

July 24, 2020

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: Department of Commerce, Energy Environmental Review and Analysis
Multiple Requests for Site Permit Amendment – Shadow Flicker
Freeborn Wind Farm – LWECS Site Permit
Freeborn County, Minnesota

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

Dear Mr. Seuffert:

Attached are the reply comments of the Minnesota Department of Commerce, Energy Environmental Review and Analysis (EERA) staff in the above stated matter.

Kathy and Greg Nelson, Sean and Heidi Gaston, and Michelle Severtson are residents of Freeborn County, Minnesota, and live within the Freeborn Wind Farm. These residents have requested an amendment to the Freeborn Wind Farm's site permit originally issued on December 19, 2018 and most recently amended by the Commission on March 31, 2020. The permit amendment requests are specifically asking for adoption of a permit amendment to mitigate negative consequences of shadow flicker on their properties.

EERA staff is available to answer any questions you or the Commission may have.

Sincerely,



Richard Davis
Environmental Review Manager

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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: July 24, 2020

EERA Staff: Richard I. Davis 651-539-1846

In the Matter of the Application of Northern States Power Company for a Large Wind Energy Conversation System Site Permit for the 84 MW Freeborn Wind Farm in Freeborn County, Minnesota.

Issue(s) Addressed:

1. What action(s) should the Commission take in response to the June 8, 2020 requests to amend the Site Permit for the Freeborn Wind Project?

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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Background and Environmental Review

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 most recently amended the site permit on March 31, 2020¹.

The Initial Site Permit Application included the Nelson (Receptor #317), Gaston (Receptor #337), and Severtson (Receptor #315) residences in the environmental review of potential Project related impacts, including specific analysis with respect to potential shadow flicker impacts. The Permittee's August 20, 2019 Site Permit Amendment Application also included the Nelson, Gaston, and Severtson residences in the updated analysis of potential shadow flicker, which included the environmental review of the potential Project amendments to the proposed change in turbine technology. EERA's review and analysis of the August 20, 2019 Site Permit Amendment Application and associated documents, determined that the proposed amendments to turbine technology and the locations of a number of turbines will have impacts comparable with the Project as originally permitted². Additionally, the proposed amendments would not violate any conditions of the issued Site Permit³.

EERA has re-visited the information and documents available in the Project Docket, and looked at potential shadow flicker impacts of proposed turbines on the Nelson, Gaston, and Severtson residences.⁴ Looking at the Project as amended and approved by the Commission on March 31, 2020, the anticipated realistic shadow flicker exposure to the Nelson residence is 33:14 hours of shadow flicker per year, Gaston residence is 24:15 hours of shadow flicker per year, and Severtson residence is 36:26 hours of shadow flicker per year. The modeled realistic shadow flicker level at the Gaston residence is below the 30 hours, or more, of shadow flicker per year specified under the Site Permit special condition 7.2. The modeled realistic shadow flicker level at the Nelson and Severtson residences are above the 30 hours, or more, of shadow flicker per year specified under the Site Permit special condition 7.2.

The Nelson and Severtson residences were identified as two of three non-participating residences potentially being exposed to 30 plus hours of shadow flicker in the Permittee's Shadow Flicker Management Plan efiled on July 14, 2020.⁵ EERA has reviewed the Shadow Flicker Management Plan, and the Permittee plans to move 17 turbine locations to the Iowa portion of the Project. This change in turbine layout will eliminate Project related shadow flicker exposure to the Nelson and Severtson residences, as well as the other non-participating resident that had been modeled to be exposed to 30 plus hours of shadow flicker per year.

¹ Commission. Order – Order Denying AFCLs Petitions and Amending Site Permit. March 31, 2020. eDocket #**20203-161639-01**.

² DOC-EERA. Comments – and Recommendations. December 12, 2019. eDocket #**201911-157474-01**

³ DOC-EERA. Comments – and Recommendations. December 12, 2019. eDocket #**201911-157474-01**

⁴ Xcel Energy. Other – Site Permit Amendment Application – Part 4 of 4. August 20, 2019. eDocket # **20198-155331-04**

⁵ Xcel Energy. Compliance Filing – Section 7.2 – Shadow Flicker Management Plan. July 14, 2020. eDocket # **20207-164893-01**

The Gaston residence is anticipated to experience 24:15 hours of shadow flicker per year⁶, which is below the 30 hours, or more, of shadow flicker per year indicated in the Amended Site Permit special condition 7.2, and the Freeborn County Ordinance 26-56.

EERA Comments and Recommendation

EERA has reviewed the permit amendment request and has identified a number of issues with the submittal.

First, EERA staff notes that all three of the residents requesting permit amendments have indicated that the Permittee's shadow flicker modeling efforts have been based on unprovided/unverified data and biased modeling parameters. EERA has revisited the Permittee's shadow flicker modeling documents⁷, and confirmed that the Permittee's consultant has conducted accurate and appropriate shadow flicker modeling. The Permittee's consultant provided the appropriate level of explanation and detail with respect to modeling methodology, appropriate citation and explanation of where data was acquired was provided, and the modeling parameters utilized were appropriate and clearly identified.

Second, EERA would like to make it clear that when considering potential shadow flicker impacts of turbines on individual residences the "Realistic" modeling results should be utilized for accurate comparison and consideration of Site Permit compliance. The "Realistic" modeling calculations include parameters such as turbine operations, turbine locations, sunshine probabilities, and the potential presence of a window on all sides of a residence (even when a window may not be present). The "Realistic" modeling does not include potential effects of blocking resulting from trees or other structures on a property. The "Realistic" modeling will likely over-estimate the potential shadow flicker exposure at all residences, because the potential window placement on all sides of residences will capture potential shadow flicker from all directions, and not including potential blocking features will also increase the modeled shadow flicker exposure.

Third, comments have been submitted that have framed the potential shadow flicker exposure will impact an entire property, including areas outside of the residence. EERA acknowledges the proposed turbines will cast shadows across some outside areas of a number of properties. However, shadow flicker experienced outdoors is typically less intense than what is experienced within a residence, and would be more similar to an individual driving a vehicle on the road and passing through the shadow of a nearby row of trees. Modeling results of potential shadow flicker exposure within a residence, as has been completed, should be utilized for accurate comparison and consideration of Site Permit compliance.

Finally, EERA would like to voice our concern that the permit amendment requests submitted by Nelson, Gaston, and Severtson, appear to be attempts at reconsideration requests of the Commission without being identified as such. All three permit amendment requests identify information that has been in the Project record at the time of the Commission's decision to approve the Amended Site Permit on March

⁶ Xcel Energy. Other – Site Permit Amendment Application – Part 4 of 4. August 20, 2019. eDocket # **20198-155331-04**

⁷ Xcel Energy. Other – Site Permit Amendment Application – Part 4 of 4. August 20, 2019. eDocket # **20198-155331-04**

31, 2020. Procedurally, the distinctions between an amendment request and a reconsideration request are significant, and without the amendment requestors bringing forward new information or data that has not already been considered in previous Commission decisions these requests appear to be reconsideration requests.

EERA recommends the Commission not approve any of the requested amendments to the Freeborn Wind Farm Site Permit, which were brought by Nelson, Gaston, and Severtson. The originally planned and approved turbines that would have potentially caused shadow flicker impacts to the Nelson and Severtson residences have been identified by the Permittee as part of the 17 turbines planned to be moved to the Iowa portion of the project. With these turbine re-locations, there should be no shadow flicker exposure at the Nelson and Severtson residences. The Gaston residence is not anticipated to experience 30 hours, or more, of shadow flicker per year, so the Permittee has minimized shadow flicker exposure through turbine siting and additional minimization and mitigation measures would not be required per Site Permit special condition 7.2.