

Staff Briefing Papers

Meeting Date October 8, 2020 Agenda Item 2**

Company Northern States Power Company (Xcel Energy)

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

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

Issues What action should the Commission take in response to the requests for amendment of the site permit?

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Relevant Documents

Date

Nelson Permit Amendment Request	June 8, 2020
Gaston Comments and Permit Amendment Request (2 parts)	June 8, 2020
Notice of Comment Period	June 30, 2020
Madson Comments	July 10, 2020
AFCL Extension Request	July 13, 2020
Notice Extending Comment Period	July 13, 2020
Xcel Energy Shadow Flicker Management Plan	July 14, 2020
Xcel Energy Comments	July 16, 2020

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.



Relevant Documents

Date

Madson Comments	July 16, 2020
Public Comments (4 parts)	July 16, 2020
Nelson Comments	July 16, 2020
Severtson Comments and Permit Amendment Request	July 16, 2020
DOC EERA Reply Comments	July 24, 2020
Nelson Reply Comments	July 24, 2020
Madson Reply Comments	July 24, 2020
Gaston Reply Comments	July 24, 2020
Public Comment	July 24, 2020
AFCL Reply Comments	July 24, 2020
Xcel Energy Reply Comments	July 24, 2020

I. Statement of the Issues

What action should the Commission take in response to the requests for amendment of the site permit?

II. Background

The Freeborn Wind Farm (project) is a 200-megawatt (MW) nameplate capacity Large Wind Energy Conversion System (LWECS), 48 MW of which will be in Freeborn County, Minnesota.¹ Freeborn Wind LLC's application for a Site Permit was filed on June 15, 2017. The application included a Shadow Flicker Assessment of the project.² A Site Permit for the project was initially granted to Freeborn Wind LLC on December 19, 2018.³ The Commission declined to act on motions for reconsideration of the Site Permit shadow flicker provisions in a February 26, 2019 Order⁴. The Commission issued an Order amending the Site Permit on May 10, 2019.⁵ On June 18, 2019, Freeborn Wind LLC and Xcel Energy (Xcel) jointly submitted a Notice of Acquisition and Request to Transfer the LWECS.⁶ On August 20, 2019, Xcel filed a permit amendment request, including an updated Shadow Flicker Study⁷. On October 22, 2019, the Commission issued an order transferring the permit to Xcel.

In its March 31, 2020 *Order Denying AFCL's Petition and Amending Site Permit*⁸, the Commission declined to order the preparation of an Environmental Impact Statement or Environmental Assessment Worksheet for the project as requested by the Association of Freeborn County Landowners (AFCL) finding instead that no additional environmental review of the project was

¹ The project as permitted authorized construction and operation of up to 41 2-megawatt turbines. Xcel notified the Commission on July 10, 2020 that it would be relocating 17 turbines originally planned to be built in Freeborn county to Worth County, Iowa, *Response in Opposition to AFCL's Motion for Order to Show Cause and Hearing, Part 1 of 5*, e-Dockets Number [20207-164813-01](#), July 10, 2020.

² *Initial Filing, Appendix C Shadow Flicker Assessment*, e-Dockets No. [20176-132804-05](#), June 15, 2017.

³ *Order Issuing Site Permit and Taking Other Action*, e-Dockets No. [201812-148595-01](#), December 19, 2018.

⁴ *Order Continuing Proceedings, Tolling Deadline, and Soliciting Comments*, e-Dockets No. [20192-150651-01](#), February 26, 2019.

⁵ *Order Amending Site Permit*, e-Dockets No. [20195-152849-01](#), May 10, 2019.

⁶ *Notice of Acquisition and Request for Transfer of Freeborn Wind LWECS and HVTL to Xcel Energy*, e-Dockets No. [20196-153672-02](#), June, 18, 2019.

⁷ Appendix F of *Site Permit Amendment Application*, Part 4 of 4, e-Dockets No. [20198-155331-04](#), August 20, 2019.

⁸ E-Dockets Number [20203-161639-01](#), March 31, 2020.

required. The Order also approved changes to the designated site and turbine selection for the project at Xcel's request.

On June 8, 2020, Kathy and Greg Nelson (the Nelsons) filed a petition to amend the Site Permit for the project in order to mitigate shadow flicker on properties in the project area, including their residence. On the same day, Sean and Heidi Gaston (the Gastons) filed a petition requesting an identical amendment.

On June 30, 2020, the Commission issued a notice requesting comments from parties on the requests for permit amendment. The Commission issued a notice on July 13, 200 extending the initial comment period through July 16, 2020 and reply comments period through July 23, 2020.

On July 14, 2020, Xcel filed its Shadow Flicker Management Plan (Plan) as required by Section 7.2 of the Site Permit.

By July 16, 2020, initial comments were received from Xcel, the Nelsons, Sue Madson and four members of the public. On the same day, Michelle Severtson filed a petition for an amendment to the site permit also related to shadow flicker.

On July 24, 2020, reply comments were received from the Department of Commerce Energy Environmental Review and Analysis (DOC EERA or Department), Xcel, AFCL, the Nelsons, the Gastons, Sue Madson, and Dorene Hansen.

III. Statutes and Rules

Minn. Stat. § 216b.27, Subd. 3 (2019) states in part:

Only one rehearing shall be granted by the commission; but this shall not be construed to prevent any party from filing a new application or complaint.

Minn. Stat. § 216F.07 (2019) states:

A permit under this chapter is the only site approval required for the location of an LWECS. The site permit supersedes and preempts all zoning, building, or land use rules, regulations, or ordinances adopted by regional, county, local, and special purpose governments.

Minn. Stat. § 216F.081 (2019) provides in part:

A county may adopt by ordinance standards for LWECS that are more stringent than standards in commission rules or in the commission's permit standards. The commission, in considering a permit application for LWECS in a county that has adopted more stringent standards, shall consider and apply those more stringent standards, unless the commission finds good cause not to apply the standards.

Minn. R. 7829.3000, Subp. 3 (2019) states:

A second petition for rehearing, amendment, vacation, reconsideration, or re-argument of a commission decision or order by the same party or parties and upon the same grounds as a former petition that has been considered and denied, will not be entertained.

Under Minn. R. 7854.1300, the Commission may amend a site permit for a large wind energy conversion system at any time if it has good cause to do so. The commission may initiate action to consider amendment or revocation of a site permit for an LWECS on its own initiative or upon the request of any person. No site permit may be amended or revoked without first providing notice and affording due process to the permit holder.

IV. Site Permit Requirements for Shadow Flicker Management

Shadow Flicker Management Plan Requirements

Section 7.2 of the December 19, 2018 Amended Freeborn Wind Site Permit establishes the conditions for identifying and addressing shadow flicker. Section 7.2 requires Xcel to provide the Commission with data on shadow flicker for each residence of non-participating landowners and participating landowners within and outside of the project area potentially subject to turbine shadow flicker exposure. The Commission also required the permittee to prepare a Shadow Flicker Management Plan designed to limit the exposure of any residence to under 30 hours of shadow flicker per year. Section 7.2 was included in consideration of Freeborn County Ordinance 26-56 (Ordinance).^{9,10} The ordinance requires that a flicker analysis be conducted and states that shadow flicker at a receptor should not exceed 30 hours per year.

⁹ “Freeborn County’s Ordinance on shadow flicker contains a requirement to conduct a flicker analysis and states that flicker at a receptor should not exceed 30 hours per year. While the Commission’s jurisdiction pre-empts application of the Ordinance, the law provides evidence of local community standards.”, Order Issuing Site Permit, page 18.

¹⁰ A flicker analysis shall include the duration and location of flicker potential for all receptors and road

The Plan must include data on shadow flicker for each residence of non-participating landowners and participating landowners within and outside of the project boundary potentially subject to turbine shadow flicker exposure. This Information must include the results of modeling used, assumptions made, and the anticipated levels of exposure from turbine shadow flicker for each residence.

Any residence or reception expect to experience 30 or more hour of shadow flicker per year must be identified in the Plan. If minimization and mitigation efforts set out in the Plan do not reduce a residence's anticipated shadow flicker exposure to less than 30 hours per year, a shadow flicker detection system will be utilized during project operations to monitor shadow flicker exposure at the residence. The 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 to the Commission by the Permittee in the Annual Project Energy Production Report required in Section 10.8 of the Permit.

Commission staff and EERA staff will be responsible for the review and approval of the Shadow Flicker Management Plan. The Commission may require the Permittee to conduct shadow flicker monitoring at any time during the life of this Permit.

Xcel Shadow Flicker Management Plan

The Shadow Flicker Management Plan identified six residential structures that would experience "Realistic Shadow Flicker" of greater than 30 hours per year, including 3 participating landowners and 3 non-participating landowners.¹¹ The Plan stated that the relocation of 17 turbines to Iowa would eliminate any shadow flicker concerns for the non-participating landowners (including those of the Nelsons and Severtson residences).

ways within a one-mile radius of each turbine within a project. The applicant shall provide a site map identifying the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall account for topography but not for obstacles such as accessory structures and trees. Flicker at any receptor shall not exceed 30 hours per year within the analysis area.

Freeborn County, Minn., Code of Ordinances § 26-56 (Ord. No. 2015-01, § 8, 12-1-2015).

¹¹ The Shadow Flicker Plan refers to residences by number only. Among the six residences that modeling predicted over 30 hours of shadow flicker per year, the three participant properties that have signed agreements with the permittee are the Ronald and Alicia Smith (131), Phillip Jacobson (220), and James and Nancy Bottelson (386). The non-participating landowners who do not have an agreement with the permittee are Michelle Severtson (315), the Nelsons (317), and the Gastons (337).

The Plan also identifies mitigation measures for reducing shadow flicker by use of a Turbine Control System (TCS). According to Xcel, the TCS is programmed with the output from the flicker model which provides a conservative (overestimate) basis to control the shadow flicker at the three participating residences by curtailing operation of the wind turbine generators during hours with a high likelihood of shadow flicker. Xcel stated that because TCS will be able to reduce all affected residences' anticipated shadow flicker exposure to less than 30 hours per year, a shadow flicker detection system is not necessary to monitor shadow flicker exposure at any of the residences in the project area.

IV. Comments of the Parties

Petitioners Nelsons, Gastons and Severtson

The Nelsons' Petition and the Gastons' Petition (collectively, the Joint Petitions) are virtually identical in every respect except the references to their respective residences and amount of shadow flicker identified in the modeling. The Nelson petition stated their property was estimated to receive approximately 123.6 hours of shadow flicker per year. The Gaston petition stated their residence is estimated to receive approximately 63.15 hours of shadow flicker per year.

The Nelson and Gaston petitions requested the site permit be amended to include the following conditions:

1. Developer must re-site a limited number of turbines into a configuration that will prevent adjacent landowners from receiving more than 30 hours of shadow flicker on their property.
2. Refinement of the mitigation process to ensure that mitigation steps are compliant with the Freeborn County Ordinance Chapter 26, Section 56 and do not require violation of the ordinance before the initiation of mitigation practices thus ensuring that landowners in the project are never subjected to shadow flicker exceeding the 30 hour standards established by Freeborn County Ordinance 26-56.
3. Following the ALJ recommendation, the developer agrees to a limit of 27 hours of modeled shadow flicker to ensure that no residents are subjected to more than 30 hours of shadow flicker per year, especially during the initial operation of the project.

In support of their petitions, the Joint Petitioners asserted the shadow flicker modeling in the Plan relies upon data that has never been presented for validation, and that basic modeling fundamentals used in the analysis are biased against landowners.

The Joint Petitioners also argued that the project developers incorporated several assumptions (such as operational time and wind direction) in the “realistic case” estimates that are not consistent with the Freeborn County Ordinance.

Severtson Petition

The Severtson Petition expressed support for the Joint Petitioners and asked for a special condition amendment for her property. The petition requested a permit condition that “the developer must move or must re-site or remove a limited number of turbines into a configuration that will prevent adjacent landowners from receiving more than 30 hours of non-discounted shadow flicker on their property per the Freeborn county shadow flicker ordinance.”

Xcel Initial Comments

Xcel’s initial comments addressed the Joint Petitioner’s request but not the Severtson Petition which was filed the same day as is comments. Xcel disputed the Joint Petitioners claims that the shadow flicker modeling was based on flawed assumptions or that its Shadow Flicker Management Plan violated Freeborn County’s shadow flicker ordinance. Xcel noted the record reflects that the Joint Petitioners have repeatedly raised this issue of shadow flicker and that their concerns have already been thoroughly and repeatedly considered and evaluated by DOC, the Office of Administrative Hearings and the Commission itself.

Xcel further asserted that the petitions are reconsideration requests subject to Minn. Stat. § 216B.27, Subd. 3, and Minn. R. 7829.3000. Xcel maintained the requests are untimely in that they are well beyond the 20-day deadline under the statute, and that to allow them to proceed solely because they are couched as a permit amendment rather than a request for reconsideration would undermine the intent of the legislature in passing Minn. Stat. § 216B.27.

Xcel argued that even if the petitions were not barred as untimely, they do not meet the standard of Minn. R. 7829.3000 in that they don’t specifically set forth the grounds relied upon or errors claimed, raise new issues, point to new and relevant evidence, expose errors or ambiguities in the underlying order.

Public Comments and Replies

Public comments received from Sue Madson, Marie McNamara, Allie Olson, Dorene Hansen and Clark Ericksen were in support of amending the Site Permit. These comments asserted that Freeborn County's Ordinance places a strict limit of 30 hours of shadow flicker exposure on each residence with no provisions for reductions as was used in the modeling. Some comments expressed the need for the amendment to address the shadow flicker concerns of non-participants and that mitigation needs to be done prior to construction. Some comments also supported the language for turbine placement or removal as requested in the Severtson Petition.

AFCL Reply Comments

In its July 24, 2020 reply comments, AFCL challenged Xcel's assertion that the Commission's jurisdiction pre-empts application of the Ordinance. AFCL stated it was unable to find any authority regarding "shadow flicker" in the Commission's statutes or rules. AFCL argued the record and the Commission did not thoroughly vet the underlying assumptions of the shadow flicker modeling.

DOC EERA Reply Comments

DOC EERA's reply comments responded to the individual concerns raised in the Joint Petitions. The Department stated it has revisited the Permittee's shadow flicker modeling documents and confirmed that the Permittee's consultant has conducted accurate and appropriate shadow flicker modeling.

The Department supported the utilization of "realistic" modeling of individual residences which includes parameters such as turbine operations, turbine locations, sunshine probabilities, and the potential presence of a window on all sides of a residence. The modeling calculations used do not include potential effects of blocking resulting from trees or other structures on a property. DOC EERA concluded 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 potential blocking features were not included thereby likely increasing the amount of shadow flicker exposure modeled.

In response to concerns that shadow flicker exposure will impact an entire property, including areas outside of the residence, the Department acknowledged the proposed turbines will cast shadows across some outside areas of properties.

The Department noted the turbine re-locations to Iowa would eliminate 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 therefore additional minimization and mitigation measures would not be required per Site Permit Section 7.2.

The Department expressed concern that the permit amendment requests may be attempts at reconsideration. DOC EERA noted that all three permit amendment requests identify information that was in the record of the project at the time of the Commission's decision to approve the Amended Site Permit on March 20, 2020. DOC EERA recommended the Commission not approve any of the requested permit amendments.

Xcel's Reply Comments

Xcel asserted that the Commission's analysis of shadow flicker was appropriate, and that the conditions on shadow flicker included in the Site Permit already address the concerns raised by the Nelsons and Gastons. According to Xcel, neither the Nelsons, the Gastons, nor any other commenter has identified any new issues, pointed to new and relevant evidence, or exposed any errors or ambiguities in the Commission's orders issuing and amending the Site Permit. Xcel stated the Nelsons' and Gastons' requests to amend the Site Permit should be denied.

V. Staff Analysis

Upon review of the petitions for permit amendment, comments received and the record of the proceeding, staff agrees with the Department's and Xcel's position that adoption of any permit amendments are not warranted. Staff believes the record supports the Commission denying or taking no action on the petitions.

The Commission issued a valid Site Permit for the project over two years ago. Staff agrees with Xcel's assertion that the question of shadow flicker was fully vetted as shown in its December 19, 2018 *Order Issuing Site Permit and Taking Other Action*.

Staff notes that Minn. Stat. § 216F.081 provides the Commission with the discretion to consider and deny the application of county standards for the siting of LWECS if it finds good cause not to apply those standards.¹²

Staff does not believe the record to date supports additional shadow flicker monitoring and does not believe the petitioners have provided sufficient information or argument to support the assertion that the basic modeling fundamentals used in the analysis were faulty or resulted in bias against landowners.

Should the Commission determine that further consideration of the petitions is warranted, staff recommends it articulate the scope of inquiry, and provide direction to parties and staff regarding the type of process and the preferred schedule.

VI. Decision Options

1. Adopt the Joint Petitioners' Site Permit Amendment
2. Deny the Joint Petitioners' Site Permit Amendment
3. Adopt the Severtson Site Permit Amendment
4. Deny the Severtson Site Permit Amendment
5. Take no action on any of the Site Permit Amendment petitions
6. Take some other action deemed appropriate

Staff Recommendation: Options 2 and 4, or Option 5

¹² "A county may adopt by ordinance standards for LWECS that are more stringent than standards in commission rules or in the commission's permit standards. The commission, in considering a permit application for LWECS in a county that has adopted more stringent standards, shall consider and apply those more stringent standards, unless the commission finds good cause not to apply the standards."