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BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application of Black Fork Wind Energy, LLC for a Certificate to Install Numerous Electricity Generating Wind Turbines in Crawford and Richland Counties, Ohio	)))))	**Case No. 10-2865-EL-BGN**

NOTICE OF FILING APPLICANT'S JULY 22, 2011, JULY 25, 2011 AND AUGUST 1, 2011 RESPONSES TO STAFF'S DATA REQUESTS

On July 22, 2011, July 25, 2011 and August 1, 2011, the Black Fork Wind Energy, LLC ("Black Fork" or "the Applicant") submitted responses to Staff's June 22, 2011 and June 29, 2011 data requests. Copies of the Applicant's July 22, 2011, July 25, 2011 and August 1, 2011 responses to Staff are attached hereto for filing on the docket.

Respectfully submitted,

M. Howard Petricoff (0008287)
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Michael J. Settineri (0073369)

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This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business.
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CERTIFICATE OF SERVICE

I certify that a copy of the foregoing document was served by hand delivery upon John Jones and Stephen Reilly, Assistant Attorneys General, Public Utilities Section, 180 E. Broad Street, 6th Floor, Columbus, OH 43215 and via U.S. Mail upon the following persons listed below this 2nd day of August 2011:

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July 22, 2011

VIA HAND-DELIVERY

Mr. John H, Jones
Assistant Attorney General
Public Utilities Section
180 E. Broad St., 6th Floor
Columbus, Ohio 43215-3793

Re: OPSB Case No. 10-2865-EL-BGN
Black Fork Wind Energy, LLC

Dear Mr. Jones:

Please find enclosed responses by the Applicant, Black Fork Wind Energy, LLC, to the Ohio Power Siting Board Staff's June 22nd Wildlife/Ecological Questions and Clarifications.

Please call me or Scott Hawken, Black Fork Wind Energy Project Manager, if there are any questions regarding these responses.

Sincerely,

Mike Settineri

Michael J. Settineri

MJS/drd
Enclosures
cc: Scott Hawken

Black Fork Wind Energy Project
Case No. 10-2865-EL-BGN
July 22, 2011 Responses to June 29, 2011 Data Requests

Wildlife/Ecological questions and clarifications - Black Fork Wind Energy project

June 22, 2011

1. Some of the proposed turbines have collection lines and access roads on separate alignments, necessitating clearing of a total of 40-50 foot wide corridor area for access roads and a 20-30 foot wide corridor for buried collection lines. Please justify why the access roads and collection lines cannot be located within the same corridor area, minimizing the overall clearing required for the project.

   A goal of the project design was to co-locate all access roads and collection lines. However, during the preliminary design phase it was determined that in some instances a consequence of co-location was an increase in the total length of collection line right-of-way (ROW) and correspondingly an increase in the amount of temporary disturbance during construction. For instance, in some locations where a collection line was originally designed to be co-located with an access road that led out to a public road ROW, we were able to significantly reduce the total temporary disturbance and minimize temporary impacts to roads, lawns, driveways, etc) by routing the collection lines through cultivated agriculture lands. In all locations where collection lines are not co-located with an access road ROW, the siting was done such that it resulted in an overall reduction in the temporary disturbance compared to impacts if co-location occurred.

   Additionally, throughout the application, due to the scale of the maps and GIS representations, separate lines were used to depict the collection lines and access roads. On the maps the collection lines and access roads appear to run in parallel paths, when in reality these facilities will be co-located within the same ROW.

2. Please provide an approximate amount of tree/vegetation clearing needed to construct this project. Please provide by; 1. wind turbines, 2. access roads/collection lines, 3. for the O & M facility, substation, switchyard, and concrete batch plant, 4. temporary laydown areas, and 5. permanent met towers.

   Please see the attached table.

3. Page 21 states that the Applicant is attempting to minimize the construction impact (of stream and wetland crossings) by boring where feasible and appropriate. Please provide more specific details and quantification.

   The Applicant will bore all locations where collection lines cross streams. There is only one location where an access road will cross a stream and impacts will be unavoidable (access road to Turbine 37). The access road stream crossing will include the replacement of an

existing culvert currently located in the stream to provide access to the agricultural field where the turbine will be located. To accommodate construction equipment, the length of the culvert will be increased. The Applicant has been in consultation with the U.S. Army Corp of Engineers regarding this stream crossing, and once construction plans are finalized the Applicant will pursue a Section 404/401 permit to allow for the stream impact.

The project has been designed to avoid all impacts to wetlands.

4. Page 33 of the application states "Natural areas will be seeded with an appropriate seed mixture to control erosion and allowed to regenerate to the original plant community". Please provide additional information (more specifics) on the species composition of the "seed mixture."

   The appropriate seed mix will vary depending on the location. The Applicant will work with the individual landowners, ODNR, and the County Soil and Water Conservation District to determine the preferred revegetation plan or seed mix for each natural area that will require reseeding. In non-agricultural areas, an erosion control seed mix that contains species that establish quickly will be used. This could include species such as perennial rye grass, Canada wild rye and a legume such as partridge pea will be used. These sites will then allowed to revegetate naturally via adjacent seed sources. Oats or winter rye may be used to quickly stabilize agricultural land if outside of the planting season. Cover crop selection and final seed mix will be determined when the Storm Water Pollution Prevention Plan (SWPPP) is established and with consultation with individual farmers for agricultural lands.

5. Page 37 of the application states that "As a result, should site conditions exist that sensitive resources (e.g. forested areas, wetlands, streams, etc.) are present within the 150 foot area surrounding the turbine center, the construction area will be adjusted to ensure these resources are not impacted by project construction or operation." What turbines would this apply to? It appears that turbine 83 for example, is near or within a wetland. Is this proposed to be offset to not impact the wetland?

   Based on our subsequent field surveys, which included surveys of the 150-foot construction radius surrounding the turbines, we were able to verify that no streams or wetlands will be impacted by construction or operation at any turbine location. Turbine 83 appears to be near a mapped Ohio Wetland Inventory (OWI) wetland however field surveys determined that this wetland was no longer in existence and will not be impacted by construction of the turbine. This is also the case with Turbines 38, 40, and 43, whereby the temporary construction area appears to intersect with OWI wetlands, but our field surveys found that these wetlands are no longer there.

   There are no temporary turbine construction areas that will intersect with forested areas as the Applicant has implemented a 100 meter setback from the turbine center to forested areas, which will prevent any clearing of forests for turbine construction.

6. Page 58 of the application states "of the 21 streams identified during the field surveys, 18 streams will be crossed by electrical collection lines....the collection lines will be installed using horizontally directionally drilled (HDD) method..." Please discuss what the stream impacts will be for any additional streams that will not be crossed by HDD.

   As discussed in our response to Question #3 above, all stream crossings will be constructed through the use of HDD. The only expected stream impact during construction will be due to the replacement of an existing culvert to accommodate the construction of an access road for Turbine 37. The three streams that were identified during field surveys and described within the Application, but not included within the HDD description, are not expected to be impacted by Project construction in any way. These streams were included within the 500-, 300-, and 100-foot field survey corridors for turbines, access roads, and collection lines, respectively, which are larger than the temporary construction corridors to allow for small shifts in the Project infrastructure when finalizing the Project layout. They will be protected during Project construction through the implementation of a SWPPP that will be developed as part of the requirements to obtain a National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. The SWPPP outlines sediment and erosion control measures and best management practices that will be implemented at the construction site to minimize or eliminate contaminated storm water runoff into nearby waterways.

7. According to the vegetation cover figures, it appears that forested areas and wetland areas are proposed to be impacted by the following collection lines: between turbine 4 and 6, turbines 6 and 7, turbines 10 and 12, turbines 90 and 16, turbines 28 and 29, turbines 29 and 30, turbines 24 and 25, turbines 44 and 43 and turbine 73 and 72 and near turbine 30, turbine 28, turbine 54, turbine 45, and turbine 55. And, it appears that forested habitat and wetland impacts are proposed to be impacted by the following access roads: between turbines 11 and 91, turbines 26 and 27, turbines 44 and 43, turbines 87 and 86 and near turbine 19, turbine 21, turbine 36, turbine 40, turbine 54, turbine 67, turbine 66, turbine 72, turbine 74, turbine 86. Please document if it is possible to adjust <u>collection lines and access roads</u> to preserve additional wildlife habitat and avoid/minimize impacts to forested habitat and wetlands. In addition, it is not clear if wetlands are proposed to be HDD since it states that no wetland impacts are proposed for the project. Please clarify any/all wetland impacts for this project.

   As described in response to Question #5 many of the wetlands depicted in Figure 8-4 – Ecological Communities as OWI wetlands are not, in fact, wetlands as determined during field surveys. A 200-foot and 300-foot corridor along all proposed collection line and access road ROWs, respectively, were surveyed by the Applicant. None of the OWI wetlands identified above were found to be wetlands.

   Due to the linear nature of collection lines and access roads, impacts to forested areas cannot be completely avoided. However, through an extensive preliminary siting effort forest impacts have been minimized such that only 3.3 acres will be cleared for construction and all but 0.6 acres will be allowed to revegetate once the Project is operational. For instance,

forest clearing was avoided during site design of the collection line between Turbine 28 and 29 and Turbine 29 and 30 and the access road between Turbine 11 and 91 and Turbine 87 and 86 to follow the field/forest edge instead of cutting directly through the forest, which is the most direct route.

After conducting field surveys with members of the OPSB staff, the majority of the concerns noted above have been resolved by on-site verification. Below is a chart describing the resolution. The Applicant is willing to work with the OPSB to adjust collection lines and access roads to reduce impacts to wildlife habitat (primarily forests) where it is practicable and if in fact there is an impact.

Description of Forest and/or Wetland Impact Concerns and Remedies

Location of Concern	Description	Remedy	Other
Between #4 and #6	Collection lines	Field verified with staff 7/12-7/14	Stream crossing but no associated wetland. At stream crossing the collection line will be installed using HDD.
Between #6 and #7	Collection lines	Field verified with staff 7/12-7/14	Existing road ROW (Hammond Rd) with minimal woodlots and stream crossing which will be crossed via HDD.
Between #10 and #12	Collection lines	Field verified with staff 7/12-7/14	Not impacting woodlots, staying on eastern boundary.
Between #90 and #16	Collection lines	Field verified with staff 7/12-7/14	The route proposed by Staff during a site review is on land not controlled within the project. The Applicant will attempt to re-route directly west, but needs to work with the landowner to gain permission.

Location of Concern	Description	Remedy	Other
Between #28 and #29	Collection lines	Field verified with staff 7/12-7/14	Not impacting woodlots, staying on southern boundary. Wetland is no longer present.
Between #29 and #30	Collection lines	Field verified with staff 7/12-7/14	Not impacting woodlots, staying on northern boundary. Wetland is no longer present.
Between #24 and #25	Collection lines	Field verified with staff 7/12-7/14	Wetland is no longer present. Stream crossing will utilize HDD.
Between #44 and #43	Collection lines and Access Roads	Field verified with staff 7/12-7/14	Wetland complex no longer present. Access road and collection line will stay on northern boundary of woodlot.
Between #73 and #72	Collection lines	Field verified with staff 7/12-7/14	No impact due to break in trees.
Near Turbine #30	Collection lines	Field verified with staff 7/12-7/14	Collection line will be installed under the stream using HDD.
Near Turbine #28	Collection lines	Field verified with staff 7/12-7/14	No impact to woodlots. Wetlands no longer present.
Near Turbine #54	Collection lines and Access Roads	Field verified with staff 7/12-7/14	No forest or wetland present.
Near Turbine #45	Collection lines	Field verified with staff 7/12-7/14	Wetland no longer present.
Near Turbine #55	Collection lines	Field verified with staff 7/12-7/14	No wetland or woodlot impacts.
Between #11 and #91	Access Roads	Field verified with staff 7/12-7/14	No impact, road on northern boundary of woodlot
Between #26 and#27	Access Roads	Field verified with staff 7/12-7/14	Wetland no longer present.
Between #87 and #86	Access Roads	Field verified with staff 7/12-7/14	No impact, road on northern boundary of woodlot. Wetlands

Location of Concern	Description	Remedy	Other
			no longer present.
Near Turbine #19	Access Roads	Field verified with staff 7/12-7/14	No impact, road on western boundary of woodlots along existing farm lane.
Near Turbine #21	Access Roads	Field verified with staff 7/12-7/14	Wetlands no longer present.
Near Turbine#36	Access Roads	Field verified with staff 7/12-7/14	No impact, road on southern boundary of woodlot. Wetlands no longer present.
Near Turbine #40	Access Roads	Field verified with staff 7/12-7/14	No impact, existing farm lane. Wetlands no longer present.
Near Turbine #67	Access Roads	Field verified with staff 7/12-7/14	No impact, road on western boundary of woodlot.
Near Turbine #66	Access Roads	Field verified with staff 7/12-7/14	No impact, road on southern boundary of woodlot.
Near Turbine #72	Access Roads	Field verified with staff 7/12-7/14	Road will be routed to avoid northeast corner of the woodlot.
Near Turbine #74	Access Roads	Field verified with staff 7/12-7/14	No impact, road on southern boundary of woodlot. Wetland no longer present.
Near Turbine #86	Access Roads	Field verified with staff 7/12-7/14	No impact, road on northern boundary of woodlot. Wetland no longer present.

8. Page 115 Major Species states"...due to lack of nesting habitat within the project area and the infrequency in which these species were identified passing through, it is not expected that operation of the project will impact these state listed species." In addition to the state listed species mentioned in this paragraph, the osprey and sharp-shinned hawk (and possibly others) were not included but were detected in diurnal surveys. Please provide a table of state listed species detected during all wildlife surveys for the proposed project.

Included below is a table listing all Ohio endangered, threatened, and special concern species that were identified during wildlife surveys for the proposed project. With the exception of big brown and northern Myotis bats, all state-listed species were found infrequently and are not anticipated to be impacted by operation of the Project.

State-Listed Endangered, Threatened, and Species of Concern Species Identified During Wildlife Surveys

Scientific Name	Common Name	Status
Circus cyaneus	Northern Harrier	SE
Junco hyemalis	Dark-eyed Junco	ST
Catharus guttatus	Hermit Thrush	ST
Empidonax minimus	Least Flycatcher	ST
Haliaeetus leucocephalus	Bald Eagle	ST
Pandion haliaetus	Osprey	ST
Myotis lucifugus	Little brown bat	SSC
Eptesicus fuscus	Big brown bat	SSC
Myotis septentrionalis	Northern Myotis	SSC
Accipiter striatus	Sharp-shinned Hawk	SSC
Protonotaria citrea	Prothonotary Warbler	SSC

Data sources: ODNR 2010

Key:
SE = State-Listed Endangered.
ST = State-Listed Threatened.
SSC = State Species of Concern

9. Please provide a table showing the distance of each turbine footprint proposed from the nearest woodlot and riparian corridor.

Included below is a table that provides the approximate distance (0-100 meters, 100-200 m, 200-300 m, and >300 m) from each turbine to the nearest forest edge or NHD stream. The Applicant enacted a minimum setback of 100 m from the turbine center to the forest edge, following setbacks as a guide from best management practices and industry experience.

Distance from Turbine to Nearest NHD Stream and Forest Block

Turbine Number	Distance to NHD Stream[1] (meters)	Distance to Forest Block[2] (meters)
1	100-200	100-200
2	200-300	100-200
3	200-300	100-200
4	200-300	200-300
5	200-300	100-200
6	100-200	100-200
7	0-100	> 300
8	100-200	100-200
9	> 300	100-200
10	200-300	> 300
11	0-100	100-200
12	> 300	200-300
13	0-100	> 300
14	> 300	200-300
15	100-200	100-200
16	100-200	> 300
17	200-300	100-200
18	200-300	> 300
19	100-200	100-200
20	> 300	> 300
21	> 300	100-200
22	200-300	> 300
23	200-300	> 300
24	100-200	> 300
25	0-100	> 300
26	> 300	> 300
27	> 300	200-300
28	> 300	100-200
29	200-300	100-200
30	0-100	> 300
31	0-100	100-200
32	200-300	200-300
33	200-300	100-200
34	200-300	100-200
35	0-100	100-200
36	200-300	100-200
37	0-100	100-200
38	> 300	100-200
39	> 300	> 300
40	> 300	> 300
41	> 300	> 300
42	100-200	> 300
43	100-200	100-200
44	200-300	> 300
45	0-100	100-200

Distance from Turbine to Nearest NHD Stream and Forest Block

Turbine Number	Distance to NHD Stream[1] (meters)	Distance to Forest Block[2] (meters)
46	200-300	> 300
47	100-200	> 300
48	200-300	100-200
49	> 300	100-200
50	0-100	100-200
51	> 300	> 300
52	> 300	200-300
53	200-300	200-300
54	100-200	> 300
55	> 300	> 300
56	100-200	> 300
57	> 300	> 300
58	> 300	> 300
59	0-100	200-300
60	> 300	> 300
61	200-300	200-300
62	> 300	> 300
63	100-200	100-200
64	> 300	100-200
65	200-300	100-200
66	200-300	200-300
67	> 300	100-200
68	> 300	100-200
69	> 300	200-300
70	> 300	100-200
71	> 300	100-200
72	200-300	100-200
73	0-100	100-200
74	> 300	> 300
75	> 300	100-200
76	> 300	100-200
77	> 300	100-200
78	200-300	100-200
79	> 300	> 300
80	100-200	> 300
81	> 300	100-200
82	> 300	100-200
83	100-200	100-200
84	200-300	200-300
85	> 300	100-200
86	200-300	100-200
87	> 300	100-200
88	> 300	100-200
89	0-100	> 300
90	100-200	> 300

Distance from Turbine to Nearest NHD Stream and Forest Block

Turbine Number	Distance to NHD Stream[1] (meters)	Distance to Forest Block[2] (meters)
91	0-100	100-200
[1]USGS NHD 2008 [2]E & E 2009		

10. Page 116 (c) states "The secondary mitigation measure to reduce potential significant bird and bat impacts was lighting and structural mitigation....In order to reduce this potential, the applicant will equip the turbines with slow blinking lights as recommended by ODNR." Please be more specific on lighting to be used.

Turbines are required to be marked to satisfy Federal Aviation Administration (FAA) requirements for visibility per Advisory Circular AC 70/7460-1K (Obstruction Marking and Lighting). The Applicant will work with FAA to develop a final lighting plan that will use the fewest number of lights, with the minimum number of flashes per minute that the FAA allows in order to minimize the attractiveness of the turbines to birds and bats. Consistent with the USFWS Guidelines, the Applicant will propose a lighting plan that will:

- **Employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, for all wind turbines and permanent met towers**
- **Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.**
- **At both operation and maintenance facilities and substations located within half a mile of the turbines to the minimum required:**
    - **Use lights with motion or heat sensors and switches to keep lights off when not required; and**
    - **Lights hooded and directed downward to minimize horizontal and skyward illumination**

Tree and Vegetation Clearing for Construction and Operation

Feature	Agriculture		Forest		Old Field		Residential/ Developed		Transportation		Public Utility/ Airport		Wetland		Total Impact	
	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
Wind Turbine	30.8	4.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**31.0**	**4.1**
Access Road/Collection Line	139.2	53.8	3.3	0.6	1.0	0.5	2.9	0.9	2.9	0.6	0.1	0.0	0.9	0.3	**150.3**	**56.7**
O&M Building/Substation /Switchyard/ Concrete Batch Plant	19.0*	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**19.0***	**9.0**
Temporary Laydown Area	10.0*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**10.0***	**0.0**
Met Towers	0.04	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.04**	**0.04**
Grand Total	**170.04**	**66.94**	**3.3**	**0.6**	**1.2**	**0.5**	**2.9**	**0.9**	**2.9**	**0.6**	**0.1**	**0.0**	**0.9**	**0.3**	**181.34**	**69.84**

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July 25, 2011

VIA HAND-DELIVERY

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Assistant Attorney General
Public Utilities Section
180 E. Broad St., 6th Floor
Columbus, Ohio 43215-3793

Re: OPSB Case No. 10-2865-EL-BGN
Black Fork Wind Energy, LLC

Dear Mr. Jones:

Please find enclosed responses by the Applicant, Black Fork Wind Energy, LLC, to the Ohio Power Siting Board Staff's June 29, 2011 Miscellaneous Clarifications data requests.

Please call me or Scott Hawken, Black Fork Wind Energy Project Manager, if there are any questions regarding these responses.

Sincerely,

Mike Settineri

Michael J. Settineri

MJS/drd
Enclosures
cc: Scott Hawken

Black Fork Wind Energy Project
Case No. 10-2865-EL-BGN
July 25, 2011 Responses to June 29, 2011 Data Requests

Miscellaneous clarifications - Black Fork Wind Energy project

June 29, 2011

1. Please list all airports within the project vicinity that are designated *"public use"*.

   The nearest "Public Use" airport is the Shelby Community Airport, which is located approximately 1-mile from the eastern project boundary. Other "Public Use" airports in the Project vicinity are The Galion Municipal Airport, in Galion, and the Port Bucyrus-Crawford County Airport, in Bucyrus. Galion Municipal Airport is approximately 3.6 miles from the southern Project boundary and Port Bucyrus-Crawford County Airport is approximately 8.6 miles from the southeast Project boundary.

2. Pg. 9 – What clearance height was filed with FAA and ODOT Aviation? Please submit all received determinations (FAA form 7460-1) to Staff for review.

   The clearance height filed with the FAA and ODOT Aviation was 492 feet. The Applicant has not yet received FAA determinations (FAA Form 7460-1), but will provide them to the OPSB once they are received.

3. Pg.9 – *"...as well as others."* Which other turbines are under consideration?

   At this time, no other turbine models are under consideration besides the models identified in the Application: GE 1.6 XLE, Vestas V-100 and Siemens SWT-2.3.

4. Page 9 - 14 turbines near airport had smaller (80 meter) hub heights. The maps indicate that there are nine 80 meter height turbines. Which is correct?

   Fourteen turbines have smaller (80 meter) hub height, turbines 24, 25, 27, 29, 30, 41, 42, 43, 44, 61, 78, 79, 81 and 82.

5. Page 13 – After construction, access roads will be reduced from 40-50 feet to 16 feet. Will access roads remain gravel when permanent, or other material?

   The permanent access roads will remain gravel when they are converted from 40-50 feet, to 16 feet.

6. Pg. 21 – Constraints were said to be considered for any turbine models under consideration. Does this list include the unnamed "other" turbine technologies?

   The constraints mentioned on page 21 do not include the "other" turbine models. If a different turbine model is ultimately selected and the maximum turbine height is greater than

156 meters, the constraints analysis will be updated to ensure that turbine operation will be consistent with the necessary setbacks.

7. Pg. 34 – *"...typical drawings of the substation..."* Is this the substation layout and location expected to be constructed, or a generic schematic?

   The substation layout and location provided in Appendix A are not generic schematics; the Applicant intends to construct the substation as depicted.

8. Pg. 141 – *"...generation facility has been sited to avoid close proximity to these towers..."* Has the Facility been sited as to avoid adverse impact to the communication services provided by these towers? What notice/discussions have taken place with the owners/operators and what was the outcome?

   The turbines were sited to avoid the beam paths that are depicted in Appendix P, eliminating the potential impact to communication services. No discussions have occurred with the owner/operators.

9. Appendix D. – Please provide new photo simulations which utilize a clear, blue sky day as background and not grey, overcast skies that may mask turbine appearances.

   The Applicant will provide updated photo simulations as requested. Our consultant expects those to be available by 8/5/2011.

10. Pg. 85 of the application states a 1,100 meter shadow flicker analysis was completed; while Appendix I, Pg. 4 states a 1,000 meter analysis was conducted? Which is correct?

    Shadow flicker was calculated using a 1,000 meter distance limit for all residences.

11. *Please indicate anticipated or likely foundation types and dimensions. Are impacts to aquifers* or public and/or private water systems anticipated? Please explain.

    The project turbine foundations will utilize a spread footer design. The approximate dimensions of each foundation will be 8 feet deep with a 40 foot radius spreadfooter design. Limited geotechnical work has been done to assess the general soil and geologic conditions in the Project area. A more detailed geotechnical survey will be conducted as part of the final design and will be provided to the OPSB.

    As described throughout the Application, it is not anticipated that the Project will have an impact on public or private water systems. The majority of the water systems in the Project area are private residential wells. Turbine foundations are not expected to exceed 8 feet below ground surface (bgs), which is above the typical well depth in the Project area (available well logs report well depths of 30-60 feet bgs and water encountered at 5-30 feet bgs). It is possible that shallow groundwater may be encountered during excavation or that other extremely localized groundwater flow disruptions may take place downgradient of the turbine foundations. According to the preliminary geotechnical investigation in the Project area, the effect on groundwater movement at these locations will be negligible and localized to approximately 100 to 200 feet from the foundation and regional groundwater flow will be

unaffected. Because of the excavation depth relative to the groundwater table, the Project is not expected to affect private wells or the regional groundwater table. While unlikely, if bedrock is encountered during excavation and blasting is necessary, the Applicant will develop a blasting plan to ensure that all applicable laws and regulations are followed and that water resources, including private wells, are not affected by the blasting operations.

The nearest surface water public water system intake is located in Shelby, more than four miles from the nearest turbine. As a result of the appreciable distance between the surface water intake and the nearest turbine, we do not anticipate any impacts to surface water public water systems.

VORYS

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August 1, 2011

VIA HAND-DELIVERY

Mr. John H, Jones
Assistant Attorney General
Public Utilities Section
180 E. Broad St., 6th Floor
Columbus, Ohio 43215-3793

Re: OPSB Case No. 10-2865-EL-BGN
Black Fork Wind Energy, LLC

Dear Mr. Jones:

Please find enclosed responses by the Applicant, Black Fork Wind Energy, LLC, to the Ohio Power Siting Board Staff's June 22, 2011 Sound/Noise Clarifications data requests.

Please call me or Scott Hawken, Black Fork Wind Energy Project Manager, if there are any questions regarding these responses.

Sincerely,

Michael J. Settineri

MJS/drd
Enclosures
cc: Scott Hawken
Jon Pawley

Black Fork Wind Energy Project
Case No. 10-2865-EL-BGN
August 1, 2011 Responses to June 22, 2011 Data Requests

Sound/Noise clarifications – Black Fork Wind Energy project

June 22, 2011

1 Pg. 11 – Please clarify if the blade pass frequency of 0.745 Hz as given, is at full generation.

At full production, the blade passage frequency is 14.5 rpm (0.725 Hz).

2 Pgs. 11-12 – Will cold weather packages be installed on turbines used? If so, how might/does this affect the acoustic signature of the turbines? Was this modeled or accounted for?

Yes, the Applicant plans to install cold weather packages on turbines. Turbine modeling for the project did not account for the installation of cold weather packages because the addition of a cold weather package results in less sound power output from the turbine.

3 Pg. 12 – Do all of the models under consideration have pad mounted transformers?

Yes, all three turbine models under consideration have pad mounted transformers.

4 Please provide the sound power levels for the pad-mounted transformers, the sound pressure level at 50 feet and discuss how much the sound pressure levels (inclusive of turbines at max output and without turbines operational) would be affected.

The sound power levels from the manufacturers are measured with the pad mounted transformers in place. In the experience of the Applicant's sound consultant, these transformers are inaudible at the standard IEC 61400-11 measurement distance, which is the hub height plus half the rotor diameter (usually 120 to 150 meters).

5 Pg. 72 – Please explain how the GE and Siemens turbines can be operated under "noise reduced operating modes" to achieve 48 dBA.

Sound emissions will be lowered in Noise Reduced Operations (NRO) through automatic turbine controls. NRO is set to function under specified conditions that can include time of day, time of year, wind speed, and wind direction. When NRO is implemented, the turbine changes torque and blade pitch to reduce the rotor speed. As noise emissions are largely a function of the blade tip speed, noise emissions are reduced. NRO modes can be set to various sound level reductions. The greater the noise reduction, the greater the affect on the power curve.

6 Pg. 72 – How does the Applicant plan/propose to verify that the design goal of 48 dBA has been achieved?

To minimize complaints and operational noise impacts, the Applicant adopted a design goal of 5 dBA over the average nighttime equivalent sound pressure level (Leq_{night}) of 43 dBA. To verify the design goal, the Applicant anticipates taking the following steps: (1) prior to the preconstruction *conference and after a final turbine model is selected and micrositing is complete, the Applicant* will model the facility noise contribution at the exterior of all nonparticipating residences within one mile of the facility boundary; (2) further study will be done of the potential impact and possible mitigation that can be implemented prior to construction for any nonparticipating residence at which the facility contribution is modeled to exceed the facility area nighttime L_{EQ} (43 dBA) by greater than five dBA at the exterior of the residence; and (3) after commencement of commercial operation, all facility noise complaints will be reviewed and investigated, and mitigation, which could include utilizing NRO, will be implemented if the facility contribution at the exterior of the non-participating residence exceeds the greater of (a) the project ambient nighttime L_{EQ} (43 dBA) plus 5 dBA, or (b) the *validly measured ambient* L_{EQ} plus 5 dBA at the location of the complaint and at the same time of day or night as identified in the complaint. A similar process was adopted for the Timber Road II Wind Farm, Case No. 10-369-EL-BGN.

7 Pg. 73 - Please provide the low frequency sound values (SPL, dB, Hz) expected to be produced by the GE and Siemens turbines.

This information was not available when the Application was submitted. It has been requested from the turbine manufacturer. The Applicant will supply this to Staff if and when it becomes available.

8 Pg. 73 - For all turbine technologies under consideration; please provide the A-weighted and C-weighted sound pressure levels, as well as one-third octave band measurements for the 20 and 25 Hz bands. Separately, evaluate the data for low frequency noise and impulsivity in accordance with the methodologies set forth in IEC 61400-11, Annex A, A.3 *Low Frequency Noise* and A.4 *Impulsivity.*

This information was not available when the Application was submitted. It has been requested from the turbine manufacturers. The Applicant will supply this to Staff if and when it becomes available.

9 Pgs. 73-74 – For all turbine types under consideration, please provide how many sensitive noise *receptors (by type) are modeled to exceed the Applicant's design goal of 48 dBA. Separately,* please clarify that no non-participating residences or sensitive receptors are expected to exceed 48 dBA with the facility in operation, regardless of turbine used.

The requested information regarding sensitive receptor modeling is provided on page 37 of the noise modeling report (Appendix H). The design goal of 5 dBA over the average nighttime equivalent sound pressure level (Leq_{night}) of 43 dBA is not predicted to be exceeded at any non-

participating residence for the preferred turbine model, the Vestas V100 1.8 MW turbine. Sound level modeling results for the GE 1.6 XLE turbine and the Siemens SWT 2.3-101 turbines show 52 and 20 non-participating residences respectively that model above the 48 dBA level. The maximum modeled sound level at a non-participating residence for the Siemens SWT 2.3-101 turbine was 49 dBA, and 50 dBA for the GE 1.6 XLE turbine.

Regardless of the turbine type utilized for this project, the Applicant will follow the verification process outlined above in the response to Data Request No. 6. In addition and as stated at page 75 of the Application, turbine mitigation will be addressed on a case-by-case basis but could include, but is not limited to noise reduced turbine operating modes, retrofits, and changing the participation status of impacted residences.

10 Pg. 70 – Is nighttime erection work anticipated to occur?

Construction during the nighttime is not part of the current plan, but if weather conditions and higher than planned wind speeds are encountered minimal night time construction may be required to maintain the construction schedule.

11 Pg. 74 – If nighttime construction work would need to occur; how/when would the Applicant notify neighbors?

In general, a plan of the week for construction will be issued to inform landowners, local residences and local official of the expected construction and location of activity occurring on the project site. In the event that nighttime operations are anticipated, it will be noted on the plan of the week and landowners in the vicinity of activity would be contacted via telephone as soon as possible.

12 Pg. 74 – Please provide the "Noise Complaint Resolution Procedure Plan" to Staff for review.

The Applicant intends to develop a Noise Complaint Resolution Procedure Plan to address noise complaints submitted both during construction and after the start of commercial operations. The Applicant will submit the draft Plan to Staff for review as soon as it is complete.

13 Appendix H, Pg. 8 – How much of an attenuation factor was built in for the windscreens?

No attenuation was subtracted from the measurements to account for the windscreens.

14 Appendix H, Pg. 8 – *"...the ground was considered soft..."* Please clarify what ground absorption coefficient was used in the modeling etc.

The modeling uses the ISO 9613-2 modeling protocol. In that protocol, there are two ground attenuation methods. The first is the "General Method" (Section 7.3.1) which takes into account ground hardness using a ground factor called "G", where G=0 when the ground is hard, and G=1 when the ground is porous. The second method is the "Alternative Method" (Section 7.3.2) which can be used if only the A-weighted sound pressure level is of interest, the sound occurs over

porous or mixed ground, most of which is porous, and the sound is not a pure tone. Because the ground hardness is assumed in the method, it does not have to be set in the model. In the modeling of A-weighted sound levels for Black Fork, the latter methodology was used. To estimate the 1/1 octave band low frequency sound levels shown in Table 4 of the noise report, the *"General Method" was used with a ground factor of zero (hard ground).*

15 Appendix H, Pg. 8 – Which one-third octave bands were analyzed?

Monitoring Locations B and E measured 10-second 1/3 octave bands between 20 Hz and 10,000 Hz. Monitoring Locations F and H measured 10-second 1/3 octave bands between 10 Hz and 20,000 Hz. The remaining monitoring locations measured 10-second A-weighted sound levels.

16 Appendix H, Pg. 24 – Please provide the coordinates (Lat/Lon) for "Site 5040".

The coordinates for Site 5040 are: Latitude N 40 deg 55.345 min, Longitude W82 deg 41.675 min

17 Please provide the coordinates for the meteorological tower/anemometer used in the ambient sound modeling (if separate from "Site 5040").

Correlations in the noise report used various meteorological stations. The coordinates for these meteorological stations are shown below:

Met Station	Latitude N	Longitude W	Monitoring Location
4767	40.8688	82.7791	F, G
9606	40.91877	82.73987	A, B, E, D
5040/5050	40.9224	82.6946	C

18 Please provide Figures 27-38 electronically (.pdf preferred) and as a complete map by turbine type (i.e. not 4 plates per turbine technology).

These figures are attached.

19 Were the turbine transformers' sound output included in the operational modeling and in the isophones presented within the application?

Yes, substation noise was included in the sound modeling for each turbine type.

20 Please provide the cumulative sound pressure level(s) at 50 feet from the fence line of the substation; the sound power levels of all equipment within the substation; an isophone map of the substation's output (dBA) cumulative of the max turbine output and delineating residences/participation status; and please specify whether the isophones in Figures 27-38 were

inclusive of substation output. If so, Please provide the modeled value(s). Separately, please provide and analyze the A-weighted / C-weighted sound pressure levels and the one-third octave band measurements (20, 25, 31.5 and 40 Hz bands) for low frequency noise in accordance with the methodologies set forth in IEC 61400-11, Annex A, A.3 *Low Frequency Noise*.

The assumed transformer sound power is 101 dBA (110.7 dBC). The un-weighted sound power by 1/1 octave bands are as follows:

Octave Band Center frequency (Hz)	Un-weighted sound power level (dBZ)
31.5	92.0
63	97.5
125	109.6
250	101.8
500	97.9
1000	95.3
2000	90.4
4000	84.5
8000	74.9

Due to the mechanisms that create sound (primarily magneto-restriction), transformers do not generate any significant sound below 120 Hz. The transformer is the only sound generating equipment proposed for the substation. Transformers are not measured according to IEC 61400-11, but rather IEC 60076-10 ("Power Transformers – Part 10: Determination of sound levels"). The projected sound levels 50 feet from the transformer are 69 dBA and 79 dBC.

The A- and C-weighted sound level isolines around the substation are attached.

21 Please provide the coordinates (Lat/Lon) for the batch plant(s); provide the sound power level(s); provide the sound pressure level(s) at 50 feet; model the sound at the nearest non-participating residence and provide the expected hours of plant operation.

The approximate coordinates for the center of the batch plant are:

Latitude 40.855349 N/Longitude 82.76099 W

At this time, the final mobile batch plant has not been selected so sound power and pressure levels cannot be determined. The Applicant will provide modeling of sound pressure levels using generally available data on concrete batch plant activities. The Applicant anticipates completing this modeling work by August 19, 2011.

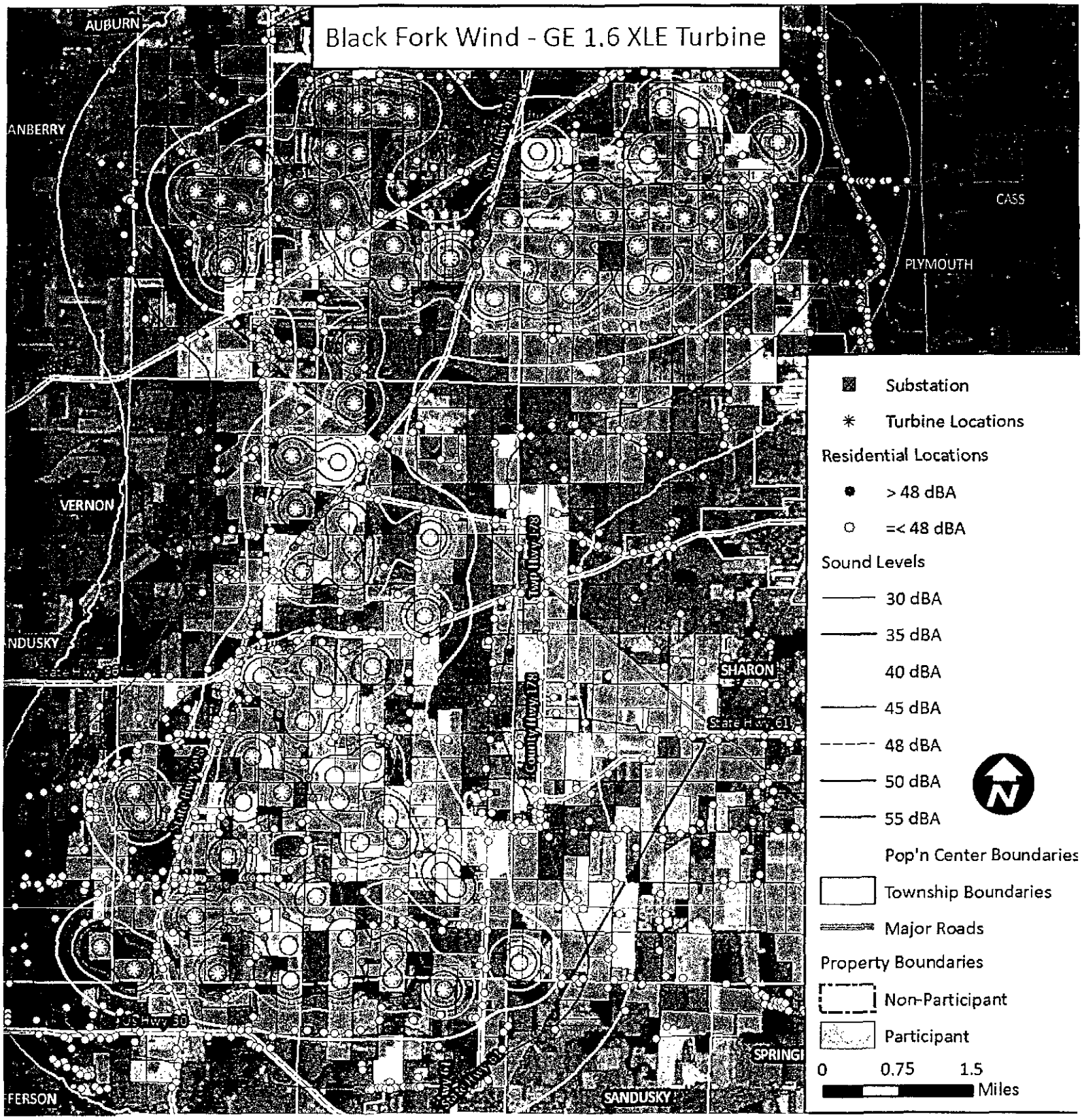
The following are additional questions that were asked at the Staff site visit:

22. What is the tonal audibility for the Vestas V-100?

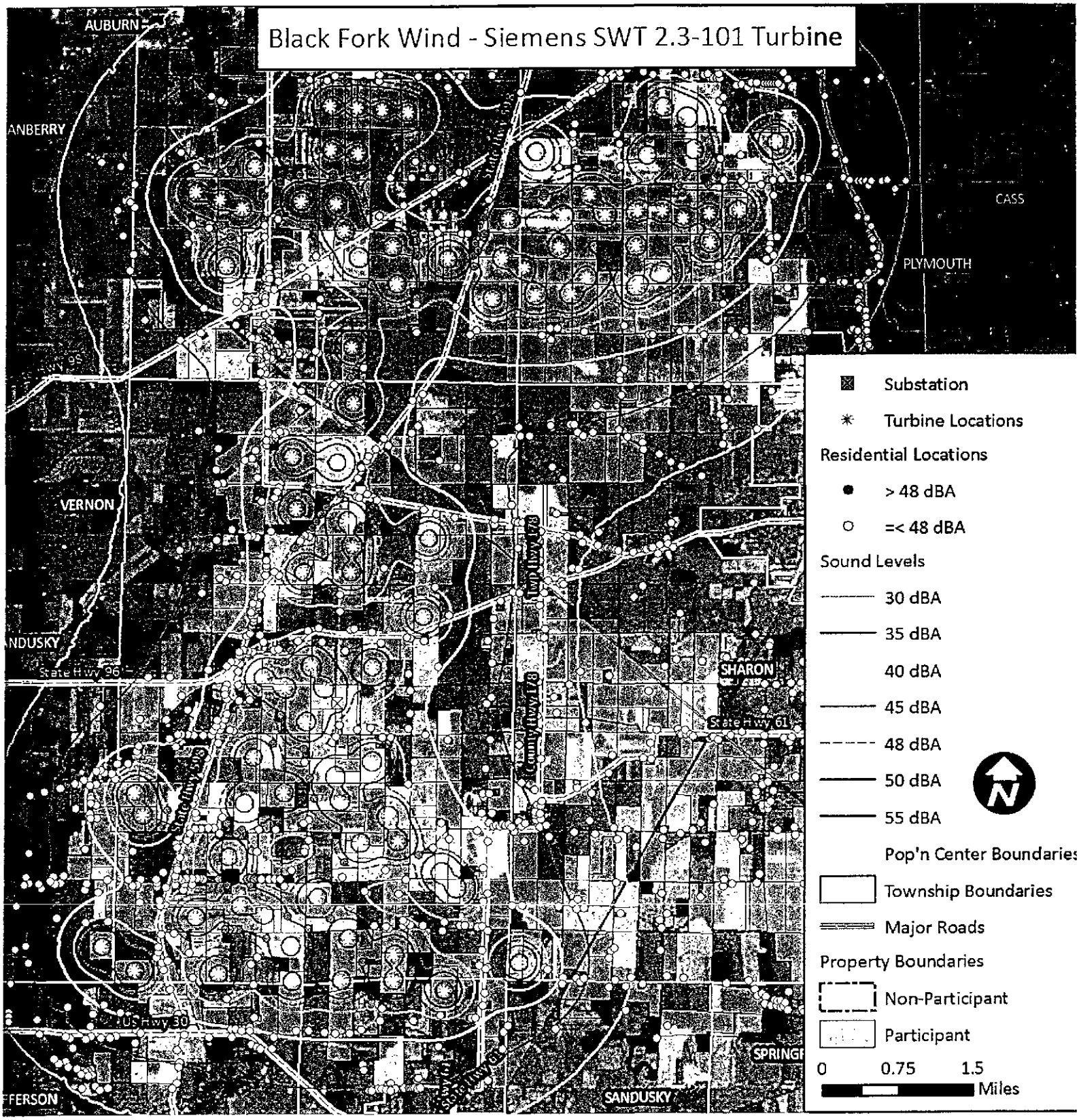
Additional information has been requested from the turbine manufacturer. The Applicant will supply this information to Staff if and when it receives this information.

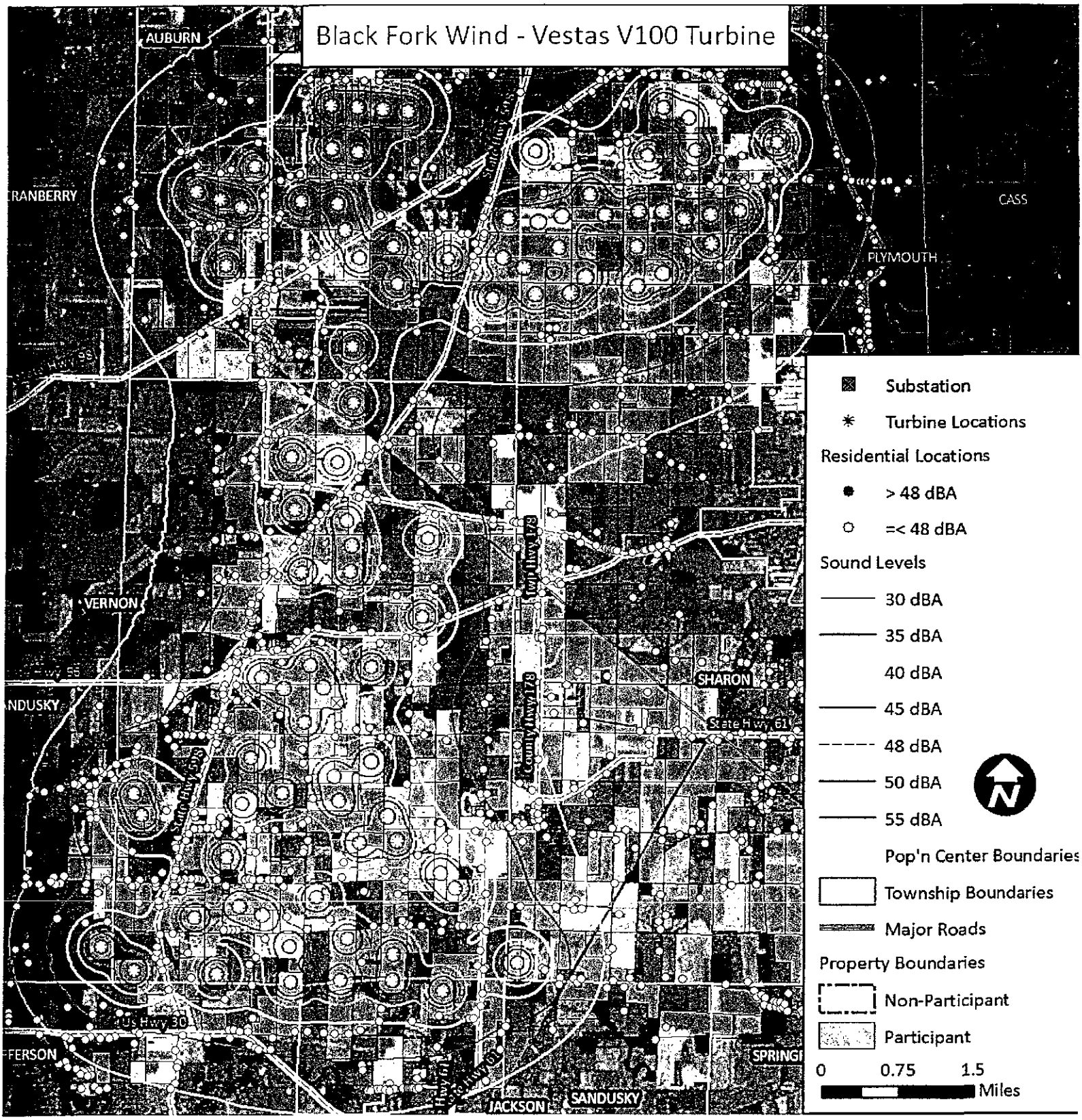
23. What is the cut-in and cut-off speeds for the proposed turbines?

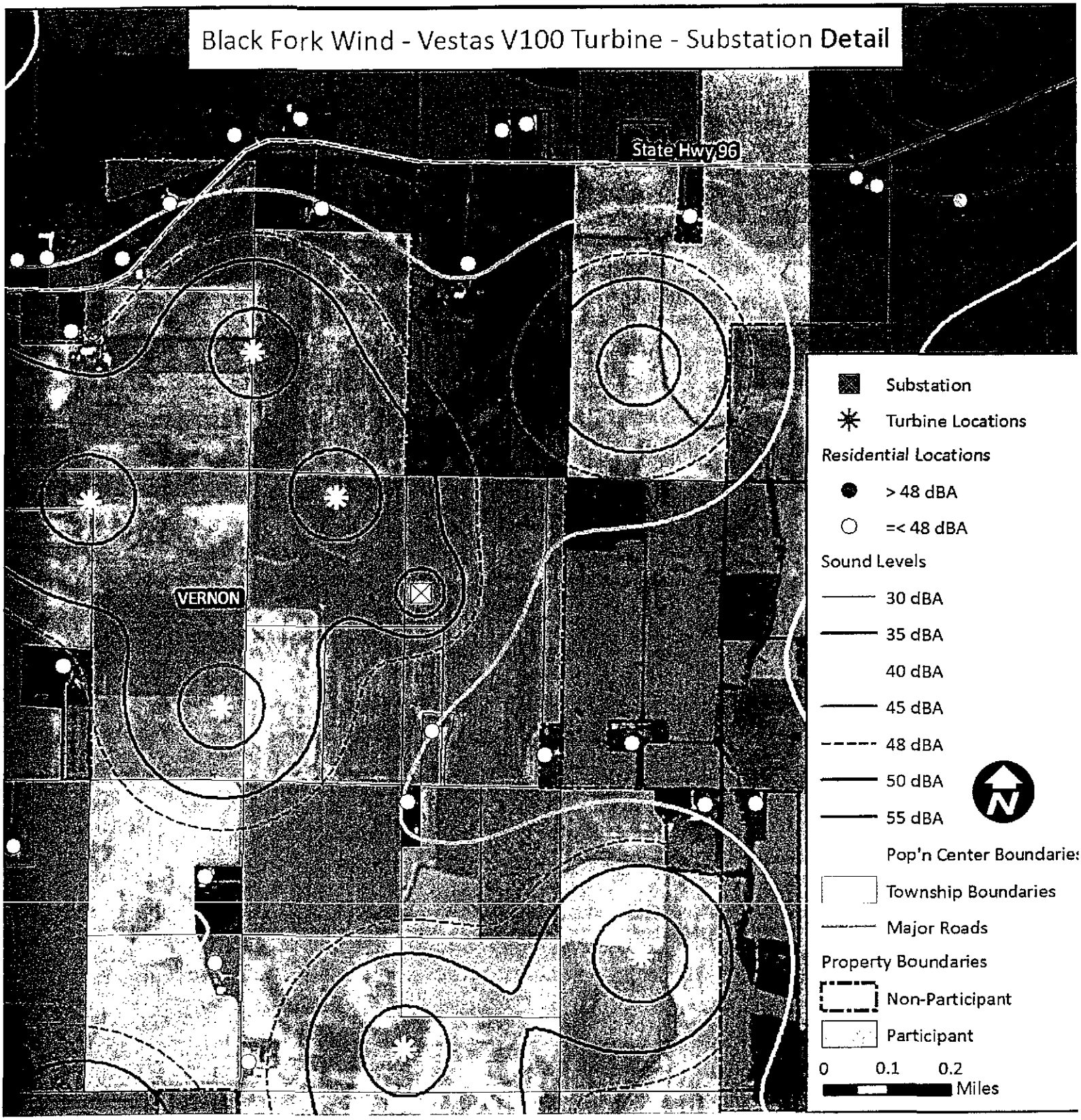
Additional information has been requested from the turbine manufacturers. The Applicant will supply this to Staff when it receives this information.


Black Fork Wind - GE 1.6 XLE Turbine
AUBURN
ANBERRY
VERNON
NDUSKY
SHARON
State Hwy 61
County Hwy 178
County Hwy 187
SPRINGI
SANDUSKY
FERSON
CASS
PLYMOUTH
Substation
Turbine Locations
Residential Locations
> 48 dBA
=< 48 dBA
Sound Levels
30 dBA
35 dBA
40 dBA
45 dBA
48 dBA
50 dBA
55 dBA
N
Pop'n Center Boundaries
Township Boundaries
Major Roads
Property Boundaries
Non-Participant
Participant
0
0.75
1.5
Miles

Black Fork Wind - Siemens SWT 2.3-101 Turbine




Black Fork Wind - Vestas V100 Turbine
AUBURN
RANBERRY
CASS
PLYMOUTH
VERNON
NDUSKY
SHARON
State Hwy 61
County Hwy 178
Sandusky Co
US Hwy 30
FERSON
SPRINGF
JACKSON
SANDUSKY
Substation
Turbine Locations
Residential Locations
> 48 dBA
=< 48 dBA
Sound Levels
30 dBA
35 dBA
40 dBA
45 dBA
48 dBA
50 dBA
55 dBA
Pop'n Center Boundaries
Township Boundaries
Major Roads
Property Boundaries
Non-Participant
Participant
0
0.75
1.5
Miles


Black Fork Wind - Vestas V100 Turbine - Substation Detail
State Hwy 96
VERNON
Substation
Turbine Locations
Residential Locations
> 48 dBA
=< 48 dBA
Sound Levels
30 dBA
35 dBA
40 dBA
45 dBA
48 dBA
50 dBA
55 dBA
N
Pop'n Center Boundaries
Township Boundaries
Major Roads
Property Boundaries
Non-Participant
Participant
0
0.1
0.2
Miles