

April 30, 2018

ELECTRONIC FILING

Mr. Daniel P. Wolf, Executive Secretary
Minnesota Public Utilities Commission
127 Seventh Place East, Suite 350
Saint Paul, MN 55101-2147

RE: Comments and Recommendations on Options for Full Project Site Noise Monitoring
Wisconsin Power and Light Bent Tree Project
ET-6657/WS-08-573

Dear Mr. Wolf:

On March 23, 2018, the Minnesota Public Utilities Commission an order requesting, among other things, that Minnesota Department of Commerce Energy Environmental Review and Analysis (EERA) review options for full project site noise monitoring and file preliminary options with the Commission. Attached are the review and comments of EERA staff on options for full project site noise monitoring.

I am available to answer any questions the Commission might have.

Sincerely,

/s/ Louise I. Miltich

Louise Miltich
Environmental Review Manager

Enclosure

cc: Bret Eknes, Commission Staff
Tricia DeBleeckere, Commission Staff
John Wachtler, EERA Director

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BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

**ENERGY ENVIRONMENTAL REVIEW AND ANALYSIS
REVIEW AND COMMENTS ON OPTIONS FOR FULL PROJECT SITE
NOISE MONITORING**

ET-6657/WS-08-573

Date: April 30, 2018

Staff: Louise Miltich | (651) 539-1853 | louise.miltich@state.mn.us

In the Matter of the Site Permit Issued to the Wisconsin Power and Light Company for the Bent Tree Project in Freeborn County, Minnesota

Issues Addressed: Commission request for Minnesota Department of Commerce Energy Environmental Review and Analysis to review options for full Project site noise monitoring and file preliminary options.

Additional documents and information, including the route permit application, can be found on eDockets by searching “08” for year and “573” for number: <https://www.edockets.state.mn.us/EFiling/search.jsp> or the EERA webpage: <https://mn.gov/commerce/energyfacilities/Docket.html?Id=19665>.

This document can be made available in alternative formats, that is, large print or audio, by calling (651) 539-1530 (voice).

Introduction

On March 23, 2018, the Commission issued a “show cause” order regarding the Bent Tree Wind Project Site Permit¹. As part of this order, the Commission asked the Minnesota Department of Commerce Energy Environmental Review and analysis (EERA) to “review options for full Project site noise monitoring and file preliminary options with the Commission” by April 30, 2018. These comments and recommendations constitute EERA’s filing in response to this request.

Background

Typically, the Commission’s Large Wind Energy Conversion System (LWECS) site permit process does not require post-construction sound monitoring at all residences or other receptors within or near the

¹ Minnesota Public Utilities Commission, March 23, 2018. *Order to Show Cause, requiring further review by the Department of Commerce and continuing curtailment.* eDockets No. [20183-141316-01](https://www.edockets.state.mn.us/EFiling/search.jsp).

project. In part, this is because the sites are so large. Taken literally, “full site” monitoring would require a minimum of two to three weeks of expensive and logistically challenging noise monitoring at dozens or even hundreds of individual locations. Instead, the permittee is required to compare the pre-construction modeling done for the entire site (as part of the permit application) with monitoring data from a much smaller set of representative sites located across the project area.^{2,3}

While this approach does not provide an actual noise level measurement at every receptor, it does provide a reasonable characterization of project noise levels at reasonable cost. Drawing on this general site characterization, the Commission can order further monitoring at specific receptors on a case-specific basis if issues arise during the course of operations.

In this case, the site characterization at the Bent Tree wind farm followed the typical approach. The 2008 site permit application included modeled wind turbine noise levels⁴. Bent Tree then completed noise monitoring at representative sites in 2011, after operations began⁵. The monitoring demonstrated that the wind farm’s contribution at the selected receptors was below the noise levels identified in Minnesota Rules 7030 at least 95% of the time. The monitoring also revealed that at higher wind speeds the model had somewhat underestimated the actual wind turbine sound.

This analysis satisfied the needs of the Department and the Commission at the time. It provided a general characterization of the site, and adequate information to inform decisions about future monitoring at specific receptors on a case-by-case basis if issues emerged.

Such a case arose in 2016, with the Commission’s order for monitoring at the Hagen, Langrud and Regehr residences.⁶ The Phase I and Phase II monitoring shed further light on those specific receptors.⁷ Phase II of the campaign used an on/off approach that is arguably an improved approach over the methodology used in the original 2011 monitoring and drew, to some extent, on MPCA’s interpretation of their standard as a “total” noise standard as required for permit “compliance.”

Overall, the recent monitoring results at the two residences are consistent with the 2011 study. That is, both the recent monitoring and that completed in 2011 indicate that at higher wind speeds the original modeling somewhat underestimates the actual wind turbine sound and that during higher wind speeds, noise levels may exceed state standards at times at some receptors.

² Minnesota Department of Commerce, Office of Energy Security - Energy Facilities Permitting. August 2010. Application Guidance for Site Permitting of Large Wind Energy Conversion Systems in Minnesota. https://mn.gov/commerce/energyfacilities/documents/LWECS_APP_Guide_AUG2010.pdf

³ Minnesota Department of Commerce, Energy Facilities Permitting. October 8, 2012. Guidance for Large wind Energy Conversion System Noise Study Protocol and Report. eDockets No. [5463931](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf). <https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf>

⁴ Wisconsin Power and Light. August 22, 2008. Revised Site Permit Application for the Bent Tree Wind Facility. . eDockets No. [5463931](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf).

⁵ Wisconsin Power and Light. June 21, 2011. Survey of Operational Sound Levels for the Bent Tree Wind Project. . eDockets No. [20116-63863-01](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf), [20116-63863-02](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf).

⁶ Minnesota Public Utilities Commission. August 24, 2016. *Order Requiring Noise Monitoring, Noise Study and Further Study*. eDockets No. [20168-124382-01](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf)

⁷ Minnesota Department of Commerce EERA, February 8, 2018. Bent Tree Wind Farm Noise Monitoring – Phase 2 Monitoring Report. eDockets No. [20182-139880-01](https://mn.gov/commerce/energyfacilities/documents/FINAL%20LWECS%20Guidance%20Noise%20Study%20Protocol%20OCT%208%202012.pdf).

EERA Analysis and Comments

EERA has reviewed the range of options for full site noise analysis as "next steps" for the Bent Tree wind farm. A summary of four potential options is provided below, along with the potential benefits and drawbacks of each option.

1. Order noise monitoring at all receptors within 1.5 miles of Bent Tree Wind Farm Project turbines. This option would be very expensive, difficult logistically because of the staff and equipment required, and would set a new Commission precedent for wind industry regulation in Minnesota. This approach would however provide the most receptor-specific data for the site and provide extensive data for model comparison.
2. Order noise monitoring at all receptors within areas that had modeled noise levels similar to Hagen and Langrud residences. Although this option would reduce the number of sites compared to Option 1, it still would require monitoring at dozens of locations and would be very expensive, difficult logistically and set a new precedent for wind industry regulation. Nonetheless, like Option 1, Option 2 would generate a collection of receptor-specific data for the site and provide extensive data for model comparison
3. Order updated noise monitoring at representative sites again. Although it is possible that the turbines have different noise profiles now than when they first went into operation seven years ago, it is not likely. The 2011 study is reasonably complete. Additional monitoring at the representative sites is not likely to provide substantially different insights than the previous results and would not offer substantial new information about actual noise levels at individual receptors. Since we have a reasonable characterization of the noise profile at this site already, the value of the additional monitoring would likely not justify the expense.
4. Require additional monitoring at specific receptors on a case-by-case basis if additional issues emerge. Consistent with past practice, the Commission could continue to rely on the outcomes of the 2011 site characterization to inform decisions on further monitoring at specific receptors if new issues arise as operations continue. This approach does not provide an extensive set of receptor-specific new data in the immediate term, but it does not foreclose the Commission from ordering intensive modeling on an as-needed basis going forward.

EERA Conclusions and Recommendations

Although the basic methods used to measure noise levels at residences near wind projects is fairly straightforward, some complex underlying issues regarding compliance with state noise standards have arisen lately in this and other dockets.

For example, whether a permittee is in compliance with the noise conditions in their permit depends on (1) whether the standard is for total noise or applies to the source only, (2) what level of contribution is appropriate for a single source in the context of a total noise standard, and (3) whether a small percentage of standard exceedance can be compatible with the concept of "compliance." These are all non-trivial issues that are subject of ongoing and unresolved debate at this point.

These questions must be resolved before the Department will have any bright line understanding of when an exceedance equals “non compliance.” And, until clear definition is established around when an exceedance equals “non compliance,” it is difficult to determine what kind and what scope of future monitoring make sense– at the Bent Tree site or any other LWECS site.

As a result, EERA believes that Option 4 is the most reasonable path forward. It does not preclude the possibility of future monitoring tailored to specific sites or problems that arise as operations continue. But, this approach provides time to sort out regulatory "gray areas" regarding compliance with state noise standards, which could be a helpful and important step in determining the objective and scope of any future site-specific monitoring.