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October 15, 2018

Ms. Barcy F. McNeal, Secretary
Public Utilities Commission of Ohio
180 E. Broad St., 11th Floor
Columbus, OH 43215-3793

Re: OPSB Case No. 18-1346-EL-BGA
Black Fork Wind Energy, LLC

Dear Ms. McNeal:

Accompanying this letter are hard and electronic copies of an application by Black Fork Wind Energy, LLC seeking to allow the use of the Siemens G132 turbine model with a 3.55 megawatt capacity in the Black Fork Wind Energy project approved in Case No. 10-2865-EL-BGN. The original application was electronically filed.

In accordance with Rule 4906-2-04 of the Ohio Administrative Code, we make the following declarations:

Name of the applicant:

Black Fork Wind Energy, LLC
a subsidiary of Element Power US, LLC
155 Federal Street, Suite 1200
Boston, MA 02110

Names and location of the facility:

Black Fork Wind Energy Project
Crawford and Richland Counties, Ohio
Auburn, Jackson, Jefferson, Sandusky and Vernon Townships in Crawford County
Plymouth, Sandusky and Sharon Townships in Richland County

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Name of authorized representative:

Michael J. Settineri
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Notarized Statement:

See attached Affidavit of Christopher L. Kopecky
Vice President
Black Fork Wind Energy, LLC

Black Fork Wind Energy, LLC is requesting a waiver from the Ohio Power Siting Board Rule 4906-3-11(B)(2)(a)(iii) to allow for newspaper notice of this application.

Very truly yours,

/s/ Michael J. Settineri

Michael J. Settineri
Vorys, Sater, Seymour and Pease LLP
Attorney for Black Fork Wind Energy, LLC

MJS
Enclosure

BEFORE THE OHIO POWER SITING BOARD

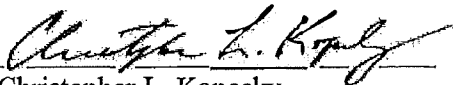
In the Matter of the Application of)
Black Fork Wind Energy, LLC to)
Amend its Certificate Issued in) Case No. 2018-1346-EL-BGA
Case No. 10-2865-EL-BGN)

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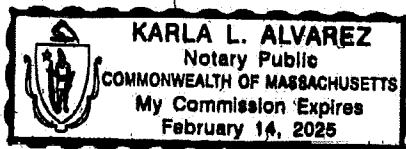
COMMONWEALTH OF MASSACHUSETTS)
) SS:
COUNTY OF SUFFOLK)

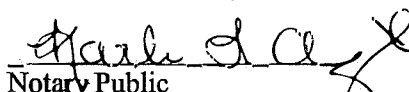
Now comes Christopher L. Kopecky, Vice President of Black Fork Wind Energy, LLC,
having been first duly sworn, declares and states as follows:

1. He is an executive officer in charge of the Black Fork Wind Energy project in
Crawford and Richland Counties, Ohio.
2. He has reviewed the application for the Black Fork Wind Energy project.
3. To the best of his knowledge, the information and statements contained in the
application are true and correct and the application is complete.


Christopher L. Kopecky
Vice President
Black Fork Wind Energy, LLC

Sworn to before me and signed in my presence this 10th day of October 2018.




Notary Public
My Commission Expires 2-14-25

BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application)	
of Black Fork Wind Energy, LLC)	Case No. 18-1346-EL-BGA
to Amend the Certificate Issued in)	
Case No. 10-2865-EL-BGN)	

Request for Approval of the Siemens G132 (3.55 MW) Model Turbine

Black Fork Wind Energy, LLC

October 15, 2018

Introduction

Black Fork Wind Energy, LLC (“Black Fork”) is certificated to construct the Black Fork Wind Energy Project, a wind-powered electric generation facility to be located in Crawford and Richland Counties, Ohio. The project will consist of up to 91 wind turbines and will have a maximum nameplate capacity of up to 200 MW. Currently approved turbines for the project consist of: the Vestas V100 (1.8 MW) with a total height of 426.5 feet, the GE XLE (1.6 MW) with a total height of 397 feet, the Siemens SWT-2.3-101 (2.3 MW) with a total height of 494 feet, the Vestas V110 (2.0 MW) turbine using either an 80 meter hub height or 95 meter hub height (maximum height of 492 feet), and the GE 2.3-107 (2.3 MW) turbine with either an 80 meter or 94 meter hub height (maximum height of 483 feet).

The original Application for a certificate of environmental compatibility and public need was filed on March 10, 2011, in Case No. 10-2865-EL-BGN. A Joint Stipulation and Recommendation (“Joint Stipulation”) entered into by Black Fork, the Ohio Power Siting Board’s Staff and the Ohio Farm Bureau Federation was filed on September 28, 2011. Thereafter, an Amendment to the Joint Stipulation was executed by the same parties and the Crawford County Board of County Commissioners, which included terms related to additional road use conditions. The Board’s Staff signed the amendment stating it did not oppose the amendment, and the Board of County Commissioners signed the amendment stating that it did not oppose the Joint Stipulation and supported and recommended adoption of conditions 72 through 80 of the amended Joint Stipulation. Following a hearing, the Board issued an Opinion, Order and Certificate in Case No. 10-2865-EL-BGN on January 23, 2012 (the “Certificate”). On May 24, 2012, certain intervenors appealed the Board’s decision to issue a Certificate to the Supreme Court of Ohio. The Court affirmed the Board’s decision on December 18, 2013.

On September 12, 2014, Black Fork submitted an application to amend its Certificate in Case No. 14-1591-EL-BGA which included a request to utilize two additional turbine models, the Vestas V110 (2.0 MW) turbine and the GE 2.3-107 (2.3 MW) turbine for this project. The Board approved that application on August 27, 2015 over the objections of certain intervening parties. In addition, on March 24, 2016, the Board approved Black Fork’s September 12, 2014 motion to extend the term of the Certificate, from January 23, 2017 to January 23, 2019. Certain intervenors appealed these decisions to the Supreme Court of Ohio; the case is currently pending as Case No. 2017-0412.

On June 6, 2017, Black Fork submitted an application to amend its Certificate in Case No. 17-1148-EL-BGA, proposing a capacity increase from 2.0 MW to 2.2 MW for the already approved Vestas V110 turbine model in addition to seeking an additional extension of its Certificate to January 23, 2020. The Board approved that application on December 7, 2017, and certain intervenors filed an application for rehearing on December 27, 2017. The Board denied the application for rehearing on June 21, 2018. Certain intervenors appealed these decisions to the Supreme Court of Ohio; the case is currently pending as Case No. 2018-1134.

Through this application, Black Fork is requesting to add the Siemens G132 (3.55 MW) turbine as a turbine suitable for this project. The Siemens G132 model takes advantage of a larger turbine rotor and other advances in technology to produce significantly more power per turbine than the other turbine models currently approved. Importantly, if Black Fork utilizes the Siemens G132 model, the project would consist of only 56 turbines versus 91 turbines, resulting in fewer impacts, and the conditions in the Certificate will continue to adequately address the project.

The Siemens G132 model represents and includes advances in technology and will be at or below the maximum height of the tallest turbine currently approved. With respect to operational noise, the Siemens G132 will result in less impact compared to previously approved turbine models because of a combination of technological advances and the fact that less turbines will be required for the project. In addition, Black Fork will continue to comply with the Certificate's operational noise condition that the Board approved.

With respect to shadow flicker, the Siemens G132 has a rotor diameter of 132 meters, which is a 22-meter increase from the current turbine model with the largest diameter of 110 meters (the Vestas V110). Although project shadow flicker will increase if the Siemens G132 is used, the increase is expected to be minimal given that the rotor diameter is increasing by only 22 meters. Black Fork will also continue to adhere to the Certificate's shadow-flicker limitations and mitigation conditions.

Of the currently approved turbines, the GE 2.3-107 and Siemens SWT-2.3-101 have the highest nameplate capacities at 2.3 MW, and if selected would result in an up to 86 turbine project. If the Siemens G132 turbine were selected, it would result in an up to 56-turbine project. The turbine with the lowest nameplate capacity is the GE XLE at 1.6 MW, and if selected would result in an up to 91 turbine project.

General Overview of the Siemens G132 3.55 MW Turbine

The Siemens G132 turbine represents a nameplate capacity improvement over previous models. The benefit of the Siemens G132 turbine is a 44% increase in the rotor swept area compared to previously approved models, which results in a significant increase in energy production, which will lower the cost of energy for the project and improve its competitiveness. General information on the Siemens G132 turbine is attached as Appendix A.

Comparison between Approved Wind Turbines and Siemens G132 Turbines

Several wind turbines have been proposed and approved by the Board for the Project, at a variety of rated powers and hub heights. If the Siemens G132 turbine is approved and subsequently selected, an 84-meter hub height will be used.

Relevant technical specifications comparing the already-approved turbines and the Siemens G132 MW turbine are listed in the below table.

Turbine Detail	Vestas V110	Vestas V110	GE 2.3-107	Vestas V100	GE 1.6 XLE	Siemens SWT-2.3-101	Siemens G132 (proposed)
Rated power	2.2 MW	2.0 MW	2.3 MW	1.8 MW	1.6 MW	2.3 MW	3.55 MW
Rotor diameter	110 meters	110 meters	107 meters	100 meters	100 meters	101 meters	132 meters
Swept area	9,503 square meters	9,503 square meters	8,992 square meters	7,854 square meters	7,854 square meters	8,012 square meters	13,685 square meters
Hub Height	95 meters	80 or 95 meters	80 or 94 meters	80 or 95 meters	80 meters	80 or 100 meters	84 meters

Importantly, because the Siemens G132 turbine, if selected, will be installed at an 84-meter hub height, the maximum turbine height of 492 feet remains less than approved in the original Application. Thus, the setback calculation for the Siemens G132 turbine model (541 feet to the nearest property line and 967 feet to the nearest non-participating residential structure) remains slightly less than the previously approved Siemens SWT-2.3-101 turbine model at the 100 meter hub height, which was the tallest approved turbine. Note that the Project had applied a 1,250 feet self-imposed setback from residential structures. All turbine locations comply with the self-imposed setback of 1,250 feet. Like the approved Siemens SWT-2.3-101 turbine and other approved turbines, the Siemens G132 turbine will satisfy the approved project setbacks.

Operational Noise Comparison

Regardless of the turbine selected, Black Fork will comply with the Certificate conditions on operational noise which require additional information submittals to Staff, additional modeling and possible mitigation.

Condition (50): That at least thirty (30) days prior to the pre-construction conference and upon selection of the turbine model to be developed, the Applicant shall provide the following to OPSB for Staff review and approval to the extent such information exists and is released to the Applicant by the turbine manufacturer: (a) The low frequency sound values (SPL, dB, Hz) expected to be produced; (b) The A-weighted and C-weighted sound power levels, as well as one-third octave band measurements for the 20 and 25 Hz bands, and a separate evaluation of the data for low frequency and impulsivity in accordance with the methodologies set forth within IEC 61400-11, Annex A, A. 3, Low Frequency Noise, and A.4, Impulsivity; and (c) The tonal audibility. (Condition 50 of the September 28, 2011 Joint Stipulation).

Condition (51): That if pre-construction acoustic modeling indicates a facility contribution that exceeds the project ambient nighttime LEQ (43 dBA) plus 5 dBA at the exterior of any non-participating residences within one mile of the facility boundary, the facility shall be subject to further study of the potential impact and possible mitigation prior to construction. Mitigation, if required, shall consist of either reducing the impact so that the facility contribution at the exterior of the non-participating residence does not exceed the project ambient nighttime LEQ (43 dBA) plus 5 dBA, or other means of mitigation approved by OPSB Staff in conjunction with the affected receptor(s).. (Condition 51 of the September 28, 2011 Joint Stipulation).

Condition (52): That after commencement of commercial operation, the Applicant shall conduct further review of the impact and possible mitigation of all project noise complaints. Mitigation shall be required if the project contribution at the exterior of any non-participating residence within one mile of the project boundary exceeds the greater of (a) the project ambient nighttime LEQ (43 dBA) plus 5 dBA, or (b) the validly measured ambient LEQ plus five dBA at the location of the complaint and during the same time of day or night as that identified in the complaint. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the greater of (a) the project ambient nighttime LEQ (43 dBA) plus 5 dBA, or (b) the validly measured ambient LEQ plus 5 dBA at the location of the complaint and at the same time of day or night as identified in the complaint, or other means of mitigation approved by OPSB Staff in coordination with the affected receptor(s). (Condition 52 of the September 28, 2011 Joint Stipulation).

The Applicant has conducted modeling to support this application, and the modeling results attached as Appendix B show that, if the Siemens G132 were used with Dino-Tail technology,¹ sound levels at a non-participating or participating residence would be 47.3 dBA or less, in compliance with the Certificate conditions. See Table 1, attached. Additionally, the Siemens G132 can be operated in noise-reduced operating mode with a lower maximum noise level, if needed, for mitigation purposes. Modeling, however, indicates that no additional mitigation will be required if this turbine is utilized for the project.²

Shadow Flicker Comparison

As required under the Certificate (conditions 54 and 55 of the September 28, 2011 Joint Stipulation), Black Fork will operate the facility so that the facility shadow flicker contribution is mitigated if it exceeds 30 hours per year for any non-participating habitable receptor. Conditions 54 and 55 state as follows:

Condition (54): At least 30 days prior to the preconstruction conference, the applicant shall complete a realistic shadow flicker analysis for all inhabited nonparticipating receptors already modeled to be in excess of 30 hours per year of shadow flicker and provide the results to Staff for review and acceptance. This analysis shall incorporate reductions for trees, vegetation, buildings, obstructions, turbine line of sight, operational hours, wind direction, and sunshine probabilities.

Condition (55): Any turbine forecasted prior to construction to create in excess of 30 hours per year of shadow flicker at a nonparticipating habitable receptor within 1,000 meters shall be subject to further review and possible mitigation. Mitigation shall be completed before commercial operation commences and consist of either reducing the turbine's forecasted impact to 30 hours per year, or other measures approved by Staff in consultation with the affected receptor(s).

Attached as Appendix C are updated initial shadow flicker modeling results for the Siemens G132. Due to the presence of additional nearby nonparticipating receptors since the previous modeling was conducted in support of the September 12, 2014 Amendment Application, as well as the increased rotor diameter of the Siemens G132, additional nonparticipating receptors are modeled to experience shadow flicker in excess of 30 hours per year, as shown in Table 2, attached. However, in compliance with Condition 54, Black Fork will complete an additional

¹ Dino-Tail technology is a wind turbine blade trailing edge treatment developed by Siemens that lowers sound emissions.

² The modeling conducted in Appendix B assumed that all turbines employed Dino-Tail technology and that none of the turbine sites were operating in noise-reduced operating mode.

analysis for these nonparticipating receptors modeled to be in excess of 30 hours per year incorporating reductions for trees, vegetation, and structures at least 30 days prior to the preconstruction conference.

If there are any nonparticipating receptors that are modeled to continue to experience shadow flicker after the analysis required by Condition 54, Black Fork will comply with Condition 55 and complete mitigation working with Staff and the affected receptor(s) before the commencement of commercial operation. In all circumstances, the Certificate's limitations on shadow flicker will be achieved with the proposed turbine model.

Safety Features

The Siemens G132 turbine has the same, if not improved, safety features as the previously approved turbines, and as generally described in the project's initial application and subsequent amendments. These features include sensors that capture outside temperatures, wind speed and direction, and turbine operating parameters such as component temperatures, pressure levels, blade vibrations and positioning. The Siemens G132 turbine model will also have a lightning protection system. Moreover, Black Fork will adhere to Certificate Condition 38, which states that "[t]he applicant shall comply with the turbine manufacturer's most current safety manual and shall maintain a copy of that safety manual in the operation and maintenance O&M building of the facility."

Conclusion

Black Fork appreciates the Board's consideration of this proposed modification, which presents only a single additional turbine model. Additional questions about the proposed Siemens G132 turbine model may be directed to the undersigned counsel.

Respectfully submitted,

/s/ Michael J. Settineri

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MacDonald W. Taylor (0086959)
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Attorneys for Black Fork Wind Energy, LLC

Table 1 – Noise Comparison

	GE 1.6	Siemens SWT-2.3-101	Vestas V100	Vestas V110	GE 2.3-107	Siemens G132 (proposed)
Number of Participating Receptors Above 48 dBA	24	16	0	15	10	0
Number of Non-Participating Receptors Above 48 dBA	52	20	0	13	20	0

Table 2 – Shadow Flicker Comparison

Shadow Flicker (hrs/year)	GE 1.6		Siemens SWT-2.3-101		Vestas V100		Vestas V110		GE 2.3-107		Siemens G132 (proposed) ³	
	# of Residences	# of Non-Participating Residences	# of Residences	# of Non-Participating Residences	# of Residences	# of Non-Participating Residences	# of Residences	# of Non-Participating Residences	# of Residences	# of Non-Participating Residences	# of Residences	# of Non-Participating Residences
0	227	208	238	218	230	210	277	253	270	246	69	62
0-5	110	100	114	103	98	90	68	60	76	66	166	149
5-10	103	87	98	83	110	92	94	85	107	97	146	137
10-15	61	52	57	48	56	48	51	42	53	44	69	59
15-20	38	31	42	36	42	35	49	41	45	36	42	36
20-25	25	22	16	14	23	21	29	24	27	23	42	27
25-30	16	14	15	11	17	14	15	11	6	5	28	19
30-35	10	7	10	8	13	10	10	7	9	6	23	19
35-40	8	3	7	4	4	3	4	3	7	2	11	7
40-45	2	2	3	1	7	3	3	0	3	1	11	8
45-50	0	0	2	1	0	0	3	0	0	0	7	2
50+	4	1	2	0	4	1	1	1	1	1	15	10

³ Modeled using actual window data rather than omni-directional shadow receptors for 76 residences.

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

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in

Case No(s). 18-1346-EL-BGA

Summary: Application Application of Black Fork Wind Energy, LLC electronically filed by Mr. Michael J. Settineri on behalf of Black Fork Wind Energy LLC