

November 4, 2020

**VIA ELECTRONIC FILING**

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place E, Suite 350  
St. Paul, Minnesota 55101

**Re: Walleye Wind, LLC – A Large Wind Energy Conversion System Site Permit  
Application –Application Amendment  
MPUC Docket No. IP7026/WS-20-384**

Dear Mr. Seuffert:

Walleye Wind, LLC (Walleye Wind, Applicant) respectfully submits this Site Permit Application amendment (Application Amendment). The Initial Application for Walleye Wind's Application for a Site Permit for a Large Wind Energy Conversion System (Initial Application) to construct and operate Walleye Wind project (Project) was filed on July 9, 2020. In this Application Amendment, Walleye Wind proposes to modify the Project's proposed wind turbine technology and layout to change alternative and primary turbine designations, modify operational power capacity at several turbines; as well as remove several turbine locations and make turbine shifts to address landowner participation and concerns. These changes are described in detail below and reflected in the following documents included with this Application Amendment:<sup>1</sup>

- (1) A clean version of the Site Permit Application text incorporating the changes described below;
- (2) **Attachment A:** A map comparing the Initial Application wind turbine array and this Application Amendment wind turbine array;
- (3) **Attachment B:** Revised Maps 2 through 18; and
- (4) **Attachment C:** Updates to Appendix B (Sound Level Assessment Report), Appendix C (Shadow Flicker Modeling Report), Appendix D (Electromagnetic Interference Analysis), and Appendix J (Decommissioning Plan).

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<sup>1</sup> Interested stakeholders will have the opportunity to comment on this Application Amendment at the yet to be scheduled Informational/Scoping Meeting and during the subsequent comments periods that will be scheduled.

Walleye Wind has designed and developed the current site in accordance with Minnesota standards in order to provide 100% Production Tax Credit capability when delivering the project for the Minnesota Municipal Power Agency in December of 2021. To meet this deadline, Walleye Wind respectfully requests Commission review and approval of the Amended Application no later than August 2021.

### **Description of Changes**

The Initial Application included 51 prospective turbine locations; five of those locations were removed from this Application Amendment. The five locations that were removed included two primary turbines and three alternate turbines. The wind turbine array in this Application Amendment is numbered in a way that spatially matches the Initial Application, including the terms “primary” and “alternate”. The removal of two primary turbines lowers the count for turbines designated as primary to 38 turbines. Walleye Wind, however, is proposing to construct 40 of the 46 prospective locations presented in this Application Amendment.

The November 2020 array includes changes to the June 2020 array, and due to these changes, those “primary” and “alternate” terms no longer indicate which turbine locations are truly expected to be built. For this reason, **Table 1** indicates the turbine technologies included in the latest array, the total count of a given turbine technology, how many of those turbines were considered “primary” in the June 2020 array, and how many are expected to be built as of October 2020. More specifically, this Application Amendment proposes to make the following changes to wind turbines:

- Two primary and three alternate turbine locations removed
- Five primary turbines changed to alternate
- Seven alternate turbines activated to primary
- Fourteen turbines shifted locations
- Four turbines changed from General Electric (GE) 2.82 MW to safe harbor model GE 2.32 MW turbines
- Three turbines changed from a safe harbor GE 2.32 to model GE 2.82
- Noise Reduced Operations (NRO) technology was added to six model GE 2.82 turbines
- Three turbines model GE 2.82 changed hub heights

With these changes in turbine technology, the Project's total power capacity will decrease slightly from 110.8 MW to 109.2 MW.<sup>2</sup>

A map comparing the Initial Application wind turbine array and this Application Amendment wind turbine array is provided in **Attachment A**. Access roads, collection routes, and crane walks were adjusted to accommodate the revised turbine array and mapping is provided in **Attachment B**. **Table 1** provides a summary of the wind turbine array changes.<sup>3</sup>

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<sup>2</sup> Select GE 2.82-127 LNTE wind turbines (turbines 5, 6, 27, 32, 33, and Alt 8) are proposed to run under a noise reduction operation (NRO). In the event that the NRO model turbines are not required, the Project capacity would increase to approximately 109.7 MWs.

<sup>3</sup> Aside from Table 1, the table numbering in this amendment corresponds to the table numbering in Initial Application.

**Table 1: Summary of Walleye Wind Site Permit Application Wind Turbine Changes**

Turbine Number		Turbine Model		Changes Between Initial Application and Application Amendment
Initial Application Primary and Alternate Designation	Application Amendment Primary and Alternate Designation	Initial Application	Application Amendment	
1	2	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine moved approximately 615 feet west
2	Alt3	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine changed to alternate and moved approximately 599 feet northwest
3	6	GE2.82 127RD 114HH	GE2.32 116RD 80mHH	Turbine model change from GE 2.82 to GE 2.32
4	Alt7	GE2.32 116RD 80mHH	GE2.32 116RD 80mHH	Turbine change to alternate and moved approximately 20 feet south
5	4	GE2.32 116RD 80mHH	GE2.82 127RD 89HH NRO	Turbine model change from GE 2.32 to GE 2.82 and added NRO technology
6	5	GE2.82 127RD 114HH	GE2.82 127RD 114HH NRO	Turbine model added NRO technology
7	-	GE2.82 127RD 114HH	-	Location removed
8	7	GE2.82 127RD 114HH	GE2.32 116RD 80mHH	Turbine model change from GE 2.82 to GE 2.32 and moved approximately 746 feet southwest
9	8	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
10	9	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-

Turbine Number		Turbine Model		Changes Between Initial Application and Application Amendment
Initial Application Primary and Alternate Designation	Application Amendment Primary and Alternate Designation	Initial Application	Application Amendment	
11	14	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
12	18	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
13	12	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
14	10	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
15	11	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
16	13	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
17	15	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
18	16	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
19	17	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
20	19	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
21	-	GE2.82 127RD 114HH	-	Location removed
22	21	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine moved approximately 36 feet northwest
23	Alt2	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine changed to alternate
24	23	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-

Turbine Number		Turbine Model		Changes Between Initial Application and Application Amendment
Initial Application Primary and Alternate Designation	Application Amendment Primary and Alternate Designation	Initial Application	Application Amendment	
25	24	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
26	25	GE2.82 127RD 114HH	GE2.32 116RD 80mHH	Turbine model change from GE 2.82 to GE 2.32
27	Alt8	GE2.82 127RD 114HH	GE2.82 127RD 114HH NRO	Turbine changed to alternate, added NRO technology, and moved approximately 557 feet northwest
28	26	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
29	27	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
30	28	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine moved approximately 115 feet south
31	29	GE2.82 127RD 114HH	GE2.82 127RD 89HH	Turbine model change to lower hub height-
32	31	GE2.32 116RD 80mHH	GE2.82 127RD 89HH NRO	Turbine model change from GE 2.32 to 2.82 and added NRO technology
33	30	GE2.32 116RD 80mHH	GE2.82 127RD 114HH NRO	Turbine model change from GE 2.32 to GE 2.82, added NRO technology, and moved approximately 15 feet east
34	35	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine moved approximately 866 feet northeast

Turbine Number		Turbine Model		Changes Between Initial Application and Application Amendment
Initial Application Primary and Alternate Designation	Application Amendment Primary and Alternate Designation	Initial Application	Application Amendment	
35	36	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
36	37	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
37	38	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
38	Alt6	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine changed to alternate
39	39	GE2.82 127RD 114HH	GE2.82 127RD 114HH	-
40	40	GE2.82 127RD 114HH	GE2.82 127RD 89HH	Turbine model change to lower hub height
Alt1	-	GE2.82 127RD 114HH	-	Location removed
Alt2	-	GE2.82 127RD 114HH	-	Location removed
Alt3	-	GE2.82 127RD 114HH	-	Location removed
Alt4	22	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine activated from alternative to primary and moved approximately 654 feet southwest
Alt5	Alt1	GE2.82 127RD 114HH	GE2.82 127RD 114HH	Turbine moved approximately 308 feet northeast
Alt6	20	GE2.82 127RD 114HH NRO	GE2.32 116RD 80HH	Turbine activated from alternative to primary and model change from GE 2.82 to GE 2.32

Turbine Number		Turbine Model		Changes Between Initial Application and Application Amendment
Initial Application Primary and Alternate Designation	Application Amendment Primary and Alternate Designation	Initial Application	Application Amendment	
Alt7	1	GE2.82 127RD 89HH	GE2.82 127RD 89HH	Turbine activated from alternative to primary and moved approximately 35 feet northeast
Alt8	32	GE2.82 127RD 89HH	GE2.82 127RD 89HH NRO	Turbine activated from alternative to primary and NRO technology added
Alt9	3	GE2.82 127RD 89HH	GE2.82 127RD 89HH	Turbine activated from alternate to primary and moved approximately 236 feet northwest
Alt10	33	GE2.82 127RD 89HH NRO	GE2.82 127RD 114HH	Turbine activated from alternative to primary, model changed to increased hub height, and moved approximately 371 feet southeast
Alt11	34	GE2.82 127RD 89HH NRO	GE2.82 127RD 89HH	Turbine activated from alternative to primary



The following maps and appendices have been updated to reflect the Application Amendment modifications: **Maps 2 through 18** are provided herein as **Attachment B**, and updates to **Appendix B (Sound Level Assessment Report)**, **Appendix C (Shadow Flicker Modeling Report)**, **Appendix D (Electromagnetic Interference Analysis)**, and **Appendix J (Decommissioning Plan)** of the Initial Application are provided herein as **Attachment C**. Sections of the Initial Application and maps or appendices that did not change are not summarized herein as the Initial Application submittal remains unchanged.

### **Section 1.0 – Applicant Information**

The Initial Application proposed a rated capacity of 110.8 MW for the Project at the point of interconnection (POI). All sections of this Application Amendment were updated to reflect the current Project capacity of 109.2 MW. The Initial Application stated the Project is projected to start construction in the second quarter of 2021, with commercial operations anticipated to commence on December 27, 2021. This Application Amendment added that to meet this deadline, Walleye Wind will need application approval in by August 2021. **Section 10.8** provides more details on the Project schedule.

### **Section 4.3 – Related Capacity**

The Initial Application proposed a rated capacity of 110.8 MW for the Project at the POI. Additionally, the Initial Application stated that the proposed capacity of the Project could increase up to 111.52 MW if alternative turbines are utilized. Due to changes in turbine technology the new rated capacity for the Project is now 109.2 MW. If Noise Reduced Operation (NRO) model alternative turbines are not utilized, the Project capacity would increase to approximately 109.7 MWs.

### **Section 4.4 – Number of Turbines and Alternate Turbine Locations**

The total capacity for the Project is previously described in the Initial Application as 110.8 MWs. The newly proposed capacity of the project is now 109.2 MW. The turbine layout submitted in the Initial Application included 51 prospective turbine locations; the five locations that were removed included two turbines designated as primary. The turbine layout submitted in this Application Amendment spatially matches the Initial Application, including the terms primary and alternate. The current preliminary layout within this Application Amendment now includes 6 alternative wind turbines. The maximum number of wind turbines proposed for construction remains 40 as provided in the Initial Application.

#### Section 4.6 – Percent of Wind Rights Secured

As of June 16, 2020, and the time of the Initial Application, Walleye Wind had land control agreements with landowners for approximately 9,188 acres or 39.7% of the land within the Site.

As of the October 26, 2020, Walleye Wind, has site control agreements with landowners for approximately 11,338 acres or 70% of the land required for successful construction and operation of the Project. Walleye Wind currently has signed control agreements for 80% of the land where permanent infrastructure is planned for construction. Walleye Wind expects that site control agreements will be signed no later than February 2021.

#### Section 5.2 – Description of Turbines and Towers

The Initial Application stated that the Project will be using a combination of four potential GE models: the 2.82 MW, 114 m hub height turbine; the 2.82 MW, 89 m hub height turbine; and the safe harbor 2.32 MW, 80 m hub height turbine; or the safe harbor 2.5 MW, 90 m hub height turbine. As described in this Application Amendment, the Project will no longer be using the safe harbor 2.5 MW, 90 m hub height turbine. **Table 3 (Wind Turbine Characteristics)** of the Application was revised to remove the turbine model GE 2.5 MW.

**Table 3: Wind Turbine Characteristics**

Design Features	GE 2.82 MW Turbine	GE 2.82 MW Turbine	GE 2.32 MW Turbine
Nameplate Capacity	2.82 MW	2.82 MW	2.32 MW
Hub Height	114 m (374 ft)	89 m (292 ft)	80 m (262.5 ft)
Rotor Swept Area	12,704 m <sup>2</sup> (136,745 ft <sup>2</sup> )	12,704 m <sup>2</sup> (136,745 ft <sup>2</sup> )	10,660 m <sup>2</sup> (114,743 ft <sup>2</sup> )
Total Height (ground to fully extended blade tip)	178.1 m (584.3 ft)	152.1 m (499 ft)	138.3 m (453.7 ft)
Rotor Diameter	127.2 m (417 ft)	127.2 m (417 ft)	116.5 m (382 ft)
Design Life	Design criteria contemplates 20 years	Design criteria contemplates 20 years	Design criteria contemplates 20 years
Cut in Wind Speed	3 m/s (10 ft/second (s))	3 m/s (10 ft/ s)	3 m/s (10 ft/s)
IEC Wind Class	S	S	S

Design Features	GE 2.82 MW Turbine	GE 2.82 MW Turbine	GE 2.32 MW Turbine
Cut Out Wind Speed	30 m/s average (98.4 ft/s) in a 600-second interval, 35 m/s average (144.8 ft/s) in a 30-second interval and 39 m/s average (305 ft/s) in a 3-second interval	30 m/s average (98.4 ft/s) in a 600-second interval, 35 m/s average (144.8 ft/s) in a 30-second interval and 39 m/s average (305 ft/s) in a 3-second interval	32 m/s average (105 ft/s) in a 600-second interval, 37 m/s average (102 ft/s) in a 30-second interval and 41 m/s average (134.5 ft/sec) in a 3-second interval
Rotor Speed	7.4-15.7 Revolutions Per Minute (RPM)	7.4-15.7 RPM	7.4-15.7 RPM
Tip Speed at rated power	85.1-89.1 m/s (279.2-292.3 ft/s)	85.1-89.1 m/s (279.2-292.3 ft/s)	81.7-85.4 m/s (268.0-280.18 ft/s)
Sound at Turbine	Lw = 108.5 A-Weighted Decibels (dBA) with LNTE	Lw = 108.5 dBA with LNTE	Lw = 106.0 dBA with LNTE
Power Regulation	Blade pitch controls power. Controls included for Zero Voltage Ride Through (ZVRT) and enhanced reactive power (0.9 power factor).	Blade pitch controls power. Controls included for ZVRT and enhanced reactive power (0.9 power factor).	Blade pitch controls power. Controls included for ZVRT and enhanced reactive power (0.9 power factor).
Generation	2.82 MW per turbine	2.82 MW per turbine	2.32 MW per turbine
Tower	Multi-coated, conical tubular steel with safety ladder to the nacelle. Rest platforms each section.	Multi-coated, conical tubular steel with safety ladder to the nacelle. Rest platforms each section.	Multi-coated, conical tubular steel with safety ladder to the nacelle. Rest platforms each section.
Nacelle Bedplate	Cast iron bedplate with fabricated extension to support the generator.	Cast iron bedplate with fabricated extension to support the generator.	Cast iron bedplate with fabricated extension to support the generator.
Main Bearings	Roller Bearings	Roller Bearings	Roller Bearings
SCADA	Each turbine is equipped with SCADA controller hardware, software and database storage capability.	Each turbine is equipped with SCADA controller hardware, software and database storage capability.	Each turbine is equipped with SCADA controller hardware, software and database storage capability.
FAA Lighting	Yes, per FAA permitting.	Yes, per FAA permitting.	Yes, per FAA permitting.
NRO	Operation of a turbine at a reduced rotor speed and with an optimized blade	Operation of a turbine at a reduced rotor speed and with an optimized blade	-

Design Features	GE 2.82 MW Turbine	GE 2.82 MW Turbine	GE 2.32 MW Turbine
	pitch angle, to lower the sound emitted	pitch angle, to lower the sound emitted	
Foundation	Per manufacturer specifications -spread foot or pier foundation-TBD.	Per manufacturer specifications -spread foot or pier foundation-TBD.	Per manufacturer specifications -spread foot or pier foundation-TBD.

Source: GE manufacturer specifications.

## Section 6.2 – Collector Lines and Feeder Lines

In the Initial Application, approximately 35 miles of trenched underground 34.5 kilovolt (kV) collector lines were estimated to electrically connect each turbine step-up transformer to the proposed Walleye Wind Substation. In this Application Amendment, the total distance of underground 34.5 kV collector lines increased from 35 miles to 37 miles due to changes in the revised layout. The total miles of underground collection cable also increased from approximately 105 to 111 miles of buried cable.

## Section 6.3 – Other Associated Facilities

### Turbines Access Roads and Temporary Laydown Yard

In the Initial Application, approximately 11.6 miles of permanent access roads were to be installed. In this Application Amendment, the total distance of permanent access roads increased to approximately 12.0 miles due to changes in the revised layout. The final length will be determined by final layout.

In the Initial Application it was not anticipated that a concrete batch plant will need to be established for Project use within the Site. The Application Amendment was revised to state if determined necessary for Project construction, a concrete batch plant will be located within the area designated for the laydown yard within the Site.

## Section 7.0 – Wind Rights

At the time of June 16, 2020 and the time of the Initial Application, Walleye Wind had site control agreements with landowners for approximately 9,188 acres or 39.7% of the land within the Site. As of October 26, 2020, Walleye Wind has executed and recorded landowner agreements for approximately 11,3385 acres within the Site, which is approximately 70% of the land required to complete the Project. Walleye Wind remains in negotiation with a number of landowners within the Site and anticipates acreage being added to the Project’s leased lands no later than February 2021. Walleye Wind currently has signed control agreements for 80% of the land where permanent infrastructure is planned for construction. Of the 46 turbines proposed for construction, 40 are

designated as primary and 6 as alternative. Forty of these turbines are signed control agreements, and six (6) are pending legal review with the Walleye Wind or landowners. Additionally, there are 39 collection agreements signed with six (6) pending legal review, 81 landowners within the 3x5 turbine setback under signed agreements, and 30 in process with either land owner or Walleye Wind legal, and the laydown yard, O&M building, ADLS and MET tower parcels are all pending legal review.

## **Section 8.4 – Noise**

In the Initial Application, the sound analysis included a total of 51 Project-related wind turbines (40 proposed plus 11 alternates) of which four (4) were proposed to be GE 2.32-116 wind turbines and 47 were proposed to be GE 2.82-127 wind turbines. Forty-two (42) proposed GE 2.82-127 wind turbines were to have a hub height of 114 m and the other five (5) were to have a hub height of 89 m. Three (3) GE 2.820127 LNTE wind turbines were proposed to operate under NRO: Alt6 (114 m HH), Alt10 (89 m HH), and Alt11 (89 m HH).

The revised sound analysis for this Application Amendment includes a total of 46 Project-related wind turbines (40 proposed plus 6 alternates) of which five (5) are proposed to be GE 2.32 wind turbines and 41 are proposed to be GE 2.82-127 wind turbines. Select GE 2.82 wind turbines (turbines 5, 6, 27, 32, 33, and Alt8) are proposed to run under NRO. All wind turbines are still proposed to have LNTE blades.

### **Section 8.4.1 Modeling Methodology and Ambient Sound Levels**

#### **Project Wind Turbines**

In the Initial Application the sound analysis for the Project conservatively included 51 turbines, of which 11 were considered alternate locations. Of these 51 turbines, 43 wind turbines are GE 2.82-127 units and four are GE 2.5-166 units. In the revised sound analysis for this Application Amendment, the analysis included 46 wind turbines, of which 6 are alternative locations. Of these turbines 46 wind turbines, 41 wind turbines are GE 2.82-127 units and five are GE 2.32-116 units. The GE 2.82-127 wind turbines have a rotor diameter of 127.2 m. Thirty-three have a hub height of 114 m and the other eight have a hub height of 89 m.

In the Initial Application, three turbines were proposed to run under NRO Mode 1. In the revised site plan, six turbines are proposed to run under NRO Mode 1 (turbines 5, 6, 27, 32, 33, and Alt8).

### **Section 8.4.2 Projected Post-Project Sound Levels**

#### **Project + Existing Non-Project**

In the Initial Application, the highest modeled “Project +Existing Non-Project” L<sub>50</sub> sound levels ranged from 21 to 47 dBA and the maximum modeled sound level was 47 dBA at 11 receptors in Minnesota (5 participating, 4 targeted, and 2 non-participating receptors). For this Application Amendment, the maximum modeled sound level of 47 dBA decreased to 9 receptors in Minnesota (6 participating and 3 targeted receptors).

### **Project Only Results**

In the Initial Application, the highest modeled L<sub>50</sub> sound level from the “Project Only” analysis ranged from 14 to 47 dBA and represented the worst case- future L<sub>50</sub> sound levels produced solely by the Project wind turbines. The maximum modeled sound level of 47 dBA occurred at 11 receptors in Minnesota (5 participating, 4 targeted, and 2 non-participating receptors). For this Application Amendment, the maximum modeled sound level of 47 dBA decreased to 8 receptors in Minnesota (6 participating and 2 targeted receptors).

In this Application Amendment, Walleye is considering operating wind turbines under different modes. In the event wind turbine #4 is not constructed, Walleye Wind, LLC will operate:

- Wind turbine #5 under NRO Mode 2 instead of NRO Mode 3
- Wind turbine #6 under normal operations instead of NRO Mode 1

To ensure compliance with this scenario, Epsilon performed sound level modeling for this alternative scenario and the results showed minimal differences (less than 1 dBA) at all receptors compared to the results presented in **Appendix B (Sound Level Assessment Report)**. Under the alternative scenario 227 receptors decreased, 429 receptors were unchanged, and 9 receptors increased. All increases were less than 1 dBA with modeled sound levels at or below 47 dBA at all locations.

### **Evaluation of Sound Levels**

In the Initial Application, since ambient sound levels in the Project area vary, modeled Project-Only sound levels were combined with modeled Existing Non-Project wind turbines sound levels and a range of non-wind turbine ambient sound levels in order to evaluate the Minnesota limit of 50 dBA. The highest Project-Only L<sub>50</sub> sound level was found to be 47 dBA at receptors #163, 317, 320, 332, 83, 316, 307, 335, N9, 334, and 148. This includes 5 participating receptors, 4 targeted receptors, and 2 non-participating receptors. For this Application Amendment, the highest Project-Only L<sub>50</sub> sound level to be 47 dBA were found at receptors #94, 147, 83, 332, N9, 163, 316, 148, and 87. This includes 6 participating receptors and 3 targeted receptors.

### **Section 8.4.4 – Potential Impacts and Mitigation**

Walleye Wind has designed the Project to meet the MPCA state noise standards and to minimize the sound levels due to the wind turbines at the homes in the community, while also meeting the other constraints of Project design and regulatory requirements. In the Initial Application, Walleye wind proposed a setback of at least 1,400 ft from residential developments.

The Project now proposes using GE 2.82 MW turbines and GE 2.5 MW turbines. However, compliance with MPCA standards setbacks will be accomplished through by maintaining the proposed minimum 1,400 ft setback from residential developments, in most cases. The Applicant will also conduct a post-construction sound level measurement program to evaluate compliance with respect to MPCA noise standards.

### Section 8.5 – Visual Impacts

In the Initial Application, Walleye proposed using four turbine models, GE 2.5 MW or the GE 2.32 MW and two models of the GE 2.82 MW. The Project now proposes to only use the GE 2.5 MW model and two models of the GE 2.82 MW. **Table 11** has been updated to reflect current Project technology.

**Table 11: Rotor Diameter and Number of Turbines (Proposed)**

Turbine Model	Total Height (m/ft)	Rotor Diameter (m/ft)	Ground Clearance (m/ft)	Number of Primary Turbines	Number of Alternate Turbines
GE 2.32 MW	138.3/453.7	116.5/382	21.8/71.7	4	1
GE 2.82 MW	178.1/584.3	127.2/417	51/167.3	27	3
GE 2.82 MW	152.1/499	127.2/417	25/82	2	3
GE 2.82 MW-NRO	178.1/584.3	127.2/417	51/167.3	3	-
GE 2.82 MW-NRO	152.1/499	127.2/417	25/82	2	1

#### Section 8.5.1 – Visual Impacts

In the Initial application, the nearest proposed turbine for the Project was approximately 4.3-miles southwest of Blue Mounds State Park. This distance has now increased to 6.7 miles in this Application Amendment. Visual impacts to Blue Mounds State Park are not expected to be a concern.

#### Section 8.5.3 – Shadow Flicker

A revised shadow flicker analysis was conducted for this Application Amendment to reflect the changes in proposed turbine technology. The revised analysis included 46 wind turbines (40 primary + 6 alternates). **Table 12** below reflects the changes to the proposed turbine characteristics.

**Table 12: Proposed Turbine Characteristics<sup>4</sup>**

	<b>GE 2.32-116 (5 Turbines)</b>	<b>GE 2.82-127 (41 Turbines)</b>
Rated Power	2,320 kW	2,820 kW
Hub Height	90 m	114 or 89 m
Rotor Diameter	116.5 m	127.2 m
Cut-in Wind Speed	3 m/s	3 m/s
Cut-out Wind Speed	32 m/s (105 ft/s)	30 m/s (98.4 ft/s)
Maximum RPM	15.7	15.7

**Potential Impacts**

In the Initial Application, the modeled worst-case annual shadow flicker duration ranged between 0 hours, 0 minutes and 120 hours, 4 minutes per year, which occurred at a targeted receptor (#147). The maximum worst-case annual shadow flicker at a non-participating receptor (#333) was 104 hours, 55 minutes. While the maximum worst-case at a participating receptor (#332) was 119 hours, 59 minutes.

In the revised analysis for this Application Amendment, the worst-case annual shadow flicker duration increased to 134 hours, 15 minutes per year. The maximum worst-case shadow flicker was at a targeted receptor (#94). The maximum worst-case annual shadow flicker at a non-participating receptor (#84) is 107 hours, 26 minutes. While the maximum worst-case at a participating receptor (#332) is 127 hours, 54 minutes.

The Initial Application indicated that the predicted, expected annual shadow flicker duration ranged between 0 hours, 0 minutes and 42 hours, 22 minutes per year, which occurred at targeted receptor #331. The maximum expected worst-case annual shadow flicker at a non-participating receptor (#333) was 34 hours, 11 minutes. While the maximum expected worst-case annual shadow flicker at a participating receptor (#332) was 41 hours, 45 minutes.

The maximum predicted expected annual shadow flicker duration for this Application Amendment is now 45 hours, 49 minutes per year. The maximum expected shadow flicker was at a participating receptor (#331). The maximum expected worst-case annual shadow flicker at a non-participating receptor (#84) is 38 hours, 36 minutes. While the maximum expected worst-case annual shadow flicker at a targeted receptor (#94) is 42 hours, 34 minutes.

In the Initial Application, 206 Minnesota receptors were predicted to experience no annual shadow



flicker, 167 locations were predicted to experience less than 10 hours per year of shadow flicker, 60 locations were expected to have between 10 and 30 hours of shadow flicker per year, and 10 locations were expected to have over 30 hours of shadow flicker per year, including three non-participating receptors.

However, the revised model for the Application Amendment indicated 227 receptors are predicted to experience no annual shadow flicker, 152 locations are predicted to experience some shadow flicker but less than 10 hours per year, 53 locations are expected to have between 10 and 30 hours of shadow flicker per year, and eleven locations are expected to have over 30 hours of shadow flicker per year, four of which are non-participating receptors.

Summaries of the modeling results are presented in **Tables 15, 16, and 17. Appendix D** to the Application Amendment provides the complete revised shadow flicker study and results for the Project. An updated **Map 18 (Shadow Flicker Modeling Results)** is also included in **Attachment B** of this Application Amendment.

**Table 15: Predicted Shadow Flicker Impacts at Participating Residents**

	Duration (hrs:mins/yr)
Maximum Shadow Flicker – Worst-Case	127:54
Maximum Shadow Flicker - Expected Case	45:49

**Table 16: Predicted Shadow Flicker Impacts at Targeted Residents**

	Duration (hrs:mins/yr)
Maximum Shadow Flicker – Worst-Case	134:15
Maximum Shadow Flicker - Expected Case	42:34

**Table 17: Predicted Shadow Flicker Impacts at Non-Participating Residents**

	Duration (hrs:mins/yr)
Maximum Shadow Flicker – Worst-Case	107:26
Maximum Shadow Flicker - Expected Case	38:36

### **Mitigation Measures**

The Initial Application states that shadow flicker exposure of residences in the areas would be minimized through the utilization of turbine setback of at least 1,400 ft (426.7 m) from homes.

This Application Amendment proposes to keep this 1,400 ft setback from residences in all but two locations.

### **Section 8.8- Recreation**

#### **Parks and Public Trails**

This Application Amendment removed reference to the Rock County setback requirement to trails.

### **Section 8.11 – Land-Based Economies**

#### **Potential Impacts**

In the Initial Application, the primary impact to agricultural land was the reduction of crop production on a total of approximately 42.8 acres of farmland in the Site. Based on the revised Project layout for this Application Amendment, Walleye Wind anticipates impacts to now total 47.4 acres of agricultural land. **Table 30** summarizes the permanent impacts to prime farmland for turbines, access roads, MET tower, the O&M facility, and the Walleye Wind Substation for the revised Project layout. **Table 31** summarizes the temporary impacts to prime farmlands for turbines, access roads, collection lines, MET tower, laydown yard, and crane walks for the revised Site plan.

**Table 30: Summary of Permanent Prime Farmland Impacts**

<b>Prime Farmland Type</b>	<b>Turbines</b>	<b>Alt. Turbines</b>	<b>Access Roads</b>	<b>Alt. Access Roads</b>	<b>MET &amp; ADLS Towers</b>	<b>O&amp;M Facility /Substation</b>	<b>Total</b>
Prime Farmland	3.8	0.38	9.80	0.78	0.03	4.39	<b>19.22</b>
Prime Farmland if Drained	0.73	0.27	2.59	0.12	0.07	5.16	<b>8.94</b>
Farmland of Statewide Importance	5.18	0.85	11.01	2.24	0.10	0.41	<b>19.79</b>
Prime Farmland if Protected from Flooding	-	0.25	0.08-	-	-	0.10	<b>0.43</b>
Not Prime Farmland	-	-	-	0.32-	-	-	<b>0.32</b>
<b>Total</b>	<b>9.75</b>	<b>1.75</b>	<b>23.48</b>	<b>3.46</b>	<b>0.20</b>	<b>10.06</b>	<b>48.70</b>

**Table 31: Summary of Temporary Prime Farmland Impacts**

Prime Farmland Type	Turbines	Alt. Turbines	Access Roads	Alt. Access Roads	Collection*	Alt. Collection*	MET & ADLS Towers	Laydown Yard	Crane Paths	Alt. Crane Paths	Total
Prime Farmland	102.62	8.36	27.95	2.28	81.77	7.36	6.08	17.01	80.17	8.06	<b>341.66</b>
Prime Farmland if Drained	22.85	8.00	7.33	0.34	23.77	2.01	1.48	0.97	24.74	0.07	<b>91.56</b>
Farmland of Statewide Importance	120.62	22.33	31.38	6.35	79.23	6.70	5.40	0.12	120.67	0.67	<b>393.47</b>
Prime Farmland if Protected from Flooding	9.64	-	0.24	-	5.58	1.66	-	-	1.0	-	<b>18.15</b>
Not Prime Farmland	3.5	0.21	-	0.89	8.25	1.06	-	-	3.25	-	<b>17.20</b>
<b>Total</b>	<b>259.27</b>	<b>38.90</b>	<b>66.90</b>	<b>9.86</b>	<b>198.60</b>	<b>18.79</b>	<b>12.96</b>	<b>18.10</b>	<b>229.86</b>	<b>8.80</b>	<b>862.04</b>

### **Mitigation Measures**

Although the total permanent loss of agricultural land increased from 42.8 in the Initial Application to 47.4 acres in this Application Amendment, this increase is still not expected to result in the loss of agricultural-related jobs or net loss of income.

#### **Section 8.12 – Tourism**

##### **Mitigation Measures**

In the Initial Application, Walleye Wind proposed a turbine setback of at least 1.1 times the total turbine height from snowmobile trails to minimize the potential for ice throw. For this Application Amendment, Walleye Wind proposes a 250 ft setback from snowmobile trails.

#### **Section 8.19 – Vegetation**

##### **Potential Impacts**

As discussed in the Initial Application, vegetation will be removed during construction and installation of Project infrastructure to allow for construction of turbine pads, access roads, substation, and O&M facilities. The majority of Project infrastructure is still proposed in agricultural fields. The Initial Application indicated that, of the total Site, approximately 51.5 acres would be permanently converted to sites for wind turbines or other Project infrastructure. Based on the revised Project layout for this Application Amendment, 47 acres will be permanently converted to sites for wind turbines or other Project infrastructure. **Table 41** summarizes the revised anticipated permanent impacts to vegetation.

As with the permanent impacts, most of the temporary impacts to vegetation in the Initial Application and this revised Frist Application Amendment are also anticipated to occur on cultivated cropland. In the Initial Application, approximately 870 acres of cropland were expected to be temporarily impacted. Based on the revised Project layout for this Application Amendment, 834 acres will be temporarily impacted for wind turbines or other Project infrastructure (**Table 42**). Impacts are estimated based on preliminary site layouts and include impacts of all 46 turbine locations, including alternate locations.

**Table 41: Summary of Estimated Permanent Impacts to Vegetation (Acres)**

Land Cover Type	Turbines	Alt. Turbines	Access Roads	Alt. Access Roads	O&M Facility/ Substation	MET &ADLS Towers	Total
Cultivated Crops	9.75	1.75	22.58	3.32	9.77	0.20	47.37
Developed, Open Space	-	-	0.70	0.08	0.29	-	1.07
Developed, Low Intensity	-	-	0.04	0.01	-	-	0.05
Grassland/ Herbaceous	-	-	-	0.01	-	-	0.01
Emergent Herbaceous Wetlands	-	-	-	0.04-	-	-	0.04
Deciduous Forest	-	-	0.01-	-	-	-	0.01
Hay/Pasture	-	-	0.15	-	-	-	0.15
Sites of Biodiversity (Below)	-	-	0.17	-	-	-	0.17
Sites of Biodiversity (Moderate)	-	-	-	-	-	-	0.00
<b>Total</b>	<b>9.75</b>	<b>1.75</b>	<b>23.48</b>	<b>3.46</b>	<b>10.06</b>	<b>0.20</b>	<b>48.70*</b>

\*The total acreage of estimated permanent impacts does not reflect the calculation for Sites of Biodiversity (Below and Moderate) as these amounts are already accounted for in other land cover impacts.

**Table 42: Summary of Estimated Temporary Impacts to Vegetation (Acres)**

Land Cover Type	Turbines	Alt. Turbines	Access Roads	Alt. Access Roads	Collection	Alt. Collection *	Laydown Yard	Crane Paths	Alt. Crane Paths	MET & ADLS Towers	Total
Cultivated Crops	257.16	38.90	64.00	9.40	185.93	17.20	17.84	222.46	8.16	12.96	<b>834.01</b>
Developed, Open Space	-	-	2.33	0.294	3.82	0.44	0.04	4.66	0.64	-	<b>12.22</b>
Developed, Low Intensity	0.22	-	0.11	0.03	0.31	-	0.22	-	-	-	<b>0.89</b>
Developed, Medium Intensity	-	-	-	-	-	-	-	-	-	-	<b>0.00</b>
Grassland/Herbaceous	-	-	-	0.04	0.11	-	-	0.02	-	-	<b>0.17</b>
Emergent Herbaceous Wetlands	-	-	-	0.10	0.43	0.18	-	-	-	-	<b>0.71</b>
Hay/Pasture	1.89	-	0.42	-	7.85	0.97	-	2.52	-	-	<b>13.65</b>
Deciduous Forest	-	-	0.04	-	0.15	-	-	0.20	-	-	<b>0.394</b>
Sites of Biodiversity (Below)	0.69	-	0.58	-	5.25	-	-	0.68	-	-	<b>7.20</b>
Sites of Biodiversity (Moderate)	-	-	-	-	0.5	-	-	-	-	-	<b>0.54</b>
<b>Total</b>	<b>259.27</b>	<b>38.90</b>	<b>66.90</b>	<b>9.86</b>	<b>198.60</b>	<b>18.79</b>	<b>18.10</b>	<b>229.86</b>	<b>8.80</b>	<b>12.96</b>	<b>862.04*</b>

\*The total acreage of estimated temporary impacts does not reflect the calculations for Sites of Biodiversity (Below and Moderate) as these amounts are already accounted for in other land cover impacts.

**Section 9.2- Other Nearby Wind Turbines, Within 10 Miles of Boundary**

In the Initial Application, 94 existing turbines were located within 10-miles of a proposed Project turbine location. Based on revisions to the Site layout, the number of existing turbines within 10-miles of a proposed Project turbine is 67.

**Section 10- Project Construction**

Due to changes in the Project layout between the Initial Application and this Application Amendment, the total number of acres of temporary grading possibly required for the Project changed from 896 acres to 862 acres.

**Section 10.2- Access Roads**

Due to changes in the Project layout for this Application Amendment, the total distance of permanent access roads changed from 11.6 miles to 12 miles.

**Section 10.3 Associated Facilities**

Due to changes in the Project layout for this Application Amendment, the total distance of underground 34.5 kV collector lines increased from 35 miles to 37 miles.

**Section 10.8 – Schedule**

A revised Project schedule is presented in **Table 52** below.

**Table 52: Project Schedule**

Activity	Initial Application Estimated Completion	Application Amendment Estimated Completion
Land Acquisition	August 2020	February 2021
Certificate of Need Order	July 2021	July-August 2021
Site Permit Order	July 2021	July-August 2021
Environmental Permits Received	March 2021	March 2021
Other Permits/Approvals Received	March 2021	March 2021

Activity	Initial Application Estimated Completion	Application Amendment Estimated Completion
Construction	August 2021	August-September 2021
In-Service Date	December 2021	December 2021

### **Section 10.9- Energy Projections**

The Initial Application estimated an annual expected net capacity factor of approximately 41.6% to 48.8% with a projected average annual output of approximately 449,860 MWh. Due the changes in turbine technology, the new net capacity factor for the Project is approximately 40.1% to 50.9% is expected annually and the projected average annual output is approximately 431,947 MWh.

### **Section 11.6- Cost to Decommission**

The initial estimated cost to decommission the Project was approximately \$89,250 per turbine in 2020 dollars. The decommissioning cost is now estimated to be \$80,372 per turbine.

Thank you for your attention to this Application Amendment.

Respectfully submitted,

**Stinson LLP**

*/s/ Brian M. Meloy*

Brian M. Meloy



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

<i>In the Matter of the Application</i>	)	
<i>of Walleye Wind, LLC for a</i>	)	
<i>Site Permit for the Walleye</i>	)	<b>Docket No. IP-7026/WS-20-384</b>
<i>Wind Project and Associated</i>	)	
<i>Facilities in Rock County, Minnesota</i>	)	<b><i>CERTIFICATE OF SERVICE</i></b>

The undersigned hereby certifies that a true and correct copy of the **WALLEY WIND LLC'S SITE PERMIT APPLICATION AMENDMENT** has been served today by e-mail and/or U.S. Mail to the following:

Name	Email	Delivery Method
Generic – Commerce Attorneys	<a href="mailto:commerce.attorneys@ag.state.mn.us">commerce.attorneys@ag.state.mn.us</a>	Electronic
Generic – Residential Utilities	<a href="mailto:residential.utilities@ag.state.mn.us">residential.utilities@ag.state.mn.us</a>	Electronic
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Dated this 4th day of November, 2020.

*/s/Nena L. Kuhnly*  
\_\_\_\_\_  
Nena L. Kuhnly