



STATE OF MINNESOTA

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January 26, 2018

The Honorable LauraSue Schlatter
Administrative Law Judge
Office of Administrative Hearings
600 North Robert Street
P.O. Box 64620
St. Paul, MN 55164-0620

**Re: 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
OAH 80-2500-34633; MPUC IP-6946/WS-17-410**

Dear Judge Schlatter:

Enclosed please find for filing the MINNESOTA DEPARTMENT OF COMMERCE, ENERGY ENVIRONMENTAL REVIEW AND ANALYSIS (DOC EERA) MOTION TO EXCLUDE BENT TREE DATA.

Pursuant to the First PreHearing Order, a courtesy copy follows to chambers and to the court reporter by electronic mail.

Sincerely,

/s/ Linda S. Jensen

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**BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 NORTH ROBERT STREET
ST. PAUL, MINNESOTA 55101**

**FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
SUITE 350
121 SEVENTH PLACE EAST
ST. PAUL, MINNESOTA 55101-2147**

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

**MINNESOTA DEPARTMENT OF COMMERCE, ENERGY ENVIRONMENTAL
REVIEW AND ANALYSIS (DOC EERA)
MOTION TO EXCLUDE BENT TREE WIND FARM DATA**

The Minnesota Department of Commerce Energy, Environmental Review and Analysis, (DOC EERA), pursuant to Minn. Rules 1405.1700, 1405.1900 subp.2¹ and the Third PreHearing Order,² submits this Motion to exclude from the evidentiary record documents regarding acoustic testing conducted for a different wind generation facility, called the Bent Tree Wind Farm,³ for which a permit application was filed in 2008.⁴

The DOC EERA appreciates that AFCL and its members are concerned about the possibility of unwanted noise from this Freeborn Wind project; acoustic testing of wind

¹ Although DOC EERA is not a party to this proceeding, Minn. Rule 1405.1900 subp. 2 allows objections to direct testimony to be made by any person, and government agencies are “persons.” Minn. Rule 1405.0200 subp.4.

² *In re 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*, OAH 80-2500-34633; MPUC IP-6946/WS-17-410, THIRD PREHEARING ORDER at para. 14, issued Dec. 5, 2017.

³ *In re Application of Wisconsin Power and Light for a Large Wind Energy Conversion System Site Permit for the Bent Tree Wind Project in Freeborn County*, Docket No. ET6657/WS-08-573 (The Bent Tree Wind Farm is located northwest of Albert Lea in Freeborn County, and it was developed and is owned by Wisconsin Power and Light Company (WPL).

⁴ *Id.*

generation facilities is so highly dependent on a wide set of variables that differ from project to project, however, that it would be misleading and prejudicial to informed decision-making for decision-makers to rely on the Bent Tree Wind Farm acoustic testing for purposes of drawing analogies or making inferences about possible noise impacts of this Freeborn Wind Farm. To accurately infer or assess noise levels at the Freeborn Wind Farm requires that the Freeborn project be modelled or tested.

FACTUAL BACKGROUND

Sound impacts of wind turbine generators are affected in varying extents by such things as the turbine model, turbine operations, hub height, rotor diameter, the number of turbines, the layout of the turbines, and attributes of a specific site, including vegetative cover present, natural landscape features, and ambient noise sources (i.e. public roads, livestock confinements, mining activities, local wind patterns). Affidavit of Richard Davis at ¶ 5.⁵

The results of acoustic monitoring for the Bent Tree Wind Farm were affected by specific things that are not present at the Freeborn Wind Farm. Bent Tree is a 200 MW facility, consisting of 122 turbines, model Vestas V82-1.65 MW, each with a hub height of 80 meters and a rotor diameter of 82 meters.⁶ The DOC EERA's Environmental Review Manager assigned to manage this Freeborn Wind Farm docket 17-410, Mr. Richard Davis, states in his Affidavit, filed

⁵ Similarly, non-compliance at one site (excess noise) would not support an assumption of non-compliance at another site, and developers cannot assume that a project is in compliance because data from other wind farms shows compliance. *See also*, "Correspondence from Alliant to Commission regarding Bent Tree Wind Farm Noise Monitoring—Monitoring Report," Oct. 10, 2017 <https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=201710-136370-01> (identifying factors that it claims affect acoustic testing, including types of microphones used in the testing (microphones may themselves make noise in blowing wind), seasonal conditions and surrounding landscapes (adjacent deciduous tree foliage rustles in the wind and houses birds who hold noisy morning choruses).

⁶ Intervenor AFCL Legalectric, Corrected Letter, Dec. 29, 2017, Attachment at 1, e-filed Jan. 2, 2018, (<https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=201712-138507-01>)

herewith, that these Vestas V82-1.65 MW models are an older generation of wind turbines. Aff. Davis at ¶ 6. The Freeborn Wind Farm, on the other hand, is proposed to consist in Minnesota of only 42 of a more modern generation of Vestas V116 and V110 - 2 MW turbines. These newer model Vestas turbines are proposed to be constructed with a hub height of 80 meters and rotor diameters of 110 to 116 meters. *Id.*

Mr. Davis's Affidavit explains that it is generally understood that turbine noise output increases with higher blade tip speeds.⁷ The wind turbines at the Bent Tree Wind Farm utilize a technology called "active stall" rotor blade designs as an "air brake," to maintain a maximum blade rotational speed during high wind speed conditions. Mr. Davis indicates that wind turbines with active stall rotor blade designs produce, under higher wind speeds, a higher maximum noise output than turbine models that utilize a more modern "blade feathering and pitch cylinders" technology to maintain maximum blade rotational speeds. Further, the two turbine models proposed for the Freeborn Wind Farm will utilize full blade feathering and pitch cylinders rather than active stall blade designs. Mr. Davis states that this attribute regarding air brakes, as well as other aspects of the designs of the turbines at the Freeborn Wind Farm make it likely that its noise profile will be materially different than the noise profile of the Bent Tree Wind Farm. He believes that because of these differences between the Bent Tree and Freeborn Wind Farms, the post-construction noise monitoring results that were collected at the Bent Tree Wind Farm cannot be used to predict potential turbine noise-related impacts at the proposed Freeborn Wind Farm, and cannot reasonably be used by the ALJ or Commission to draw inferences about potential noise impacts in the present Freeborn Wind Farm docket. Aff. Davis at ¶¶ 7-9.

⁷ See also, Direct Testimony of Mike Hankard at ll. 94-103, filed at: <https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=201712-138400-01>

This motion requests that the Administrative Law Judge exclude from the evidentiary record or give no weight to the following documents:

- Attachment 11 to the Direct Testimony of Dorene Hansen and (the identical) Schedule D to the Rebuttal Testimony of Dorene Hansen. This document is the post-construction noise assessment for the Bent Tree Wind Farm conducted by an expert consultant, Garrad Hassan America, Inc, (n/k/a DNV GL),⁸ which tested and determined noise levels at the Bent Tree Wind Farm site using the “Post-Construction Noise Measurement Study Protocol” (DNV GL Protocol) developed by DNV GL⁹ (the Bent Tree Report).
- A related e-mail sent by one of the DNV GL engineers who worked on the Bent Tree Report¹⁰ to DOC EERA staffer, Ms. Louise Miltich in the Bent Tree matter, 08-573.

THE BENT TREE REPORT LACKS PROBATIVE VALUE, IS IRRELEVANT AND IMMATERIAL TO ISSUES TO BE DECIDED IN THIS FREEBORN WIND FARM DOCKET.

Minnesota Rule 1405.1700 subp. 3 permits an ALJ to exclude evidence that is irrelevant or immaterial. Further, Minn Rule 1405.1700 subp. 8 states¹¹ that “written submissions that are not subject to cross-examination shall be given such weight as the administrative law judge deems appropriate.”

The DOC EERA asks that the ALJ exclude the Bent Tree Report and related correspondence because the documents have de minimus relevance to this docket. The principal value of the Bent Tree Report would be only to demonstrate that testing methodologies exist, which is not disputed, and perhaps for a crude comparison of the two projects (that is, to identify

⁸ In 2009, UK based Garrad Hassan, the world’s largest wind energy consultancy, was acquired by the company now known as DNV GL, (as were the Canadian wind energy consulting and engineering company Hélimax and the German company WINDTEST, which are also expert on measurements for wind turbines and wind farms). The company is now known as “DNV GL.” <https://www.dnvgl.com/about/in-brief/our-history.html> (history of the company).

⁹ Bent Tree Docket, “Bent Tree Wind Farm Post-Construction Noise Assessment, Wisconsin Power and Light Co.”, August 30, 2017, at page 6. <https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=20179-135856-01>

¹⁰ Shant Dokouzian, Professional Engineer, Senior Project Manager, Development and Engineering Services, Principal Engineer. Renewables Advisory, DNV G–Energy.

¹¹ See also Minn. Rule 1405.0800 (B) (written testimony which is not subject to cross-examination, shall be given such weight as the administrative law judge deems appropriate).

the many differences between the Bent Tree Wind Farm and the Freeborn Wind Farm, and the corresponding differences that would be likely in acoustic test results. This sort of comparison is neither relevant nor material to issues to be decided in this Freeborn Wind matter. The ALJ would be prudent to exclude the Bent Tree Report and related correspondence or to give the documents no weight.

CONCLUSION

For the foregoing reasons, the Bent Tree Report and related correspondence should be excluded or given no weight.

January 26, 2018

Respectfully submitted,

/s/ Linda S. Jensen

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ATTORNEYS FOR MINNESOTA
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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

AFFIDAVIT OF RICHARD DAVIS

STATE OF MINNESOTA)

) ss.

COUNTY OF RAMSEY)

I, Richard Davis, being duly sworn on oath, state as follows:

1. My name is Richard Davis. I am an Environmental Review Manager for the Minnesota Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 280, Saint Paul, MN 55101 (DOC EERA).

2. I have conducted environmental reviews of proposed wind energy facilities for over eight years. During the first four of these years, my work was primarily focused on reviewing projects for potential wildlife and wildlife habitat impacts, as I was a Fish and Wildlife Biologist for the United States Fish and Wildlife Service (USFWS). In April of 2013, I joined the DOC EERA. Since then, I have been responsible for the entire environmental review and analysis of potential environmental and human impacts of four proposed wind energy facilities in Minnesota. These environmental reviews have included the analysis of the pre-construction noise modeling documents that inform the wind turbine siting process. I have also been involved

in the review of multiple post-construction noise monitoring study protocols, and the review and analysis of multiple post-construction noise monitoring studies.

3. The purpose of my affidavit is to provide information to support the DOC EERA's motion to exclude from the evidentiary record certain irrelevant documents, including the Bent Tree Wind Farm Post-Construction Noise Assessment completed by DNV-GL (the Bent Tree Report)¹ and a related e-mail from one of the experts who issued the Bent Tree Report² to fellow DOC EERA staff member, Ms. Louise Miltich, in the Bent Tree docket, 08-573.

4. Although I do not consider myself an expert in acoustic monitoring of wind turbine generators, as a result of my previous four years of experience completing the review and analysis of pre-construction noise modelling and post-construction noise monitoring protocols and reports for wind energy facilities in Minnesota, I do have a general knowledge of the protocols and methods involved in the testing of noise impacts of wind generation facilities. It is my understanding that individuals who are experts in the acoustic monitoring of wind turbine generators are generally, at minimum, professional engineers.

5. It is my understanding that the sound impacts of wind turbines on local residents are affected in varying extents by such things as the turbine model, turbine operations, hub height, rotor diameter, the number of turbines, the layout of the turbines, and attributes of a specific site, including vegetative cover present, natural landscape features, and ambient noise sources (i.e. public roads, livestock confinements, mining activities, local wind patterns). Looking just at a couple aspects of turbine design shows that, because the turbines operating at the Bent Tree Wind Farm are different than the turbines proposed to operate at the Freeborn

¹ The Bent Tree Report is Attachment 11 to the Direct Testimony of Dorene Hansen and Schedule D to the Rebuttal Testimony of Dorene Hansen.

² Shant Dokouzian, P.Eng., Senior Project Manager, Development and Engineering Services, Principal Engineer. Renewables Advisory, DNV GL – Energy.

Wind Farm, the potential noise-related impacts of the two projects should be substantially different from one another.

6. The Bent Tree Wind Farm is a 200 MW project, consisting of 122 Vestas V82-1.65 MW, each with a hub height of only 80 meters and a rotor diameter of 82 meters. These are an older generation of turbines.³ The Freeborn Wind Farm, on the other hand, is proposed to consist in Minnesota of only 42 of a more modern generation of Vestas V116 and V110 - 2 MW turbines. These newer model Vestas turbines are proposed to be constructed with a hub height of 80 meters and rotor diameters of 110 to 116 meters.⁴

7. It is generally understood that turbine noise output increases with higher blade tip speeds. The wind turbines at the Bent Tree Wind Farm utilize “active stall” blade designs as their “air brake,” to maintain a maximum blade rotational speed during high wind speed conditions.⁵ Wind turbines with active stall blade designs produce, under higher wind speeds, a higher maximum noise output than turbine models that utilize a more modern “blade feathering and pitch cylinders” technology to maintain maximum blade rotational speeds. I understand that the two turbine models proposed for the Freeborn Wind Farm will utilize full blade feathering and pitch cylinders rather than active stall rotor blade designs.⁶

8. It is my understanding that it is unlikely that this attribute regarding air brakes, as well as other aspects of the designs of the turbines at the Freeborn Wind Farm will cause its noise profile to be materially different than the noise profile of the Bent Tree Wind Farm.

³ Vestas no longer publishes information about them on its website, www.vestas.com

⁴ Application at 8 and n. 1 (Tower heights will be 80 meters, and with blades, 135-138 meters.)
<https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=20176-132804-01> See also
https://www.vestas.com/en/products/turbines/v110-2_0_mw#!technical-specifications; and
https://www.vestas.com/en/products/turbines/v116-2_2_mw#!technical-specifications

⁵ <https://en.wind-turbine-models.com/turbines/81-vestas-v82-1.65> (rotor type is activestall).

⁶ Specifications for the Freeborn turbines’ air brakes is “full blade feathering with 3 pitch cylinder” https://www.vestas.com/en/products/turbines/v110-2_0_mw#!technical-specifications and https://www.vestas.com/en/products/turbines/v116-2_2_mw#!technical-specifications

