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February 21, 2019

VIA ELECTRONIC FILING

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

Re: Buffalo Ridge Wind, LLC – Certificate of Need Application Amendment

MPUC Docket No. IP-IP7006/CN-19-309
OAH 82-2500-36550

Dear Mr. Seuffert:

Buffalo Ridge Wind, LLC (BRW or Applicant) submits this Amendment to update its August 9, 2019 Certificate of Need Application (Application), related to the Buffalo Ridge Wind Project (Project), filed in Docket No. IP70061/CN-19-304. Specifically, since submittal of the Application, BRW has modified the wind turbine technology and layout within the original 17,609-acre Project Area to address a Federal Aviation Administration (FAA), Department of Defense (DoD), and U.S. Air Force (USAF) concern that the originally proposed wind turbine array may impact a common air route surveillance radar (CARSR). BRW has consulted with the FAA, DoD, and the USAF in revising the array to mitigate those agencies' concerns with respect to the impact on CARSR.[1]

More specifically, the August 9, 2019 Application proposed 40 primary turbines using 31 General Electric (GE) 2.82 megawatt (MW) wind turbines, five GE 2.52 MW wind turbines, and four GE 2.3 MW wind turbines. Additionally, the initial layout proposed five alternative wind turbine locations including one GE 2.82 MW wind turbine, three alternative GE 2.52 MW wind turbines,

[1] Interested stakeholders will have the opportunity to comment on this Amendment under the existing procedural schedule, as a Public Hearing is scheduled for March 26, 2020, and written comments from the public and state agencies on the Application will be accepted through April 9, 2020. *See* Amended Scheduling Order issued by Judge Case in the above-referenced dockets on February 11, 2020.

and one GE 2.3 MW wind turbine, for a total of 45 turbine locations. The modified design uses 36 GE 2.82 MW wind turbines and four GE 2.3 MW wind turbines. The updated wind array also includes five alternative GE 2.82 MW wind turbine locations for a total of 45 wind turbine locations. Due to changes in turbine technology, the Project's total power capacity will decrease slightly from 109 MW to 108.7 MW.

A map comparing the previous and revised wind turbine arrays 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 **Figure 1**. **Table 1** provides a summary of the wind turbine design changes.[2]

Table 1: Summary of Buffalo Ridge Wind, LLC Site Permit Application Wind Turbine Changes

New Turbine Number	Old Turbine Number	Proposed Turbine Model	Turbine Model Change	Comment
1	1	GE 2.82	No Change	
2	2	GE 2.82	No Change	Turbine moved 23 feet
3	3	GE 2.82	No Change	
4	4	GE 2.82	No Change	
5	5	GE 2.82	No Change	
6	6	GE 2.82	No Change	
7	7	GE 2.82	No Change	Turbine moved 1,680 feet
8	8	GE 2.82	Turbine changed from 2.3 to 2.82	Turbine moved 630 feet
9	9	GE 2.82	Turbine changed from 2.52 to 2.82	

[2] The table numbering in this amendment corresponds to the table numbering in BRW's initial Application.

New Turbine Number	Old Turbine Number	Proposed Turbine Model	Turbine Model Change	Comment
10	10	GE 2.82	No Change	Turbine moved 80 feet
11	11	GE 2.82	Turbine changed from 2.52 to 2.82	
12	12	GE 2.82	No Change	
13	13	GE 2.82	No Change	Turbine moved 30 feet
14	14	GE 2.82	Turbine changed from 2.52 to 2.82	
15	15	GE 2.82	Turbine changed from 2.52 to 2.82	Turbine moved 11,400 feet
16	16	GE 2.82	No Change	Turbine moved 260 feet
17	17	GE 2.82	No Change	
18	18	GE 2.82	No Change	Turbine moved 30 feet
19	19	GE 2.82	No Change	Turbine moved 3,240 feet
20	20	GE 2.82	No Change	Turbine moved 3,800 feet
21	Alt2	GE 2.82	Turbine changed from 2.52 to 2.82	Alternate turbine activated as primary turbine
22	22	GE 2.82	No Change	
23	23	GE 2.82	No Change	Turbine moved 50 feet
24	24	GE 2.82	No Change	

New Turbine Number	Old Turbine Number	Proposed Turbine Model	Turbine Model Change	Comment
25	25	GE 2.82	No Change	
26	26	GE 2.3	No Change	
27	27	GE 2.82	No Change	
28	28	GE 2.82	No Change	
29	29	GE 2.82	Turbine changed from 2.52 to 2.82	Turbine moved 70 feet
30	30	GE 2.82	No Change	
31	Alt3	GE 2.3	No Change	Alternate turbine activated as primary turbine
32	32	GE 2.82	No Change	Turbine moved 315 feet
33	Alt4	GE 2.82	Turbine changed from 2.52 to 2.82	Alternate turbine activated as primary turbine
34	34	GE 2.82	No Change	
35	35	GE 2.82	No Change	
36	Alt5	GE 2.82	Turbine changed from 2.52 to 2.82	Alternate turbine activated as primary turbine
37	37	GE 2.82	No Change	
38	38	GE 2.3	No Change	

New Turbine Number	Old Turbine Number	Proposed Turbine Model	Turbine Model Change	Comment
39	39	GE 2.3	No Change	
40	40	GE 2.82	No Change	
Alt1	Alt1	GE 2.82	No Change	
Alt2	21	GE 2.82	Turbine changed from 2.52 to 2.82	Primary turbine changed to alternate
Alt3	31	GE 2.82	Turbine changed from 2.3 to 2.82	Primary turbine changed to alternate and moved 775 feet
Alt4	33	GE 2.82	Turbine changed from 2.52 to 2.82	Primary turbine changed to alternate
Alt5	36	GE 2.82	Turbine changed from 2.52 to 2.82	Primary turbine changed to alternate

Based on the changes set forth in Table 1, certain sections of the Application have been updated and are represented in the text of this Amendment. Sections of the Application and maps or appendices that did not change are not summarized herein as the Application submittal remain unchanged.

The following addresses those sections of the August 9, 2019 Application that are impacted by the Amendment.

Section 1.1 – The Buffalo Ridge Wind Project

The initial Application proposed a total capacity of 109 MW using 31 GE 2.82 MW wind turbines, five GE 2.52 MW wind turbines, and four GE 2.3 MW turbines. The Project's total capacity is now approximately 108.7 MW and will be generated using 36 GE 2.82 MW wind turbines and four GE 2.3 MW wind turbines.

Section 5.0 – Certificate of Need Criteria

Section 5.2 – Description of Turbines and Towers

5.2.1 Size, Type, and Timing

The initial Application indicates that the Project is approximately 109 MW. However, the capacity of the Project has decreased slightly to 108.7 MW since submission of the initial Application.

5.2.4 Reliability

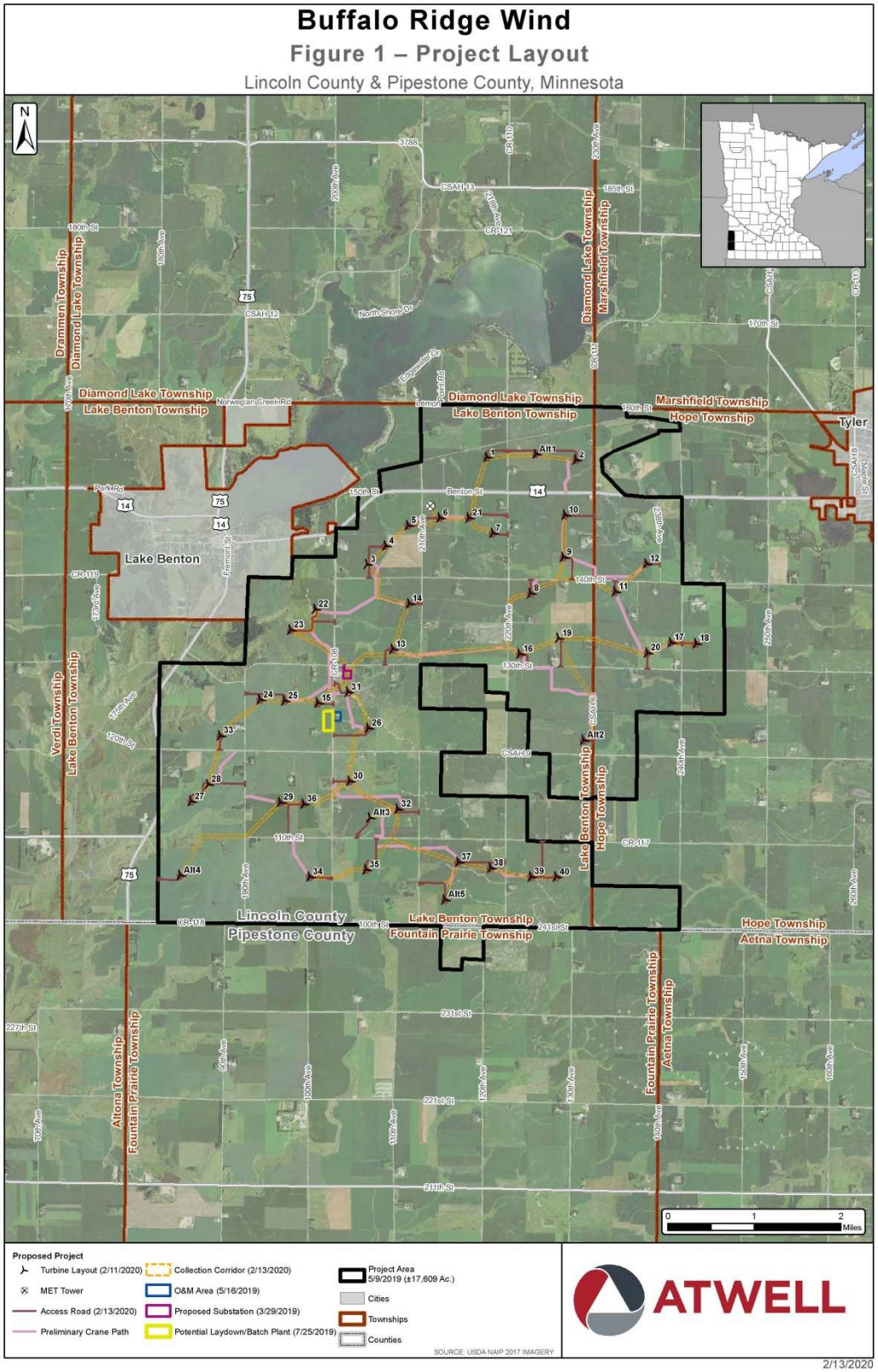
Based on the revised Project layout and changes in turbine technology, a net capacity factor of approximately 47% to 54% is expected annually, as compared to 48% to 52% provided in the initial Application. Additionally, the projected average annual output of approximately 480,250 megawatt hours (MWh) is anticipated for the Project, adjusted from 478,600 MWh for the Project.

Section 6.0 – Description of LEGF and Alternatives (Minn. R. 7849.0250)

Section 6.1 – Proposed Project (Minn. R. 7849.0250(A))

The initial Application stated that three turbine models would be used for the Project, including: 31 GE 2.82 MW wind turbines, five GE 2.52 MW wind turbines, and four 2.3 MW wind turbines. However, the five GE 2.52 MW wind turbines are being replaced with GE 2.82 MW wind turbines for a total of 36 GE 2.82 MW wind turbines and four GE 2.3 MW wind turbines. The GE 2.52 MW turbines had a 127 m rotor diameter (RD) with 89 m towers. As both the GE 2.52 MW turbines and the GE 2.82 MW turbines have the same RD and hub height, this change is negligible. A map showing the updated Project is provided below in **Figure 1**.

Figure 1. Project Layout



Section 6.1.1 – Nominal Generating Capacity and Effect of Economies of Scale (Minn. R. 7849.0250(A)(1))

The total nominal generating capacity of the Project was initially approximately 109 MW. Due to changes in Project design, the generating capacity is now 108.7 MW.

Section 6.1.2 – Annual Capacity Factor (Minn. R. 7849.0250(A)(2))

In the initial Application, the projected annual net capacity factor for the Project was approximately 48% to 52% with a projected average annual output of approximately 478,600 MWh. However, the projected annual net capacity factor for the Project is now approximately 47% to 54%. Additionally, a projected average annual output of approximately 480,250 MWh is now anticipated for the Project.

Section 6.2 – Availability of Alternatives (Minn. R. 7849.0250(B))

Section 6.2.2 – Upgrades to Existing Resources (Minn. R. 7849.0250(B)(2))

The initial Application stated that there was no potential upgrade to an existing Great River Energy (GRE) facility suitable to produce approximately 109 MW of wind energy. The capacity of the project has been updated to 108.7 MW and it remains true that no upgrade to an existing GRE facility would be suitable to produce 108.7 MW of wind energy.

Section 6.2.3 – New Transmission (Minn. R. 7849.0250(B)(3))

The initial Application stated that, according to GRE, there are no transmission alternatives that would provide approximately 109 MW of wind energy, as only a wind generating plant can produce the approximately 109 MW of renewable energy contracted for in the PPA. The capacity of the project has been updated to 108.7 MW and it remains true that no transmission alternatives would be suitable to provide 108.7 MW of wind energy.

Section 11.0 – Environmental Information for Proposed Project and Alternatives (Minn. R. 7849.0310)

Section 11.1 Wind Facility

Section 11.1.1 Impacts to Visual Resources

No changes to visual impacts are expected as hub height and rotor diameter remain the same. **Table 4** has been updated to reflect current project technology.

Table 4. Rotor Diameter and Number of Turbines

Turbine Model	Rotor Diameter (meters/feet)	Rotor Tip Height (meters/feet)	Ground Clearance (meters/feet)	Number of Turbines	Number of Alternate Turbines
GE 2.3 MW	116/380.6	138.3/453.7	22/72.2	4	1
GE 2.82 MW	127/ 416.7	152.1/499	25/82	36	1

Section 11.1.1 Shadow Flicker Impacts

The initial Application indicated that the predicted expected annual shadow flicker duration ranged between 0 hours, 0 minutes and 37 hours, 29 minutes per year, which occurred at participating receptor #141. Following the wind turbine shifts and turbine technology changes, the predicted expected annual shadow flicker duration increased to 40 hours, 49 minutes and is at participating receptor #93. In the revised Application, the maximum modeled expected annual flicker at a non-participating receptor (#51) is 29 hours, 39 minutes, which is a 54-minute decrease from the 30 hours, 35 minutes at non-participating receptor #154 indicated in the initial Application.

In the initial Application, 294 receptors were predicted to experience no annual shadow flicker, 63 locations were predicted to experience less than 10 hours per year of shadow flicker, 38 locations were expected to have between 10 and 30 hours of shadow flicker per year, and six locations were expected to have over 30 hours of shadow flicker per year, including one non-participating receptor. However, due to turbine technology changes, 295 receptors are now predicted to experience no annual shadow flicker, 67 locations are predicted to experience less than 10 hours per year of shadow flicker, 40 locations are expected to have between 10 and 30 hours of shadow flicker per year, and nine locations are expected to have over 30 hours of shadow flicker per year, none of which are non-participating receptors.

Section 12.0 – Facility Information for Proposed Project and Alternatives Involving Construction of a Large Electric Generating Facility (LEFG) (Minn. R. 7849.0320)

Section 12.8 – Noise (Minn. R. 7849.0320(I))

The initial Application referred to the Lake Benton II wind facility as “future non-project”, indicating that this wind facility was to be commissioned in the future. However, the repowered Lake Benton II wind facility (Lake Benton Wind II) is currently operational, and therefore, is referred as an existing wind facility. Additionally, the initial Application used the term “existing non-Project” to refer to turbines from the Ruthton Wind Farm. In the revised analysis, this existing non-Project is now referred to as “Ruthton Wind Turbines”.

In the initial Application, the second highest modeled L50 sound level from the Project + existing non-Project (i.e., Ruthton Wind Turbines) + Future Non-Project (i.e., Lake Benton Wind II)

scenario was 48 dBA and occurred at two locations (one participating and one non-participating). In the revised analysis, the second highest modeled L50 sound level from the Project + Ruthton Wind Turbines + Lake Benton Wind II scenario remains at 48 dBA and now occurs at three locations, non-participating receptor #42 and participating receptors #64 and #841.

Respectfully submitted,

Stinson LLP

/s/ Brian M. Meloy

ATTACHMENT A

Buffalo Ridge Wind Energy Center

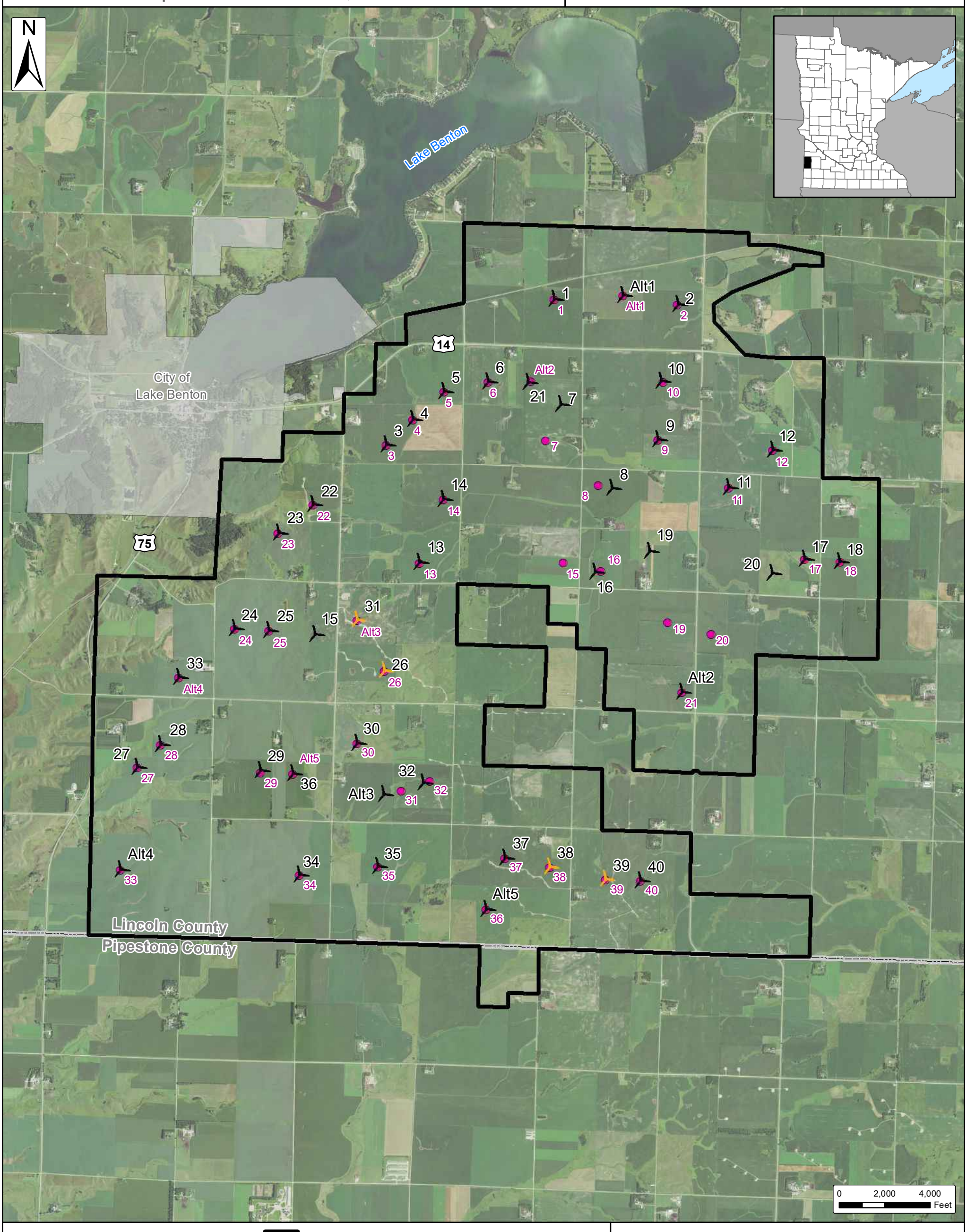
Turbine Layout Comparison

Lincoln and Pipestone Counties, Minnesota

Client: Buffalo Ridge Wind, LLC

Issue Date: 2/12/2020

Atwell, LLC Project: 17000620



Revised Turbine Layout GE 2.82 Model (2/11/2020)

Revised Turbine Layout GE 2.3 Model (2/11/2020)

Previous Turbine Layout (7/26/2019)

Proposed Project Area

City/Village

County Boundary

SOURCE: USDA National Agriculture Imagery Program (2017)

ATWELL

STATE OF MINNESOTA
BEFORE THE
PUBLIC UTILITIES COMMISSION

Katie Sieben	Chair
Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
John Tuma	Commissioner
Valerie Means	Commissioner

In the Matter of the Application of Buffalo Ridge Wind, LLC for a Certificate of Need for the 109 MW Large Wind Energy Conversion System in Lincoln and Pipestone Counties, Minnesota	MPUC Docket No. IP7006/CN-19-309

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of **Buffalo Ridge Wind, LLC's Certificate of Need Application Amendment** has been served today by e-mail and/or U.S. Mail to the following:

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Dated this 21st day of February, 2020

/s/ Joshua M. Feit
Joshua M. Feit