35 dBA at
8 night should be the limit ideally, correct?

9 A Well, that wasn't the conclusion of the paper, but --

10 Q Are those two consistent?

11 A Yeah.

12 MS. BENSKY: Thank you.

13 MR. REYNOLDS: Have one follow-up
14 question.

15 EXAMINER NEWMARK: One. All right.

16 RECROSS-EXAMINATION

17 BY MR. REYNOLDS:

18 Q I wanted to show you, and I just want to identify
19 this. I marked it as Hessler A. I don't have
20 copies, but I just want to know if this is the paper
21 that shows that -- that you referred to that shows
22 that larger turbines above .2 -- .23 have higher low
23 frequency levels than less than 2? Is that the paper
24 you were referring to?

25 A Yes, I believe that's what this paper says. As I

1 said, I haven't read it for years.

2 MR. REYNOLDS: Okay. And -- yeah, it's
3 Hessler Exhibit No. 8. I just wrote on it.

4 MS. NEKOLA: Your Honor, we object. We
5 haven't seen this.

6 MR. REYNOLDS: Yeah, I understand. I am
7 just marking it so that he can identify it.

8 EXAMINER NEWMARK: What's his next
9 exhibit?

10 MS. NEKOLA: It would be 7.

11 MR. REYNOLDS: Okay.

12 EXAMINER NEWMARK: It would be 7 anyway.
13 Okay. Are you trying to move it in now at this
14 point?

15 MR. REYNOLDS: I don't have to move it in
16 now. I just wanted him to identify it and then I
17 have one follow-up question.

18 EXAMINER NEWMARK: Well, based on this
19 exhibit?

20 MR. REYNOLDS: Well, okay. Let me do a
21 backup question.

22 BY MR. REYNOLDS:

23 Q What is the title of the exhibit that you're looking
24 at?

25 A Low frequency noise from large wind turbines.

1 Q And is the premise of that article that large wind
2 turbines above point -- 2.3 megawatts tend to have
3 more low frequency sound than turbines less than 2
4 megawatts?

5 EXAMINER NEWMARK: He's already answered
6 that. No. He's already answered.

7 MR. REYNOLDS: Okay.

8 BY MR. REYNOLDS:

9 Q Do you know, the other turbines that are proposed
10 here are above 2.3 megawatts, are they not?

11 A There's been so much focus on the N100 that I don't
12 even remember what the other two models were.

13 Q Well, if -- if I told you that they were above 2.3
14 megawatts, then they would -- those turbines would
15 fall within the definition of larger turbines as
16 outlined in that paper, right?

17 A Yeah, I suppose so, but I would point to a figure in
18 that paper --

19 EXAMINER NEWMARK: Okay. Let's hold on,
20 though. We're really running far afield if we're
21 going to be digging into this exhibit since there's
22 an objection already based on entering it in the
23 record. Any response to that objection? You want
24 to move it?

25 MR. REYNOLDS: Well, yeah. I think it's

1 relevant because the testimony about low frequency
2 noise, I think this witness has talked about that
3 it's not a big deal, and here we may have an answer
4 with respect to why there's a difference between the
5 wind turbines at Shirley, which are 2.5, and the
6 lack of low frequency symptoms at Glacier Hills,
7 which are less than 2, and the fact that this
8 witness thinks there are low frequency problems at
9 Shirley. So that the question is, well, we could
10 use the other turbine, but there's still within the
11 gamut of these larger turbines. So I think it's
12 relevant to that, and I -- I'm certainly willing to
13 give the -- my colleagues a chance to look at this.
14 I only had one copy. It came up, you know.

15 EXAMINER NEWMARK: Timing has been an
16 issue here. Do you guys have a response? Clean?

17 MS. NEKOLA: Just -- it's the same
18 response. We haven't had a chance to look at this.
19 Mr. Hessler hasn't seen it for a long time, and I
20 don't see the relevance. I'm confused really what
21 you're trying to do here.

22 MR. REYNOLDS: Difference between Glacier
23 Hills and Shirley is --

24 EXAMINER NEWMARK: I'm going to leave it
25 out.

1 MR. REYNOLDS: Okay.

2 EXAMINER NEWMARK: We're not going to put
3 it in, and I think he's actually answered these
4 questions anyway. It's already on the record, so it
5 would be repetitive at this point. And let's move
6 on.

7 MS. NEKOLA: Can we go off the record a
8 minute?

9 (Discussion off the record.)

10 EXAMINER NEWMARK: All right. Back on the
11 record. Do you have anything else?

12 MR. SCRENOCK: No.

13 EXAMINER NEWMARK: All right. I had some
14 questions, but at the risk of opening up another
15 whole round of cross, I'll forgo it.

16 Any redirect?

17 MS. BRANT: Yeah, we have some redirect.

18 REDIRECT EXAMINATION

19 BY MS. BRANT:

20 Q Mr. Hessler, you talked with Ms. Bensky about your
21 Exhibit 3 in this proceeding?

22 A Yes. Uh-huh.

23 Q Can you just clarify for us the purpose of Exhibit 3?

24 A Yeah. It was just to give a generic example of
25 actual measurements of wind turbine sound compared to

1 EXAMINER NEWMARK: Okay.

2 DIRECT EXAMINATION

3 BY MR. REYNOLDS:

4 Q Could you state your name, please.

5 A Wes Slaymaker, S-L-A-Y-M-A-K-E-R.

6 Q And Mr. Slaymaker, you filed some direct testimony in
7 this case?

8 A That's correct.

9 Q Is it true and correct to the best of your knowledge?

10 A It is.

11 MR. REYNOLDS: All right. That's it.

12 EXAMINER NEWMARK: Okay. You're excused.

13 (Witness excused.)

14 EXAMINER NEWMARK: All right. Who's next?

15 MR. REYNOLDS: Dr. SCHOMER.

16 PAUL SCHOMER, TOWN OF FOREST WITNESS, DULY SWORN

17 EXAMINER NEWMARK: Okay.

18 DIRECT EXAMINATION

19 BY MR. REYNOLDS:

20 Q Can you state your name, please.

21 A Paul Schomer.

22 Q All right. And have you filed testimony in this
23 case?

24 A Yes.

25 Q All right. In the form of direct?

1 A Yes.

2 Q And rebuttal?

3 A Surrebuttal.

4 Q Yeah, whatever.

5 A Yes.

6 Q Did you bring that testimony with you?

7 A I did not.

8 Q All right. And since giving that testimony, have you
9 received other information such as Roberts
10 surrebuttal or listening to the testimony of
11 Mr. Hessler? Do you have anything to add to that
12 testimony that you've already given in written form?

13 A I would have comment on what Mr. Hessler said this
14 morning.

15 Q All right.

16 A That would be all.

17 Q Go ahead.

18 A There's two points I would make very briefly and very
19 simply. One has to do with the pseudo-noise, and
20 he's talked about it. We've talked about it a lot.
21 It's a very important issue in terms of being able to
22 measure things around a wind farm, and Mr. Hessler's
23 introduced it. He and his father did a study which
24 was published in NCEJ, which he referred to this
25 morning.

1 And when you're dealing with wind noise --
2 I'm going to try to make this very simple -- there's
3 two kinds of turbulence. Turbulence is the air
4 moving around for one reason or another. One kind of
5 turbulence is just like the -- if you put a stick in
6 water, a stream, and you see the line go out behind
7 the stick, and that's called wake turbulence because
8 it's just like a wake from a boat.

9 And there's another kind of turbulence
10 called intrinsic turbulence. This is the air moving
11 around on its own, heating the air against the ground
12 or being turned over by buildings nearby or stones or
13 shrubbery or whatever makes the air mixed up and not
14 steady. So there's these two kinds of turbulence
15 that is pseudo-noise, and this is what we're trying
16 to get rid of so that we can make measurements that
17 are accurate.

18 Q Okay. So what's your comment on Mr. Hessler's
19 comment?

20 A The comment is that Mr. Hessler and his father
21 measured only the wake turbulence in the wind tunnel
22 because it was very smooth flow. It didn't have
23 intrinsic turbulence, and the intrinsic turbulence is
24 the much more dominating factor. And so the numbers
25 he quotes for -- for what turbulence causes are quite

1 low compared to what you measure in reality.

2 Q All right. And how is that relevant to what we're
3 considering here?

4 A That's relevant in the difference between the level
5 of the turbine noise and the level of the background,
6 that the level of the turbine compared to the level
7 of the background exceeds 10 dBA. It's not less than
8 10 dBA.

9 Q And why is that important?

10 A That is -- 10 dBA is thought of when you start to
11 have serious problems with a new noise source
12 compared to what was existing. And so this
13 exceedance is significant, and the numbers presented
14 by Mr. Hessler are identical to what has been
15 published for just the total pseudo-noise.

16 Q All right. Do you have any comments on the issue of
17 low frequency sound emanated from large turbines
18 defined as above 2.3 megawatts versus low turbines,
19 smaller turbines, less than 2 megawatts?

20 A I would expect in just about any machine, as the
21 machine gets bigger, the dimensions get bigger. It's
22 how it couples energy out of it. As the sound
23 radiated will get bigger, which means the wavelength
24 is longer. The fundamental dimension to the sound
25 gets bigger, which means it's lower frequency. This

1 would -- I would expect from any machine, and I'm not
2 surprised to see the data for this machine go that
3 way.

4 Q And would that explain the wide or rather consistent
5 complaints of health effects from the residents at
6 Shirley that have 2.5 megawatt machines as opposed to
7 other wind farms?

8 MR. WILSON: I'm going to object to that
9 question to the extent that it goes to health
10 impact. I don't think he's qualified as a health
11 expert.

12 EXAMINER NEWMARK: Okay. I'll sustain
13 that.

14 BY MR. REYNOLDS:

15 Q You have given testimony on the -- do you have
16 information about the relative impacts of low
17 frequency sound on health?

18 A Yes.

19 MR. WILSON: Objection.

20 MR. REYNOLDS: This has been the part of
21 it. He's testified to this. We've had Mr. Hankard
22 who testified about annoyance versus health.

23 EXAMINER NEWMARK: The first question, did
24 you say complaints or did you say health?

25 MS. BENSKY: That was just a foundational

1 question.

2 MR. REYNOLDS: Yes. Exactly.

3 EXAMINER NEWMARK: That's fine. Let him
4 answer.

5 THE WITNESS: What question am I answering
6 now?

7 EXAMINER NEWMARK: None. Let him think.

8 BY MR. REYNOLDS:

9 Q All right. There has been testimony about -- from
10 the Shirley Wind residents who have machines that are
11 2.5 megawatts, and then we've had testimony about --
12 from complaints that -- that are more of the sleep
13 category as opposed to the nausea, headache, earache
14 category, okay? You've given testimony that the
15 infrasound impacts to human health focus on those
16 kinds of symptoms like headache, nausea, vertigo,
17 feeling of ill at ease, right?

18 A Yes.

19 Q Would the size of the turbines at Shirley and its
20 likely higher production of low frequency noise have
21 a potential explanation for why the folks at Shirley
22 are having such difficulty?

23 A I think it's a potential explanation, but I think I
24 could come up with -- there's other explanations
25 maybe. But that's certainly a potential explanation.

1 Q All right. Well, the whole -- the point of this
2 hearing is to try to determine whether the project as
3 designed for the Town of Forest is -- is appropriate.

4 A Yes.

5 Q And size of turbines is one factor?

6 A It is a factor.

7 Q What else?

8 A I think that -- that the -- to me, one of the
9 important factors has been the nature of the
10 community being somewhat unique. This is -- the
11 basic things that have been talked about here are
12 most important. The testimony you had yesterday,
13 although I was not here, I've heard that kind of
14 thing before, and I think that the issue before us is
15 whether that's going to continue. The people are
16 being taken out of their homes by the sound. This is
17 not new. As I've pointed out in my testimony, this
18 has been going on for 30 years, not with wind farms
19 but with low frequency noise, and especially
20 pulsating noise.

21 The notion that wind farms is somehow
22 different is just not -- makes sense. And that we
23 know and we've known for years that these same
24 symptoms have occurred over time with different kinds
25 of sources of low frequency sound, and the result is

1 always the same. There's a fraction of the
2 population, we don't think it's a large fraction,
3 that has these symptoms to the point where some are
4 driven out of their homes.

5 EXAMINER NEWMARK: Okay. Sir, I think
6 wasn't the question what -- what was your question,
7 what things can be done to prevent this, to reduce
8 this?

9 MR. REYNOLDS: Yes.

10 BY MR. REYNOLDS:

11 Q Okay. So there are -- in your view, you've made a
12 recommendation that if this project is -- is -- is
13 approved, that the -- that the noise limits be
14 reduced?

15 A I have made a recommendation that the noise limits be
16 reduced and that the -- I have made a recommendation
17 that the prediction based upon the average is not
18 consistent with what's been put together as the
19 procedures in Wisconsin.

20 Q All right. Explain that.

21 EXAMINER NEWMARK: Well, is this in his
22 testimony already? He said he explained this.

23 MR. REYNOLDS: All right. Yeah.

24 EXAMINER NEWMARK: Okay.

25 BY MR. REYNOLDS:

1 Q Well, let me ask you this. We've been talking about
2 average noise limits and maximum noise limits.

3 A Correct.

4 Q What are the limits that we should be shooting for
5 here?

6 A Well, what I think about always is are things
7 logical, is this what was meant. And as I understand
8 it in Wisconsin and in this proceeding, people have
9 said there's a 45 dB nighttime limit, and it has to
10 be designed for 100 percent of the houses, the homes
11 of nonparticipating residents meet 45 dB. It
12 wouldn't be acceptable for 50 percent of the homes to
13 meet 45 dB.

14 And then I ask the question, if 100
15 percent of the homes have to meet 45 dB, how can you
16 have 100 percent of the homes meeting it half the
17 time is somehow different than half the homes meeting
18 it all the time. To me the two are the very same
19 thing, just on a basis of logic that if you have a
20 rule of 45 dB, it should be that way. You can't have
21 it -- it's met half the time at all the houses but
22 it -- the two are the same.

23 Q So is that the -- is your recommendation for a 39 dB
24 limit designed then to make sure that the maximum
25 doesn't exceed 45?

1 A No. I was saying that we should model using zero at
2 a minimum, model using zero as the modeling rather
3 than .5.

4 Q Okay.

5 A So that there is -- you get closer to this
6 realization that you have a limit met all the time at
7 all the houses and not -- well, all the time at some
8 of the houses you wouldn't permit, but some of the
9 time at all the houses is permitted. And the two are
10 identical, so it's difficult to understand the
11 distinction.

12 Q So when you first looked at this, the model that you
13 looked at in the application was based upon a zero
14 coefficient?

15 A The original material presented, I think it was
16 called Appendix V as I recall, had zero for the
17 modeling.

18 Q And you thought that was an appropriate number?

19 A I believe that is an appropriate number.

20 Q And why be conservative in modeling?

21 A Well, one of the reasons I came to this -- two
22 reasons I come to this. One is the one I've just
23 illuminated, that if you have a rule that all the
24 houses meet it and then you say half the time, and
25 then you say but you can't have -- it's met 100

1 percent of the time at half the houses, there's no
2 logic there.

3 The other reason is that this is supposed
4 to be done in terms of the ISO standard. People say
5 we're applying ISO 9613, and ISO 9613 calls for --
6 if you follow it, it says we're making a
7 conservative prediction and that the only
8 permissible way and to say you're using 9613 is to
9 make the prediction, and then if you want to have a
10 time average according to ISO 9613, there's a
11 specific procedure in the standard for doing that,
12 and that's not being followed.

13 So I do it on the basis of logic, of what
14 the rule is, and I've come to that conclusion on the
15 basis of following the standards, which have not
16 been followed.

17 Q So is it -- is it fair to say that a conservative
18 model will err, if at all, on the side of public
19 safety?

20 A I wouldn't call it erring, but it will certainly be
21 on the side of public safety.

22 MR. REYNOLDS: Okay. That's all I have.

23 EXAMINER NEWMARK: Okay. Other questions?

24 CROSS-EXAMINATION

25 BY MR. WILSON:

1 Q Mr. Schomer, have you visited the site?

2 A No.

3 Q So that means you haven't taken any data at the site?

4 A No.

5 Q You testified in response to some questions from
6 Mr. Reynolds that the nature of this community was
7 very unique. If you haven't been to the site, how
8 can you understand whether this community is unique
9 or not?

10 A I find the unique factor in the activities this
11 community has engaged in in terms of trying to
12 maintain the quiet, rural nature of the community,
13 and I find that to be similar to situations I've seen
14 in other parts of the country where that kind of
15 community existed, and I've seen very unique
16 reactions when that exists.

17 Q So if I understood your testimony, what's unique
18 about this community is that they're -- at least some
19 people in the community are fighting the project?

20 A No. I said that in the testimony I've read that's
21 been put in place in this, that this community has a
22 land use plan of some kind. I don't profess to be a
23 planner and get all the terms right, but that this
24 community has gone out and said we want to maintain
25 the quiet, rural nature of this community, we don't

1 want to plan for industry, we want a plan for
2 five-acre homes and the maintenance of farms. That's
3 where they're unique.

4 And the similarity I find that was I --
5 plans that the FAA tried to implement some probably
6 25 or 30 years ago, and probably the one example I
7 can think of where the FAA was eventually stopped by
8 Congress because of the uproar. And I find this --
9 the dynamics of this community to be along those
10 lines.

11 Q So you've reviewed the comprehensive plan for the
12 Town of Forest?

13 A I've reviewed the testimony.

14 Q But you haven't reviewed the plan?

15 A I've not reviewed the document, no.

16 Q Are you familiar with the fact that in Wisconsin,
17 most local communities have to do some type of
18 comprehensive plan by law?

19 A Yes.

20 Q Okay. So they're not unique from that perspective?

21 A No.

22 Q Okay. You don't have any medical training; is that
23 right?

24 A That's correct.

25 Q You have an engineering degree?

1 A Correct.

2 Q So if you take a look at page 2 of your direct
3 testimony. You have a copy of your testimony with
4 you?

5 A I wasn't asked to bring them, so I am at the mercy of
6 somebody to give me a copy.

7 MR. REYNOLDS: What do you want, direct?

8 MR. WILSON: For the time being, yes.

9 MR. REYNOLDS: All right.

10 MR. WILSON: He'll need sur, too.

11 MR. REYNOLDS: He is on direct.

12 THE WITNESS: All right. Page 2.

13 BY MR. WILSON:

14 Q Line 17 and 18, I find within a reasonable degree of
15 engineering certainty that there will be significant
16 health impacts. Can you explain to me the
17 relationship between engineering and health impacts?

18 A I think that we've heard Mr. Hessler testify, and I
19 think that on the same basis we have been observing
20 and learning about these problems for many years.
21 And, no, we're not going to give prescriptions out
22 and -- but we understand better the acoustics and the
23 physics, and I think that there's a shared burden to
24 do these things properly, but we are part of the
25 team.

1 Q Okay. Are you saying that -- you've already
2 testified you're not a health expert; is that
3 correct?

4 A I have testified, and I'm certainly not trained as a
5 health expert.

6 Q Are you a health expert?

7 A I think I understand something about the health
8 effects of noise from the literature that I follow.
9 Does that say I'm a doctor, no.

10 MR. WILSON: Did you give him his sur?

11 MR. REYNOLDS: He's got it.

12 BY MR. WILSON:

13 Q So at page 11 of your sur, you're talking about your
14 conclusion that the 0.00 contour is appropriate?

15 THE WITNESS: I have to ask for page 11 of
16 the sur.

17 MR. REYNOLDS: I'm sorry?

18 THE WITNESS: The surrebuttal.

19 MR. REYNOLDS: It's right there.

20 THE WITNESS: It is?

21 MR. REYNOLDS: Yeah. It's all tabbed
22 together.

23 THE WITNESS: Oh, right behind that?

24 MR. REYNOLDS: Yep.

25 THE WITNESS: Okay. That should be easy.

1 Page 11.

2 MR. WILSON: Yes.

3 BY MR. WILSON:

4 Q So at 11 there, you are testifying at line 15 about
5 the appropriateness of the zero contour, correct?

6 A Correct.

7 Q And you would agree that that contour is the most
8 conservative possible?

9 A It's the most conservative possible using 9613.

10 Q Okay. Now, if we could go back to your direct
11 testimony on page 9. On page 9 in the middle of the
12 page there you're describing your Exhibit 2, which
13 is, you know, the results of you running a model, and
14 in this case you used -- you used both zero and .5;
15 is that correct --

16 A Yes.

17 Q -- to produce Exhibit 2?

18 A That is true.

19 Q Okay. And reviewing your testimony here on page 9,
20 there's nowhere where you indicate in your direct
21 testimony here that using the .5 is inappropriate?

22 A At that point in time, we had not received the
23 operation of the source levels from proponent as
24 perhaps you recall, and I was trying to make sense
25 out of this with data that we had been able to

1 collect off the internet, which were apparently
2 precursor data to the real data. And my whole
3 original testimony is somewhat screwed up because we
4 didn't have the source data that should have been a
5 part of the application.

6 Q Are you done?

7 A I'm saying I did the best I could given the data we
8 did and didn't have.

9 Q Fair enough.

10 A And I did analysis of .5, but the analysis I did of
11 .5 was equal to the zero case because the source data
12 that I found were that much higher.

13 Q Okay. But you used a ground factor of .5 in your
14 initial creation of Exhibit 2, correct?

15 A That was one of the numbers I looked at.

16 Q Okay. And why did you not at that time use zero for
17 the entire run to create Exhibit 2?

18 A As I just told you, I was trying to figure out what
19 was going on because I could not understand even what
20 was being recommended by proponent, whether it was
21 zero or .5, what the data were that were to be used.
22 When I made my .5 predictions, they came out zero.
23 The zero predictions of the report, I didn't know if
24 the report was labeled wrong, whether there was 141
25 houses as Mr. Hessler criticized my report for. It

1 was just -- would have been much better if we had the
2 source data.

3 Q Okay. You have a fundamental belief that these
4 models should be run using the zero contour, correct?

5 A I think that that's something that I thought about.
6 I've not articulated it.

7 Q But you articulated it in your testimony?

8 A In this. Not up until here. I have -- I've come to
9 that conclusion for Wisconsin for two reasons. One
10 is because the standard that you say is being used
11 calls for it. And the second is, when I read the
12 rule, or as I understand the rule, and I have read
13 the rule, there just doesn't seem to be a difference
14 between the application two different ways. I have
15 made predictions using the annual average for sources
16 that call for that specifically. When you make
17 predictions for an airport, it calls for the annual
18 average. When you make predictions for a highway,
19 these are called for. I didn't see that they were
20 called for here. I saw a different kind of thing.

21 Q Okay. So you testified that you just recently came
22 to the conclusion that zero is appropriate only here
23 in Wisconsin; is that correct?

24 A No. I think it's probably a good idea all over, but
25 it's something that we haven't done in this country

1 in transportation noise sources.

2 Q Okay. But this was a recent revelation that you've
3 had; is that correct?

4 A This actually occurred serendipitously. I was asked
5 to give a lecture this coming November on ISO 9613.
6 And when I started to put the lecture together, I
7 realized that it was calling for this conservative
8 prediction and that indeed I had been misusing the
9 standard, and I was on the committee that wrote it
10 when it was written.

11 Q So does this revelation occur between the time that
12 you submitted your direct testimony and the time you
13 submitted your surrebuttal testimony?

14 A That part of it does, yes.

15 Q Yeah. So that explains why you were willing to use a
16 .5 in your direct testimony but not in your
17 surrebuttal testimony?

18 A No. The .5, as I've tried to say, is lots of reasons
19 for it being there. Part of it is I tried to
20 understand what was going on.

21 MR. WILSON: I think that's all we have.

22 EXAMINER NEWMARK: May or may not be. I
23 want to let you know before you stop, I've decided
24 to allow that Schomer page 6 on surrebuttal in.
25 Basically we have so many standards at this point in

1 the record, and the studies we let in refer to WHO
2 and all kinds of European standards, day and night
3 standards. Let's just put it all in, and I'll give
4 you a chance to cross him on that if you need to.
5 None?

6 MR. WILSON: We're just fine with your
7 ruling.

8 EXAMINER NEWMARK: All right. Any other
9 questions?

10 MS. BENSKY: I have a few.

11 CROSS-EXAMINATION

12 BY MS. BENSKY:

13 Q We've talked a lot about this ISO 9613 standard. You
14 said you were on the committee that wrote it?

15 A Correct.

16 Q Mr. McKeever is passing them out to everyone so I
17 think it will be helpful to --

18 A I can't hear so well at my -- you have to speak up a
19 little bit.

20 Q You spent too much time around wind turbines? Sorry.
21 That was a joke. It was funny.

22 So you've just been handed a piece of
23 paper. Is this the international standard 9613-2
24 that you helped create?

25 A Yes.

1 Q And this was designed in 1996, correct?

2 A This was first edition it says 1996, December 15th.

3 Q And has it been revised since then?

4 A No.

5 Q Was this standard designed specifically for wind
6 turbine noise?

7 A No.

8 Q And if you turn to page -- I don't know what page it
9 is -- the pages don't appear to be numbered. If you
10 turn five pages in, it says acoustics.

11 A Okay. Maybe you have a clause number.

12 Q Part 2, acoustics attenuation of sound during
13 propagation outdoors. It's the fifth page in.

14 A I'm not sure I know what -- there's Clause 2 is the
15 following -- there's normative references. Are you
16 in the --

17 EXAMINER NEWMARK: I think you have it
18 right in front there.

19 THE WITNESS: Part 2, yes. That's all
20 dealing with Part 2. Part 1 is air absorption,
21 tables of air absorption.

22 EXAMINER NEWMARK: Can I have that back,
23 please? I'm going to follow along.

24 THE WITNESS: Okay. Part 2.

25 BY MS. BENSKY:

1 Q And there are two columns on this page, and the
2 right-hand column, the second paragraph beginning
3 with the word, this method is applicable. Do you see
4 where I am? That's on the right-hand column near the
5 top.

6 A This method is applicable, yes.

7 Q Uh-huh. And it says, it is applicable directly or
8 indirectly to most situations concerning road or rail
9 traffic, industrial noise sources, construction
10 activities, and many other ground-based noise
11 sources. Is a wind turbine a ground-based noise
12 source?

13 A Probably not. There's no other standard to use.

14 Q So this is the best standard, but it's not quite
15 right?

16 A It's not going to be quite right.

17 Q But this standard specifically does not apply to
18 sound from aircraft and flight or blast waves from
19 mining, right?

20 A Okay. That was probably inserted by me.

21 Q Is one of the reasons why you are calling for using
22 this very conservative absorption coefficient because
23 of this limitation?

24 A That would be one of the reasons. We have -- we
25 studied in my laboratory air to ground versus ground

1 to ground propagation by having one experiment where
2 we had 100-foot-high tower that we did sound
3 propagation measurements for, and then we had a
4 source on the ground that we did the propagation
5 measurements for, and the difference of 100-foot-high
6 tower versus on the ground was -- oh, I've got
7 published papers on it. I don't know that I remember
8 the exact numbers. The levels -- the higher levels
9 are about the same, but they're three times more
10 often, then you're up 100 feet.

11 Q What happens if you're up 100 meters?

12 A It's going to possibly be even more frequent.
13 Possibly be the same. I guess that didn't answer
14 much, but that's the best I can do.

15 Q Well, the point is that we just don't know?

16 A Well, I know it won't be less, but I don't know
17 that -- I haven't reached the saturation or that it's
18 going to continue to grow.

19 Q Having this in your hand, and if you can do it very
20 quickly, can you point to other paragraphs that
21 encourage the model to be used in a conservative
22 manner?

23 A Say that again, please.

24 Q Well, you talked about after looking through this,
25 you realized that the intention was to obtain

1 conservative results; is that correct?

2 A Yes.

3 Q And I'm asking you where in the document we should
4 look to get that information.

5 A Okay. That is one place. When it talks about the
6 cement, and I just have to find where it talks about
7 that. Well, in 3.2 in definitions it gives
8 equivalent continuous downwind octave band sound
9 pressure level, and downwind is a shorthand name for
10 sound -- propagated sound where it travels in the
11 louder manner. Because as everybody knows, you're
12 downwind outdoors, it's louder than if you're upwind,
13 and that's what the downwind means here, that you're
14 getting a prediction that's hearing-enhanced
15 propagation. So in 3.2, the definition of downwind
16 indicates this. And then it talks about predicting
17 the downwind. Let's see. I think on Equation 5 and
18 6 -- in 5 it talks about the downwind again.

19 EXAMINER NEWMARK: That's meteorological
20 conditions, number five? Is that where you're at?

21 THE WITNESS: No. I'm on Equation 5 on
22 the unknown page, but it's in the end of Clause 6.

23 EXAMINER NEWMARK: Oh.

24 THE WITNESS: And this is the basic
25 equation for using ISO 9613, and it talks about

1 downwind. And as I said, if one wants to calculate
2 the long-term -- the long-term averages, if you look
3 at the bottom of just before you get to 7,
4 there's -- you go up two paragraphs, it says the
5 long-term average weighted sound pressure LAT,
6 paren, LT for long-term, shall be calculated
7 according to the equation there, and that's not been
8 done.

9 BY MS. BENSKY:

10 Q In this project?

11 A In this project.

12 Q And what's the significance of that?

13 A Well, this is the procedure that was designed in the
14 standard for going from downwind to long-term if
15 long-term wanted to be used. What this does is it
16 says that if you're up in the air, which is what I
17 just -- we know we are, they recognized when this was
18 written, they being -- this was really based upon a
19 German standard initially -- that when you have an
20 elevated source, you're going to get this high level
21 more of the time, as I said, three times as often,
22 which was a whole lot of the time from 100-foot high.
23 When you look at this case, this standard says that
24 you never have anything but the high levels from an
25 elevated source and that the -- the average that's

1 used for other sources shouldn't be used for this
2 because it is elevated, and I think that's the
3 difference that comes in here.

4 MS. BENSKY: Thank you.

5 EXAMINER NEWMARK: Anything else?

6 MS. BENSKY: Briefly.

7 BY MS. BENSKY:

8 Q Is it necessary for you to visit a site to be able to
9 analyze data that was taken at that site?

10 A No.

11 Q Is this something that you do all the time in your
12 professional work?

13 A Well, I like to judge the people that have made the
14 measurements and have some feel for things, but I
15 would say that things that are done by Mr. Hankard or
16 Mr. Hessler, I believe the measurements in general.
17 Now, I've said that I thought he was wrong on the
18 empty pseudo-noise, but that's a separate thing.

19 Q And even though that you -- so, is your own
20 experimentation necessary to be able to reach the
21 opinions that you've reached in this case? Is it
22 necessary for you personally to conduct experiments
23 in order for you to reach the opinions that you have
24 reached in this case?

25 A No. As I've said, even if I had done studies that

1 would be part of the team, that I think that nothing
2 is done by one person alone.

3 Q And in fact, whoever uses this model is to some
4 extent relying on your work, right?

5 A They're relying on my work. They're relying on the
6 Deutsches In -- DIN, Deutsches Institut fur Normung.

7 Q So even though you've not been to the site, and even
8 though you haven't done your own experimentation, can
9 you still state the opinions that you stated in this
10 case to a reasonable degree of scientific certainty?

11 A Yes, I do.

12 MS.

13 MS. BENSKY: Thank you.

14 EXAMINER NEWMARK: Okay. Other questions?

15 RECROSS-EXAMINATION

16 BY MR. WILSON:

17 Q Just a couple questions following up on ISO 9613-2.
18 When you testified earlier that you were implementing
19 a method incorrectly, was it this method that you
20 were --

21 A I'm sorry? I don't quite follow the question.

22 Q Well, you told me -- you told me before when I was
23 asking you questions that you had this recent
24 epiphany which is the result now of using -- you're
25 saying you use the zero ground contour, and you told

1 me that up until recently something had been -- had
2 been implemented improperly by yourself as well.

3 A Yes. I had forgotten. I don't -- you know, I don't
4 use 9613 that often. It's used for this, but it's
5 not used -- I use 9613 for this, and I use it for
6 small arms ranges occasionally.

7 Q Okay.

8 A But when you're doing airports or highways or other
9 things, there's models put out by the DOT for those
10 kinds of sources. So if you do general work, which I
11 do in all kinds of noise areas, you use different
12 things at different times. What I was saying is
13 until I had looked over this to prepare this lecture
14 for Brazil when I'll be there, I remembered that this
15 was for the downwind situation, which is also called
16 for in ISO 1996, which I do know because I'm chairman
17 of that committee.

18 Q Okay. I just have one other question for you. Have
19 you done any studies that implement this standard
20 with your new recollection against actual sound
21 measurements to be able to tell whether it's a good
22 fit?

23 A Well, you're not looking for a good fit. When
24 you're --

25 Q That's not my -- my question is this, have you

1 compared your calculations using this method against
2 actual sound measurements with your recent
3 recollection that you've got to do in a certain way?

4 A Well, of course I haven't.

5 MR. WILSON: Thank you. That's all.

6 EXAMINER NEWMARK: Okay. Redirect?

7 MR. REYNOLDS: Just a couple questions.

8 MR. LORENCE: Your Honor --

9 EXAMINER NEWMARK: Oh.

10 MR. LORENCE: -- I may have a question
11 before we get to redirect.

12 MR. REYNOLDS: Sorry. Go ahead.

13 EXAMINER NEWMARK: While you're doing
14 that, I was going to take a minute. Did we verify
15 his testimony?

16 MR. REYNOLDS: If I didn't -- I thought I
17 did.

18 EXAMINER NEWMARK: Did you? You know
19 what, just do it again just in case because I don't
20 remember.

21 FURTHER DIRECT EXAMINATION

22 BY MR. REYNOLDS:

23 Q Dr. Schomer, do you verify that the rebuttal or
24 surrebuttal that you've given, or direct and
25 surrebuttal, is true and correct?

1 A Yes.

2 MR. REYNOLDS: Okay.

3 EXAMINER NEWMARK: And these Exhibits 1
4 through 4 as well?

5 MR. WILSON: Your Honor, I think given the
6 discussion of this document, it probably ought to go
7 in as an exhibit.

8 MR. McKEEVER: Yes.

9 MR. LORENCE: I'm going to ask a couple
10 questions on it, so you may want to hold off on
11 that.

12 EXAMINER NEWMARK: Okay. Let me just have
13 him answer. Are Exhibits 1 through 4 -- sir?
14 Mr. Schomer, Exhibits 1 through 4, were they
15 filed -- are they correct to the best of your
16 knowledge?

17 THE WITNESS: I'm sorry?

18 EXAMINER NEWMARK: Your Exhibits 1 through
19 4, are they correct to the best of your knowledge?

20 THE WITNESS: Yes.

21 EXAMINER NEWMARK: Okay. Thanks.

22 All right. Commission staff.

23 CROSS-EXAMINATION

24 BY MR. LORENCE:

25 Q Dr. Schomer, on page 12 of your surrebuttal

1 testimony, and I'm looking on lines 6 through 8.

2 A Uh-huh. I guess I'm not fast enough. All right. I
3 got to page 12.

4 Q On lines 6 through 8 you say, ISO 1996 requires what
5 is termed "downwind" or weather-enhanced propagation
6 conditions so that model predictions are only
7 infrequently exceeded. Do you see that sentence?

8 A Yes.

9 Q I have never seen ISO 9613-2 before today. Could you
10 tell me where that's required in this -- in this ISO
11 9613?

12 A Those are the questions we just answered, but I can
13 go through it again.

14 Q Well, you talked about the downwind stuff, but you
15 say it says that it's only infrequently exceeded, and
16 I'm wondering if it says that in here anywhere?

17 A That's what the downwind nomenclature means, and I
18 believe it's in either 9613 -- I know it's in either
19 9613 or in 1996, which 9613 incorporates by
20 reference.

21 Q I have one more question, and again this shows my
22 complete ignorance on this standard. In Section 7.3,
23 that's called ground effects, and again there's not a
24 page number here, but if you could turn to that.

25 A Okay. 7.3. 7.3, ground effects, yes.

1 Q Is this section equivalent of the ground factor that
2 we've been talking about the last two days?

3 A This section is -- makes use of the ground factor.
4 It's not equivalent. This is where the ground factor
5 comes in. What you have is on the next page there's
6 graphs showing the -- what the sound propagation is
7 in different octave bands. And then in the
8 implementation there's a table on the next page,
9 Table 3, and in Table 3 if you look in there, there's
10 A sub S or A sub R in the middle column at the top,
11 and that's for the source or receiver region. We've
12 been talking about there's really three factors, the
13 .5 or the zero whatever. You have a factor for the
14 source region, a factor for the middle, and a factor
15 for the receiver region. And if you look at the
16 formulas under A sub R of the middle column, you'll
17 see a G. That's the ground factor that goes between
18 zero and 1.

19 Q And that's the ground factor we have been talking
20 about for two days?

21 A There's three of them technically: one for the
22 source, one for the receiver, and one for the middle.

23 Q So if we turn back one page where it begins with the
24 letter A, then it says hard ground.

25 A Hard ground, yes.

1 Q That first paragraph ends -- it says, for hard ground
2 G equals zero. So this is the ground factor zero
3 that we've been talking about, correct?

4 A Correct.

5 Q And then for porous ground in B, it's G equals 1?

6 A Correct.

7 Q And then for mixed ground, it says it's someplace in
8 between zero and 1. Do you see that?

9 A I see that.

10 Q So this is the ground factor we've been talking about
11 here?

12 A Yes. But to understand that is a question that was
13 earlier. You've got a source up in the air and not
14 on the ground, so does this standard really apply.
15 And my answer was, it's the best we have, but you
16 can't apply it exactly the way you would if it was on
17 the ground because the source is as high in the air,
18 it changes what the propagation is. So that the
19 definition of what is hard and what is soft, you have
20 a source that's 100 meters in the air on average.
21 That's not on the ground as one of the other
22 counsel's pointed out.

23 Q But it has to get to the ground -- the sound has to
24 get to the ground eventually, doesn't it?

25 A It has to get to the ground eventually.

1 Q And once it's on the ground, won't it travel along
2 the ground?

3 A No. It's only -- the only thing you have is an
4 effect of the microphone height at your receiver.
5 The other -- it doesn't -- it doesn't come down to
6 the ground and then travel across the ground like
7 this. It doesn't do that. What you're interested in
8 is the path that goes straight from this up in the
9 air source to your receiver, which may be near the
10 ground, but you don't have any other path. If you
11 do, it's because you don't have good propagation.
12 Then it's poor propagation conditions.

13 MR. LORENCE: Thank you. I have no
14 further questions.

15 MS. BENSKY: Your Honor, can I follow up
16 on that? This is really important, and I want to
17 make sure I understand.

18 RECROSS-EXAMINATION

19 BY MS. BENSKY:

20 Q So are you saying that if we have a flat -- if we
21 have a flat ground, if there's a source that's close
22 to the ground emanating sound, that sound can just go
23 and be absorbed in the ground, correct?

24 A Ground absorption -- what happens, and this is more
25 related to people's experience. You know, if we went

1 through all the details, it would be complicated, but
2 I think people's experience is useful here. First of
3 all, the first rule is that if you're downwind, it's
4 louder than if you're upwind, and there's -- the
5 reason is the downwind, and this is going to seem
6 strange, we think of sound almost as rays, sound rays
7 rather than waves.

8 And let's put it this way. Let's say you
9 were behind the barrier. You expect it to be
10 quieter. It's quieter because there's no direct path
11 from the sound to you. It has to come around the
12 corner just like if you had a -- something to stop
13 the sun or a reflector of light. You go behind it,
14 it's not as light as in front of it. Sound is the
15 same thing. If you have a barrier or something that
16 prevents the sound from getting to you, it's quieter
17 than if you don't have that. Well, on a sunny day
18 and you're upwind, you don't hear things. But if
19 you're downwind, you do.

20 Another thing -- example, if you're out in
21 a boat, do you hear things far away out in a boat?
22 You've seen that? This is the hard surface of the
23 water, and frequently above the water there's a
24 temperature inversion because of the cooling and
25 heating of the water. And those two can form two

1 layers that the sound gets trapped in, and then you
2 have very -- you hear the people whispering on the
3 shore, and it's like they're 10 feet away from you.
4 I'm sure many of you have experienced this. This has
5 to do with the propagation downwind versus upwind,
6 has to do with the propagation.

7 The physics is complicated, but the
8 effects -- same thing. Ever hear sources very early
9 in the morning? You wake up at 5:00 a.m. and you
10 hear a distant train or horns or the wheels? Have
11 you experienced that? That again has -- at that time
12 of day, you've got a direct path from the source,
13 which is -- you don't hear the rest of the day to
14 you. It has to do with the physics of the situation.

15 I'm not going to attempt to go into the
16 physics, but I'm trying to give you different
17 examples out of your daily life that show you this is
18 what goes on. We don't want to really go into the
19 details of what's going on.

20 Q So if there's a source up in the air that's emitting
21 sound, the sound's going to come down and it's going
22 to hit the receptor before it hits the ground and
23 absorbs; is that correct?

24 A It's going to hit the receptor directly. There will
25 be -- it gets confusing.

1 Q That's for sure.

2 A The ground is important only that it gives a
3 reflection that can enhance or interfere with the
4 direct path. But it does hit the microphone, that's
5 the first thing it hits in time. The sound will
6 arrive at the microphone before -- it comes directly
7 from the source, so it will arrive first.

8 Q So somebody standing outside near a wind turbine or
9 any source up in the air, that sound wave is going to
10 travel down, and it's going to hit that person's ear
11 before it goes down to the ground and gets absorbed?

12 A Well, won't be totally absorbed but, yes, it does hit
13 you before it's absorbed. And I think your point is
14 good, that as you're traveling along the ground, from
15 ground to ground it will be absorbing some of the
16 sounds, and that alone is -- that's part of the
17 reason that the air-to-ground path is louder.

18 Q And so do you think it's proper to assume no
19 absorption and use that 0.0 coefficient for this
20 reason?

21 A That's part of the reason. Part of the reason is
22 the -- in order to have a prediction that is what is
23 called for in the standard, which is a prediction
24 that is -- if you like the term conservative, a
25 prediction that predicts what's going to happen 90

1 percent of the time or 95 percent of the time or some
2 percentage of the time, I actually think that from
3 the data that I know of, the prediction is probably
4 the -- about 85 percent of the time would be
5 included, and 15 percent of the time you would be
6 above what's being predicted with the 0.00
7 prediction. It's not the most conservative
8 prediction in the world by any means.

9 Q But considering we have to use this model because we
10 don't have anything better, the best way to use this
11 model for a source that's 100 meters in the air is to
12 use that 0.0 coefficient?

13 A 0.00 is the best you can do with this.

14 MS. BENSKY: Great. That's very helpful.
15 Thank you.

16 MR. REYNOLDS: Couple questions on
17 redirect.

18 REDIRECT EXAMINATION

19 BY MR. REYNOLDS:

20 Q Dr. Schomer, is it the heart of it that the challenge
21 of creating a model to reflect what the citizens of
22 Forest will actually experience, is that the heart of
23 why it's better to have conservative estimates than
24 not conservative estimates of sound? Because we're
25 trying to figure out what's going to happen to the

1 citizens in Forest.

2 A I think there's probably lots of reasons I can think
3 of for doing this. Again, we're dealing with a low
4 frequency sound primarily. The A-weighted sound is
5 going to correlate with it as it does with nearly all
6 noise sources.

7 I think it's important to understand how
8 the ear hears because that's all a part of this, and
9 the ear doesn't hear all frequencies equally. It
10 doesn't process all frequencies equally, and it gets
11 very different at low frequencies. The ear gets very
12 different at low frequencies, and this is one of the
13 reasons I would say this is important. We -- I think
14 Mr. Hessler testified that the threshold of hearing
15 changes, or maybe it was in that paper that was
16 passed out, but the threshold of hearing is very
17 different from one person to another.

18 But what's even more important is that at
19 the middle frequencies, like 1,000 hertz, a change of
20 10 decibels is a doubling or a cutting in half of
21 loudness. At these low frequencies, like let's say
22 10 hertz, at 10 hertz, about a 2 dB change is a
23 doubling of loudness. So at low frequencies,
24 anything that you're off gets magnified by the ear.
25 If you're off by 5 dB at low frequencies, that's a

1 factor of four in loudness. Whereas if you're off by
2 5 dB at a middle frequency in a prediction, that's
3 not even a factor of two in loudness. So errors get
4 magnified at the low frequencies just because of how
5 we hear.

6 Q That was one of the reasons for looking at the more
7 conservative model. Are there any others?

8 A Well, let's see. I've talked about the standard
9 calling for it. I've talked about it makes sense
10 from the -- from the way the rule is written.
11 Certainly it makes sense from being conservative from
12 just the standpoint of how the ear hears. I think
13 that just what we've talked about, the health effects
14 and the fact that there's people that may be affected
15 just like in one other community, somehow it seems
16 like it calls for us to be cautious.

17 I think that if -- if it were some other
18 area where government was involved directly, let's
19 say, we're going to install -- we're going to license
20 fire detectors that only work 90 percent of the time
21 and 10 percent of the time people aren't warned about
22 the fire protector, but that's good enough. People
23 wouldn't say that's good enough, so the fire
24 protection has to work all the time. And I think
25 when we're talking about people literally being

1 driven out of their homes, we have to be a little bit
2 cautious.

3 MR. REYNOLDS: Thank you. I don't have
4 anything else.

5 EXAMINER NEWMARK: Highland?

6 MR. WILSON: No.

7 EXAMINER NEWMARK: All right. What are we
8 doing with our ISO 9613-2?

9 MS. BENSKY: I'd like to move it into
10 evidence.

11 EXAMINER NEWMARK: All right. Any
12 objections?

13 MR. LORENCE: I guess I'd like to talk
14 about that for a second.

15 EXAMINER NEWMARK: Okay.

16 MR. LORENCE: We've kept out all kinds of
17 reports and exhibits today because they didn't come
18 in at the proper time. Professor Schomer could have
19 put it in at any time with his exhibits. I
20 recognize that counsel here is not -- is not -- his
21 witness is not asking this. But I guess I would ask
22 the ALJ that under the theory that, you know, we've
23 been keeping out late-filed things and this is
24 awfully dense information, whether this should go in
25 the record.

1 EXAMINER NEWMARK: Okay.

2 MR. LORENCE: And I just as a second aside
3 for counsel, I'm not positive, but I think that
4 these are usually under copyright, and is this
5 something that we would be able to place on our
6 website and make available to the world if -- I
7 don't want to get you in any kind of copyright
8 trouble if that's the case.

9 MR. McKEEVER: I'll just say I got it on
10 the internet.

11 MR. LORENCE: Yeah.

12 MR. REYNOLDS: And this is the standard
13 that has been used by all the measurers of sound, so
14 this is -- this is kind of the bible of sound
15 measurement.

16 MR. LORENCE: And I guess that reinforces
17 my question then. Anybody could have put it in.
18 Any of the experts could have put it in from direct
19 testimony on it. So whether we get it here at this
20 late hour or not, I'll defer to the decision, but
21 I'm -- given what we've done today with other
22 things, I just wanted to raise that point.

23 MS. BENSKY: I guess the nature of this
24 exhibit is totally different. This exhibit doesn't
25 give any opinions. It's just a standard that

1 everybody -- all the sound people in this case have
2 used and relied upon. So I think it would be
3 helpful to have it in. And even if it wasn't in, I
4 think it's the type of material that could be quoted
5 and briefed anyway, so --

6 EXAMINER NEWMARK: Let's not get into
7 that.

8 MR. WILSON: I think at the risk of making
9 it look like Ms. Bensky and I are on the same
10 team --

11 EXAMINER NEWMARK: We would like to see
12 that.

13 MR. WILSON: I agree.

14 EXAMINER NEWMARK: Okay.

15 MR. WILSON: It should come in.

16 EXAMINER NEWMARK: I understand.

17 MR. WILSON: There's a lot of testimony on
18 it.

19 EXAMINER NEWMARK: Let me say the
20 overarching concern I have or rationale for letting
21 it in is we've cited to equations and all kinds of
22 portions of this document which I think can only be
23 correctly or adequately explained or referenced by
24 having the document. So for the abundance of
25 caution for making the record even larger, I think

1 it would enhance the Commissioner's review of the
2 testimony we've just heard. So what's the number
3 for this one? It's 9, Schomer 9, is that --

4 MR. REYNOLDS: I thought it was 5.

5 EXAMINER NEWMARK: Well, I don't know if
6 we ever marked your other ones. I might have
7 mentioned on the record because Mr. Schomer, I was
8 not accepting his Exhibits 5 through 8, and I am
9 pretty sure I referenced that at the beginning of
10 the hearing. So we're just going to call this 9.

11 MS. BENSKY: Okay.

12 (Schomer Exhibit No. 9 marked and received.)

13 EXAMINER NEWMARK: All right. I think
14 you're done.

15 THE WITNESS: Thanks.

16 EXAMINER NEWMARK: You're excused.

17 (Witness excused.)

18 EXAMINER NEWMARK: 3 o'clock. Let's take
19 15 minutes.

20 (Break taken from 3:05 p.m. to 3:20 p.m.)

21 EXAMINER NEWMARK: Well, got enough people
22 back, I guess. You want to start off the record?

23 MR. McKEEVER: Yeah.

24 (Discussion held off the record.)

25 EXAMINER NEWMARK: All right. Next?

Exhibit C

Freeborn Wind Hearing Exhibit AFCL 35
p. 15 of Wayne Brandt's lease with Invenergy
([20183-140948-08](#))

Wayne Brent

I have many reasons why these windmills are of great concern. After reading the easement, I have many reservations about what is stated. Without reading the entire easement, I will quote a few troubling statements. With respect for time, I will only read my comments and, hopefully, you will read the Easement at a later time.

Refer to 7-B. Acquisition of Interest (page 10 of Easement): “The acquisition of all or any portion of Grantee's interest in the Property or the Windpower Facilities or the Easement by another person shall not require the advance consent of Owner or constitute a breach of any provision or a default under this Agreement, and Owner shall recognize the person as Grantee's proper successor.”

COMMENT: It appears that any person or company may purchase this wind farm, whether it be from the United States, Russia, Iran, China, or anywhere else. Wouldn't that be nice.

Refer to 9-C. New Easement to Mortgagee (page 13 of Easement): “If the Easement or this Agreement terminates because of Grantee's default, or if the Easement is foreclosed, or if the Easement or this Agreement is rejected or dis-affirmed pursuant to bankruptcy law or other law affecting creditors' rights – the Owner shall, upon written request from any Easement Mortgagee within 90 days after such event, enter into a new Easement for the Property on the following terms and conditions.

Refer to 9-C (iii) At the option of the Easement Mortgagee, the new easement may be executed by a designee of such Easement Mortgagee without the Easement Mortgagee assuming the burdens and obligations of Grantee.”

COMMENT: It appears there is no guarantee that a new Mortgagee, if found, would be required to purchase the old Mortgage Easement. It also appears that, under



9-C (section 3), if a new Easement Mortgagee is found, they would not have to assume the burdens and obligations of the Grantee.

On another subject, will Grantee ever fulfill their so-called promise to remove these eyesores upon termination? The Easement states that if Grantee fails to fulfill their obligation within one year, then the Owner may do so, and the Owner will be reimbursed for reasonable and documented costs.

Even if the Owner was to take these wind turbines down, they should not have to be responsible for finding cranes and equipment to do so. The astronomical costs to remove the towers and access roads could be more than \$100,000 per turbine, probably more than what farmers could afford.

If this wind project can be built in a year, why can't the turbines be taken down in a year? It should be much easier to take down than to build for the Grantees. In my opinion, I firmly believe Grantees have no intention of taking these wind turbines down. I believe that about a year from their final termination, they will deed the wind turbines back to the Owner, relieving the Grantee of all obligations to do so. The Grantee will be long gone shortly thereafter with no address or phone number to be found and no one to be held accountable.

If there are any removal costs, and I quote, "they will be determined by the Grantee acting in good faith," as stated in section 10-D of the easement. This doesn't sound very promising for the Owners or those who have to look at these turbines.

Refer to 11-B. Confidentiality (page 16 of Easement): "To the fullest extent allowed by law, Owner shall maintain and shall cause its Related Persons to maintain, in the strictest confidence, for the sole benefit of Grantee, all information pertaining to

the financial terms of or payments under this Agreement, the Grantee's site or product design, methods of operation, methods of construction, power production or availability of the Windpower Facilities, and the like, whether disclosed by Grantee or discovered by Owner, unless such information either (i) is in the public domain by reason of prior publication through no act or omission of Owner or its employees or agents, or (ii) was already known to Owner, at the time of disclosure and which Owner is free to use or disclose without breach of any obligation to any person or entity. To the full extent permitted by law, Owner shall not use such information for its own benefit, publish or otherwise disclose it to others, or permit its use by others for their benefit or to the detriment of Grantee.”

COMMENT: Could it be that the Grantee has a lot to hide, and they are willing to prosecute any person who talks about their easement and how much one Owner received that the other Owners did not. Isn't it a shame that they can, to the fullest extent of the law, prosecute a person who talks about what he or she signed?

In closing, I would like to know how our townships are going to be protected from all the damage that will be incurred during the reverse procedure of removing these eyesores. We will have to contend with considerable damage to our roads because the huge cranes and trucks will cause great damage once again. Another issue not mentioned in this Easement was the miles of gravel roads that will be left in the fields for our future farmers to contend with. They didn't address this issue anywhere, I'm sure, because they have no intention of removing these roads or even being around at that point in time.

I would ask the Public Utilities Commission to take a good look into the R-E-S wind project in the Waltham-Sargent area where many people are very upset with promises made by RES and not kept.

Also, I don't understand why the energy produced by these wind projects in Minnesota is allowed to go to other states and doesn't stay here where we can benefit from it. If they want to send the energy out of state, then let those states look at the wind turbines – not us. Sad – Sad – Sad.

There are hundreds, maybe thousands, of these towers sitting idle, rusting across the sunsets of our planet. It's a shame that this is allowed to happen, and it is happening.

Every morning and evening in early spring, summer and fall, my wife and I enjoy sitting on our porch looking out at the rich and productive soil and beautiful countryside surrounding our home. It is really sad that will be an enjoyment of the past because these eyesores could consume our once beautiful countryside.

Finally, there's one more thing I would miss, and that is watching the migration of the geese in the early spring and late fall. Their path is directly over our farm, but no more if the wind turbines take over the landscape. I'm sure there could be many dead geese before they finally realize the danger and change their course.

In addition to the geese, we have witnessed eagles flying through our farmyard and have seen them on wires, in the trees and on the roads in our area, which is 3/4 of a mile from the nearest proposed wind turbine. I have pictures of an eagle sitting on a nest about 6 miles from our home. Environmentalists should be encouraged to take action to help these protected species. Wind turbines should be prohibited from being constructed in the habitat of our national birds.

These are my opinions as I see it. Please consider what I've said, and I thank you for your time.

C:testimony-Wayne 2-20-18.odt

7. Assignment.

a. Assignments. Grantee shall have the right, without obtaining the consent of Owner, to do any of the following with respect to all or any portion of the Property: finance Windpower Facilities; grant co-easements, separate easements, subeasements, licenses or similar rights (however denominated) to one or more persons (an "Assignee"); or sell, convey, lease, assign, mortgage, encumber or transfer to one or more Assignees the Easement, or any or all right or interest in the Easement or in this Agreement, or any or all right or interest of Grantee in the Property or in any or all of the Windpower Facilities that Grantee or any Assignee party may now or hereafter install on the Property. Grantee shall notify Owner in writing of any such assignment, and any such Assignee shall assume in writing the obligations of Grantee under this Agreement which Grantee will no longer be fulfilling pursuant to the terms and conditions of such assignment with respect to the Property assigned. To the extent provided for in each conveyance document, an Assignee shall have all of the rights and benefits of Grantee under and pursuant to this Agreement. Grantee shall be relieved of all of its obligations under this Agreement upon the sale, conveyance, lease, assignment or transfer ("Transfer") of its entire interest hereunder or, if only a partial interest is Transferred and such Transfer is to an affiliate of Grantee, Grantee shall be relieved of only those obligations under this Agreement relating to the partial interest Transferred to its affiliate.

7 b. Successor Interest. The acquisition of all or any portion of Grantee's interest in the Property or the Windpower Facilities or the Easement by another person shall not require the advance consent of Owner or constitute a breach of any provision or a default under this Agreement, and Owner shall recognize the person as Grantee's proper successor.

c. Assignment by Owner. This Agreement shall not be construed to limit Owner's right to sell, transfer or convey, lease, mortgage, grant easements, licenses or similar rights or otherwise encumber the Property (each, a "Owner Transfer"); provided, however, in each case, any such Owner Transfer shall be subject and subordinate to the rights of Grantee hereunder and under the Easement.

8. Collection/Transmission Facilities.

a. Grant of Collection/Transmission Facilities Easement. Upon the request of Grantee during the term of the Easement, Owner shall grant to Grantee one or more easements for the construction, laying down, installation, use, replacement, relocation, removal, operation and maintenance of underground and aboveground electric collection and transmission facilities including electric transmission and distribution lines, communication lines, interconnections and switching stations on, under, over and across designated portions of the Property ("Collection/Transmission Facilities Easement"). Any such Collection/Transmission Facilities Easement shall contain all of the rights and privileges for Windpower Facilities as are set forth in this Agreement.

b. Access. Any Collection/Transmission Facilities Easement shall also include the right of ingress to and egress from the Collection/Transmission Facilities (whether located on the Property, on adjacent property or elsewhere) over and along the Property by means

Easement Mortgagee or other party has ownership of the easement estate or possession of the Property.

(v) Neither the bankruptcy nor the insolvency of Grantee shall be grounds for terminating the Easement as long as all material obligations of Grantee under the terms of the Easement and this Agreement are performed by the Easement Mortgagee in accordance with the terms of the Easement and this Agreement.

(vi) Nothing herein shall be construed to extend the Easement beyond the Term or to require an Easement Mortgagee to continue foreclosure proceedings after the default has been cured. If the default is cured and the Easement Mortgagee discontinues foreclosure proceedings, the Easement shall continue in full force and effect.

9 c. New Easement to Mortgagee. If the Easement or this Agreement terminates because of Grantee's default or if the Easement is foreclosed, or if the Easement or this Agreement is rejected or disaffirmed pursuant to bankruptcy law or other law affecting creditors' rights, the Owner shall, upon written request from any Easement Mortgagee within ninety (90) days after such event, enter into a new easement for the Property, on the following terms and conditions:

(i) The terms of the new easement shall commence on the date of termination, foreclosure, rejection or disaffirmance and shall continue for the remainder of the terms of the Easement, at the same rent and subject to the same terms and conditions set forth in this Agreement.

(ii) The new easement shall be executed within thirty (30) days after receipt by Owner of written notice of the Easement Mortgagee's election to enter a new easement, provided said Easement Mortgagee: (i) pays to Owner all rent and other monetary charges payable by Grantee under the terms of the Easement and this Agreement up to the date of execution of the new easement, as if the Easement had not been terminated, foreclosed, rejected or disaffirmed; (ii) performs all other obligations of Grantee under the terms of the Easement and this Agreement, to the extent performance is then due and susceptible of being cured and performed by the Easement Mortgagee; and (iii) agrees in writing to perform, or cause to be performed, all non-monetary obligations which have not been performed by Grantee and would have accrued under the Easement and this Agreement up to the date of commencement of the new easement, except those obligations which constitute non-curable defaults as defined above. Any new easement granted to the mortgagee shall enjoy the same priority as the Easement over any lien, encumbrances or other interest created by Owner.

9 c (iii) At the option of the Easement Mortgagee, the new easement may be executed by a designee of such Easement Mortgagee without the Easement Mortgagee assuming the burdens and obligations of Grantee thereunder.

(iv) If more than one Easement Mortgagee makes a written request for a new easement pursuant hereto, the new easement shall be delivered to the Easement

delivered to Owner by Grantee after wind turbines have been installed on the Property, such notice shall be accompanied by a statement by Grantee setting forth how Grantee shall comply with the provisions of Section 10(c).

b. Owner's Right to Terminate. Except as qualified by Section 9, Section 10(e) and Section 10(f) below, Owner shall have the right to terminate the Easement if all or any portion of its rights in this Agreement and the easements granted hereunder if (i) Grantee has not commenced construction of Windpower Facilities for the Project on or near the Property within seven (7) years of the Effective Date or (ii) a material default in the performance of Grantee's obligations under this Agreement shall have occurred and remains uncured following the applicable notice and cure periods provided herein.

c. Effect of Termination. Upon termination of the Easement, Grantee shall, as soon as practicable thereafter, remove above-ground and below-ground (to a depth of four (4) feet below grade) Windpower Facilities from the Property. All Property disturbed by Grantee shall be restored to a condition reasonably similar to its original condition. Reclamation shall include, as reasonably required, leveling, terracing, mulching and other reasonably necessary steps to prevent soil erosion. If Grantee fails to remove such Windpower Facilities within twelve (12) months of termination of the Easement, or such longer period as Owner may provide by extension, Owner may do so, in which case Grantee shall reimburse Owner for reasonable and documented costs of removal and restoration incurred by Owner.

10 d. Security for Removal of Windpower Facilities. On or by the fifteenth (15th) anniversary of the Operation Date, Grantee shall obtain and deliver to Owner a letter of credit, or similar financial assurance, in form and substance reasonably satisfactory to Owner securing performance of Grantee's obligation to remove the Windpower Facilities located on the Property (the "Removal Security"). The Removal Security shall be equal to the estimated amount, if any, (the "Net Removal Costs") by which the cost of removing the Windpower Facilities exceeds the salvage value of such Windpower Facilities. To the extent that the Net Removal Costs are zero (or negative), the Removal Security shall not be required on the part of the Grantee, provided, however that Grantee shall re-evaluate the need for the Removal Security at least annually after the fifteenth (15th) anniversary of the Operations Date. Grantee shall not be required to deliver such Removal Security to Owner if Grantee (i) is in the process of repowering or otherwise redeveloping the power generating units on the Property with new power generating units (or commits in writing with notice to Owner to do so within two (2) years after the fifteenth (15th) anniversary of the Operations Date), or (ii) has delivered such Removal Security, or similar financial assurance, in connection with the permitting of the Property or any other portion of the Windpower Facilities for Grantee's Wind Turbines. Once in place, Grantee shall keep such Removal Security, or similar financial assurance, in force throughout the remainder of the Operations Term and Extended Term, as applicable. ~~The Net Removal Costs shall be determined by the Grantee acting in good faith.~~ If any requirement or right provided in this Section contradicts or opposes any state or local laws, such state or local laws shall take precedence over this provision and such requirement or right shall be invalidated.

e. Default. If a Party (the "Defaulting Party") fails to perform an obligation under this Agreement the other Party (the "Non-Defaulting Party") shall not have the right to exercise any remedies hereunder if the default is cured within sixty (60) days of the Defaulting

Party receiving written notice of such default specifying in detail the default and the required remedy from the Non-Defaulting Party; provided, that if the nature of the default requires, in the exercise of commercially reasonable diligence, more than sixty (60) days to cure, then the Defaulting Party shall not be in default as long as it commences performance of the cure within sixty (60) days and thereafter completes such cure with commercially reasonable diligence. Further, if the Parties have a good faith dispute as to whether a payment is due hereunder, the alleged Defaulting Party may deposit the amount in controversy (not including claimed consequential, special, exemplary or punitive damages) in escrow with any reputable third party escrow, or by interpleading the same, which amount shall remain undistributed and shall not accrue interest penalties, and no default shall be deemed to have occurred, until final decision by a court of competent jurisdiction or upon agreement by the Parties. No such deposit shall constitute a waiver of the Non-Defaulting Party's right to institute legal action for recovery of such amounts.

f. Remedies. Except as qualified by Section 9 regarding Mortgagee Protections, should a default remain uncured by the Defaulting Party beyond the applicable cure periods, the Non-Defaulting Party shall have and shall be entitled to exercise any and all remedies available to it at law or in equity, all of which remedies shall be cumulative, including the right to enforce this Agreement by injunction, specific performance or other equitable relief. Notwithstanding anything in this Agreement to the contrary or any rights or remedies Owner might have at law or in equity, if any of Grantee's Windpower Facilities are then located on the Property and Grantee fails to perform any of its non-monetary obligations hereunder, then Owner shall be limited to pursuing damages and Owner shall not commence any action to terminate or cancel this Agreement.

11. Miscellaneous.

a. Force Majeure. If performance of the Easement or of any obligation hereunder is prevented or substantially restricted or interfered with by reason of an event of Force Majeure (defined below), the affected Party, upon giving notice to the other Party, shall be excused from such performance to the extent of and for the duration of such prevention, restriction or interference. The affected Party shall use its reasonable efforts to avoid or remove such causes of nonperformance and shall continue performance hereunder whenever such causes are removed. "Force Majeure" means fire, earthquake, flood, or other casualty, condemnation or accident; strikes or labor disputes; war, civil strife or other violence; any law, order, proclamation, regulation, ordinance, action, demand or requirement of any government agency or utility; or any other act or condition beyond the reasonable control of a Party hereto.

11. b. Confidentiality. To the fullest extent allowed by law, Owner shall maintain, and shall cause its Related Persons to maintain, in the strictest confidence, for the sole benefit of Grantee, all information pertaining to the financial terms of or payments under this Agreement, Grantee's site or product design, methods of operation, methods of construction, power production or availability of the Windpower Facilities, and the like, whether disclosed by Grantee or discovered by Owner, unless such information either (i) is in the public domain by reason of prior publication through no act or omission of Owner or its employees or agents, or (ii) was already known to Owner, at the time of disclosure and which Owner is free to use or disclose without breach of any obligation to any person or entity. To the full extent permitted by law, Owner shall

not use such information for its own benefit, publish or otherwise disclose it to others, or permit its use by others for their benefit or to the detriment of Grantee.

c. Successors and Assigns. The Easement and the terms of this Agreement shall inure to the benefit of and be binding upon Owner and Grantee and, to the extent provided in any assignment or other transfer under Section 7 hereof, any Assignee, and their respective heirs, transferees, successors and assigns, and all persons claiming under them. References to Grantee in this Agreement shall be deemed to include Assignees that hold a direct ownership interest in the Easement or this Agreement and actually are exercising rights under the Easement or this Agreement to the extent consistent with such interest.

d. Grant of Easements. Owner and Grantee agree and acknowledge that the terms and conditions of this Agreement are in addition to the terms and conditions of the Grant of Easements, which terms and conditions are incorporated herein by reference.

e. Notices. All notices or other communications required or permitted by this Agreement, including payments to Owner, shall be in writing and shall be deemed given when personally delivered to Owner or Grantee, or in lieu of such personal delivery services, five (5) days after deposit in the United States mail, first class, postage prepaid, certified, addressed as follows:

If to Owner:

<Landowner Name>
<Address 1>
<Address 2>
Phone: <Insert>
Email: <Insert>

If to Grantee:

Invenergy Wind Development LLC
One South Wacker Drive
Suite 1800
Chicago, Illinois 60606
Attn: General Counsel

Any Party may change its address for purposes of this paragraph by giving written notice of such change to the other parties in the manner provided in this paragraph.

f. Entire Agreement; Amendments. This Agreement, together with all exhibits attached hereto, constitutes the entire agreement between Owner and Grantee respecting its subject matter, and supersedes any and all oral or written agreements. Any agreement, understanding or representation respecting the Property, the Easement, or any other matter referenced herein not expressly set forth in this Agreement or a subsequent writing signed by both parties is null and void. This Agreement shall not be modified or amended except in a writing signed by both parties. No purported modifications or amendments, including without limitation any oral agreement (even if supported by new consideration), course of conduct or absence of a response to a unilateral communication, shall be binding on either Party. Provided that no material default in the performance of Grantee's obligations under this Agreement shall have occurred and remain uncured, Owner shall cooperate with Grantee in amending this Agreement from time to time to include any provision that may be reasonably requested by Grantee for the purpose of implementing the provisions contained in this Agreement or for the purpose of preserving the security interest of any Assignee or Easement Mortgagee.

Exhibit D

AFCL IR-9 to Xcel Energy

Xcel's Response

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 9
Docket No.: IP-6946/WS-17-410
Response To: Association of Freeborn County Landowners
Requestor: Carol A. Overland
Date Received: August 29, 2019

Question:

Referring to Site Permit Amendment Application, Attachment J, p. 4 of 8, Freeborn Wind/Xcel states:

As owner and operator of Project facilities, Xcel Energy will bear the financial responsibility for decommissioning activities and Project area restoration...

- a. Is Xcel Energy amenable to permit condition requiring Xcel Energy to bear the financial responsibility for decommissioning activities and Project area restoration?
- b. If no, why not?

Response:

Although the Company does not oppose including such a permit condition in principle, adding the quoted language from the Company's Decommissioning Plan as a permit condition is unnecessary. Section 11.2 of the Site Permit already requires the Company "to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment to a depth of four feet" and, "to the extent feasible," to "restore and reclaim the site to its pre-project topography and topsoil quality."

Preparer: Matt Harris
Title: Principal Attorney
Department: General Counsel
Telephone: 612-330-7641
Date: September 9, 2019

Exhibit E

AFCL IR-10 to Xcel Energy

Xcel's Response

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 10
Docket No.: IP-6946/WS-17-410
Response To: Association of Freeborn County Landowners
Requestor: Carol A. Overland
Date Received: August 29, 2019

Question:

Referring to AFCL-35, Wayne Brant Public Comment (p. 15 of lease), see also hearing testimony of Wayne Brandt, Tr. Public Hearing, p. 133-139, and lease's "Effect of Termination" clause:

If Grantee fails to remove such Windpower Facilities within twelve (12) months of termination of the Easement, or such longer period as Owner may provide by extension, Owner may do so, in which case grantee shall reimburse Owner for reasonable and documented costs of removal and restoration incurred by Owner.

- a. Is Xcel willing to amend participant leases to remove the lease paragraph above?
- b. Is Xcel willing to amend participant leases to add the statement that "*As owner and operator of Project facilities, Xcel Energy will bear the financial responsibility for decommissioning activities and Project area restoration.*"
- c. Is Xcel Energy amenable to a permit condition requiring Xcel Energy amend participant leases to release participants from financial responsibility for decommissioning activities and Project area restoration?
- d. If no, why not?

Response:

- a. No. This is a standard term of easement agreements with landowners, and we believe this is an important protection for landowners.
- b. No. This proposed statement is unnecessary. Section 10.c. of the Easement Agreement requires the Company to, "remove above-ground and below-ground (to a depth of four (4) feet below grade) Windpower Facilities from the Property," and if the Company fails to do so within a year of terminating the easement, provides the landowner with the option to remove the same facilities and seek reimbursement from the Company. Additionally, Section 10.d of the

Easement requires the Company to provide “a letter of credit, or similar financial assurance” that “secur[es] performance” of the Company’s “obligation to remove the Windpower Facilities located on the Property,” in an amount “equal to the estimated amount” by which “the cost of removing the Windpower Facilities exceeds the salvage value of such Windpower Facilities.”

- c. No. This is unnecessary for the reasons set forth above in part b.
- d. See parts b and c above.

Preparer: Matt Harris
Title: Principal Attorney
Department: General Counsel
Telephone: 612-330-7641
Date: September 9, 2019

Exhibit F

Decommissioning cost estimate

Palmers Creek wind project, \$7,355,822 for 18 turbines

(IP-6979/WS-17-265)

9.7.4 Construction Financing

The Applicant has already secured both construction financing through its balance sheet and parent company equity investment.

9.7.5 Permanent Financing

The Applicant has already secured both construction and permanent financing.

9.7.6 Expected Commercial Operation Date

The anticipated commercial operation date (COD) is March 2018 following installation of the permanent tap.

9.8 ENERGY PROJECTIONS

When built, the Project will have a nameplate capacity of 44.6 MW. Assuming net capacity factors of approximately 39.2 percent, projected average annual output will be approximately 153,400 MWh. Net calculations take into account, among other factors, energy losses in the gathering system, mechanical availability, array losses and system losses.

9.8.1 Proposed Array Spacing for Wind Turbines

The turbines and associated facilities will be sited on agricultural land in Chippewa County, Minnesota. The Applicant's proposed siting layout (included) optimizes wind and land resources at the site while minimizing Project impacts. The turbines will have a rotor diameter (RD) of 116 meters (380 ft.), and the Project will have, on average, east-west spacing between individual turbines of 6 RD and north-south spacing of 10 RD. A final as-built siting layout and site plan will be provided for approval prior to the pre-construction meeting.

9.8.2 Base Energy Projections

When built, the Project will have a nameplate capacity of 44.6 MW. Assuming net capacity factors of approximately 39.2 percent, projected average annual output will be approximately 153,400 MWh. Net calculations consider, among other factors, energy losses in the gathering system, mechanical availability, array losses and system losses.

9.9 DECOMMISSIONING AND RESTORATION

Decommissioning will occur at the end of the project life or facility abandonment. For the purposes of this section, "facility abandonment" shall mean the ceasing of electricity generation for a period of not less than 12 continuous months, unless the company produces evidence of mitigating circumstances. Such evidence may include long delays in spare part procurement or a force majeure event that interrupts the generation of electricity. As used here, a "force majeure" event means an instance such as fire, earthquake, flood, tornado, or other act of God and natural disasters; strikes or labor disputes; war; any law, order, proclamation, regulation, ordinance, action, demand or requirement of any government agency; suspension of operations of all or a portion of the project for overhaul, upgrade, or reconditioning; or any other act or condition beyond the reasonable control of the Project Sponsor.

All decommissioning and restoration activities will adhere to requirements of appropriate governing authorities and will be in accordance with all applicable federal, state, and local laws.

The decommissioning plan and anticipated costs shall be reviewed and updated every five years by the Applicant.

9.9.1 Anticipated Life of the Project

The expected life of the Project is approximately 30 years (leases for the Project are for the life of the PPA, with an option to upgrade turbines and extend leases for an additional 20 years).

9.9.2 Cost to Decommission

The estimated cost to decommission Palmer's Creek Wind Farm was provided by Fagen, Inc., construction contractor, in a letter dated November 16, 2016. The estimate is considered to be the current dollar value (at time of approval) of salvage value and removal costs.

The estimated salvage value of each turbine will be based upon the worst-case scenario assuming the only salvage value of the turbine is from scrapping the steel. The estimate was based upon the total weight of one turbine, which is 275 tons consisting primarily of steel. Because it does not separate the scrap value of all the constituent materials, the estimate is very conservative. Also, it is highly likely that there would be opportunities for re-sale for reuse of all or some of the turbines or turbine components.

Based on the current estimate, the cost of decommissioning is \$7,385,822 with a potential scrap return value of \$445,500. These anticipated costs shall be reviewed and updated every five years by the Applicant.

9.9.3 List of Decommissioning and Restoration Activities

The decommissioning and restoration process includes the removal of above-ground structures (turbines); removal of below-ground structures (foundations and underground cables); and topsoil restoration.

9.9.3.1 Wind Turbines

Dismantling the wind turbines will require the use of cranes and heavy equipment. Electronic components, controls and internal cables will be disconnected and removed. The rotor and nacelle will be lowered to the ground for disassembly. The tower sections will be lowered to the ground where they will be further disassembled for transporting. The Applicant will attempt to identify a purchaser of the intact wind turbine components. If a buyer cannot be found, the rotor, nacelle, and tower sections will be reduced to shipping dimensions for transport to an offsite facility for reconditioning, salvage, recycling, or disposal.

If resold and not scrapped, tower sections and rotors will be transported in the same manner as their delivery to the site. It is assumed that transportation costs will be the responsibility of the purchaser of the scrap material.

9.9.3.2 Transformers

Transformer removal will consist of disconnecting the electrical connection system from the base transformer. Any sellable components will be removed and transported offsite.

9.9.3.3 Turbine foundations

Turbine foundations will be excavated to a depth of 48 inches below grade to sufficiently expose and remove all anchor bolts, rebar, conduits and pedestal concrete. The excavation will be filled with clean sub-grade material, compacted to a density similar to surrounding sub-grade material, and finished with topsoil.

9.9.3.4 Substation

The Applicant does not intend to decommission the substation.

9.9.3.5 Underground Cables

All underground cables at depths less than 36 inches below finished grade will be removed. All underground cables at depths greater than 48 inches below finished grade will be abandoned in place if it is determined that their presence does not adversely impact land use and they do not pose a safety hazard.

9.9.3.6 Road Materials

All road materials will be allowed to remain on-site. All township, county, or state roads, impacted by Project decommissioning activity, if any, will be restored to original condition upon completion of decommissioning.

9.9.3.7 Soil Restoration

Soil decompaction in agricultural production areas will also occur by salvaging topsoil prior to construction and tilling soils during restoration. Once all of the above and below ground components designated for disposal or salvage have been removed, the remaining decommissioning work will consist of regrading and reseeding disturbed areas. All disturbed areas will be restored to pre-existing conditions and contours. All construction clean-up work and permanent erosion control measures will be done in accordance with the formal SWPPP for the Project.

9.9.3.8 Access

During decommissioning activities, appropriate agencies, such as Chippewa County, Department of Commerce, and other appropriate agency staff, shall have access to the site, pursuant to reasonable notice, to inspect the results of complete decommissioning. All decommissioning and restoration activities will be in accordance with all applicable federal, state, and local permits and requirements.

Exhibit G

Decommissioning cost estimate

Nobles Wind Project decommissioning cost

IP-6646/WS-09-584



414 Nicollet Mall
Minneapolis, MN 55401

February 8, 2011

—VIA ELECTRONIC FILING—

Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, MN 55101

RE: COMPLIANCE FILING
201 MW NOBLES WIND ENERGY PROJECT
DOCKET NO. IP-6646/WS-09-584

Dear Dr. Haar:

Northern States Power Company, a Minnesota corporation (“Xcel Energy” or “the Company”), submits to the Minnesota Public Utilities Commission (the “Commission”) this compliance filing in the above-referenced matter. This filing is being made pursuant to Section G.1 of the Site Permit transferred to Xcel Energy by Commission Order dated August 25, 2010. As specified by the Commission’s Order at Section G.1:

“...Permittee shall submit to the Commission a Decommissioning Plan documenting the manner in which the Permittee anticipates decommissioning the Project in accordance with the requirement of Minnesota Rules part 7836.0500, subp. 13...”

DECOMMISSIONING/RESTORATION/ABANDONMENT

The Nobles Wind Energy Project (“the project”) is an important part of Xcel Energy’s renewable energy generation portfolio and our continued commitment to the State’s and the Commission’s policies of promoting renewable generation and reducing carbon emissions. The project was placed in service in December 2010 with an estimated useful project life of 25 years, resulting in an estimated decommissioning date of December 2035. However, as with all capital projects, the remaining life of

the project will be periodically reassessed in the subsequent Annual Remaining Lives Filings and the possibility exists that the project will continue to operate beyond 2035.

When the Company decommissions the project site, Xcel Energy will be responsible for all costs associated with decommissioning and shall restore and reclaim the site to its pre-project topography pursuant to the terms and conditions specified in Section 11.0 of the individual landowners' Easement Agreement. Restoration activities will include and not be limited to removal of all physical material and equipment related to the project to a depth of 48 inches. The land will be restored to the condition it was in at the time the easement was granted, including returning the land to the same grade and filling the land with topsoil comparable to the topsoil that existed as of the date of signing of the landowner Easement Agreements.

To ensure that adequate recovery is made to cover future decommissioning and restoration costs, an adjustment is made to the depreciation expense calculated for the project. As part of the decommissioning process, the Company will likely salvage and recycle most of the generation equipment, material and cables, which will go toward off-setting the costs associated with decommissioning the project. The salvage value of the equipment is factored into the net salvage rate.

In the 2010 Remaining Lives Filing, E002-D-10-173, the Commission approved a net salvage rate of -8.7% to be used for the project. This means that an additional 8.7% of the value of all the project's assets will be recovered as part of the ratepayers' service rate. These funds collected for removal and restoration are included in the accumulated reserve for the project, but tracked separately from the reserve for the asset itself. A conservative estimate for a decommissioning expense is approximately four-hundred forty-five thousand dollars (\$445,000) per turbine (2009 dollars).¹

Xcel Energy is a regulated utility governed by the laws of the State of Minnesota and will observe all regulatory requirements with respect to decommissioning the project including removal of all facilities and restoration of the land.

We have served a copy on the Minnesota Attorney General's Office- Residential Utilities Division and all parties on the attached service list.

¹ Includes allowance for salvage value and based on total dismantling cost estimate for the project of 8.7% of the total plant balance of \$510,965,406, equaling an estimated dismantling cost \$44.5 million or \$445,000 per turbine.

Burl W. Haar
February 8, 2011
Page 3

We have served a copy on the Minnesota Attorney General's Office- Residential Utilities Division and all parties on the attached service list.

If you have any questions or concerns regarding this matter, please contact me at (612) 330-5641 or brian.r.zelenak@xcelenergy.com.

SINCERELY,

/s/

BRIAN R. ZELENAK
MANAGER, REGULATORY ADMINISTRATION

cc: Service Lists
- IP-6646/WS-09-584
- E002/CN-08-1437

Exhibit H

Decommissioning cost estimate
Lake Benton Decommissioning Plan
IP-6903/WS-18-179

Lake Benton Power Partners II, LLC

September 11, 2019

VIA ELECTRONIC FILING

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place E, Suite 350
St. Paul, MN 55101

Re: *In the Matter of the Application of Lake Benton Power Partners II, LLC for a Site Permit Amendment for the up to 100.2 MW Lake Benton II Wind Farm in Pipestone County, Minnesota, Docket No. IP-6903/WS-18-179*

Compliance filing – Section 11.1 – Decommissioning Plan

Dear Mr. Wolf:

In compliance with Section 11.1 of Lake Benton Power Partners II, LLC's ("LBII") Site Permit, LBII hereby submits its Decommissioning Plan for the repowered facility as Attachment 1. Consistent with Section 11.1, LBII is also providing the Decommissioning Plan to Pipestone County.

Section 11.1 of the LBII Site Permit states as follows:

The Permittee shall refile the July 26, 2018 decommission plan, as revised at least forty-five 45 days prior to the start of decommissioning of the existing project.

With regard to the repowered project, the Permittee shall submit a decommissioning plan to the Commission at least fourteen 14 days prior to the pre-operation meeting, and provide updates to the plan every five years thereafter.

The plan shall provide information identifying all surety and financial securities established for decommissioning and site restoration of the project in accordance with the requirements of Minn. R. 7854.0500, subp. 13. The decommissioning plan shall provide an itemized breakdown of costs of decommissioning all project components, which shall include labor and equipment. The plan shall identify cost estimates for the removal of turbines, turbine foundations, underground collection cables, access roads, crane pads, substations, and other project components. The plan may also include anticipated costs for the replacement of turbines or repowering the project by upgrading equipment.

The Permittee shall also submit the decommissioning plan to the local unit of government having direct zoning authority over the area in which the project is located. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

Respectfully submitted,

/s/ Brian J. Murphy

Brian J. Murphy

Managing Attorney

NextEra, Energy Resources, LLC

700 Universe Blvd.

Juno Beach, FL 33408

(561) 694-3814

Brian.J.Murphy@nee.com

ATTACHMENT 1
LBII DECOMMISSIONING PLAN

DECOMMISSIONING PLAN

Lake Benton II Wind Energy Facility

Lake Benton Power Partners II, LLC

September 11, 2019

Decommissioning Plan for the Lake Benton II Wind Energy Facility

1.0 INTRODUCTION

1.1 Background

Lake Benton Power Partners II, LLC (“LBII”) has prepared this Decommissioning Plan (“Plan”) to provide documentation of activities necessary to decommission the Lake Benton II Wind Energy Facility (Project) and restore the Project area in accordance with the requirements of Minn. R7854.0500, subp.13.

On May 3, 2018, LBII filed an application with the Minnesota Public Utilities Commission (“Commission”) to construct and operate the repowered 100.2 megawatt (“MW”) wind energy facility (MPUC Docket Number: IP-6903/WS-18-179). The proposed Project includes the installation of up to 44 wind turbines, associated access roads, underground collection system, an operations and maintenance facility, and associated facilities. A Site Permit for the repowered facility was granted by the Commission on May 30, 2019.

1.2 Anticipated Life of the Project

LBII expects the Project to be in service for 25 years. This estimate is based on LBII’s experience operating projects, turbine models, and technology.

2.0 DECOMMISSIONING AND RESTORATION

2.1 Decommissioning Preparation Activities

The wind farm will be disconnected from the grid to allow for the safe dismantling of the Project.

2.2 Removal of Facilities

2.2.1 Turbines and MET Towers

The disassembly and removal of this equipment will essentially be the same as its installation, but in reverse order. For turbines, the rotor (hub and blades) are removed from the nacelle and, with the help of a smaller crane, turned horizontally and set on the ground. Next, the nacelle will be removed from the top of the tower, followed by each portion of the tower. Once the turbine rotor has been removed, a crew and small crane will disassemble it into the hub and three loose turbine blades. When the rotor is disassembled, the blades will be placed into a carrying frame, which can then be loaded onto a truck for removal from the site. The hub can also be removed once it is disassembled from the blades. Turbine foundations will be removed to a depth of four feet. LBII

will work with landowners regarding whether the landowner prefers to keep extracted concrete on their property. If landowners prefer to keep extracted concrete, the concrete will be crushed and provided to the landowner.

MET towers will also be removed in a similar fashion to the turbines. A small crane will be used to dismantle the structures from the top down and will be loaded onto trucks to be removed from the site.

2.2.2 Access Roads

LBII will work with landowners regarding whether the landowner prefers to keep the access road in place. In the event landowners do not want to keep the access road, or portions thereof, the access roads will be removed and the land will be restored.

2.2.3 Underground Collection and Pad Mounted Transformers

Where feasible, all underground collection lines buried above four feet below the surface will be removed. Underground collection buried greater than four feet below the surface will be abandoned in place unless requested by the landowner or other entity. LBII will work with landowners or applicable entities to determine if underground collection lines may be abandoned in place when located above four feet below the surface to minimize impacts to the environment. If the cables are to be removed, a trench will be opened and the cables pulled out. The cables will be cut into manageable sections and removed from the site.

Pad mounted transformers will be disconnected from the collection system and wind turbine generators once the electrical system has been shut off and hauled offsite. The concrete pads will be crushed and either hauled offsite or provided to the landowner, if requested.

2.2.4 Collection Substation and O&M

All above ground structures at the collection substation including the conductors, switches, transformers, fencing, and other components will be dismantled and removed from the site. Additionally, the structures at the Project O&M facilities will be removed. All concrete foundations will be crushed and either hauled offsite or provided to the landowner, if requested. Where feasible, all underground infrastructure associated with the substation or O&M, including underground conduits and grounding wires, will also be removed to a depth of four feet, unless it has been negotiated with the landowner that this infrastructure may be abandoned in place.

2.3 Salvage and Disposal

After dismantling the Project, high value components will be removed for scrap value. The remaining materials will be left on the landowner property where expressly requested by the

landowner, or will be reduced to transportable size and removed from the site for disposal. Materials will be disposed where disposal is permitted and where there is capacity for the disposal. Generally, turbines, transformers, electrical components, and towers are refurbished and resold or are recycled for scrap. All unsalvageable materials will be disposed of at authorized sites in accordance with applicable regulations. Decommissioning of the existing turbines will include removal and transport of generators and towers offsite to disposal facilities and/or sale of towers and generators.

2.4 Restoration

Following the dismantling and removal of Project infrastructure, LBII will return the Project Area as close to preconstruction conditions as reasonable. LBII will implement the following:

- All areas where existing infrastructure has been removed will be graded and reseeded, as Appropriate.
 - LBII will coordinate with local NRCS staff to revegetate non-cropland and pasture areas disturbed during decommissioning with native seed mixes appropriate to the region. Reseeding with native seed mixtures will be used on restoration areas except in cropland areas and in areas where landowners indicate preference for other seeding plans. Reseeding of cropland areas will be conducted in coordination with the landowner.
 - After removal of all foundation materials, the areas will be filled with clean compatible sub-grade material compacted to a density similar to the surrounding sub-grade material.
- Topsoil will be removed prior to removal of structures from all work areas and stockpiled and separated from other excavated material. The topsoil will be replaced to original depth and original surface contours reestablished where possible. Any topsoil deficiency and trench settling shall be mitigated with imported topsoil consistent with the quality of the affected site
- Areas compacted by equipment used in the decommissioning may be tilled in a manner adequate to restore the topsoil and subgrade material to a density consistent with the surrounding areas and then will be reseeded. The depth of compaction relief will depend on site-specific conditions.

3.0 COST ESTIMATE

1.0 Turbines and Towers		Cost Estimate
	1.1 Dismantle Turbine & Towers	\$ 5,000,000
	1.2 Removal of Transformers	\$ 200,000
2.0 Tower Foundations		
	2.1 Foundation Removal, Disposal and Grading	\$ 1,200,000
	2.2 Transformer Pad Removal and Disposal	\$ 125,000
3.0 Other Structures		
	3.1 MET Towers, O&M Building Salvage, Fence Removal	\$ 50,000
	3.2 Grading	\$ 100,000
4.0 Tower Access and Site Roads		
	4.1 Remove Access Roads	\$ 1,000,000
5.0 Collection System		
	5.1 Remove Collection System Terminations	\$ 200,000
6.0 Substation		
	6.1 Substation Foundations, Fence, Steel and Grading	\$ 300,000
	6.2 Substation Equipment	\$ 200,000
7.0 Mobilization/Demobilization		
	7.1 Mobilization/Demobilize	\$ 300,000
8.0 Project Salvage Value		
	8.1 Project Steel Salvage Value	(\$ 2,200,000)
	TOTAL:	\$ 6,475,000

4.0 DECOMMISSIONING SECURITY

LBII will establish performance bonds with Pipestone County for the total amount of infrastructure located within those communities.

Exhibit I

Decommissioning cost estimate

Pleasant Valley decommission cost estimate

IP-6828/WS-09-1197



414 Nicollet Mall
Minneapolis, MN 55401

October 16, 2015

—VIA ELECTRONIC FILING—

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, MN 55101

RE: COMPLIANCE FILING
PLEASANT VALLEY WIND, LLC
DOCKET NO. IP-6828/WS-09-1197

Dear Mr. Wolf:

Northern States Power Company, a Minnesota corporation (“Xcel Energy” or “the Company”), submits to the Minnesota Public Utilities Commission (the “Commission”) this compliance filing in the above-referenced matter. This filing is being made pursuant to Section 9.1 of the Large Wind Energy Conversion System (LWECS) Site Permit (as amended) for Pleasant Valley Wind, LLC (PVW) which requires a decommissioning plan be prepared and submitted to the Commission documenting the manner in which PVW anticipates decommissioning the Pleasant Valley Wind Project (the project.)

Xcel Energy is under contract to purchase PVW, and will own and operate the project at the commencement of commercial operations.¹ Xcel Energy has shared this filing with RES Americas, the developer of PVW; to ensure that all parties agree that the plan being filed is consistent with discussions they had during the development of the plan.

¹ See *In the Matter of the Petition of Xcel Energy for Approval of the Acquisition of 600 MW of Wind Generation*, Docket No. E-002/M-13-603, Order Approving Acquisition with Conditions (December 13, 2013)

DECOMMISSIONING/RESTORATION/ABANDONMENT

The Pleasant Valley Wind Project (“the project”) is an important part of Xcel Energy’s renewable energy generation portfolio and our continued commitment to the State’s and the Commission’s policies of promoting renewable generation and reducing carbon emissions. The project is expected to be placed in service in late fall 2015 with an estimated useful project life of 25 years², resulting in an estimated decommissioning date of October 2040. However, as with all capital projects, the remaining life of the project will be periodically reassessed in the subsequent Annual Remaining Lives filings; the possibility exists that the project will continue to operate beyond 2040.

When the Company decommissions the project site, Xcel Energy will be responsible for all costs associated with decommissioning and shall restore and reclaim the site to its pre-project topography pursuant to the terms and conditions specified in the individual landowners’ Easement Agreement. Restoration activities will include and not be limited to removal of all physical material and equipment related to the project to a depth of 48 inches. The land will be restored to the condition it was in at the time the easement was granted, including returning the land to the same grade and filling the land with topsoil comparable to the topsoil that existed as of the date of signing of the landowner Easement Agreements.

To ensure that adequate recovery is made to cover future decommissioning and restoration costs, an adjustment is made to the depreciation expense calculated for the project. As part of the decommissioning process, the Company will likely salvage and recycle most of the generation equipment, material and cables, which will go toward off-setting the costs associated with decommissioning the project. The salvage value of the equipment is factored into the net salvage rate.

In the 2015 Remaining Lives Filing, E002-D-15-0046, the Company requested that the Commission approve a net salvage rate of -8.5 percent to be used for the Project. This means that an additional 8.5 percent of the value of all the project’s assets will be recovered as part of the ratepayers’ service rate. These funds collected for removal and restoration are included in the accumulated reserve for the project, but tracked separately from the reserve for the asset itself. There are currently no site-specific

² See *In the Matter of the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in Minnesota*, Docket No. E002/GR-13-868, DIRECT TESTIMONY AND SCHEDULES OF LISA H. PERKETT, Page 28, Lines 9-12 (November 4, 2013)

Daniel P. Wolf
October 16, 2015
Page 3

studies to rely on for the Project since it remains under construction, but the net salvage rates of other wind facilities owned by Xcel Energy were used as a guideline for the 2015 Annual Review of the Remaining Lives filing. A conservative estimate for a decommissioning expense is approximately two-hundred ninety thousand dollars (\$290,000) per turbine (2015 dollars)³.

Xcel Energy is a regulated utility governed by the laws of the State of Minnesota and will observe all regulatory requirements with respect to decommissioning the project including removal of all facilities and restoration of the land.

We have served a copy on the Minnesota Attorney General's Office- Residential Utilities Division and all parties on the attached service list.

If you have any questions or concerns regarding this matter, please contact me at amy.s.fredregill@xcelenergy.com or (612) 215-5367.

SINCERELY,

/s/

Amy S. Fredregill
Manager Resource Planning & Strategy

³ Includes allowance for salvage value and based on total dismantling cost estimate for the project of 8.5% of the total plant balance of \$341,505,777, equaling an estimated dismantling cost \$29.0 million or \$290,000 per turbine.

Exhibit J

Freeborn Wind Hearing Exhibit AFCL 21, IR 16, Dan Litchfield response

January 12, 2018

LEGALECTRIC
1110 WEST AVENUE
RED WING, MN 55066
(612) 227-8638
OVERLAND@LEGALECTRIC.ORG

Freeborn Wind Project - Information Request #16 to Freeborn Wind

Docket Number: PUC Docket No.: IP-6946/WS-17-410 Request Date: January 2, 2018
OAH Docket No.: 80-2500-34633 NonPublic Public

Requested From: Freeborn Wind, Christina Brusven & Lisa Agrimonti, Attorneys for Freeborn Wind

Party Requesting Information: Carol A. Overland for Assoc. of Freeborn Co. Landowners

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	Freeborn Wind Project
-------------	-----------------------

16. Referring to Freeborn Application, p. 110:

10.10.2 Cost to Decommission

Project decommissioning has not yet been determined. The Applicant will create a thorough decommissioning cost estimate prior to construction begins as part of a decommissioning plan.

10.10.3 Method of Ensuring Funds Will Be Available for Decommissioning and Restoration

Sufficient funds will be set aside to fund Project decommissioning and site restoration efforts following the cessation of Project operation. These funds will be supplemental to the extent that the salvage value of Project facilities do not cover final decommissioning costs. Availability of funds will be discussed in the decommissioning plans.

Please produce decommissioning plan, complete with estimate of funds needed, in addition to salvage value, for decommissioning.

How will funds be set aside? Held by what entity? A bond, insurance, deposit with Commission, or some other means?



What assurance does applicant provide that if LLC should go bankrupt, be sold or transferred, or dissolve, that decommissioning fund would be available?

How would spending of decommissioning fund be authorized?

If "The Project" re-evaluates and/or updates decommissioning alternatives, costs, and/or funding, what efforts will be made to notify the Commission, participants, interested parties, and the public?

These requests are continuing, and if new or additional information is discovered, please supplement your responses as soon as possible.

Electronic format preferred, via email or CD/flash drive.

Response:

Freeborn Wind will comply with the terms of the Site Permit as it relates to the preparation, content and distribution of a decommissioning plan. See Section 11.0 of the Draft Site Permit.

Response Date: January 12, 2018

Response by: Dan Litchfield

Exhibit R

Bent Tree Post-Construction Noise Monitoring Study

Phase II

PUC Docket ET6657/WS-08-573

February 7, 2017
Mr. Daniel Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: Bent Tree Wind Farm Noise Monitoring – Phase 2 Monitoring Report
Docket No. ET6657/WS-08-573

Dear Mr. Wolf:

The Department of Commerce's Energy Environmental Review and Analysis (EERA) staff submits the enclosed Bent Tree Wind Farm Phase 2 Post-Construction Noise Assessment Report (Report) pursuant to the Commission's August 24th, 2016 order requiring noise monitoring, noise study and further study to address noise-related complaints filed by three landowners regarding the Bent Tree project (E-dockets WS-08-573, Document ID [20168-124382-01](#)).

Under the direction of EERA, DNV GL-Energy completed noise monitoring at the Bent Tree Wind Farm in June of 2017. The resulting Bent Tree Wind Farm Post-Construction Noise Assessment report was filed in the dockets on September 28, 2017 (E-dockets WS-08-573, Document ID [20179-135856-01](#)). Due to exceedances documented during the June 2017 monitoring period, an "on/off" measurement campaign was recommended to properly isolate wind turbine sound from total measured sound, consistent with Appendix A of the Large Wind Energy Conversion System (LWECS) Noise Study Protocol and Report.

In consultation with Commission staff, EERA requested that DNV GL-Energy complete this "on/off" monitoring in order to fulfill the Commission's August 24th order. The study was conducted in late November of 2017. During this campaign, wind turbine sound was isolated from total measured sound by conducting measurements with all turbines operational and also conducting measurements with a subset of wind turbines in proximity to complaint receptors turned off across a range of wind and atmospheric conditions. Turbine contribution to overall sound level was derived by logarithmically subtracting the "turbine on" from the "turbine off" measurements.

The results of the "on/off" campaign are documented in the attached Report. As indicated in the Report, if wind turbine contribution to total sound exceeds a level of 50 dBA at certain wind speeds, it can be reasonably determined that the wind turbines are the main contributor to exceedances during those conditions. The analysis shows that turbine contribution in excess of 50 dBA can occur at the Langrud property when hub height wind speeds reach 11.5 m/s and higher, and extrapolated data in the report shows similar trends for the Hagen property.

We believe that completion of this “on/off” monitoring campaign fulfills the Commission’s August 24th order to conduct monitoring consistent with the guidance contained in the Large Wind Energy Conversion System Noise Study Protocol and Report. Because the report documents that there are periods during which Bent Tree Wind Farm turbines contribute significantly to total noise exceedances, EERA staff believes that noise standards indicated in Condition E. 3 of the Bent Tree Wind Farm LWECS site permit are not being met.

Please do not hesitate to contact me if you have any questions concerning this letter.

Sincerely,

s/ Louise I. Miltich

Louise Miltich
Energy Environmental Review and Analysis
85 7th Place East, Suite 280, Saint Paul, MN 55101
P: 651-539-1853
C: 651-470-1666

enclosure: Report: Bent Tree Wind Farm Phase 2 Post-Construction Noise Assessment

BENT TREE WIND FARM

Phase 2 Post Construction Noise Assessment

Wisconsin Power and Light Company

Document No.: 10071686-HOU-R-01

Issue: B, **Status:** Final

Date: 1 February 2018



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Project name:	Bent Tree Wind Farm	DNV GL - Energy
Report title:	Phase 2 Post Construction Noise Assessment	Advisory Americas
Customer:	Wisconsin Power and Light Company 31072 State Highway 13 Hartland, MN 56042	333 SW 5 th Ave., Suite 400 Portland, OR 97204 Tel: 503-222-5590, x133
Contact person:	Andrew Hanson	Enterprise No.: 94-340223694-
Date of issue:	1 February 2018	340223694-3402236
Project No.:	10071686	
Document No.:	10071686-HOU-R-01	
Issue/Status	B/Final	

Task and objective:

This report presents the results of analysis conducted by DNV GL on behalf of Wisconsin Power and Light Company.

Prepared by:	Verified by:	Approved by:
<hr/> Kristjan Varnik Project Engineer, Development and Engineering Services	<hr/> Danny Schoborg Engineer, Development and Engineering Services	<hr/> Shant Dokouzian, P.Eng. Principal Engineer, Development and Engineering Services

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Reference to part of this report which may lead to misinterpretation is not permissible.

Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	19 January 2018	Draft	K. Varnik	D. Schoborg	S. Dokouzian
B	1 February 2018	Final	K. Varnik	D. Schoborg	S. Dokouzian



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1 INTRODUCTION

The Department of Commerce, Energy, Environment Review and Analysis (EERA, formerly Energy Facilities Permitting) of the state of Minnesota has requested, on behalf of Wisconsin Power and Light Company ("WPL"), that Garrad Hassan America, Inc. (DNV GL) perform a second phase of post-construction noise assessment for the Bent Tree Wind Farm (the "Project"). The purpose of this Assessment is to determine the noise contribution of wind turbine generators on two nearby residences. The Project is in Freeborn County, MN, approximately 90 miles south of Minneapolis, consisting of 122 Vestas V82-1.65 MW wind turbine generators (WTG) with a hub height of 80 m and a rotor diameter of 82 m. The Project began operation in 2011.

1.1 Background

An audit was conducted in June 2017 by DNV GL [1], closely following the requirements under the "Guidance for Large Wind Energy Conversion System (LWECS) Noise Study Protocol and Report" ("Guidance") [2] issued by the EERA, in collaboration with the Minnesota Pollution Control Agency (MPCA) Noise standards [3]. More specifically, the audit was conducted, at the request of the EERA, due to on-going complaints at two receptors within the Project Area; the Langrud ("BT-M01") and Hagen ("BT-M02") receptors. The June 2017 audit, which measured the total noise experienced at the receptors, concluded that:

"(...) 16 total hours of non-compliance with the LWECS Guidance were identified at BT-M01 and BT-M02. During most of the exceedance periods, bird sounds and/or wind induced sound on vegetation and tree leaves appear to be the primary contributor to the exceedances. Wind turbine sound appears to be audible in the recordings during some of the exceedance periods. However, as stipulated in Appendix A of the LWECS Guidance, further detailed investigations would be necessary to assess the contribution of the wind turbines to the total sound levels experienced at the receptors.

As such, it was recommended to perform an additional measurement campaign to properly isolate wind turbine sound from total measured sound. This can be achieved by conducting measurements where a subset of wind turbines in proximity of the complaint receptors are turned off and on under various wind and atmospheric conditions."

As requested by the EERA, a second assessment (the "Phase 2 Assessment"), was undertaken with the primary goal of isolating the wind turbine sound from the total measured sound. The noise measurement protocol for this campaign was approved by EERA before measurements were undertaken [4].

2 METHODOLOGY

2.1 Environmental Sound Background

Sound levels are expressed in the decibel unit and are quantified on a logarithmic scale to account for the large range of acoustic pressures to which the human ear is exposed. A decibel (dB) is used to quantify sound levels relative to a 0 dB reference. The reference level of 0 dB is defined as a sound pressure level of 20 micropascals (μpa), which is the typical lower threshold of hearing for humans.

Sound levels can be presented both in broadband (sound energy summed across the entire audible frequency spectrum) and in octave band spectra (audible frequency spectrum divided into bands). Frequency is expressed in the Hertz unit (Hz), measuring the cycles per second of the sound pressure waves. The audible range of humans spans from 20 to 20,000 Hz. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighting filter is applied to closely approximate the human ear's response to sound. This scale is commonly used in environmental and industrial sound. Sound expressed in the A-weighted scale is denoted dBA. All values in this report are presented in A-weighted scales, unless explicitly stated otherwise.

A sound source has a certain sound power level rating which describes the amount of sound energy per unit of time. This is a basic measure of how much acoustical energy it can produce and is independent of its surroundings. Sound pressure is created as sound energy flows away from the source. The measured sound pressure level (SPL) at a given point depends not only on the power rating of the source and the distance between the source and the measurement point (geometric divergence), but also on the amount of sound energy absorbed by environmental elements between the source and the measurement point (attenuation). Sound attenuation factors include meteorological conditions such as wind direction, temperature, and humidity; sound interaction with the ground; atmospheric absorption; terrain effects; diffraction of sound around objects and topographical features; and foliage.

In order to determine the sound contribution from the wind turbine on the receptor, it is necessary to quantify the ambient background sound level, and then subtract it logarithmically from the total measured sound level. Background sound levels may be highly variable in rural areas and may be dependent on atmospheric conditions including wind speed and wind direction.

2.2 Minnesota Noise Limits

The regulations applicable to the Project are the Minnesota Noise Standards [3].

Minnesota Pollution Control Agency (MPCA) 7030.0040 Noise Standards state the following:

7030.0040 Noise Standards.

Subpart 1. Scope. These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conservation requirements for receivers within areas grouped according to land activities by the noise area classification (NAC) system established in part 7030.005. However, these standards do not, by themselves, identify the limiting levels of impulsive

noise needed for the preservation of public health and welfare. Noise standards in subpart 2 apply to all sources.

Subpart. 2. Noise Standards.

Table 2-1 Minnesota Noise Standards

Noise Area Classification	Daytime		Nighttime	
	<i>L₅₀</i>	<i>L₁₀</i>	<i>L₅₀</i>	<i>L₁₀</i>
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

The Project is considered under noise area classification 1, which includes homes, other residential uses, religious activities, and educational services. Therefore, the applicable nighttime L50 limit is 50 dBA and the nighttime L10 limit is 55 dBA at each receptor. Daytime L50 and L10 limits are 60 dBA and 65 dBA, respectively.

Sound pressure levels can be reported in a variety of ways. L50 and L10 represent noise levels that are exceeded 50% and 10% of the time, respectively. Leq represents the average sound over a period of time. L50, L10, and Leq sound pressure levels can be reported in dB, or weighted units such as dBA or dBC. The A-weighted curve (i.e. dBA) is used to duplicate the sensitivity of the human ear to sound. In other terms, dBA is the most accurate unit to replicate how a human ear translates sound pressure waves, originating from ambient sound and wind turbine sound, into sound levels. The Minnesota Noise Standards are expressed in dBA, as are the sound levels within this document. The noise standard applies to one hour survey periods, meaning that for any given one-hour period, the L50 and L10 levels shall not exceed Table 2-1.

The above sound limits are for “total” sound, or in other terms, the contribution of the Project combined with the ambient sound. As discussed in Section 1.1, if “total” sound exceedances are measured, further detailed investigations are necessary to isolate the contribution of the wind turbines to the total sound levels experienced at the receptors. The focus of this assessment is to determine the wind turbine contribution.

It should be noted that acoustic specifications for wind turbines are provided in terms of Leq, as well as measurements and results to determine the wind turbine contribution. Due to the generally constant nature of wind turbine sound, when reported over long periods, the Leq results are a reasonable approximator of L50, however careful consideration should be applied when comparing the two metrics.

It should be noted that the Minnesota wind turbine guidance [2] does not state what level of turbine only contribution is acceptable, i.e. compliant, but suggests investigating if the wind turbines are the main contributor to the total sound during exceedances. If the contribution of the wind turbines exceeds an Leq level of 50 dBA at certain wind speeds, it can be reasonably determined that the wind turbines are the main contributor to L50 total noise exceedances during those conditions. Lower wind turbine contribution levels, but close to this threshold, could be viewed as impactful as well, but determining which level is impactful is outside the scope of this present study.

2.3 Instrumentation

The instrumentation used for the post-construction noise monitoring included the following:

- Larson Davis sound meters model 831 Class I;
- FreeField ½ inch microphone model 377B02;
- Preamplifier model PRM831;
- Vaisala Weather Transmitter model SEN-031;
- Larson Davis Precision Acoustic on-site Calibrator model CAL200; and
- Complete kit for outside sound measurement (including large tripods, 7" wind and rain screen, protective Pelican case, solar panels, and long range batteries).

The sound meters meet the IEC 61672 Class 1 specifications. All instruments had a valid calibration, and calibration sheets are included in Appendix C of this document. Based on the above descriptions, the instrumentation complies with the requirements of the Guidance and Minnesota regulations [3]. The weather sensor was appropriately heated with an autonomous power supply in order to ensure accurate data was gathered during low temperatures. Pictures of the monitoring set-ups are including in Appendix B.

Table 2-2 provides the serial numbers of the equipment used at each monitoring location.

Table 2-2 Monitoring Equipment Serial Numbers by Monitoring Location

Monitoring location	Sound Level Meter	Preamplifier	Microphone
Langrud (M01)	3172	019221	159539
Hagen (M02)	2661	10895	158436

2.4 Measurement Locations

On-site monitoring was conducted at the two receptors, identified as BT-M01 and BT-M02. Table 2-3 summarizes the selected monitoring locations, which were at the same properties as the initial audit in June 2017. Since the foliage had changed between November and June, BT-M01 was repositioned on the same property to avoid potential noise issues from a nearby evergreen tree. The new location was 135 ft (41 meters) north of the old location but approximately the same distance to the nearest wind turbine. Although the new location was placed in an area more commonly traversed by the landowner, this location was not preferable for monitoring during the June 2017 period due to deciduous foliage and avian wildlife. Table 2-3 provides the coordinates of the monitoring locations.

Figure 2-1 presents a general overview map of the measurement locations in relation to the Project. Figure 2-2 provide locations for the equipment on the properties. Pictures of the monitoring locations are included in Appendix B.

Table 2-3 Final Measurement Point Locations

Final Measurement Point	Receptor Address	Easting	Northing	Distance to nearest turbine, ft	Notes
Langrud (BT-M01)	25887 – 705 th Avenue, Alden, MN 56009	463000	4841960	350 m (1150 ft) from Turbine 362	Closest wind turbine is West
Hagen (BT-M02)	70286 – 290 th Street, Hartland, MN 56042	462949	4847019	465 m (1525 ft) from Turbine 132	Closest wind turbines are NE and SE

UTM NAD83 zone 15

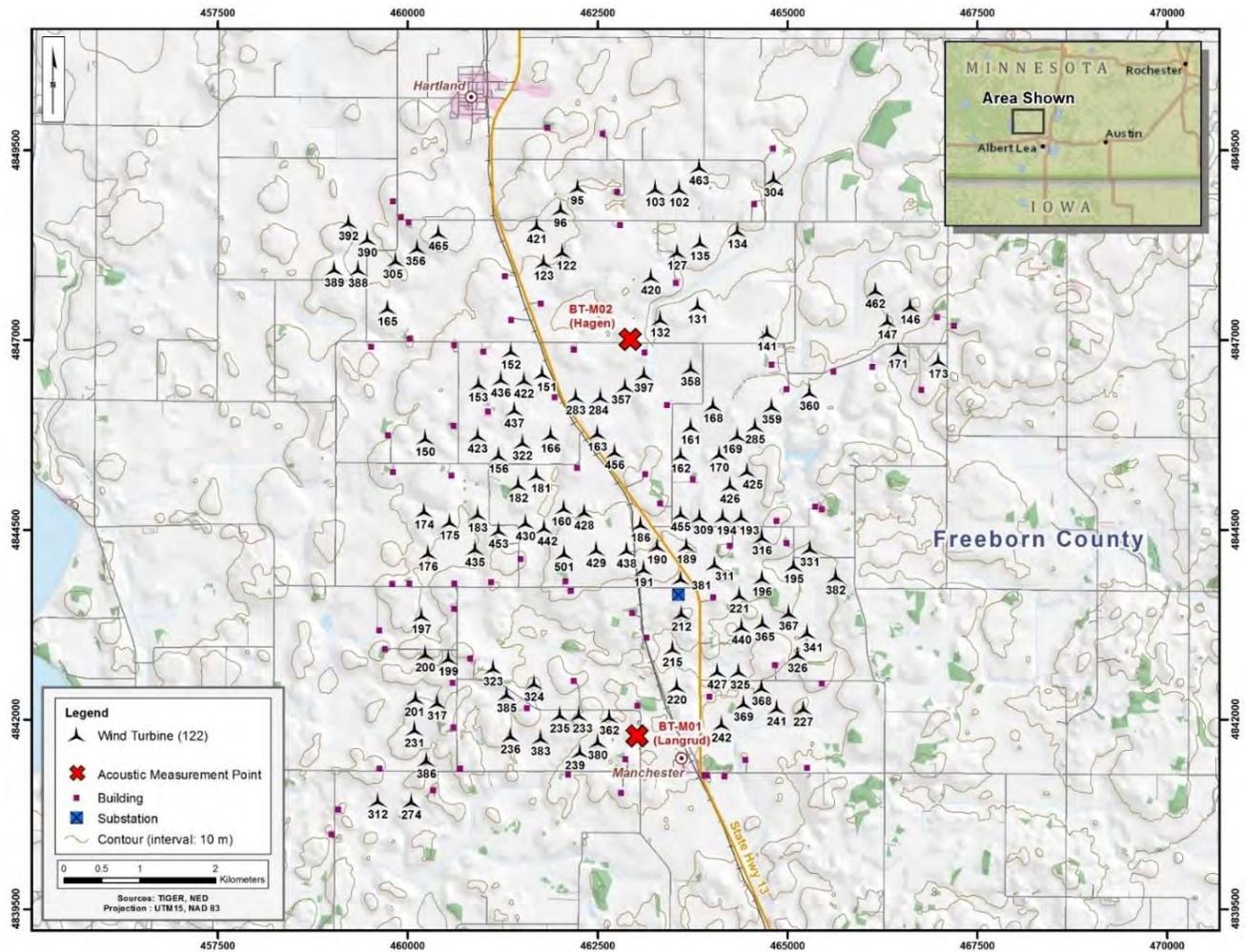


Figure 2-1 Map of Project and Monitoring Locations



Figure 2-2 Equipment Locations on Properties

2.5 Data Collection

Just over one week (9 days) of data was collected from 21 November 2017 to 30 November 2017. For two nighttime periods during the monitoring period, as defined in Table 2-4, all wind turbines within a 2.4 km (1.5 mile) radius were parked under medium to high wind conditions to allow collection of ambient noise conditions. This represents 73 out of the 122 operational turbines.

Only nighttime data was used throughout the assessment as detailed in further Sections below, since it is typically at night that domestic and traffic activities are at its lowest. As such, this allows for less interference or intrusive sounds that require filtering, and a better “signal-to-noise” ratio, i.e. a stronger level of total noise vs ambient level which can provide a more accurate understanding of turbine only contribution. Sound contribution from wind turbines vary primarily with hub height wind speed and not with time of day; the sound contribution from the turbines estimated with nighttime data, applies to daytime as well.

Each day, wind speed forecasts were reviewed to select the best opportunities to measure ambient sound levels, i.e. with the wind turbines parked, during relevant wind speeds. As such, wind turbines were parked from November 23rd 10 p.m. to November 24th 4 a.m. and on November 25th from 12 a.m. to 7 a.m. There were other periods when wind turbines were not operational due to hub height wind speeds below the cut-in level. Measurements during these periods were excluded in the analysis. Operational logs provided by EERA from the Project operator confirm the shutdown periods occurred [5]. Aside from the forced curtailment periods, all wind turbines within 2.4 km (1.5 miles) were operational during the measurement campaign.

Table 2-4 Shutdown Schedule

Wind Turbine Forced Curtailment Window	
Start Time	End Time
23 November 2017, 10 p.m.	24 November 2017, 4 a.m.
25 November 2017, 12 a.m.	25 November 2017, 7 a.m.

2.6 Wind Speed Data

The Minnesota LWECs Guidance does not have a defined method for determining the wind turbine contribution at the receptors, including the wind speed range relevant for data analysis.

Wind turbine sound changes with respect to hub height wind speeds. Wind turbine manufacturers provide sound data sorted in separate bins based on the wind speed (i.e. when the hub height wind speed is x , the sound power level of the turbine is y). A wind speed bin is a narrow range of wind speeds to group data in a more meaningful way for further analysis; for example, data acquired under hub height wind speeds ranging from 9.6 m/s to 10.5 m/s would be grouped under the 10 m/s wind speed *bin*, and so forth.

The IEC-61400-11 Edition 3 standard [6] is the internationally recognized standard for determining the wind turbine sound power level. Its method for determining the relevant hub height wind speed range is specific to the wind turbine. It is defined as the hub height wind speeds ranging from 0.8 to 1.3 times the wind speed occurring at 85% of the rated wind turbine power. The rated power for the Vestas V82 is 1650 kW, and 85% rated power is approximately 1400 kW which occurs at approximately a 10 m/s hub height wind speed, or wind speed *bin*. To account for the 0.8 and 1.3 range, the relevant range for acoustic testing

would equate to hub height wind speed bins from 8 m/s (17.9 mph) to 13 m/s (29.0 mph). Therefore, the current analysis aimed at acquiring data samples within this range, but also at a hub height wind speed bin of 7 m/s (15 mph), to help identify acoustic trends at slightly lower wind speeds. It should be noted that measuring wind turbine sound at higher hub height wind speeds can be difficult due to increased wind-induced sound on the microphone at ground level, and the less-frequent occurrence of those elevated winds speeds.

Hub height wind speed data was collected from operational logs obtained by EERA from the plant operator [5]. The logs were provided for the two closest wind turbine generators at each location. Two anemometers on each wind turbine nacelle provided measured wind speeds at hub height. The electrical output of the wind turbine as well as the turbine power curve, which relates electric power output to hub height wind speeds, was also provided as another means to extract hub height wind speed. DNV GL used the nacelle anemometers that were in best agreement with wind speeds derived by the electrical output and power curve. These were anemometers #2 on turbines #362 (BT-M01) and #132 (BT-M02).

Wind speed data at the microphone level was collected from an in-situ weather station. This is described as the microphone wind speed and is different from the hub height wind speed. The Vaisala units monitor wind speed and wind direction, temperature, relative humidity, and precipitation. Precipitation data obtained on-site was compared to the nearest NOAA station, and on-site data broadly concurred. Due to the benefit of the in-situ weather stations, the local data was used for initial data filtering, in lieu of data from a distant NOAA station, as it is more accurate for data filtering at the microphone level. Wind speed measurements at the microphone and at hub height are inherently related, but not directly correlated. Wind speed can vary significantly at different elevations depending on atmospheric conditions, and the influence of nearby structures and landscape.

It should be noted that units in this report are generally provided in metric units, to suit the international standards that govern certification. However, Table 2-5 provides a comparison between wind speed in miles per hour and meters per second to suit English units.

Table 2-5 Wind Speed Units Comparison

Miles per hour (mph)	Meters per second (m/s)
1	0.4
2	0.9
3	1.3
4	1.8
5	2.2
6	2.7
7	3.1
8	3.6
9	4.0
10	4.5
11	4.9
12	5.4
13	5.8
14	6.3

Miles per hour (mph)	Meters per second (m/s)
15	6.7
16	7.2
17	7.6
18	8.0
19	8.5
20	8.9

2.7 Noise Emission Data

Free field microphones connected to sound level meters were installed on tripods approximately 1.8 m (6 feet) above ground, and site calibration was performed before and after each monitoring period. The differential calibration was not greater than 0.5 dBA as per Table 2-6. Photos of sound equipment stations at each point are included in Appendix B.

Table 2-6 Site Calibration Log

Monitoring location	End-of-campaign site calibration	
	Date	Differential (dBA)
Langrud (BT-M01)	30 November 2017	0.10
Hagen (BT-M02)	30 November 2017	-0.09

Sound measurements were made continuously using a FAST response setting and were averaged and stored every 10 seconds, along with the relevant statistics for that period. Sound events louder than 60 dBA were recorded as an audio file as well for further analysis. Periods with intruding intermittent background noise (as from aircraft) were omitted.

Because environmental sound measurements are greatly influenced by wind-induced sound, the measurement stations included an oversized 175 mm (7 in) foam wind screen, as per industry standards. This enabled the measurement of sound (without significant wind-induced sound effects on the microphone) in microphone winds up to 5 m/s (i.e. 11 mph) at the measurement level. The LWECs Guidance states that measurements taken during winds higher than 11 miles per hour at microphone height should not be used in a measurement campaign.

Hub height wind speed binning of the sound level data was the primary method of analysis, and binning based on microphone wind speed was used as a supplemental data set to confirm wind turbine noise contribution trends. Hub height binning of data is the preferred method since wind turbine sound is directly related to hub height wind speed. Microphone hub height wind speed binning more accurately reflects ambient sound on the ground. It is worth noting, as described in sections below, that sorting data based on the microphone wind speeds showed similar sound levels during the turbine parked periods, similar increasing noise levels as wind speeds increased and similar turbine contributions levels.

3 DATA ANALYSIS AND RESULTS

3.1 Measurement Point BT-M01 - Langrud

BT-M01 is in the southern-central region of the Project area. The property is characterized by a series of small buildings including a residence, garage and workshop with a gravel dirt driveway connecting them. A series of evergreen trees on the western side serves as a windbreak. The deciduous trees scattered across the property had lost their foliage prior to the measurement period.

Measurement results are presented per hub height wind speed bins below. The data presented is a subset of the overall dataset, filtered for nighttime and downwind from the nearest wind turbine (#362) to the west. The applied downwind filter is +/- 45 degree from the wind turbine (winds coming from the 225° to 315° True North direction) to include all western wind directions. This also consists of the direction range that is not shielded by the buildings on the property. The downwind filter is used as it provides a clearer and more accurate representation of turbine noise contribution on this property. Excluded data also includes microphone height wind speeds greater than 11 mph, intruding intermittent background noise, and the beginning and end of the curtailment periods. There were no periods of precipitation during the nighttime periods.

The number of 10 second samples is presented for periods with the turbines on (i.e. "total" noise) and off (i.e. ambient background sound during forced curtailment). The acoustic average and standard deviation of the turbine on periods and turbine off periods is also provided. It can be observed that the turbine off data remains fairly constant, due to the significant shielding at the Langrud property. The data shows a slight upward trend at hub height wind speeds above 10 m/s. The turbine contribution is determined by logarithmically subtracting the average noise level for the turbine on periods from the turbine off periods. This is presented visually in Figure 3-1 and as a data table in Table 3-1. The bold line represents the average noise level, while the dotted line represents the standard deviation.

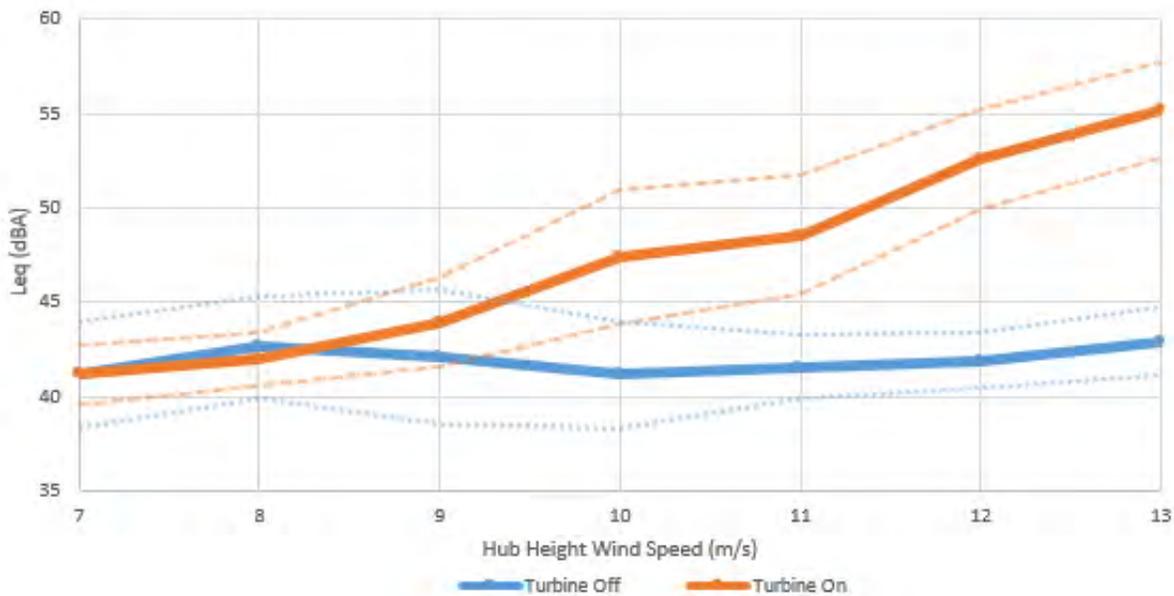


Figure 3-1 BT-M01 Leq Sound Levels per Hub Height Wind Speed

Table 3-1 BT-M01 Leq Sound Levels per Hub Height Wind Speed

Hub Height Wind Speed (m/s)	Turbine Off			Turbine On			Turbine Contribution (dBA)
	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	
7	41	530	2.8	41	2524	1.5	-
8	43	1124	2.6	42	1068	1.4	-
9	42	781	3.4	44	2075	2.4	39
10	41	349	2.7	48	1554	3.7	47
11	42	464	1.7	49	1545	3.1	48
12	42	189	1.4	53	1042	2.7	52
13	43	42	1.5	55	564	2.5	55

From the results, the turbine contribution at the property would be in excess of 50 dBA at hub height wind speeds equal and above the 12 m/s wind speed bin at hub height, and the turbine contribution is considered a main contributor to exceedances under the assumptions of this report.

A supplemental evaluation is provided under Appendix C, where the same filtered data is binned per microphone wind speed. Similar trends and turbine contribution values were calculated. A more pronounced upward trend in turbine off sound was measured, as expected.

Figure 3-2 presents the 1/3 octave band 10 second Leq for all nights, filtered similarly by wind direction and for the 10 and 13 m/s hub height wind speed bins. The A-weighted data presents a notable difference between the turbine on (solid) and turbine off (dotted) levels for frequencies under 8000 Hertz.

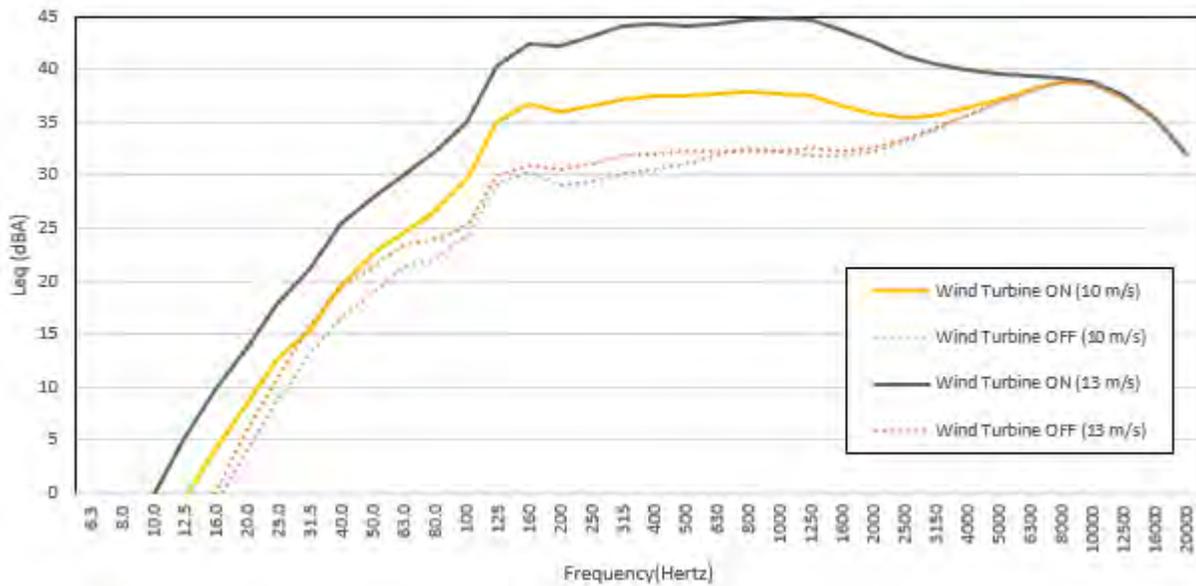


Figure 3-2 BT-M01 Leq Frequency Content per Hub Height Wind Speed

3.2 Measurement Point BT-M02 - Hagen

BT-M02 is located in the central region of the project area. An evergreen windbreak is located on the northern side of the property. There are many mature deciduous trees on the property, but the trees had lost their foliage prior to the measurement period.

During the first night of forced curtailment (“turbines off”), the winds were primarily from the south-southwest direction and the noise levels between periods with the turbines on and turbines off were very similar. Under these conditions, the turbine contribution could not be determined. The 10 second A-weighted sound Leq were measured in a range between 46 dBA and 58 dBA. Figure 3-3 presents the 1/3 octave band 10 second Leq from the first night of operation for the 10, 11 and 12 m/s hub height wind speed bins. The A-weighted data demonstrates a concentration of acoustic energy between 100-200 Hz regardless of whether the turbines were operational or not, which resulted in high measured sound levels. There were minor differences between the turbine on and turbine off levels for this night, with some turbine off binned data being louder than turbine on data. This indicates that the turbines were not the significant contributor for the night, and indicates a possibility that when winds are from the south-southwest, there is a strong predominance of low frequency sound on the property which does not originate from the wind turbines.

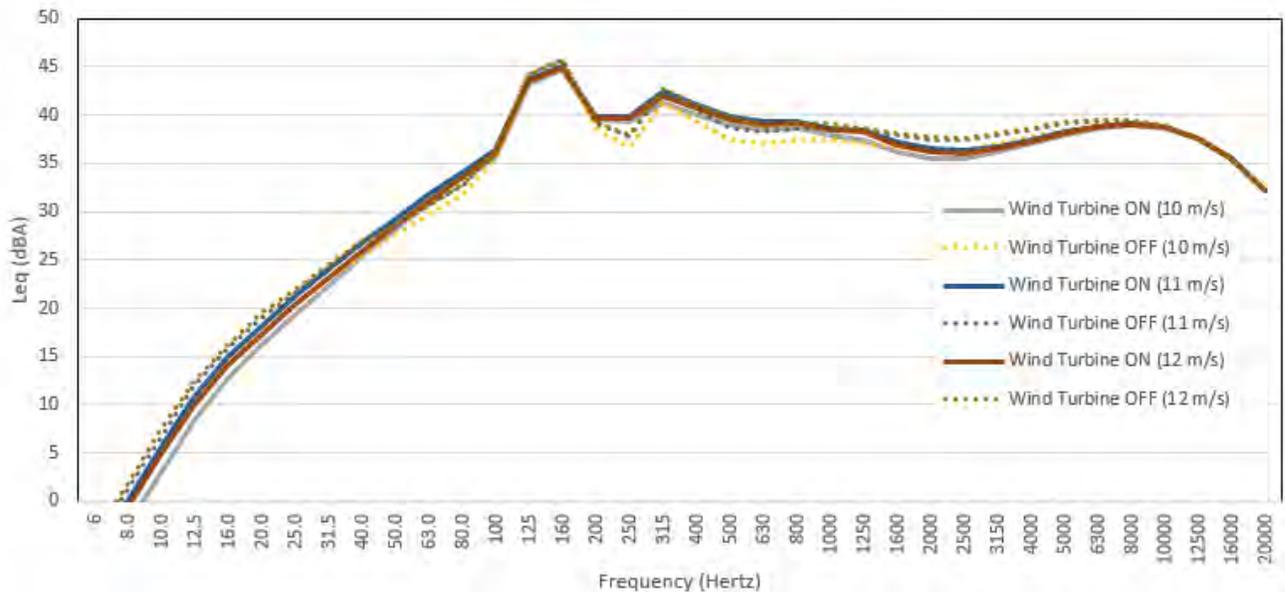


Figure 3-3 BT-M02 Leq Frequency Content per Hub Height Wind Speed (Nighttime 11/23-11/24)

As such, Figure 3-3 presents measurement results per hub height wind speed bins, but exclude turbine off data from the first night of forced curtailment (23 to 24 November). The data presented is a subset of the overall dataset, filtered to improve signal-to-noise ratio by only including western and northwestern wind directions between 250 and 350 degrees, with turbine off data and turbine on data coming from similar directions. These measurements were screened by the trees and the house, but still present the most consistent results at this property. The 10 second measured sound levels at the Hagen residence were highly variable, with 10 second A-weighted Leqs between 28 dBA and 58 dBA during periods of parked turbines.

The downwind filter also effectively filtered away data from the first night of turbine off measurements. Excluded data also includes microphone height wind speeds greater than 11 mph, intruding intermittent background noise, and the beginning and end of the curtailment periods. There were no periods of precipitation for the whole period.

Turbine off noise levels at wind speeds above 10 m/s at hub height were not captured on the second night of forced curtailment (25 November), therefore a preliminary extrapolation was used to estimate turbine on sound levels, and estimate turbine contribution. Standard polynomial curves were not an acceptable fit to the observed wind speed and noise measurement data relationship, so a linear trend line was applied and used to estimate the noise levels at hub wind speeds up to 13 m/s.

The number of 10 second samples is presented for periods with the turbines on (i.e. "total noise") and off (i.e. ambient sound during forced curtailment). The acoustic average and standard deviation of the turbine on periods and turbine off periods is provided. The turbine contribution is determined by logarithmically subtracting the average noise level for the turbine on periods from the turbine off periods. This is presented visually in Figure 3-4 and as a data table in Table 3-2. The bold line represents the average noise level, while the dotted line represents the standard deviation.

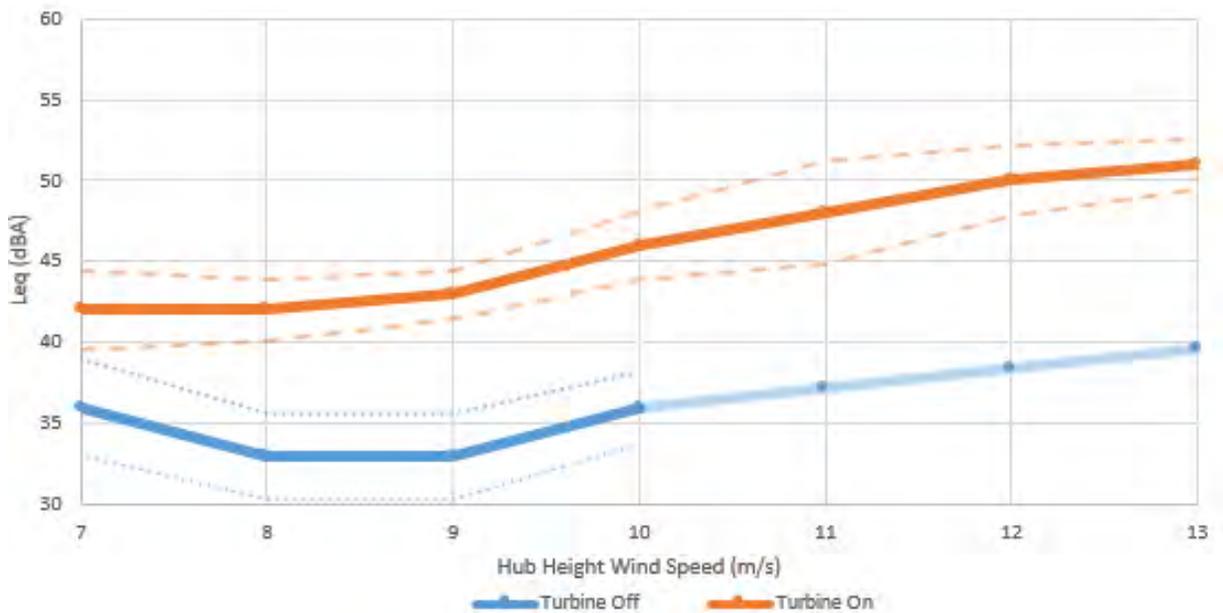


Figure 3-4 BT-M02 Leq Sound Levels per Hub Height Wind Speed

Table 3-2 BT-M02 Leq Sound Levels per Hub Height Wind Speed

Hub Height Wind Speed (m/s)	Turbine Off			Turbine On			Turbine Contribution (dBA)
	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	
7	36	231	3.0	42	2539	2.5	41
8	33	993	2.7	42	1568	1.8	41
9	33	432	2.7	43	1235	1.5	43
10	36	584	2.2	46	1114	2.2	46
11	37*	0	-	48	1059	3.2	48*
12	38*	0	-	50	653	2.2	50*
13	40*	0	-	51	550	1.6	51*

* Represents theoretical results from extrapolated values

Preliminary analysis indicates that the turbine contribution may exceed 50 dBA at higher hub height wind speeds, and be considered a significant contributor to exceedances under the assumptions of this report. However, this was not specifically measured. The extrapolated results show the turbine is a significant contributor above 12 m/s, but there is increased uncertainty in the extrapolation process when compared to noise measurements.

A supplemental evaluation is provided under Appendix C, where the same filtered data was binned per microphone wind speed. Turbine off data were not extrapolated for the supplemental analysis, but similar trends and turbine contribution values were calculated for the measured data. A more pronounced upward trend in turbine off sound was measured, as expected.

Figure 3-5 presents the A-weighted third octave band for the 10 m/s hub height wind speed bin, filtered for wind direction between 250 and 350 degrees for the second night of curtailment, to improve the signal-to-noise ratio. The A-weighted data presents a notable difference between the turbine on (solid) and turbine off (dotted) levels for frequencies under 2000 Hertz.

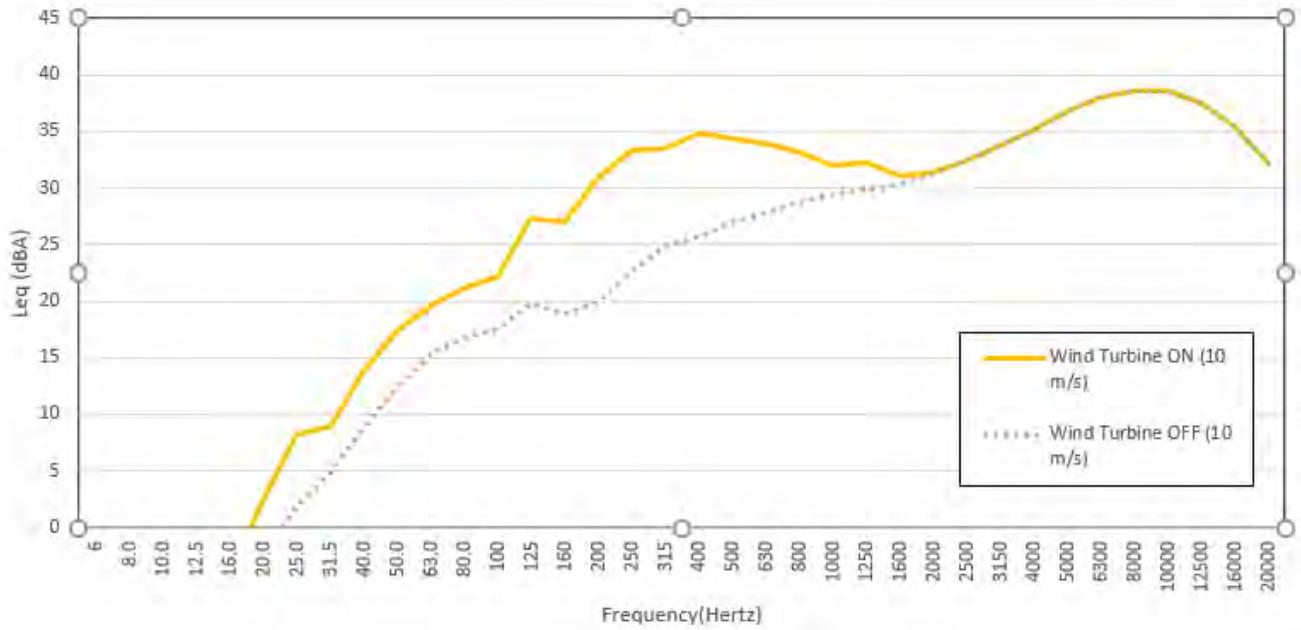


Figure 3-5 BT-M02 Leq Frequency Content per Hub Height Wind Speed (Nighttime 11/24-11/25)

4 DISCUSSION

The Minnesota LWECs guidance are based on total noise levels. When exceedances occur, additional noise assessments are required to determine if nearby wind turbines are significant contributors. In this assessment, the turbine contribution of the sound level was derived by logarithmically subtracting the turbine on from the turbine off measurements. In instances when the turbine Leq contribution is over 50 dBA, it is reasonable to determine that turbines are significant contributors (See Section 2.2).

The sound levels on the two properties were highly variable. As stated in the 2011 Bent Tree acoustic study – “Background levels in rural areas are highly variable and usually highly dependent on the specific wind and atmospheric conditions occurring at a particular moment.” [7]. This was also observed in the June 2017 DNV GL study [1]. However, by analysing the frequency content of the measured signal, filtering by wind direction, sorting by hub height wind speed, and having a good comparison set of on & off data, the assessment shows that turbines are the primary contributor to the acoustic environment under certain atmospheric conditions for Langrud, and potentially Hagens.

Measured turbine contribution in excess of 50 dBA occurred at the Langrud property (BT-M01) at hub height wind speeds of 12 m/s and 13 m/s, while the turbines were operational. When compared to noise levels during turbine off periods, it was also determined that the turbines contribute significantly to total noise exceedances.

Measured exceedances of total noise at the Hagen property occurred with the turbines off and turbines on. During the first night of the measurements with turbines parked, turbine off levels were louder than turbine on levels. This demonstrates that under some conditions, there is significant noise in the area not caused by turbine operations. On the second night when turbines were off, hub height wind speeds were lower (i.e. not exceeding 10 m/s) and turbine contribution was detectable, however, turbine contribution in excess of 50 dBA was not measured. The resultant data set did not provide turbine off measurements at higher hub height wind speeds. Based on the filtered information from this measurement program, it is difficult to infer the turbine off noise levels at elevated hub height wind speeds with high confidence. The turbine off noise data at lower wind speeds demonstrated a weak relationship when using polynomial and linear regression, yet a linear fit was applied for extrapolating into higher wind speed bins. Although it is likely that the turbine contribution remains significant at the higher wind speeds, it cannot be stated decisively based on the observed data since the turbine off data used in the analysis captures only one night at lower wind speeds. Additional noise measurements, under different wind speeds and directions, would provide for a more robust assessment of wind turbine noise contribution at this property.

A trend was observed at both properties, where the turbine contribution increased beyond 85% rated power. Modern pitched wind turbines typically reach their maximum noise levels at 85%-90% of rated power, after which the noise levels remain fairly constant or occasionally slightly decrease. This is due to the feathering of the blades in higher wind speeds, which limits the rotational speed of the rotor and reduces torque. Therefore, the aerodynamic noise typically does not increase. The Vestas V82 is an active-stall wind turbine. The wind turbine uses a combination of blade pitch control, but also blade stall technology. Stall technology can lead to increased sound level emission at higher wind speeds. Therefore, the observed trend of increased noise beyond 85% of rated power, is likely explained by the wind turbine technology. Based on the information in this report, it is observed that turbine contribution exceedances begin to occur in the 12 m/s hub height wind speed bin, which includes wind speeds from 11.5 m/s and up.



A preliminary acoustic model was developed for the Project in order to determine which turbines would be curtailed [4]. The modeling was done with the CadnaA acoustic propagation software, which uses the ISO 9613-2 model [8]. Model results indicate that the cumulative contribution from all nearby turbines on the Langrud property should be 1-2 dB higher than the Hagen property, for a given hub height wind speed. This preliminary comparative analysis did not consider foliage, property layout or atmospheric conditions. The model did suggest while many turbines have the potential to contribute to the cumulative noise within the acoustic environment, the primary contributor of wind turbine noise at Langrud is the nearest wind turbine (#362) and the primary contributors of wind turbine noise at Hagen are the nearest two turbines (#132) and (#397).



5 CONCLUSION

DNV GL has completed this Phase 2 post-construction noise assessment in accordance with the Phase 2 Post-Construction Noise Measurement Study Protocol (DNV GL Protocol) [3]. Relevant aspects of the IEC 61400-11 Ed 3 standard for wind turbine sound level measurements were also used as reference. More specifically, the assessment was requested by EERA due to an audit conducted in June 2017 [1] which showed total noise exceedances at two complaint receptors within the Project Area; the Hagen and Langrud receptors.

Based on the measured data and analysis, turbine contribution in excess of 50 dBA Leq can occur at the Langrud property when hub height wind speeds reach 11.5 m/s and higher, while extrapolated data shows similar trends for the Hagen property. Sound levels vary greatly depending on hub height wind speed, and wind direction to a lesser degree. Additional data collection would confirm which hub height speeds and direction combination cause exceedances, and would help validate the preliminary findings at the Hagen residence during higher wind speeds.

It is probable that the nearest turbine to the Langrud property is the primary contributor during exceedances. As well, preliminary findings indicate that the two turbines nearest the Hagen property may also contribute to noise exceedances, based on the turbine contribution calculations at lower wind speeds.

6 REFERENCES

- [1] DNV GL. Bent Tree Wind Farm: Post-Construction Noise Measurement Assessment. File No 10046144-HOU-R-02-B, 30 August 2017.
- [2] Minnesota Department of Commerce, Energy Facilities Permitting. Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report. 8 October 2012.
- [3] Minnesota Pollution Control Agency. A Guide to Noise Control in Minnesota – Acoustic Properties, Measurement, Analysis and Regulation. 2008, including Minnesota Administrative Rules 7030.0040 Noise Standards. Posted 12 December 2003;
<https://www.revisor.leg.state.mn.us/rules/?id=7030.0040>.
- [4] DNV GL. Bent Tree Wind Farm: Phase 2 Post-Construction Noise Measurement Study Protocol. 27 September 2017.
- [5] Turbine curtailment and wind speed records sent by email from Andrew Hanson, Alliant Power to L. Miltich, Minnesota Department of Commerce, S. Dokouzian, DNV GL, 5 December 2017, "Sound Study Data.xlsx", "Power Curve.xlsx".
- [6] International Electrotechnical Commission. IEC 61400-11 Wind Turbine Generator Systems – Part 11: Acoustic Measurement Techniques. 07 November 2012.
- [7] Survey of Operational Sound Levels Bent Tree Wind Farm. Hessler Associates, Inc. June 17, 2011.
- [8] International Organization for Standardization. ISO 1996-2: Acoustics – Description, measurement, and assessment of environmental noise – Part 2: Determination of environmental noise levels. 2008.

APPENDIX A – NEARBY TURBINES TO MEASUREMENTS POINTS

Turbines within 2.4 km (1.5 miles) of each measurement point are listed in the table below.

Turbine ID	Easting	Northing	Corresponding Measurement Point
T212	463605	4843373	Langrud (M01)
T215	463487	4842910	Langrud (M01)
T220	463543	4842412	Langrud (M01)
T233	462250	4842035	Langrud (M01)
T235	462002	4842033	Langrud (M01)
T236	461353	4841760	Langrud (M01)
T239	462266	4841548	Langrud (M01)
T241	464857	4842126	Langrud (M01)
T242	464133	4841911	Langrud (M01)
T323	461124	4842656	Langrud (M01)
T324	461661	4842451	Langrud (M01)
T325	464357	4842609	Langrud (M01)
T362	462655	4842008	Langrud (M01)
T368	464659	4842396	Langrud (M01)
T369	464424	4842187	Langrud (M01)
T380	462503	4841682	Langrud (M01)
T383	461749	4841732	Langrud (M01)
T385	461300	4842304	Langrud (M01)
T427	464076	4842611	Langrud (M01)
T440	464399	4843200	Langrud (M01)
T122	462032	4848134	Hagen (M02)
T123	461789	4848005	Hagen (M02)

T127	463548	4848137	Hagen (M02)
T131	463816	4847430	Hagen (M02)
T132	463324	4847251	Hagen (M02)
T134	464343	4848417	Hagen (M02)
T135	463846	4848264	Hagen (M02)
T141	464733	4847071	Hagen (M02)
T151	461771	4846535	Hagen (M02)
T152	461356	4846831	Hagen (M02)
T161	463727	4845838	Hagen (M02)
T162	463592	4845462	Hagen (M02)
T163	462497	4845748	Hagen (M02)
T166	461883	4845729	Hagen (M02)
T168	464023	4846121	Hagen (M02)
T169	464341	4845718	Hagen (M02)
T170	464102	4845475	Hagen (M02)
T283	462210	4846230	Hagen (M02)
T284	462537	4846228	Hagen (M02)
T285	464575	4845843	Hagen (M02)
T357	462865	4846369	Hagen (M02)
T358	463725	4846605	Hagen (M02)
T359	464791	4846106	Hagen (M02)
T397	463111	4846525	Hagen (M02)
T420	463205	4847812	Hagen (M02)
T422	461531	4846450	Hagen (M02)
T436	461228	4846459	Hagen (M02)
T437	461406	4846058	Hagen (M02)



T456	462723	4845507	Hagen (M02)
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UTM NAD83 Zone 15

APPENDIX B – MEASUREMENT POINT PHOTOS



BT-M01 facing West



BT-M01 facing South



BT-M02 facing Northwest



BT-M02 facing West

APPENDIX C – MICROPHONE WIND SPEED BINS

Appendix C contains measured nighttime sound levels sorted into microphone wind speed bins, by the nearest whole integers. Microphone measurements above 5 m/s were omitted from the noise study. As a result, the 5 m/s bin contains values from 4.5 to 5 m/s only.

The Langrud property was filtered to include wind directions from the west +/- 45 degrees, to concentrate on contributions from the nearest turbines and avoid shielding from the buildings.

The Hagen property was filtered with a directional filter from 250 to 330 degrees. This was done to remove the first night of measurements with the turbines off as further discussed in 3.2, and improve signal-to-noise ratio.

Table C-1 Measured Results Binned per Ground Wind Speed for BT-M01 Langrud

Microphone Wind Speed (m/s)	Turbine OFF			Turbine On			Turbine Contribution (dBA)
	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	
1	41	658	2.8	41	6549	2.9	34
2	41	1318	2.2	46	4389	3.5	44
3	44	1420	2.0	50	2680	3.2	49
4	44	25	2.0	55	693	3.2	55
5	41*	1*	-	56	26	2.6	56*

* - There is higher uncertainty in result since there is only one sample

Table C-2 Measured Results Binned per Ground Wind Speed for BT-M02 Hagen

Microphone Wind Speed (m/s)	Turbine Off			Turbine On			Turbine Contribution (dBA)
	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	Average Level (dBA)	Number of Samples	Standard Deviation (dBA)	
1	34	1678	2.7	43	7728	2.7	43
2	37	676	2.5	46	2096	3.3	46
3	40*	1*	-	49	664	2.6	49*
4	N/A	N/A	N/A	53	282	1.6	N/A
5	N/A	N/A	N/A	55	75	1.2	N/A

N/A - Not applicable. No measurements were captured in this range.
* - There is higher uncertainty in result since there is only one sample



APPENDIX D – CALIBRATION SHEETS

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A 1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; E0651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; S1252-2002.

Manufacturer:	Larson Davis	Temperature:	75.1 °F
Model Number:	831		23.94 °C
Serial Number:	3172	Rel. Humidity:	45.8 %
Customer:	TMS Rental	Pressure:	922.1 mbar's
Description:	Sound Level Meter		922.1 hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:
Within the stated tolerance of the manufacturer's specification.

Calibration Date: 3/15/2017 Calibration Due: _____

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due
Stanford Research Systems	DS960	123710	4/19/2017
Larson Davis	2239	109	4/22/2017

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&T) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturer's specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standards and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Andy McGuire

Signature: 



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 Cincinnati, OH 45241
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 www.modalshop.com

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2005) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60604-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	74.9 °F
Model Number:	831		23.63 °C
Serial Number:	2661	Rel. Humidity:	42.1 %
Customer:	TMS Rental	Pressure:	997.5 mbars
Description:	Sound Level Meter		997.5 hPa

Note: As Found/As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the stated tolerance of the manufacturer's specification.

Calibration Date: 9/15/2017 Calibration Due: _____

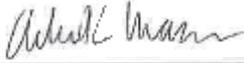
Calibration Standards Used:

Manufacturer:	Model	Serial Number	Cal Due
Stanford Research Systems	DS360	123270	4/25/2018

This Certificate attests that the instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standards and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

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Signature: 



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~Certificate of Calibration~

3149 East Kemper Rd
 Cleveland, OH 44121
 PH: 216-251-0910
 Fax: 216-458-2172
 www.modalshop.com

Manufacturer: PCH
 Model Number: 377B02
 Serial Number: 158135
 Asset ID:

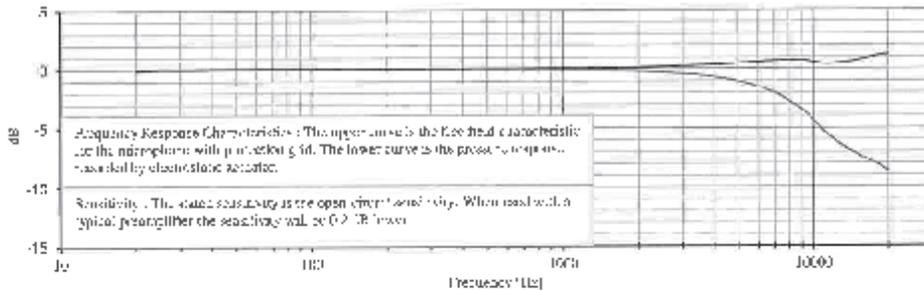
Customer: TMS Rental
 Address:

Calibration Date: Jul 27, 2017 12:22:03
 Due Date:

Description: Free Field Microphone
 Sensitivity: 250 Hz **1 kHz**
 -26.72 -26.79 dB re. 1V/Pa
 -16.15 45.76 reV/Pa

Temperature: 75 (24) °F (°C)
 Humidity: 46 %
 Ambient Pressure: 297.1 mbAr
 Polarization Voltage: 0 VDC

Cal. Results: In Tolerance



Traceability: The calibration is traceable through 661264413-14
 Notes: Calibration results relate only to the items calibrated.
 This certificate may not be reproduced, exact in full, without written permission.
 This calibration is performed in compliance with ISO 9001, ISO 17025 and ANSI Z540.
 Measurement uncertainty (250 Hz sensitivity calibration) at 95% confidence level 0.30 dB.
 Calibrated per specs. no EMI/RFI

User Note: As Found / As Left: In Tolerance.

Frequency Response with reference to level at 250 Hz							
Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)
20	-3.11	630	0.93	3500	0.78		
25	-3.01	800	0.91	5000	0.46		
31.5	-3.04	1000	0.95	7000	0.54		
40	-3.01	1250	0.96	9000	0.62		
50	-3.01	1600	0.96	12000	0.68		
63	-3.02	2000	0.98	16000	0.69		
80	-3.01	2500	0.97	20000	0.77		
100	-3.02	3150	0.99	25000	0.77		
125	-3.02	4000	0.11	31500	0.78		
160	-3.01	5000	0.13	40000	0.46		
200	-3.00	6300	0.17	50000	0.60		
250	-3.00	8000	0.20	63000	0.33		
315	-3.00	10000	0.24	80000	1.06		
400	-3.01	12500	0.24	100000	1.26		
500	-3.00	16000	0.22				

Technician: Ed Deylir

Reference Equipment Used:

Approval: *[Signature]*

Manuf.	Model	Serial	Cal. Date	Due Date
GLAS	40AG	9542	9/20/2016	9/20/2017



Calibration Lab
 CALIB-AT/CN/CERT 2649.01



~Certificate of Calibration~

3149 East Kemper Rd
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 Ph : 513-251-9919
 Fax: 513-253-2172
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Manufacturer: PCB
Model Number: 37B02
Serial Number: 159539
Asset ID:

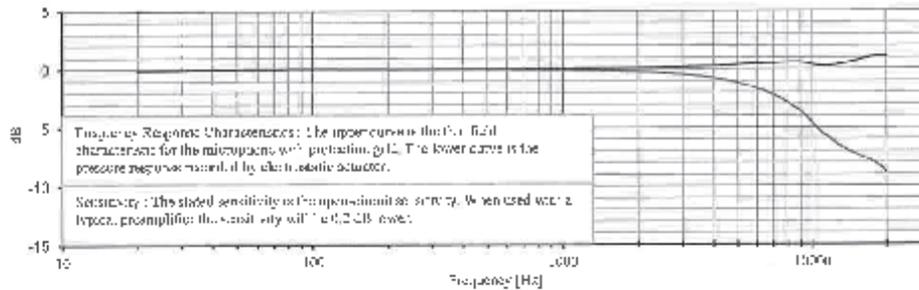
Customer: TMS Rental
Address:

Calibration Date: Jul 27, 2017 11:00:00
Due Date:

Description: Free-Field Microphone
Sensitivity: 250 Hz 1 kHz
 -26.47 -26.55 dB re. 1 V/Pa
 47.47 47.04 mV/Pa

Temperature: 76 (24) °F (°C)
Humidity: 44 %
Ambient Pressure: 992.7 mbars
Polarization Voltage: 0 VDC

Cal. Results: In Tolerance



Traceability: The calibration is traceable through 693284413-14.

Notes: Calibration results are only valid for the items calibrated.
 This certificate may not be reproduced, except in full, without written permission.
 This calibration is performed in accordance with ISO 9001, ISO 17025 and ANSI Z540.
 Measurement uncertainty (250 Hz sensitivity calibration) at 95% confidence level: 0.20 dB.
 Calibrated per procedure P410-204

User Note: As Found: As Left, In Tolerance

Frequency Response with reference to level at 250 Hz							
Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)
20	0.10	630	0.31	4500	0.20		
25	0.10	800	0.33	5000	0.21		
31.5	0.09	1000	0.34	5600	0.22		
40	0.09	1250	0.35	6300	0.23		
50	0.08	1600	0.36	7100	0.24		
63	0.08	2000	0.37	8000	0.25		
80	0.07	2500	0.38	9000	0.26		
100	0.07	3150	0.39	10000	0.27		
125	0.07	4000	0.40	11200	0.28		
160	0.06	5000	0.41	12500	0.29		
200	0.06	6300	0.42	14000	0.30		
250	0.05	8000	0.43	16000	0.31		
315	0.05	10000	0.44	18000	0.32		
400	0.04	12500	0.45	20000	0.33		
500	0.04	16000	0.46				

Technician: Brady Hammett

Reference Equipment Used:

Approval: *Brady Hammett*

Manufacturer	Model	Serial	Cal. Date	Due Date
GRAS	40AG	58934	9/29/2016	9/29/2017



CALIBRATION CERT 2649-01

Page 1 of 1



~Calibration Certificate~

3149 West Kemper Rd.
Cincinnati, OH 45241
Ph: 513 351 9919
Fax: 513-428-2172
www.modalshop.com

Manufacturer:	Tarson Dev's	Asset ID:	
Model:	CA1200	Calibration Date:	JUL 11, 2017 12:52:07
Serial Number:	13271	Due Date:	
Description:	Acoustic Calibrator	Technician:	Ed Devlin
Customer:	TMS Rental	Approval:	<i>[Signature]</i>

Calibration Results:

Measured SPL : 94.01 dB re 20µPa	Temperature:	94.0 (75.0 F)
Measured Frequency : 1,000.00 Hz	Humidity:	46.00%
	Pressure:	993.3 mbars

Upon receipt for calibration, the instrument was found to be: **WITHIN** the stated tolerance of the manufacturer's specification.

Note: **As Found / As Left: In Tolerance.**

Measurement uncertainty at 95% confidence level: 0.25 dB

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification:

*This calibration is traceable through : 683/284413-14

Notes:

The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. Unless otherwise noted, the reported value is both 'as found' and 'as left' data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Reference Equipment Used:

Manufacturer	Model	Serial	Cal. Date	Due Date
GRAS	40A01	9542	9/20/2016	9/20/2017



-Calibration Certificate-

3149 East Kemper Rd.
Cincinnati, OH 45244
Ph: 513-251-9919
Fax: 513-459-2172
www.modalshop.com

Manufacturer:	Larson Davis	Asset ID:	
Model:	CAL200	Calibration Date:	Jul 11, 2017 12:56:35
Serial Number:	13271	Due Date:	
Description:	Acoustic Calibrator	Technician:	Ed Devlin
Customer:	TMS Rental	Approval:	<i>Edward Devlin</i>

Calibration Results:

Measured SPL : 114.05 dB re, 20µPa	Temperature:	24 °C (75 °F)
Measured Frequency : 1,000.00 Hz	Humidity:	46.00%
	Pressure:	993.2 mbars

Upon receipt for calibration, the instrument was found to be:
WITHIN the stated tolerance of the manufacturer's specification.

Note: **As Found / As Left: In Tolerance.**

Measurement uncertainty at 95% confidence level: 0.25 dB

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification:

This calibration is traceable through : 689284413-14

Notes:

The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. Unless otherwise noted, the reported values include 'as found' and 'as left' data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Reference Equipment Used:

Manuf.	Model	Serial	Cal. Date	Due Date
GRAS	40A01	9542	9/20/2016	9/20/2017



ABOUT DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas and energy industries. We also provide certification services to customers across a wide range of industries. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers' decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. Operating in more than 100 countries, our professionals are dedicated to helping customers make the world safer, smarter and greener.

Exhibit S

Kathy Nelson Comment – Shadow Flicker

PUC Docket IP-6946/WS-17-410

STATE OF MINNESOTA)
) ss

COUNTY OF FREEBORN)

I, Kathy Nelson, after being duly sworn on oath, state as follows:

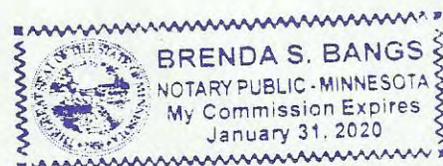
1. My name is Kathy Nelson, and I live at 11589 870th Ave Glenville, MN
2. I am directly affected by the Freeborn Wind project because I live in the project area.
3. I am concerned about Shadowflicker, noise, property value ice throw + TV reception
4. I have included supporting documents.
5. I am concerned about All of the above - the size of the turbines as that is not the size that was permitted.
6. I have included supporting documents.
7. I ask that the Public Utilities Commission hold a contested case hearing where these issues of material fact will be developed for the record.

Name Kathy Nelson
Address 11589 870th Ave Glenville, MN 56036
Phone 507-383-9701

Further your affiant sayeth naught.

Signed and sworn to before me this 3rd day of November, 2019.

Brenda S Bangs Notary Public



November 3, 2019

Katie Sieben Chair
Dan Lipschultz Commissioner
Valerie Means Commissioner
Matt Schuerger Commissioner
John A. Tuma Commissioner

In the Matter of the Application of Freeborn Wind Energy, LLC for a Large Wind Energy Conversion System Site Permit for the 84 MW Freeborn Wind Farm in Freeborn County
PUC Docket No. IP6946/WS-17-410

I am asking this to be a contested case for the proposed Freeborn Wind Site project. The type and layout of the turbines are not what was granted in the permit. There permit was given for smaller turbines. Please consider the people living in this community—just because a few big landowners are in favor DOES NOT mean the majority of the people are. Please let our voices be heard.

I have looked at the shadow flicker data and find that my home will have 7416 minutes “worst case”. The Windpro program then adjusts this number to 1,995 minutes. This is still OVER the 30 hour limit. I am a non-participant who is in my yard or home most days. I have no confidence that the turbines around me will be shut down after the first 30 hours of flicker. This issue could drive me from my home.

This project should not be built until turbines are moved or removed. 7400+ minutes of potential shadow flicker, “worst-case scenario” or “real”, should make anyone re-think where the turbines around receptors 315, 316, and 317 are placed.

There are many others that far exceed the 30 hour limit when looking at “worst case”. There is no guarantee that the flicker will be closer to “real” adjusted minutes. There is also no guarantee that we will have immediate response from Xcel when exceedances occur. Remove the turbines.

Please refer this matter to a contested case where these matters of fact will be developed for the record.

Kathy Nelson
11589 870th Ave.
Glenville, MN 56036
507-383-9701
gregandkathynelson@gmail.com

Exhibit T

AFCL Information Request to Xcel Energy

IR-9

PUC Docket IP-6946/WS-17-410

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 9
Docket No.: IP-6946/WS-17-410
Response To: Association of Freeborn County Landowners
Requestor: Carol A. Overland
Date Received: August 29, 2019

Question:

Referring to Site Permit Amendment Application, Attachment J, p. 4 of 8, Freeborn Wind/Xcel states:

As owner and operator of Project facilities, Xcel Energy will bear the financial responsibility for decommissioning activities and Project area restoration...

- a. Is Xcel Energy amenable to permit condition requiring Xcel Energy to bear the financial responsibility for decommissioning activities and Project area restoration?
- b. If no, why not?

Response:

Although the Company does not oppose including such a permit condition in principle, adding the quoted language from the Company's Decommissioning Plan as a permit condition is unnecessary. Section 11.2 of the Site Permit already requires the Company "to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment to a depth of four feet" and, "to the extent feasible," to "restore and reclaim the site to its pre-project topography and topsoil quality."

Preparer: Matt Harris
Title: Principal Attorney
Department: General Counsel
Telephone: 612-330-7641
Date: September 9, 2019

Exhibit U

AFCL Information Request to Xcel Energy

IR-10

PUC Docket IP-6946/WS-17-410

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 10
Docket No.: IP-6946/WS-17-410
Response To: Association of Freeborn County Landowners
Requestor: Carol A. Overland
Date Received: August 29, 2019

Question:

Referring to AFCL-35, Wayne Brant Public Comment (p. 15 of lease), see also hearing testimony of Wayne Brandt, Tr. Public Hearing, p. 133-139, and lease’s “Effect of Termination” clause:

If Grantee fails to remove such Windpower Facilities within twelve (12) months of termination of the Easement, or such longer period as Owner may provide by extension, Owner may do so, in which case grantee shall reimburse Owner for reasonable and documented costs of removal and restoration incurred by Owner.

- a. Is Xcel willing to amend participant leases to remove the lease paragraph above?
- b. Is Xcel willing to amend participant leases to add the statement that “*As owner and operator of Project facilities, Xcel Energy will bear the financial responsibility for decommissioning activities and Project area restoration.*”
- c. Is Xcel Energy amenable to a permit condition requiring Xcel Energy amend participant leases to release participants from financial responsibility for decommissioning activities and Project area restoration?
- d. If no, why not?

Response:

- a. No. This is a standard term of easement agreements with landowners, and we believe this is an important protection for landowners.
- b. No. This proposed statement is unnecessary. Section 10.c. of the Easement Agreement requires the Company to, “remove above-ground and below-ground (to a depth of four (4) feet below grade) Windpower Facilities from the Property,” and if the Company fails to do so within a year of terminating the easement, provides the landowner with the option to remove the same facilities and seek reimbursement from the Company. Additionally, Section 10.d of the

Easement requires the Company to provide “a letter of credit, or similar financial assurance” that “secur[es] performance” of the Company’s “obligation to remove the Windpower Facilities located on the Property,” in an amount “equal to the estimated amount” by which “the cost of removing the Windpower Facilities exceeds the salvage value of such Windpower Facilities.”

- c. No. This is unnecessary for the reasons set forth above in part b.
- d. See parts b and c above.

Preparer: Matt Harris
Title: Principal Attorney
Department: General Counsel
Telephone: 612-330-7641
Date: September 9, 2019

Exhibit V

Statement of Need and Reasonableness

In the Matter of the Proposed Adoption of Rules Governing
The Siting of Large Wind Energy Conversion Systems

Minnesota Rules chapter 4401

September 20, 2001

**STATE OF MINNESOTA
MINNESOTA ENVIRONMENTAL QUALITY BOARD**

**In the Matter of the Proposed
Adoption of Rules Governing
the Siting of Large Wind Energy
Conversion Systems**

**STATEMENT OF NEED
AND REASONABLENESS**

Minnesota Rules chapter 4401

I. BACKGROUND AND INTRODUCTION

In 1995 the Minnesota Legislature passed a law regulating large wind energy conversion systems. Minnesota Session Laws 1995, chapter 203, codified at Minnesota Statutes sections 116C.691 to 116C.697. The law required that any person seeking to construct a Large Wind Energy Conversion System (LWECS) in Minnesota was required to obtain a Site Permit from the Minnesota Environmental Quality Board.

A wind energy conversion system is a wind turbine or windmill or other device and associated facilities that converts wind energy to electrical energy. A Large Wind Energy Conversion System is a combination of these devices that generates 5,000 kilowatts or more. Minnesota Statutes section 116C.691

The law went into effect on August 1, 1995. At that time the EQB already had an application pending for a large wind energy conversion system, commonly referred to as the Northern States Power Company Phase II Project, a 107.5 megawatt project near Lake Benton, Minnesota. The EQB has successfully applied the new statutory requirements to the project and issued a Site Permit to NSP on October 31, 1995.

In December 1995, the EQB adopted Interim Site Permit Procedures for Large Wind Energy Conversion Systems. These Interim Procedures identified information to be included in a permit application and established procedures for providing the public with opportunities to participate in the permit consideration. The EQB successfully applied the Interim Site Permit Procedures to seven large wind projects since the adoption of the Interim Procedures in 1995.

The Minnesota Environmental Quality Board is proposing to adopt these rules under the statutory provisions relating to adoption of rules without a public hearing. Minnesota Statutes sections 14.22 to 14.28. These statutes allow an agency to adopt rules by giving notice to the public and allowing a period of time for the public to enter comments into the record, but do not require the agency to hold a public hearing. Because the EQB has had extensive experience applying the Interim Site Permit Procedures and issued seven site permits under those Procedures, and because the Procedures form the basis of these

proposed rules, the EQB has been able to bring these rules forward in a proven and polished form. Permit applicants and the public have had opportunities to participate in the issuance of site permits under essentially the same requirements and procedures proposed in these rules. Neither permit applicants nor the general public have complained about the manner in which the EQB has administered the site permit program under the Interim Procedures. This should allow these rules to go forward in an expeditious and noncontroversial manner.

Alternative Format

Upon request, this Statement of Need and Reasonableness can be made available in a different format, such as large print, Braille, or cassette tape. To make a request, contact Larry Hartman at the Minnesota Environmental Quality Board, 658 Cedar Street, St. Paul, Minnesota 55155, phone (651) 296-5089, fax (651) 296-3698, or e-mail, larry.hartman@state.mn.us For TTY, contact Minnesota Relay Service at 800-627-3529 and ask for EQB.

II. STATUTORY AUTHORITY

Minnesota Statutes section 116C.695 provides:

The board shall adopt rules governing the consideration of an application for a site permit for an LWECS that address the following:

- (1) criteria that the board shall use to designate LWECS sites, which must include the impact of LWECS on humans and the environment;
- (2) procedures that the board will follow in acting on an application for an LWECS;
- (3) procedures for notification to the public of the application and for the conduct of a public information meeting and a public hearing on the proposed LWECS;
- (4) requirements for environmental review of the LWECS;
- (5) conditions in the site permit for turbine type and designs; site layout and construction; and operation and maintenance of the LWECS, including the requirement to restore, to the extent possible, the area affected by construction of the LWECS to the natural conditions that existed immediately before construction of the LWECS;
- (6) revocation or suspension of a site permit when violations of the permit or other requirements occur; and

(7) payment of fees for the necessary and reasonable costs of the board in acting on a permit application and carrying out the requirements of sections 116C.691 to 116C.696.

As is more specifically explained below in the discussion for each individual section of the proposed rules, each of these areas described above is addressed in the rules.

Under this grant of authority, the EQB has the necessary statutory authority to adopt rules for the administration of permit applications for Large Wind Energy Conversion Systems.

Minnesota Statutes section 14.125 – a part of the Administrative Procedure Act that applies to rulemaking – provides that an agency shall publish notice of intent to adopt rules or a notice of hearing within 18 months of the effective date of the authorizing statutes or the rule authority expires. However, this provision does not apply to laws authorizing or requiring rulemaking that were enacted before January 1, 1996, and the statutes at issue here were adopted in 1995.

Because the Interim Site Permit Procedures worked well in issuing LWECs Site Permits, the EQB elected to focus its efforts on the existing and proposed wind projects rather than on the development of a comprehensive set of rules. Thus, it has taken several years to bring this set of permanent rules to rulemaking. However, the experience the EQB has had in issuing these other site permits over the past five years has assisted the EQB greatly in addressing all the matters that are included in the proposed rules.

II. NEED FOR THE RULES

Rules for the administration of site permits for Large Wind Energy Conversion Systems are needed because the EQB is likely to receive a number of permit applications over the next few years and into the future for large wind projects. Wind energy continues to be developed along Buffalo Ridge in southwestern Minnesota, and other areas of the state are likely to see development as well. It is preferable to have in place a comprehensive set of procedures and requirements that have the force and effect of law that can be applied in permitting proceedings for large wind projects. The Legislature declared in 1995 that the policy of the State is to site LWECs in an orderly manner that is compatible with environmental preservation, sustainable development, and the efficient use of resources. These rules are intended to further those legislative goals and policies.

III. COMPLIANCE WITH VARIOUS STATUTORY REQUIREMENTS.

A. SOLICITATION OF OUTSIDE OPINION

Minnesota Statutes section 14.101 requires an agency to solicit public comments on the subject of the proposed rulemaking. On February 12, 2001, the EQB published notice in the *State Register* of its intent to promulgate rules regarding the processing of permit

applications for Large Wind Energy Conversion Systems. 25 State Register 1382 (Feb. 12, 2001). The EQB also published notice in the *EQB Monitor* on February 19, 2001.

The public was given until April 6, 2001, to submit comments in response. The EQB did not receive a single written comment in response to the notice of intent to solicit outside opinion. The EQB also solicited public comments in March 1996 with a notice to that effect in the *State Register*. 20 State Register 2256 (March 11, 1996). No comments on the subject of the rules were submitted at that time either.

B. DISCUSSION OF TOPICS IDENTIFIED IN SECTION 14.131

Minnesota Statutes section 14.131 requires that an agency that is proposing to adopt rules must address a number of factors in the Statement of Need and Reasonableness. The required factors are addressed below:

- (1) A description of the classes of persons who probably will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule.**

The persons who will be primarily affected by these rules are the wind developers. Local governmental officials and the general public and organizations involved in environmental protection are also affected by these rules but not in the same way as the developers. Utilities that purchase electricity generated by wind power can be affected by these rules.

The wind developers will bear the costs of the proposed rules because they are the persons who apply for the permits to construct the Large Wind Energy Conversion Systems. These persons will have to pay fees for the processing of their permit applications. Also, the permit conditions that are imposed in a site permit, such as environmental mitigation and construction limitations and avian mortality and other studies, will also result in costs to the permittee to perform these tasks.

Permittees will also receive a benefit from these rules, however. The rules will inform wind developers what is expected of them in constructing large wind projects. The permit will authorize the permittee to proceed with construction of a wind project in a specific area, effectively precluding other developers from building in that area. The permit may be an effective tool in finalizing financing of a proposed project. The state permit will pre-empt local review of the project and eliminate the need to seek separate permits from a number of local governmental bodies.

Local government will be affected by these rules in the sense that a permit for a LWECs project will determine the location of the facility and the conditions under which the project is to be constructed and operated. Local government will be pre-empted from enforcing its own zoning and other regulations. Minnesota Statutes section 116C.697. Local residents may be impacted by the location of wind turbines near their property. Environmental organizations will be affected because the rules will determine how the

wind resources are developed in an orderly fashion that is protective of the resource and the environment. Utilities that will purchase the electricity generated by wind turbines will be affected through the availability and cost of such power.

(2) The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues.

The Environmental Quality Board is authorized by statute to charge permit applicants with the necessary and reasonable costs incurred by the EQB in processing the permit application. Minnesota Statutes section 116C.695(7). In addition, the EQB is authorized to make a general assessment against utilities in the state to fund the EQB's work with energy facilities. Minnesota Statutes section 116C.69, subd. 3. None of the expenses incurred by the EQB in either promulgating these rules or in administering permit applications will be paid for out of the general fund. Thus, implementation and enforcement of these rules should have no effect on state revenues.

The EQB estimates that in the next few years one or two permit applications for LWECS projects will be submitted each year. In the past six years since the law went into effect, the EQB has issued seven site permits for LWECS projects. The processing of these applications has cost about \$10,000 per application, although the first permit for the Northern States Power Company's Lake Benton I project was significantly higher, in excess of \$100,000, because it was a highly contested permit with a contested case hearing and an appeal to the Minnesota Court of Appeals by Kenetech Windpower, Inc.

(3) A determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule.

The EQB has operated under Interim Site Permit Procedures for the past five years. These rules are based on those Interim Procedures. Given the fact that neither the wind developers nor the general public have complained about any portions of the Interim Procedures for the past several years, it does not seem that the rules are unreasonably costly or intrusive. The EQB issued two Site Permits for LWECS in the year 2001 – one to Navitas Energy LLC and one to Chanarambie Power Partners LLC. It took about sixty days from acceptance of the application to complete the process and issue the permit, and it cost the applicants approximately \$10,000 each in fees charged by the EQB. The EQB believes that the proposed rules will provide for an expeditious consideration of a permit application with minimal cost to the applicant and ample opportunity for the public to be informed and to participate.

(4) A description of any alternative methods for achieving the purposes of the proposed rule that were seriously considered by the agency and the reasons why they were rejected in favor of the proposed rule.

In 1995 when the EQB first began implementing the statutory requirement to obtain a site permit for a LWECS, there were several wind developers who were competing for the

best lands along Buffalo Ridge for wind projects. In order to ensure that the best lands were available to the serious wind developers who were likely to proceed expeditiously with their projects, the EQB included in the Interim Site Permit Procedures a mechanism whereby a utility company that had applied to the Public Utilities Commission for a certificate of need for a wind project in a specific area and was directed by law to provide wind power, was entitled to have that area reserved for its development for a period of two years from the time the application was accepted by the PUC. Such a reservation is not included in the proposed rules.

The reason for eliminating this mechanism is because it is no longer necessary. Instead, the proposed rules allow a person to apply for a permit for a specific area, but the authorization to proceed is contingent on the permittee obtaining the wind rights in the area defined in the permit and obtaining a power purchase agreement with somebody who is going to buy the electricity generated. In the last few years it has been private companies, not public utilities, that have been applying for the wind permits. Developers with the wind rights and a commitment to buy the power, along with the financing to fund the project, are going to be able to proceed with their projects without any need to reserve an area in advance.

(5) The probable costs of complying with the proposed rule.

The most readily identifiable costs of the proposed rules are the fees to be charged for processing the permit application. These fees for the seven site permits issued to date have been approximately \$10,000 per permit proceeding, except for the first permit the EQB issued to Northern States Power Company in 1995. Unless a project is controversial for some reason, and a contested case hearing is required on the application, costs for processing a permit application should continue to be in the \$10,000 range.

Permittees, of course, will also incur costs in complying with the conditions imposed in the permit. Wind turbines can cost more than a million dollars apiece, so the costs of complying with permit conditions has not been a major factor for wind developers as far as the EQB knows. The avian mortality study that Northern States Power Company was ordered to perform in 1995 cost about \$500,000 to complete. That cost, however, is being shared proportionately by all wind developers who obtain permits from the EQB through 2002, depending on the megawatts of installed capacity permitted.

(6) An assessment of any differences between the proposed rule and existing federal regulations and a specific analysis of the need for and reasonableness of each difference.

This statutory requirement is primarily designed to address the situation where a proposed state rule is more stringent than a corresponding federal requirement. In this case, there is no corresponding federal regulation. Chapter 4401 applies to state permitting requirements for Large Wind Energy Conversion Systems. The federal government does not require such a permit for wind projects. The federal government could require approval for a wind project in certain circumstances, such as the case where

the wind turbines are near an airport or located on federal lands. However, the federal government does not require a permit for a wind project per se.

C. Performance-Based Analysis-Minnesota Statutes Section 14.002.

Minnesota Statutes section 14.002 requires an agency that is developing rules to describe in the Statement of Need and Reasonableness how it considered ways it might afford flexibility in complying with the regulatory requirements being proposed while still meeting the agency's objectives. Here, what the EQB tried to do was to minimize the burden on what must be submitted as part of a permit application, yet ensure that environmental and energy considerations are addressed, and to expedite the process, yet provide ample opportunity for public input.

An example of how the EQB provided flexibility is in part 4401.0450, subpart 2, where the proposed language gives a permit applicant the right to go ahead with the permit application even if the applicant does not have a power purchase agreement for the power that will be generated. Another example is in subpart 5 of the same part, where an applicant's lack of wind rights will not hold up processing a permit application, even though without the wind rights the proposer will not be able to build the project.

In order to provide information to the public, and yet keep the process moving, the proposed rules provide that upon acceptance of an application, the chair of the board will make a preliminary decision on whether a permit may be issued and prepare a draft site permit if the decision is to approve a permit. This draft site permit will quickly identify for the public and the applicant any areas of contention. In the end, the existence of a draft site permit should provide for an expeditious final decision.

Throughout development of the proposed rules, the EQB was cognizant of the desire by applicants to minimize the burden of applying for a permit and to provide for an expeditious final decision. The EQB also considered that the public wants to be informed about proposed projects and to have an opportunity to participate in the decisionmaking process. The EQB believes that these rules will result in an open, informed, expeditious permitting process. The statute gives the EQB 180 days from the time an application is accepted to reach a final decision. Minnesota Statutes section 116C.694(c).

All interested persons are encouraged to submit comments on any parts of the rules. If there are other instances where additional flexibility is possible, the EQB will certainly consider such suggestions.

D. NOTICE TO COMMISSIONER OF THE DEPARTMENT OF AGRICULTURE

Minnesota Statutes section 14.111 provides that before an agency may adopt rules that affect farming operations, the agency must provide a copy of the proposed rules to the Commissioner of the Department of Agriculture at least 30 days before publishing notice in the *State Register*. In this case, these proposed rules will not directly regulate farming operations, and this notice is probably not required. However, because the wind projects

to be permitted under these rules will likely be located on farm land, farming operations can be impacted when the wind turbines are constructed, and it is appropriate to notify the Commissioner.

Presently, the Commissioner of the Department of Agriculture, Gene Hugoson, is the chair of the Environmental Quality Board. Commissioner Hugoson has, of course, been advised of the possible adoption of these rules. This statutory requirement has been complied with.

E. ADDITIONAL NOTICE GIVEN TO THE PUBLIC

Minnesota Statutes section 14.23 requires an agency to describe in the Statement of Need and Reasonableness the efforts the agency made to notify persons or classes of persons who might be affected by the proposed rules about the proposed rulemaking. In addition to the statutory requirements to publish notice in the State Register and to mail notice to persons on the EQB rulemaking list, the EQB will also undertake other efforts to notify the public about these proposed rules.

The EQB will publish notice in the *EQB Monitor* of the proposed rulemaking. Each issue of the *EQB Monitor* is distributed to a lengthy list of persons and published on the EQB webpage. Many groups and individuals in Minnesota and elsewhere who are active and interested in environmental matters in the state are aware of the *EQB Monitor* and read it regularly.

In addition, the EQB will post a copy of the notice, the proposed rules, and this Statement of Need and Reasonableness directly on the internet. The EQB homepage contains an entry identifying the new items that have been recently posted by the EQB. When this material is first posted, the public will also see an entry highlighting the fact that this material is now available on the web.

The EQB has also over the past six years or so compiled a list of several hundred names of people who are known to the agency to be interested in wind development and new wind projects. The list includes names of wind developers, utility companies, local government officials, and the general public. The EQB will mail notice directly to the persons on this list, either by postal mail or by electronic mail.

Finally, the EQB will publish notice of the proposed rulemaking in local newspapers in southwestern Minnesota, where most of the wind development has occurred in the state. These will be the same newspapers that have been used in the past to provide notice about permit applications for specific projects.

V. RULE-BY-RULE ANALYSIS

This part of the SONAR is a rule-by-rule discussion of the reasons why the rule is being proposed. In a number of places, the EQB identifies documents that provide information that supports the proposed language

4401.0100 PURPOSE.

This part is simply a recitation of what chapter 4401 is intended to do and repeats the statutory policy regarding the orderly development of the wind resource in Minnesota. Minnesota Statutes section 116C.693. There are no substantive requirements in this part.

4401.0200 Definitions.

Subpart 1. Scope. This provision simply states that the terms defined in the rule are for purposes of chapter 4401.

Subpart 2. Associated Facilities. The term associated facilities is used in the statutory definition of “wind energy conversion system” but the Legislature did not define the term. It is helpful to provide a definition because an LWECS consists of not only the wind turbines, but also other associated facilities. Under the law even the associated facilities require a permit before construction is authorized.

The EQB proposes to define “associated facilities” as those “facilities, equipment, machinery, and other devices necessary to the proper operation and maintenance of a large wind energy conversion system, including access roads, collector and feeder lines, and substations.” This is simply a common sense definition. When permitting a LWECS, the EQB must not only identify the wind turbines to be included in the project, but also the other facilities and equipment that are necessary to make the wind turbines functional.

While it is not possible to identify specifically what facilities and equipment are included within the definition of “associated facilities” for every LWECS that might be proposed, there are some facilities that are certainly within the definition. The proposed definition lists access roads, collector and feeder lines, and substations as examples of “associated facilities.” These are the kind of facilities that have been included in other permitted projects as associated facilities. Surely, the electrical connections required to convey the electricity from the wind turbine to the transmission grid are associated facilities. Also, facilities necessary to transport the turbines and towers and other equipment to the site, like access roads, are the kind of activities that impact the environment and should be evaluated as part of the permit process. These roads are also necessary to maintain the turbines after they are up and running.

Other kinds of facilities and equipment and machinery that are necessary to the project will be determined during the permit process. The permittee can identify these facilities that are necessary to operation and maintenance of the LWECS. The reference to “necessary” facilities is specific enough to allow the applicant and the EQB to determine what is included within the definition.

Subpart 3. Board. The Minnesota Environmental Quality Board is sometimes simply referred to as the “board” in the rules for clarity and simplicity. The board is

comprised of the commissioners and directors of the state agencies that are members of the MEQB and the private citizens appointed by the Governor. Minnesota Statutes section 116C.03, subdivision 2. The board is the entity that makes the final decisions on permits and other matters.

Subpart 4. Chair. The “chair” is the person appointed by the Governor to serve as the chair of the board. There are several tasks identified in the rules for the chair of the Board to perform. As is explained below for specific rule language, it is reasonable to assign certain duties to the chair to ensure that the process moves expeditiously to a decision by the board. Since the board meets only once a month, it would slow down the process if every matter had to be brought to the board.

Subpart 5. Construction. The EQB does not want project proposers to begin construction of their proposed projects until after a permit has been issued. Part 4401.0300 provides that it is against the law to commence construction of an LWECs until the board has issued a site permit. The reason for prohibiting construction until the permit is issued is so that the applicant will not engage in conduct that irreversibly impairs the environment or make financial commitments that will make it difficult for the EQB to openly evaluate the project. It is common practice for permitting agencies to insist that projects not begin until a decision on the permit has been made. See, for example, the Minnesota Pollution Control Agency’s rules for water permits. Minnesota Rules part 7001.1020, subpart 8.

The question, of course, is what does it mean to commence construction. The kinds of commitments and activities described in the proposed rule – starting a continuous program of construction or site preparation - are the kinds of commitments and activities that would make it difficult for the EQB to deliberate to the extent it must on a permit request and to decide on the permit in accordance with the requirements of the law. These kind of efforts not only put pressure on the EQB to allow the conduct to go forward, but they can result in damage to the environment that could have and should have been avoided.

The proposed definition does not prohibit entering into power purchase agreements and obtaining wind rights from property owners and gathering wind data prior to obtaining a permit. Obviously, these kinds of tasks can be completed without impacting the permit process or the environment. Indeed, the EQB wants developers to negotiate and enter into power purchase agreements with utilities and negotiate and obtain wind rights from property owners. Certainly there is no objection to gathering wind data without applying for and obtaining a permit.

Nor does the rule make any mention of restricting the right to enter into contractual commitments related to the wind project. The EQB considered limiting the ability of a permit applicant to make binding contractual agreements to purchase facilities or equipment in advance of receiving a permit, but wind developers must be able to arrange for delivery of the turbines well in advance of applying for and receiving a permit from the EQB.

Subpart 6. Draft site permit. The draft site permit is a document that represents a preliminary decision by the chair that a site permit can be issued for the project. The draft site permit contains terms and conditions that the chair has determined might be appropriate to include in the final site permit. The draft site permit will assist the applicant and the public in understanding the issues associated with the proposed project

Subpart 7. EQB. This is the definition of the agency itself, including both the Board and the staff. Whenever it is the chair or the board that is responsible for performing a task or making a decision, the rules specify that. But in many instances it is the staff that will actually carry out certain tasks, and it is necessary to recognize that distinction. For example, it is the staff that will arrange for the publication of certain notices and maintain the accounting of the costs. In those instances in the rules where agency staff may perform the task, the rules spell out EQB, rather than the Board or the Chair.

Subpart 8. EQB Monitor. The *EQB Monitor* is a bulletin published by the EQB every other Monday. The *EQB Monitor* has been published by the EQB since 1977. The *EQB Monitor* is distributed widely to interested persons, and it is published on the web.

<http://www.mnplan.state.mn.us/eqb/monitor.html>

The public has come to expect notices of EQB matters to be published in the *EQB Monitor*, and there are several references in the rules to publication in the *EQB Monitor*.

Subpart 9. Large wind energy conversion system or LWECS. This definition is the statutory definition in Minnesota Statutes section 116C.691, subdivision 2.

Subpart 10. Person. Person needs to be defined broadly to include more than just individual human beings. The definition here is the same definition used in the Power Plant Siting Rules. Minnesota Rules part 4400.0200, subp. 12.

Subpart 11. Power Purchase Agreement. Individuals and corporations and other organizations that are not in the utility business are often the persons who propose large wind energy projects. These wind developers intend to sell the power generated to utilities like Xcel Energy and Great River Energy, who will then deliver the electricity to the ultimate consumers. Since the developers do not have their own transmission facilities, they need an agreement with the utilities to purchase the power to be generated. This definition defines power purchase agreement to be any kind of enforceable agreement between the developer and the utility for purchase of the wind power.

Subpart 12. Site Permit. The Site Permit is the document that the board issues at the completion of the process that authorizes the applicant to proceed with construction of the project under the terms and conditions contained in the permit.

Subpart 13. Small Wind Energy Conversion System or SWECS. This definition is identical to the statutory definition. Minnesota Statutes section 116C.691, subdivision 3. Every wind energy conversion system is either a SWECS or a LWECS but the EQB has jurisdiction only over the LWECS.

Subpart 14. Wind Energy Conversion System or WECS. This definition is identical to the statutory definition as well. Minnesota Statutes section 116C.691, subdivision 4. The Legislature intended in the statute and the EQB intends in the rule to promulgate a broad definition that will encompass any kind of device that captures the wind to use for the generation of electric energy.

4401.0300 PERMIT REQUIREMENT

Subpart 1. LWECS. This rule is simply a reiteration of the statutory mandate that a permit is required to construct a Large Wind Energy Conversion System. The rule also requires that the permit must be obtained before construction of the system can commence. Since the term “construction” is defined in part 4401.0200, subpart 5, there should be no confusion on the part of developers what is allowed to happen before the permit is issued. The explanation for the definition is included in the discussion for that subpart.

Subpart 2. SWECS. The Legislature provided that a Site Permit from the EQB is not required to construct a wind project of less than 5 megawatts and this rule recognizes that limitation. The EQB has no jurisdiction over SWECS, and the second sentence of this rule recognizes that local units of government are responsible for regulating the small wind projects. No state environmental review is required of an electric generating facility of less than five megawatts. Minnesota Rules part 4410.4600, subpart 3.

Subpart 3. Expansion of Existing System. The purpose of this provision is to require EQB review and approval before an existing LWECS is expanded by any amount or before an existing SWECS is expanded by an amount that allows the SWECS to generate more than 5 megawatts of electricity. Since the Legislature required any project over 5 megawatts to undergo state review, it makes sense to give the EQB an opportunity to analyze any expansion of an existing project when more than 5 megawatts of power are involved. The EQB wants to avoid the situation where several small projects are constructed without state review when in reality the projects are essentially one large project that requires an EQB permit.

The test proposed in the EQB rule for determining whether several small projects are really a large project is taken from the statutory language passed by the Legislature in the Energy Security and Reliability Act of 2001. Minnesota Session Laws 2001, chapter 212, article 5, section 2. In the 2001 legislative session, the Minnesota Legislature addressed this issue in terms of the incentive payment that is available to developers of small wind energy projects under two megawatts. Minnesota Statutes section 216C.41. The incentive payment is 1.5 cents per kilowatt-hour for qualifying facilities. The

Legislature was concerned that developers might attempt to skirt the limitations of the incentive payment provision by proposing several small wind projects, none of which exceeds two megawatts alone but which in total exceed that number, by proposing each project under a different name. In that way a developer might seek an incentive payment for several small projects that in reality are one large project in excess of the qualifying amount.

The language passed by the Legislature reads as follows:

(b) Beginning January 1, 2002, the total size of a wind energy conversion system under this section [216C.41] must be determined according to this paragraph. Unless the systems are interconnected with different distribution systems, the nameplate capacity of one wind energy conversion system must be combined with the nameplate capacity of any other wind energy conversion system that is:

- (1) located within five miles of the wind energy conversion system;
- (2) constructed within the same calendar year as the wind energy conversion system; and
- (3) under common ownership.

In the case of a dispute, the commissioner of commerce shall determine the total size of the system, and shall draw all reasonable inferences in favor of combining the system.

(c) In making a determination under paragraph (b), the commissioner of commerce may determine that two wind energy conversion systems are under common ownership when the underlying ownership structure contains similar persons or entities, even if the ownership shares differ between the two systems. Wind energy conversion systems are not under common ownership solely because the same person or entity provided equity financing for the systems.

Minnesota Statutes section 216C.41, subd. 5, as amended by Minnesota Laws 2001, ch. 212, art. 5, section 2.

The language in the proposed rule is essentially the same as the statutory language. The test applied by the Commissioner of the Department of Commerce for incentive payment purposes will be the same test applied by the EQB for permitting purposes. The Commissioner of Commerce is a member of the EQB Board and there will be cooperation between Commerce and the EQB in resolving whether two or more small projects are really one larger project.

4001.0400. FILING OF APPLICATION FOR SITE PERMIT.

Subpart 1. Number of Copies. The rule requires an applicant to file three copies of the application with the EQB. The reason three copies are required is so that the Chair can have a copy and the staff can have two. It is reasonable to require the applicant to provide enough copies to allow the staff and the Chair to conduct their review of the adequacy of the application. As is explained later, once the application is accepted the applicant will have to submit additional copies so the EQB can provide copies to all those persons who normally receive such documents.

Subpart 2. Electronic Copy. The EQB has been putting more and more information on its web page. The public has come to expect to find information about matters pending before all state agencies on the web. It is a convenient and inexpensive way to provide information to the public. In order to put the application on the web, the applicant must provide an electronic version of the document. The rule recognizes that an applicant can ask for a waiver of the requirement to provide an electronic copy, but it is hard to imagine in today's computer world that an electronic version is not available. Perhaps certain maps or photographs may not be available but even that situation should not arise often.

Subpart 3. Proprietary information. The purpose of this subpart is simply to recognize that on occasion an applicant may provide information as part of an application that is protected from public disclosure by Minnesota law. The most likely statute providing such protection is the Minnesota Government Data Practices Act, Minnesota Statutes chapter 13, and the most likely classification is trade secret information. Minnesota Statutes section 13.37(b). However, an applicant may have other reasons to protect certain information and may certainly rely on those.

The issue over public inspection of information in wind project applications has not been a problem in the past, but the rule nonetheless creates a mechanism for handling a request by an applicant to protect certain information from public disclosure. The request will be brought to the full Board for a determination of whether the information actually qualifies for the classification. If the Board disagrees with the applicant, and is of the view that the information is public information, the applicant can either allow the public to inspect the information, withdraw the application, or challenge the Board's decision in court. In any event, information that an applicant believes is not open for public review will not be made available to the public without affording the applicant an opportunity to establish that the information is protected.

4401.0450 CONTENTS OF SITE PERMIT APPLICATION.

Subpart 1. Applicant. This subpart requires the applicant to provide basic background information about the person or persons applying for the LWECS Site Permit. This same kind of information is required from applicants for other kinds of energy facilities permitted by the MEQB. See Minnesota Rules parts 4400.0600 (transmission lines), 4400.2600 (power plants), and 4415.0115 (pipelines). This kind of

information is necessary to ascertain who the permittee or permittees should be and also to provide contact persons for purposes of mailing notices and asking questions.

Item A. A letter of transmittal from an authorized representative or agent of the applicant is simply a means of submitting the application.

Item B. Providing the complete name, address, and telephone number of the applicant and authorized representatives ensures that the EQB staff can contact the right people if questions should arise. This is especially important when the application is first filed with the EQB if the staff has not had much prior contact with the applicant and learned the names of the appropriate people with knowledge about the project.

Item C. Asking for the signature of the preparer of the application is certainly a reasonable request. The preparer of the application is usually the person who is most knowledgeable about the project, or at least knows who to talk to about a particular matter. Applicants often use consultants to prepare and submit their applications. It is helpful to know who the consultant is so that questions may be directed to the consultant to clarify data or information in the application and to arrange for the transfer of an electronic version of the application.

Item D. The EQB wants to know whether the applicant is actually the person who will construct and operate the LWECs. It is important to determine the appropriate persons to name as permittees on the permit and to ensure that any conditions included in the permit will be complied with. The public usually wants to know the names of all persons involved with a proposed project. For example, in one application proceeding Northern States Power Company was the applicant, Zond, Inc. was the builder, and the permittee was Lake Benton Power Partners, LLC.

Item E. Asking the applicant to identify any other wind projects in which the applicant has an ownership or other financial interest will allow the EQB to determine whether a particular project is part of any other wind projects. It will also allow the EQB to consider the applicant's performance regarding these other projects and evaluate the applicant's ability to comply with permit conditions.

Item F. As with item D, the EQB wants to ensure that the proper persons are named as permittees. If the operator of the LWECs is required to ensure compliance with certain operating conditions, the EQB wants to know who that person is who will be performing certain operational tasks.

Item G. This last item simply asks the applicant to identify who should be named as permittees on the permit. It has been the EQB's experience that oftentimes a wind developer will incorporate a new organization for purposes of a particular project. The EQB needs to know the precise name of the applicants, and whether they are individuals, corporations, limited liability partnerships, or other organization. Asking the applicant to identify the precise names and structure of the permittees is the best way to ensure that the correct names are used.

Subpart 2. Certificate of need or other commitment.

Item A. A certificate of need is a document issued by the Minnesota Public Utilities Commission. Minnesota Statutes section 216B.243, as amended by Minnesota Laws 2001, chapter 212, art. 7, sec. 33. A certificate of need is required for any power plant over 50 megawatts. Minnesota Statutes section 216B.2421, subd. 2(a), as amended by chapter 212, art. 7, sec. 29.

If a certificate of need is required, the applicant should file that application with the PUC prior to filing a site permit application with the MEQB. See Minnesota Statutes section 216B.243, subd. 4, as amended by chapter 212, art. 7, sec. 32. The applicant can file a permit application with the EQB before the PUC makes a decision on the certificate of need, but the EQB cannot issue a permit until a certificate of need is issued. Minnesota Statutes section 216B.243, subd. 2. Because the siting process will take less time to complete than the certificate of need process, the board can process the site permit but not make a final decision on the site permit until a certificate of need has been granted. The need and siting decisions for other energy facilities are made in the same sequence.

Item B. This provision recognizes that the Board may ask the PUC to determine if a certificate of need is required for a particular project. Because wind turbines are modular in nature, additional turbines may be added to a project at almost anytime. If, for example, a 45 MW project is built (for which a certificate of need is not required because it is under 50 MW), and the developer later proposes to add another 10 MW, it may be appropriate for the PUC to determine if a certificate of need is required.

Item C. This provision addresses those wind projects for which a certificate of need is not required because the LWECs is under 50 megawatts. In the absence of a need decision, the board wants to know what the applicant intends to do with the power that is generated. The board does not want to issue a site permit for a project that may not be built.

The board explained the reasons for requiring a power purchase agreement in two recent wind permit proceedings. The EQB in May 2001 issued permits to two developers for projects for which they did not have a power purchase agreement. One permit was for Navitas Energy, LLC, and the other was for Chanarambie Power Partners, LLC. for projects in Murray and Pipestone Counties. In both cases, the permittee had not finalized a power purchase agreement, at least not for all the power it intended to generate. The EQB issued both permits but conditioned them on the requirement that the permittee obtain a power purchase agreement within a specified time. The EQB made a specific finding regarding this issue in those permit proceedings, which reads as follows: “The purpose of the requirement for a power purchase agreement was to ensure that a developer did not tie up a large area of land for wind generation when the project was not likely to go forward in a timely fashion.” Finding No. 44, Navitas Energy, LLC.

The rule provides that the chair may request the applicant to submit a copy of the power purchase agreement or other document confirming the sale of the power. It is reasonable to recognize that the EQB can insist on confirmation that a power purchase agreement or other enforceable arrangement exists for sale of the power. However, the power purchase agreement is sometimes a confidential document, and the EQB has not in the past required the entire document to be submitted. The EQB may not need to know the terms of the sale, or the price, or other matters, for example, but only that an enforceable agreement exists. In such event, the EQB can request that only certain parts of the agreement be submitted.

While it is reasonable to expect a wind developer to tell the EQB what it intends to do with the power it plans to generate, the lack of a power purchase agreement does not necessarily mean that the permit will be delayed or denied. Both the Navitas permit and the Chanarambie permit were conditioned on the permittee obtaining a power purchase agreement within a relatively short period of time, and the permittees were not allowed to proceed with construction until they obtained a power purchase agreement. This is a reasonable solution to the situation where a developer wants to get a project approved but has not finalized the purchase arrangement yet, and this approach is continued in the rules.

Subpart 3. State policy. This part requires the applicant to describe in the application how the LWECS project will comport with a state policy that provides for environmental preservation, sustainable development and efficient use of resources. Minnesota Statutes section 116C.693. This part is significant in that it expresses the state policy and provides the applicant an opportunity to demonstrate how the LWECS project addresses these general policy areas. The applicant's discussion of this may also provide the Board with additional knowledge about development of the wind resource that may be helpful in the review and permitting of the LWECS project.

Subpart 4. Proposed site. This provision requires the applicant to submit basic information about the proposed site.

Item A. The boundaries of the project must be identified with some specificity so the EQB can determine whether the project interferes with any other existing or proposed wind projects. Applicants for existing projects have not had difficulty in the past in providing the EQB with United States Geological Survey (USGS) maps or other maps showing the boundaries of the project. The EQB will specifically identify the boundaries of the project in any permit that is issued, so the applicant must specify the area for which approval is being sought.

Item B. The EQB wants to know the characteristics of the wind within the proposed project boundaries. In order to ensure the orderly and efficient use of the wind resource, as directed to do by the Legislature, it is important to know the quality of the wind in the area to be developed.

The information required under this item is the kind of information developers have to gather to determine whether a proposed location has the kind of winds that are required for a successful wind project. The ten characteristics identified in this rule provide information on the speed of the wind, the seasonal variation in the wind, the frequency of the wind, wind direction, height of the wind above grade, and other criteria that are important in siting the location of wind turbines. Developers are not going to propose a project unless they have gathered this kind of information about the wind. It has not been a problem with past permits for applicants to provide the information requested here.

Item C. Since other meteorological conditions like rainfall and snowfall and temperature can affect the amount of electricity generated by wind turbines, it is reasonable to request an applicant to supply this kind of information. Again, any applicant for a wind project costing millions of dollars is going to have this kind of information available.

Item D. The reason for identifying the location of other wind turbines in the general area of the proposed LWECs is to ensure that one project does not interfere with another. If turbines are sited too close together, a downwind turbine can experience what's called wake loss. Wake loss results when the wind is sent into a turbulent state after encountering a turbine. If a turbine is located too close downwind, usually within ten rotor diameters of the upwind turbine, the wind will not have had a chance to recover to its normal state, and the turbulence will result in less efficient generation of electricity at the second turbine. Because the EQB wants to ensure efficient use of the wind resource, it is preferable to avoid wake loss to the extent possible. By taking into account existing turbines, the EQB can evaluate the potential for wake loss with a proposed project.

Subpart 5. Wind rights. In order to construct wind turbines in a particular location, the permittee must have the right to place the turbines on the land in the desired location. Wind developers have negotiated easements and other agreements with many landowners along Buffalo Ridge in southwest Minnesota and in other areas of the state with potential wind resources. It is reasonable and appropriate to expect a permit applicant to describe what wind rights the applicant holds within the proposed boundary of the project. The manner in which the EQB will address the issue of wind rights with particular projects is discussed under part 4401.0610, subpart 1.

Subpart 6. Design of project. This rule requires an applicant to provide some detail about the project being proposed. This information is required so the EQB can know specifically what is being proposed, evaluate the project and identify any problem areas, and determine necessary conditions for any permit that is issued.

Item A. The applicant must identify how many turbines the project will include and where the applicant intends to install those turbines. Identification of turbine location is necessary for all kinds of reasons, everything from environmental impacts to wake loss. The EQB understands, however, that at the time the application is submitted, the applicant can only estimate where the turbines will be located, because micrositing

occurs after the permit is issued and construction is about to begin. The permit does not preclude the permittee from moving the location of particular turbines from what was anticipated, as long as other various restrictions of the permit are complied with, such as setback requirements and restrictions on placing turbines in areas like wetlands. Typically, a site permit for a wind project contains a condition requiring the permittee to inform the EQB of the precise locations of the turbines when the micrositing is complete.

Item B. The EQB needs to know the specifics of the turbines that will be installed – the height, the structure, the blade diameter, and other data. This information is necessary to evaluate the possible impacts of the project on the environment and to consider the energy production expected.

Items C and D. The wind turbines are only a part of any LWECS. A wind project also involves all kinds of electrical equipment, like transformers and collection and feeder lines, and other equipment like maintenance and operational equipment. In order to evaluate the complete impact of a proposed project, these associated facilities must also be identified. It is appropriate to require the applicant to identify what additional facilities are associated with the particular project being proposed. In addition, this will ensure that any permit that is issued will be written to cover everything that is associated with the project.

Subpart 7. Environmental impacts. Of course, the EQB must investigate and review the environmental impacts associated with any proposed wind project. The applicant is the one that must provide the information about the potential impacts of the project. What this rule requires is the inclusion in the application of information on the potential impacts of the project, the mitigative measures that are possible, and adverse environmental effects that cannot be avoided. This is the typical analysis with any project undergoing environmental review by the EQB or other agencies.

The effects identified in items A – R in the rule should cover every potential impact of a LWECS. It is not necessary to discuss every single one of these in this Statement of Need and Reasonableness. Suffice it to say that an applicant must identify any and all potentially adverse impacts that may be caused by a proposed project and mitigative measures that might be implemented with regard to those impacts.

Wind projects have not been found to have significant environmental and human impacts. Wind projects along Buffalo Ridge have been generally well accepted by residents and others concerned about the environment. Permit conditions have been satisfactory to address specific concerns like wetlands and wildlife management areas with past permits. One area of concern that was raised initially was the possibility of avian fatalities caused by the turbines.

As part of the first wind permit issued by the EQB, the Board required Northern States Power Company to conduct an avian mortality study along Buffalo Ridge. This study was conducted between 1995 and 2000, and a report on the study was completed in 2000. The researchers found that the number of avian fatalities from the wind turbines at

Buffalo Ridge is essentially inconsequential, although there was some bat mortality found. The wind developers are presently conducting additional studies on bat mortality.

Because the environmental and human consequences of wind turbines are relatively minor and can be minimized by appropriate permit conditions, the EQB is not requiring in these rules that an Environmental Assessment Worksheet or an Environmental Impact Statement be prepared on a proposed LWECS. It is sufficient that the environmental impacts and mitigative measures be discussed in the application itself. If an issue of concern were to be raised specific to a particular wind project, the EQB could ask for additional examination of those impacts and could address the concern through permit conditions or by moving some of the turbines

Subpart 8. Construction of project. Construction itself can cause environmental impacts, so it is necessary for the applicant to address the manner in which the project will be constructed. It may be necessary to include conditions in the permit requiring mitigative measures during construction of the turbines.

Subpart 9. Operation of project. Once the wind turbines are up and running, they must be operated and maintained. The applicant must describe its operation and maintenance procedures so any impacts associated with those tasks can be identified and addressed.

Subpart 10. Costs. The EQB uses the cost information to evaluate whether the project is making efficient use of the wind resource. Also, cost information is important to place in perspective the costs of mitigating any environmental impacts that are identified.

Subpart 11. Schedule. The EQB wants to know at the time the application is submitted what the developer's proposed schedule is. The EQB understands that sometimes schedules slip, but at least the applicant can provide an anticipated schedule. The rule requires the applicant to describe the anticipated schedule for a number of tasks, including obtaining the permit, acquiring land, obtaining financing, procuring equipment, and completing construction. This information will give the EQB a good overall view of the tasks required to be completed to actually bring the project online, and help identify any constraints in the schedule. The expected date of commercial operation is helpful to the EQB and to other state agencies as well. The public, also, is interested in the anticipated schedule for construction of the project.

Subpart 12. Energy projections. The EQB has been collecting data on how well the wind turbines in the state have been performing. At the time the application is submitted, the applicant can only make projections on the energy to be generated, but it is helpful to know what the developer expects to receive from the turbines planned for installation.

Subpart 13. Decommissioning and restoration. Just like any other project, a LWECS will not last forever. At some point the wind turbines and other associated

facilities will have to be decommissioned. The EQB wants to know upfront how the developer plans to pay for removal of the turbines at the end of their useful life. Since the wind turbines may last for thirty years or more, and the ownership of the project may change over the years, some arrangements must be made from the start to provide funding for the ultimate decommissioning. In other cases wind developers have created funds specially set aside for this purpose, and the funding comes from payments made periodically from sale of the electricity. The EQB is not promulgating one specific requirement for ensuring funds are available for decommissioning, and the EQB will allow applicants to be creative provided the EQB can be assured the money will be there when needed.

Subpart 14. Identification of other permits. It is not unusual with any project requiring a permit that the applicant identify what other permits are required before the project can go ahead. These permits are normally such permits as a Department of Natural Resources water crossing permit or a wetland survey and a Pollution Control Agency surface water discharge permit. Sometimes federal approval may be required, depending on the location of the project. For example, approval from the Federal Aviation Administration (FAA) may be required if an airport is nearby, or approval from the Bureau of Land Management could be necessary if the project were to be located on federal lands. Local government is pre-empted from enforcing its zoning and land use ordinances when the EQB has jurisdiction over a project. Minnesota Statutes section 116C.697.

4401.0460 ACCEPTANCE OF APPLICATION.

Sections 4401.0460 through 4401.0550 establish the procedures the EQB will follow in acting on an application for a site permit for a LWECs. The Legislature specifically directed the EQB to adopt rules establishing such procedures. Minnesota Statutes section 116C.695(2).

Subpart 1. Action by chair. The chair has thirty days under this requirement to accept or reject an application once it is submitted to the EQB. The statute specifically provides that it is the chair who decides on the completeness of the application. Minnesota Statutes section 116C.694(c). Allowing the chair to make this decision, rather than the board, will help to speed the process along. Ultimately, of course, it is the full board that will decide whether to issue a permit and what conditions to include.

The chair has thirty days from the day the application is submitted to make a decision on the completeness of the application. Acceptance of the application also triggers the start of the 180 days the EQB has to act on the application. Minnesota Statutes section 116C.694(c). Normally, wind developers have been in contact with the staff prior to submission of an application and have allowed the staff to comment on draft applications. Thus, when the application is submitted in final form, it contains the information the staff believes is necessary and is quickly accepted. If the chair should reject an application, the rule requires the chair to identify in writing the deficiencies that exist and how the application can be corrected.

Subpart 2. Notice of application acceptance. It is important that notice be provided quickly to persons who are likely to be interested in the fact that a wind permit has been applied for. This subpart requires the applicant to notify local officials and to publish notice in a newspaper of general circulation in each county in which the project is proposed to be located within fifteen days after acceptance of the application. Fifteen days is a reasonable period of time. There is no reason notice can't be published in the newspaper within a few days or a week after acceptance of the application.

This subpart provides that failure to give this notice or a delay in giving the notice could result in the permit being denied or a decision being delayed. It is appropriate to provide that these kind of sanctions could be imposed because the EQB has only 180 days to act on a permit application once the application is accepted, and it is important to give the public ample opportunity to respond to the proposal.

However, it is unlikely that such sanctions would be imposed. In most instances, the public will have already been informed about the possibility of a wind project in their vicinity by the time the application is submitted to the EQB, since usually the word about a proposed project is in the news locally before a permit is even applied for. Also, the subpart provides that the chair may elect to relieve the applicant of giving this notice. The reason for this is oftentimes the EQB is prepared to give the notice specified in part 4401.0550, subpart 1, at the same time the applicant is required to give notice under this subpart. In such situations, it makes sense to combine the notice to provide all the information specified in 4401.0550. Further, the EQB will post the application on its web page as soon as possible after the application is accepted, and the use of the internet helps provide notice very quickly.

Subpart 3. Additional copies. The purpose of this subpart is to ensure that a hard copy of the application is available in the area where the project is proposed to be located. The rule requires the applicant to provide a copy to the cities, townships, and counties where the project is located. These local governmental offices are a convenient place for residents in the area to come to review a hard copy. The rule directs local officials to make the application available for public inspection. The EQB has found local officials more than willing to perform this task in the past.

The applicant also must provide a hard copy to the Minnesota Public Utilities Commission and the Minnesota Historical Society. The PUC is interested in all wind projects because the PUC may have evaluated the project as part of a certificate of need proceeding or may have to consider the project in a subsequent rate hearing. The Department of Commerce will also be interested in all wind projects, but since the Commissioner of the Department of Commerce is a member of the EQB board, that agency will always be provided with such applications.

The rule requires the applicant to provide a hard copy of the application to each landowner within the boundaries of the proposed LWECS site. These are the people who are most directly affected by the project and who are most likely to review the

application. The EQB experience with all kinds of energy facilities is that the landowners whose property is most directly affected want to be provided with a hard copy of the application.

Once an application has been accepted, the applicant must submit a number of additional copies to the EQB. The rule does not specify how many copies of the application the applicant must submit. The chair will inform the applicant of the number. The EQB would like to minimize the number of hard copies that are required, but the EQB has a fairly extensive mailing list of agencies and citizens who require a copy of such documents. It is likely that the EQB will require 40 or more copies.

4401.0470 PUBLIC ADVISOR The Power Plant Siting Act, Minnesota Statutes sections 116C.51 to 116C.69, which was passed in 1973, gives the EQB jurisdiction over power plants other than wind projects and over high voltage transmission lines. One of the requirements of the Power Plant Siting Act is that the EQB appoint a staff person to act as a public advisor when a permit application for a power plant or transmission line is submitted. Minnesota Statutes section 116C.59, subd. 3. There is no corresponding requirement in the wind power statutes, but the EQB believes that continuation of this practice is desirable. Therefore, the EQB is proposing to adopt this section to provide for the appointment of a staff person to assist the public in participating in LWECS permit proceedings. The EQB has appointed a public advisor in the other wind project permit proceedings and the public has appreciated having such a person to consult about the process.

The language in this section is based on the language in the existing power plant siting rules. Minnesota Rules part 4400.0900. It is important to emphasize in the rule that while this staff person can assist the public in understanding the process, the staff cannot act as a legal adviser or advocate for any member of the public.

4401.0500 PRELIMINARY DETERMINATION AND DRAFT SITE PERMIT.

Subpart 1. Preliminary determination. This rule provides that within 45 days after acceptance of an application, the Chair must make a preliminary determination whether a permit may be issued and prepare a draft site permit with proposed conditions if a permit may be issued. This is the process followed by other agencies in administering permit programs. See the Pollution Control Agency rules on permits. Minnesota Rules parts 7001.0100 and 7001.1080.

The existence of a draft site permit will help the public and the applicant focus on any issues that are associated with the project. It will convey a preliminary decision by the chair that a site permit may be issued, and the proposed conditions will identify any potential issues of concern. The EQB has issued seven site permits for LWECS over the last six years and these permits have been quite similar in content. The EQB believes that it can quickly make a preliminary decision on whether a permit is appropriate and can draft the document with conditions based on the other permits that have been issued.

Subpart 2. Effect of draft site permit. This provision is necessary to clarify that issuance of a draft site permit does not mean that a permit is guaranteed. The EQB could still deny the permit based on information that is collected during the permit process. The permit conditions can certainly be changed in any manner that is supported by the record. Also, this rule emphasizes that a draft site permit does not authorize anything. A permit applicant is not authorized to begin construction of a wind project simply because the chair has sent a draft site permit out for public comment.

4401.0550 PUBLIC PARTICIPATION. This rule is intended to ensure that the public has an opportunity to participate in the processing of a permit application for a proposed wind project. The statute requires the EQB to include in its rules procedures for notifying the public of an application and affording opportunities for a public information meeting and a public hearing on a proposed LWECS. Minnesota Statutes section 116C.695(3). Some of the provisions in these proposed rules intended to provide public notice, part 4401.0460, and to assist the public, part 4401.0470, have already been discussed. This rule addresses additional notice and opportunities for public participation in the process.

Subpart 1. Public notice. Part 4401.0460 specifies requirements for notifying the public that a permit application for a wind project has been accepted by the EQB. This rule, part 44001.0550, specifies the notice that must be given by the EQB, not the applicant, about how the EQB will actually process the application and how the public may participate.

The rule does not specify when the notice must be given, but since it is not given until after a draft site permit is prepared, it could be as long as 45 days after acceptance of the application. However, with the Navitas and Chanarambie permits issued in May 2001, the staff had a draft site permit prepared within days after the application was accepted, so this notice was provided shortly after the application was accepted. That is the reason part 4401.0460, subpart 2, recognizes that these two notices may be combined.

Items A, B, and C. Some of the information – the name of the applicant and the description of the project and the location of a hard copy of the application– are repetitious from information the applicant must provide under 4401.0460. But it is helpful for the EQB to include that information in its notice as well.

Item D. This item requires a statement in the notice that a draft site permit is available. The draft permit will focus the issues for the public so it is important that the public knows that such a document is available.

Item E. This provision requires the EQB to identify the name of the public advisor appointed by the Chair. The public needs the identity of this person so the public knows who to contact at the EQB staff with its questions.

Item F. The notice must contain the time and place of a public information meeting that the EQB will hold on every site permit application. As discussed below, the

public must be given notice that a public meeting will be held in the area of the proposed project before the EQB will make a decision on a permit.

Item G. The notice must notify the public that comments may be submitted on the draft permit within a specified time period. The time period is discussed under subpart 4 of this rule. Also, the notice must inform the public that any person can request a contested case hearing on the matter. This hearing option is discussed under subpart 5.

Item H. Item H. requires the EQB to explain the anticipated procedures for reaching a final decision on the permit application. This requirement is another example of how the EQB wants to ensure that the public is fully aware of its opportunities to participate in the permitting process.

A related issue that should be discussed here under this proposed rule is the authority of the EQB to appoint a citizen advisory task force. The Power Plant Siting Act, which applies to large electric power generating plants and high voltage transmission lines, provides that the EQB can create a citizen advisory task force to assist the agency in siting and routing these kind of projects. Minnesota Statutes section 116C.59, subd. 1, as amended by Minnesota Laws 2001, chapter 212, article 7, section 18. These wind rules on LWECS do not contain a specific provision for creating such a task force. The reason for that is unlike the traditional coal-fired and natural gas-fired power plants, where several sites can be considered for the location of the plant, the wind developer has one particular area in mind for the project. There is not a great deal a citizen advisory task force can do with regard to selecting a site for a wind project.

In 1995, with the Lake Benton I project, the EQB actually did appoint a citizen advisory task force. That project, however, was proposed under the old power plant siting provisions that required an applicant to propose at least two sites. The task force did have two sites to review and did make a recommendation on a preferred site. Today, however, under these newer wind siting statutes, there are not two sites to review, and there is no role for a citizen advisory task force to play in reviewing potential sites.

Subpart 2. Distribution of public notice. While subpart 1 specifies what has to be in the notice the EQB will give the public, this rule addresses how to give that notice. Newspaper ads have historically been an effective means of alerting the public to matters pending before the EQB, and this rule continues that practice. Also, the EQB usually compiles a list of names and addresses of people who are known to the EQB to be interested in certain matters or certain kinds of matters, and the EQB will assuredly contact directly any person who asks to be notified about wind permits generally or a certain project specifically. Finally, the EQB Monitor has been published by the EQB for about 25 years, and the public has come to expect information like notice of permit applications in the Monitor. The Monitor is also available electronically on the EQB webpage, and thousands of people often check the Monitor on their computers for information.

Subpart 3. Public comments on draft permit. The public must be given an opportunity to submit comments on a proposed project. This rule gives the public a minimum of 30 days after publication of the draft site permit in the EQB Monitor to submit comments. The EQB can allow more than 30 days if the Chair believes that more time is appropriate in the circumstances. Also, the rule allows the Chair to extend the comment period if necessary to accommodate members of the public who have a good reason for needing more time. Further, the public will actually have more than 30 days from the time the notice of the acceptance of the permit application was first given and the application made available in local governmental offices.

Subpart 4. Public information meeting. The rule requires that the EQB hold a public informational meeting on each permit application. The EQB has held public informational meetings on all previous wind projects that have been permitted, and the EQB, and the public presumably, has found these meetings to be helpful in gathering information on a particular project. It is worthwhile to continue this practice.

The rule specifies how the meeting should be noticed and scheduled. The time frames provided are designed to afford the public an opportunity to meet with the EQB staff and the applicant at the meeting, ask their questions and gather information, and then have time to submit written comments if desired. The rule provides that the Chair can extend the comment period upon request.

Subpart 5. Contested case hearing. The statute requires that the EQB rules must provide for the conduct of a public hearing. Minnesota Statutes section 116C.695(3). The EQB does not read the statute to require a contested case hearing presided over by an administrative law judge in every case, as is specified in the Power Plant Siting Act for large electric generating power plants and high voltage transmission lines. Minnesota Statutes section 116C.57, subd. 2d., as amended by chapter 212, article 7, sec. 10. Instead, the EQB believes it is in compliance with the statute to provide for public meetings and an opportunity to request a contested case hearing in an appropriate situation. With only 180 days to complete the permitting process, it is unlikely the Legislature intended the EQB to hold a contested case hearing on every permit application.

During the public comment period, any person may request a contested case hearing. The person requesting the hearing must put the request in writing and specify the issues to be addressed in the hearing and the reasons why a hearing is necessary. The request will be presented to the full board. There must be a good reason to go through the time and expense of a contested case hearing. Item B. provides that the board will hold a hearing if it finds that a material issue of fact is in dispute and the holding of a hearing would aid the EQB in making a final determination on the permit application. These are reasonable criteria to apply in determining whether a contested case hearing is appropriate.

It is reasonable to impose a time limit on when a person may ask for a contested case hearing. The proposed rule allows the public to ask for a hearing any time up to the day

the comment period on the draft site permit ends. This is a minimum of 30 days after the draft site permit becomes available.

If a hearing is ordered, it will be a contested case hearing, presided over by an administrative law judge from the Office of Administrative Hearings who will conduct the hearing and write a report making recommendations on the site permit. Item C of the subpart specifically recognizes the role of the Office of Administrative Hearings. It is likely that the board will have to extend the time to act on the permit if such a hearing is held.

The only contested case hearing the EQB has held on a LWECS project involved the Lake Benton I project in 1995, in which two developers were competing for the same project. The other six LWECS that have been built along Buffalo Ridge were permitted without any controversy. No members of the public requested hearings on any of those projects. The EQB expects that future projects will also be able to be permitted without a contested case hearing, but this rule will be available if the situation should arise where there is public objection.

4401.0600 FINAL PERMIT DECISION.

Subpart 1. Board action. This subpart recognizes that it is the full Board that will make the ultimate permit decision. The rule provides that the Board must follow the applicable contested case procedures in those situations where a hearing was held. Those requirements can be found in the EQB's own procedural rules, Minnesota Rules chapter 4405, and in the rules of the Office of Administrative Hearings, Minnesota Rules chapter 1405, and in the Administrative Procedure Act, Minnesota Statutes sections 14.57 to 14.62.

When a hearing has not been held, the Board must still act on the basis of the record that has been created and follow its own procedural requirements in Minnesota Rules chapter 4405, for bringing matters to the Board at a regular monthly meeting for action.

Subpart 2. Time limit for decision. This provision is merely a repeat of the statutory requirement that the EQB has 180 days after acceptance of the application to act on the request. Minnesota Statutes section 116C.694(3). However, the statute allows the EQB to extend this deadline for cause, and the rule recognizes that possibility. It is impossible to identify in the rule all the reasons for extending a deadline, and the EQB has not even attempted to list any acceptable reasons. It is reasonable to address this question on an ad hoc basis as the situation arises. Of course, if the applicant agrees to the extension, it is reasonable to extend the time. In all cases, the EQB will not unreasonably delay reaching a decision on a permit.

In the past, for projects that were not contested, the EQB has been able to issue a site permit within just a month or two from the date the application was submitted. Under these rules, requiring certain notices to be given and affording time for public comment,

the EQB should be able to make a final decision on an uncontested permit request within three or four months from the day the application is accepted.

Subpart 3. Determination by board. This rule sets forth the standard for issuance of a permit. The requirements are taken from the statute setting forth state policy to site LWECs in an orderly manner that is compatible with environmental preservation, sustainable development, and the efficient use of resources. Minnesota Statutes section 116C.693. These criteria are admittedly subjective, but they are the standards established by the Legislature, and in the seven wind permits the EQB has issued to date, application of these criteria has not been a problem. It is reasonable for the EQB to attempt to minimize the environmental impacts of the project, ensure the continued development of the wind resource, and utilize the wind resource in an efficient manner that keeps the costs of wind power as low as possible.

Subpart 4. Conditions. The EQB is authorized by statute to include conditions in any wind permit it issues. Minnesota Statutes section 116C.694(d). The EQB has not attempted to establish by rule any conditions that go into all wind permits. Appropriate conditions are determined during the permitting process. The information required to be included with the permit application is intended to allow the EQB to establish appropriate conditions reflecting the specifics of the project.

The seven wind permits that the EQB has issued generally contain the same permit conditions, and it is likely that permits issued in the future will contain identical or similar conditions. The last two wind permits issued by the Board - the Navitas permit and the Chanarambie Power Partners permit – are essentially identical. Nonetheless, the EQB is not attempting in this rulemaking to establish any conditions by rule.

There are a couple of rule requirements in part 4401.0610 that will be included in the permits that are issued, so in a sense these rule requirements are permit conditions. These requirements are discussed below.

Subpart 5. Term. The statute does not establish any definitive term for a wind permit. The EQB proposes to adopt by rule a term of 30 years for an LWECs permit. The EQB has included this 30-year term in its existing permits without objection. The 30 years is based on the generally accepted fact that 30 years is about how long a wind turbine is expected to last. However, the rule does provide that the permit can be extended so the EQB has no intention of requiring the removal of turbines that have a useful life. Requiring a renewal after 30 years, however, will afford the EQB an opportunity to take a fresh look at an old project and determine whether there is useful life left.

4401.0610 EFFECT OF PERMIT.

Subpart 1. Wind rights. This rule provides that even if a person obtains a wind permit from the EQB, the permit itself does not convey the right to install any wind turbines if the permittee does not hold the wind rights in the area where the permittee

wants to construct the turbine. Many wind developers are private organizations without the authority of eminent domain that would allow the permittee to condemn land. A wind developer cannot simply march onto private property and begin installing wind turbines.

This issue came to light in May 2001 when both Navitas Energy and Chanarambie Power Partners wanted a wind permit to construct turbines in the same area. Neither one held the wind rights in the area contested. In order to proceed with issuance of a permit to both developers, the EQB included language in their permits that provided that they could not go ahead in the contested area until the wind rights were obtained, and then the developer that failed to get the wind rights was precluded from building in that area. See the Navitas and Chanarambie permits. This seemed like a reasonable solution to the issue, one that allowed the developers to proceed with their projects in other areas, and the EQB has determined to incorporate this approach into the rule.

Several years ago, when the first wind projects were being developed along Buffalo Ridge by Northern States Power Company, NSP solicited bids from wind developers with the condition that NSP would provide the wind rights. Now, the developers are responsible for obtaining their own wind rights

While wind rights are required in order to construct a wind project, the EQB has not necessarily held up the issuance of a permit when a developer is still negotiating for certain wind rights. With the two permits issued in May 2001 to Navitas Energy and Chanarambie Power Partners, the Board included in both permits a particular area for which neither permittee held the wind rights, but provided that only that developer that obtained the wind rights could develop in the area. This was a reasonable solution in May 2001 and may continue to be a reasonable method to deal with situations where a wind developer has not obtained the wind rights. However, a developer with wind rights in a particular area may also apply for a permit and pre-empt another developer with a permit from developing in a particular area.

Subpart 2. Other LWECS construction. This subpart is a corollary to subpart 1. While Navitas and Chanarambie sought their permits simultaneously, in the future two wind developers may seek a permit to place turbines in same area at different times. This rule recognizes that just because the first developer obtains a permit for a certain area, that a second developer cannot seek a permit for the same area if the first developer does not hold the wind rights in the area permitted. The EQB believes that this kind of rule will allow developers to continue with their development plans and result in expeditious development of the wind resource in Minnesota.

Subpart 3. Power purchase contract. This is another related issue. A wind developer is not going to be able to obtain financing of a proposed project if the developer has nobody to buy the wind power that is to be generated. However, a developer may seek a permit from the EQB while it is negotiating a power purchase agreement or other enforceable mechanism for sale of the power. This provision will allow the EQB to proceed with issuance of the permit even though the details on a power purchase agreement have not been worked out. This was the situation with the Navitas

and Chanarambie permits. In that case, the EQB gave both developers a permit but conditioned the permits on the obtaining of a power purchase agreement or other mechanism for selling the power. If the permittee was not able to finalize a power purchase agreement within a finite time, less than one year in Chanarambie's case and about a year with Navitas, the permit was null and void. Again, this kind of approach allows the EQB to issue the permit and keep the developer moving with its plans, and yet not jeopardize the use of the wind resource by another developer with wind rights or a power purchase agreement.

It was discussed above in section 4401.0600, subpart 4 (Conditions) that the EQB had not attempted to establish conditions in the rule. In effect, however, the requirements in this part 4401.0610 do establish conditions that will be placed in wind permits.

4401.0620 DELAY IN COSTRUCTION. Because the Legislature wants to see an efficient and orderly development of the wind resources in this state, the EQB has proposed this condition to require a permittee to begin construction of the project within two years, and if construction has not begun within that timeframe, the permittee must advise the Board of the reason for the delay. The Board may then consider whether to revoke the permit. No permit would be revoked without notice and opportunity to be heard and compliance with all of the permittee's rights.

The EQB has required in its Power Plant Siting rules for years, Minnesota Rules part 4400.4000, that if a large power plant or high voltage transmission line permitted by the Board is not placed under construction within four years, the Board shall suspend the permit and the permittee cannot proceed without a reinstatement of the permit by the Board. This same concept is continued in this rule, although the timeframe is shorter and the suspension or revocation of the permit is not automatic. The reason for the rule is that at least for the larger projects (over 50 megawatts), the Public Utilities Commission will have determined that the project is needed. If the project is needed, the EQB, and perhaps the PUC and other agencies as well, want to know what is holding up construction, and whether another developer or another project should be permitted.

4401.0700 PERMIT AMENDMENT OR REVOCATION.

Subpart 1. New boundary. When a wind permit is issued for a proposed project, the boundaries of the project are specifically defined in the permit. Once the permittee completes its micrositing process and determines the specific locations for the turbines, however, the size of the project may shrink in size. The EQB then redefines the boundaries of the project to be the minimum area required so that the areas not used are available for other projects.

In the past this amendment of the permit to redefine the boundaries has been done by the board. But because it is a rather routine matter, the proposed rule would delegate that authority to the chair. This delegation allows this task to be completed with a minimum of administrative delay. However, the rule does provide that if there is a dispute over the precise boundaries of the project, any person can bring the matter to the full board. This

could be the permittee, who thinks the project area has shrunk too much, or another developer who wants the boundaries even smaller. The EQB has not experienced any complaints over the redefining of the boundaries, but the rule provides a process in case an objection is raised.

Subpart 2. Permit amendment. The statute recognizes that the Board may “deny, modify, suspend, or revoke a permit.” Minnesota Statutes section 116C.694(d). This subpart simply repeats that authority.

Subpart 3. Permit revocation. This subpart recognizes that the Board may revoke a permit in certain situations and the rule specifies the situations under which the permit may be revoked. The first condition in Item A is when the applicant has knowingly made a false statement as part of the application. Obviously, a permitting agency has the authority to revoke a permit that was obtained falsely, and that is what this provision says.

Item B allows the Board to revoke a permit if the permittee has failed to comply with the terms and conditions of the permit. Again, this is a situation where any permitting agency could chose to revoke a permit. However, violation of a permit condition is not an automatic revocation. The Board has discretion in how to respond to a permit violation. Not every permit violation is of such consequence that revocation or other sanction is appropriate. This will be a case-by-case decision.

Item C allows the Board to revoke a permit if human health or the environment is endangered. Here, too, the Board has discretion and it will be an ad hoc decision.

Item D covers the situation where the permittee has violated other laws that reflect on the ability of the permittee to comply with the permit.

The EQB has never revoked a wind permit, or any other permit, that it has issued. It is unlikely that a permittee will ever engage in the kind of conduct specified here. Nonetheless, it is reasonable to provide in the rules for revocation of a permit if the situation should arise.

Subpart 4. Procedure. Because the EQB has discretion whether to revoke a permit even if certain conduct has been engaged in, and because a permittee is entitled to certain due process rights before a permit can be taken away, this subpart establishes that the EQB must afford the permittee the right to notice and opportunity to be heard before a permit can be amended or revoked. The rule also recognizes that the Board may act on its own volition, or any person may bring an alleged misconduct situation to the Board’s attention.

4401.0800 FEES.

Minnesota Statutes section 116C.695(7) provides that the board shall adopt rules governing “payment of fees for the necessary and reasonable costs of the board in acting

on a permit application and carrying out the requirements of sections 116C.691 to 116C.697. The EQB is not establishing in this rule that applicants must pay fees; that was established by the Legislature in the statute. Instead, this rule only addresses the manner in which the fees are paid.

Minnesota Statutes section 16A.1283 is a new statute that was passed in 1999 that provides that a state agency may not impose a new fee or increase an existing fee without the approval of the Legislature. In this case, the EQB is not imposing a new fee or increasing an existing fee. The fee remains exactly as the Legislature created it in 1995. Therefore, it is not necessary to obtain legislative approval to adopt this subpart of the rules.

Subpart 1. Fee requirement. The first sentence of this rule merely recognizes the requirement that a permit applicant must pay a fee. The second sentence attempts to identify some of the necessary and reasonable costs that must be paid in processing a permit application. Obviously, staff time is a significant part of the necessary expenses. In addition, there are costs the EQB must pay to other persons, such as newspapers and postage and travel expenses, that must be covered. Often the EQB must seek legal advice in processing a particular application, and this is certainly true if any litigation should result. There are times when the EQB's permit decisions are challenged in court. In fact, the first LWECS permit the EQB issued, to Northern States Power Company for the Lake Benton Phase I project, was challenged in court.

Subpart 2. Determination of board budget. The applicant must pay the necessary and reasonable expenses of the EQB in processing the application. When the permit is applied for, nobody knows exactly how much it will cost to process, so the chair, working with the EQB staff, will prepare an estimate of the expected costs. The estimate will be based on past experiences in processing LWECS applications and on the staff's expectations of what will be involved in processing the pending application. The expenses incurred by the EQB in issuing the last two wind permits issued by the Board – the Navitas and Chanarambie Power Partners permits issued in May 2001 and referenced throughout this document – were approximately \$10,000. This is a reasonable fee and the applicants have not complained about the amount.

If an applicant should disagree with the chair's estimate, the rule allows the applicant to bring the complaint to the attention of the board. The EQB does not expect this to happen, because the staff will be able to make a fairly accurate estimate, and because in the end, the applicant will not be required to pay more than the actual costs. In any event, the rule recognizes that an applicant could ask the board to review the estimated budget.

Subpart 3. Initial payment. The EQB will begin incurring costs from the time the application is submitted so it is necessary for the applicant to make a payment to the agency essentially at the same time the application is submitted. The rule recognizes that the EQB will not begin to process the application until the first payment is made. If the applicant is late in making the payment, the EQB's timeframe for completing the permit process will not commence. The EQB's experience has been that applicants will discuss

the budget with the staff before the application is even submitted, so that when the applicant does submit the application, a check for the initial amount can be included.

The rule requires that the first payment be at least 50% of the total estimated budget. Because the staff must complete a great deal of work in a relatively short time after the application is accepted, it is reasonable to require one-half of the total payment be made upfront. Also, since the timeframe allowed for the entire process is only 180 days, it is preferable to not spend a lot of time sending invoices out to the applicant for additional payments. Some applicants might simply choose to submit the entire estimated fee upfront with the application and wait until the final accounting to determine the actual expenses.

Minnesota Statutes section 116C.69, subd. 2 and 3, which apply to permitting of power plants and transmission lines, requires that permit fees be deposited in a separate account for the specific project. Section 116C.695 does not include that requirement, but the EQB has always in the past maintained separate accounts for LWECS applications, and it makes sense to continue that practice. Maintaining a separate account helps ensure that only the necessary and reasonable costs attributable to the project are charged to the applicant.

Subpart 4. Periodic payments. If the applicant only pays one-half of the estimated budget, or if the estimated budget turns out to be insufficient, the EQB will send an invoice to the applicant and request additional payments. The EQB expects the applicant to make the payments before the EQB incurs expenditures beyond what is available in the account, and the EQB usually requests payment within 30 days of receipt of the invoice. It is reasonable to require that the applicant maintain a positive balance in the account to pay EQB expenses as they are incurred.

The rule provides that if the applicant has an outstanding balance due at the time the EQB is prepared to make a final decision on the permit, the applicant must pay that amount before a final decision is made. It makes good sense to ensure that the applicant pays what is owed for processing the permit before the final decision is made.

Subpart 5. Final accounting. Since the applicant pays only what is necessary and reasonable, a final accounting is required once all the expenses have been incurred. The final accounting will indicate exactly what costs and expenses were paid as part of the application. The EQB's accounting people will prepare the final accounting. If the applicant believes that the figures are unnecessary or unreasonable, the applicant can request that the board review the numbers and make a final decision on the amount due.

The final accounting cannot occur until the EQB has determined all its expenses in processing the permit application. It is possible that an aggrieved person may challenge the Board's final decision by bringing a lawsuit, so the final accounting cannot occur until the time for judicial review has expired.

It is reasonable to provide only a short period of time for either the applicant to make an additional payment, or the EQB to refund an overpayment, once the final accounting is determined. The rule provides for a thirty-day period for the final payment. Both the applicant and the EQB should be able to make the requisite payment within thirty days of the determination of the amount.

VI. Conclusion

As explained in this document, the proposed rules will help ensure that the EQB can carry out its legislative mandate to ensure the orderly development of the wind resources in this state while protecting the environment. The permit program established by these rules for Large Wind Energy Conversion Systems should operate in an effective and expeditious fashion to accommodate applicants who seek a prompt resolution of their permit application and the public who seek an opportunity to be informed and to be heard.

DATED: September 20, 2001



GENE HUGOSON
Chair
Minnesota Environmental Quality Board

EXHIBIT LIST

1. 25 State Register 1382 (February 12, 2001) (Notice of Intent to Solicit Outside Opinion)
2. EQB Monitor (March 5, 2001)
3. List of Persons Interested in Rules on Wind Projects
4. List of Wind Permits Issued by the EQB
5. Interim Site Permit Procedures
6. Lake Benton I Permit
7. Navitas Energy, LLC
 - a. Application
 - b. Permit
 - c. Findings of Fact
8. Chanarambie Power Partners, LLC
 - a. Application
 - b. Permit
 - c. Findings of Fact
9. Avian Study
10. Energy Security and Reliability Act of 2001

ADDENDUM TO STATEMENT OF NEED AND REASONABLENESS

At the Environmental Quality Board meeting on September 20, 2001, when the Board approved the Statement of Need and Reasonableness and authorized the Chair to go forward with formal rulemaking on the proposed rules, the Board made one change in the proposed rules as they were presented to the Board. The Board in its authorizing resolution directed the staff to add a short Addendum to the SONAR explaining this one change, and that is the purpose of this Addendum.

The one change the Board made in the proposed rules was to change the word “electricity” in part 4401.0610, subpart 3 to the word “power.” The changed language now reads as follows:

Subp. 3. Power purchase agreement. A site permit does not authorize construction of the project until the permittee has obtained a power purchase agreement or some other enforceable mechanism for sale of the power to be generated by the project. If the permittee does not have a power purchase agreement or other enforceable mechanism at the time the permit is issued, the board shall provide in the permit that the permittee shall advise the board when it obtains a commitment for purchase of the power. The board may establish as a condition in the permit a date by which the permittee must obtain a power purchase agreement or other enforceable mechanism or the site permit is null and void.

The reason for the change is to recognize that the energy generated by wind turbines could be in a form other than electricity. For example, the electricity generated by the turbines could be used to produce hydrogen, which could then be stored and sold to a purchaser for use in generating electricity at a later time, or even sold for other purposes. By using a broader term in this subpart, the EQB is recognizing that it may be possible to utilize wind turbines for purposes other than the immediate sale of electricity.

On September 24, 2001, amendments to the rules of the Office of Administrative Hearings regarding rulemaking became effective. The amendments were published in the State Register on September 17, 2001 (26 State Register 391).

One of the changes made to the rules relates to information in the Statement of Need and Reasonableness. The new rule now requires the SONAR to include the date the statement is made available for public review. Minnesota Rules part 1400.2070, subpart 1.E. This rule change became effective after the EQB Board approved the Statement of Need and Reasonableness in this case but this Addendum is added to provide this information.

The Statement of Need and Reasonableness first became available to the public on September 13, 2001, the day the information for the EQB’s September 20 monthly Board

meeting was mailed to Board members and to persons on the agency's mailing list. The SONAR has been available for the asking since that date. The SONAR was discussed at the Board meeting on September 20, 2001.

Exhibit W

MPCA Rejection of Petition for Rulemaking

Minnesota Rules chapter 7030 - Noise

September 12, 2016



Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

September 12, 2016

Carol Overland
Legalelectric, Inc.
1110 West Avenue
Red Wing, MN 55066

Dear Ms. Overland:

RE: Petition for Rulemaking for Wind Turbine Noise Standards, Minnesota Rules Chapter 7030

After consulting with colleagues at the Minnesota Departments of Health and Commerce, I have concluded that the current understanding of wind turbine noise and its potential effects is insufficient to support rulemaking at this time. Discussions will continue among the agencies listed above, and we will monitor the science (as resources allow) to inform our decision about rulemaking in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "John Linc Stine".

John Linc Stine
Commissioner

cc: Commissioner Ehlinger, Minnesota Department of Health
Commissioner Rothman, Minnesota Department of Commerce
Executive Secretary Daniel Wolf, Public Utilities Commission

