

Ohio Power Siting Board
Staff Investigation Report and Recommendation

Case No.: 11-5543-EL-BGA

Project: Amendment to Hog Creek II Wind Farm Certificate of Environmental Compatibility and Public Need

Applicant: Hog Creek Wind Farm, LLC
629 Euclid Avenue, Suite 635
Cleveland, OH 44114-3003

Report Date: 14 November 2011

Waiver Requests: None

Inspection Date(s): 9 November 2011

Staff Assigned: D. Rostofer, J. Pawley, N. Doss, A. Conway

Summary of Staff Recommendations (see report text for discussion):

Application: ☐ Approval ☐ Disapproval ☒ Approval with Conditions
Waiver: ☐ Approval ☐ Disapproval ☒ Not Applicable

Project Amendment Description

The Applicant designed the original project (Case No. 09-0277-EL-BGN) to accommodate three possible turbines depending on availability and cost at the time of ordering. The proposed turbines were the GE 1.6, the Siemens SWT 2.3-101, and the Vestas V100. The structures consisted of a three-bladed horizontal axis turbine and nacelle on top of an off-white monopole tubular steel tower. The Applicant proposed to use either eight Siemens SWT 2.3-101 turbines which are rated at 2.3 MW, ten Vestas model V100 turbines which are rated at 1.8 MW or ten GE 1.6 turbines which are rated at 1.6 MW. This project was certificated by the Ohio Power Siting Board on August 29, 2011.

Alternative layouts are now being considered by the Applicant in this amendment application (Case No. 11-5543-EL-BGA) using new technologies (Nordex N100 and REpower MM100 turbine models). The new layouts will consist of five to 10 turbine sites associated with the original case and will depend on the turbine model ultimately chosen (See attached maps). The Applicant would like to construct this project in 2012 and has determined that the previously reviewed wind turbine technologies would not be available for delivery in 2012, providing the reason for certificating additional technologies. The Applicant proposes to construct a wind-powered electric generating facility ranging from 12.5 – 18.4 megawatts (MW) in nameplate capacity between the villages of Dunkirk and Ada, in Washington Township, Hardin County, Ohio.

The Applicant has filed for interconnection with PJM and currently has a signed Interconnection Service Agreement and Interconnection Construction Service Agreement (queue position U1-059). The point of interconnection to the electric utility grid will be a tap-in along the Ada-Dunkirk 69 kilovolt (kV) transmission line via the proposed new Hog Creek Wind Farm I and American Electric Power substations on Township Road 30 in Washington Township.

Amendment Review

The Applicant evaluated the Nordex N100 turbine layout because it would have the greater impact on the project area. The Applicant determined that all turbine locations in the amendment would be located at least 1,000 feet from the nearest habitable residence and 541 feet from the nearest non-participating property boundary, which is in compliance with minimum setback requirements.

The Applicant provided both cumulative (Hog Creek I & II) and non-cumulative shadow flicker model results for Staff review. Each were modeled in “worst-case” (glass house, no obstructions, etc.) and “realistic” (with obstructions) modes. The cumulative, “worst-case” analysis modeled two participating receptors to receive shadow flicker in excess of 30 hours per year.

All turbine locations have been submitted for FAA review. The Applicant evaluated the impacts of the new turbine locations on microwave paths, radio/television/cellular phone reception, and military radar systems. No new impacts were found through these evaluations.

Final turbine foundation designs were submitted for the turbines proposed in this amendment. The Applicant is considering two typical designs for wind turbine foundation systems; the spread footer foundation, and a rock-anchored, pile-supported foundation.

These turbine models are designed to withstand high wind speeds. The REpower MM100 wind turbine will automatically shut down and stop producing energy at its cut-out speed of 22 meters per second (m/s), or 49 miles per hour (mph). The Nordex N100 turbine has a cut-out speed of 20 m/s, or 45 mph. The cut-out wind speed refers to the wind speed at which a wind turbine ceases to produce energy. The Nordex N100 turbine is certified by the International Electrotechnical Commission (IEC) as a Class IIIa wind turbine, and has been designed to withstand wind speeds of 37.5 m/s or 83 mph. The REpower MM100 wind turbine has been certified by the IEC as a Class S wind turbine, and has been designed to withstand 42.5 m/s or 95 mph wind speeds. The Applicant states that the turbines have the following safety features in case of high winds: two independent braking systems and automatic turbine shut down at excessive wind speeds. The Applicant has also incorporated a wind turbine layout with a minimum residential setback distance of 1,000 feet, and a property setback of 541 feet. Installing and utilizing these safety control mechanisms minimizes the potential impacts from high winds.

Staff has found that there is at least one natural gas pipeline within the project area. In order to avoid a serious safety risk and significant environmental impact, Staff would recommend that all turbines be located a minimum setback distance from natural gas and/or hazardous liquids pipelines of at least 1.1 times the total height of the turbine structure as measured from its tower's base (excluding the subsurface foundation) to the tip of its highest blade. This setback would ensure that if a turbine were to fall with a blade fully extended, the tower and/or blade would not land on and affect the operation of a pipeline. Based on the tallest wind turbine model proposed for this project, with a tip height of 150 meters, the recommended pipeline setback would equate to 165 meters (541 feet). The Applicant has indicated that proposed turbine 7b is located well over 2500 ft. from the nearest pipeline. This distance would meet the Staff recommended pipeline setback.

The Applicant performed an initial archaeological literature review in 2009, architectural/history studies in the spring of 2010, and a Phase I archaeological field study in the summer of 2010. These studies and subsequent findings/recommendations encompassed the location of infrastructure for the original Hog Creek I & II Wind Farm layouts and will need to be updated to reflect any shifts in turbine location, underground cable work, access roads, and view-shed, as needed for this amendment.

Recommended Findings

Staff recommends that the Board find that the proposed amendment to the Certificate poses minimal social and environmental impact, provided that the amendment include the conditions specified in the section of this report entitled Recommended Conditions.

Recommended Conditions

That the Applicant shall adhere to all conditions of the original Certificate for the Hog Creek II Wind Farm project (Case No. 10-0654-EL-BGN).

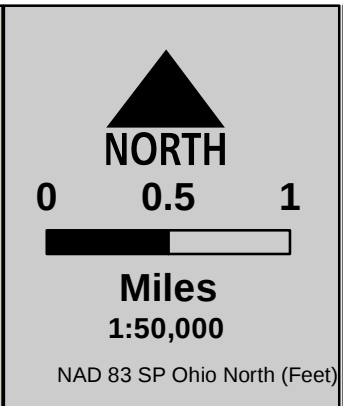
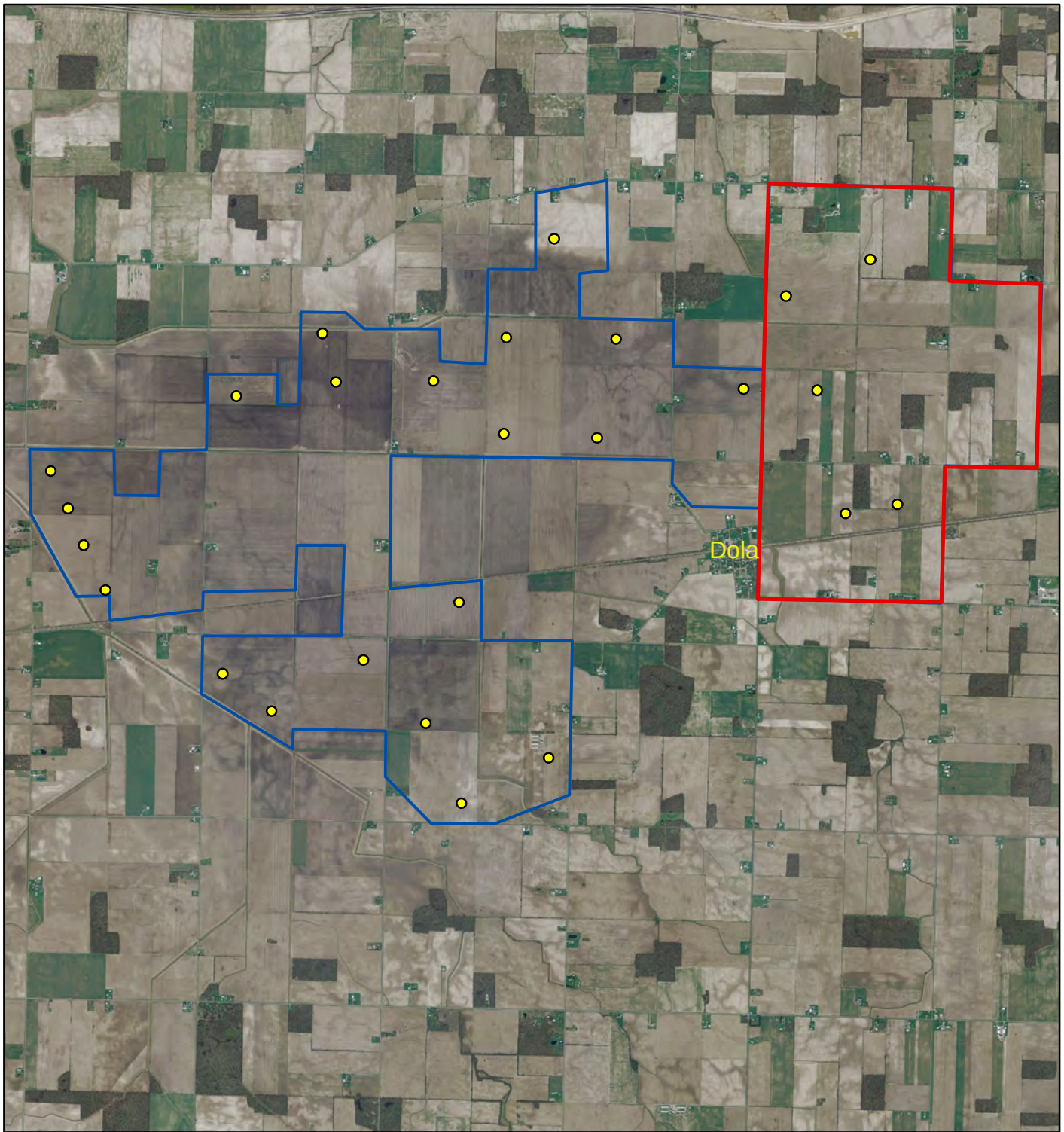
That prior to construction, the Applicant shall update the June 1, 2010 Phase I archaeological survey, to reflect changes in the project as described in this amendment, as acceptable to Staff. If the resulting additional survey work discloses a find of cultural or archaeological significance, or a site that could be eligible for inclusion on the National Register of Historic Places, then the Applicant shall submit a modification or mitigation plan for Staff's acceptance. Any such mitigation effort shall be developed in coordination with the Ohio Historic Preservation Office, with input from the Hardin County Historical Society, and submitted to Staff for review and acceptance.

The photo simulations included in the original Hog Creek II Wind Farm application (Case No. 10-0654-EL-BGN) shall be updated to include pertinent views that might change due to the proposed amended turbine layout. The Applicant's architectural survey shall also be revised, as needed, to reflect additional information related to the amended plan. These revisions shall be submitted to Staff for review prior to construction.

That the Applicant shall adhere to a setback distance of at least one and one-tenth (1.1)

times the total height of the turbine structure, as measured from the tower's base (excluding the subsurface foundation) to the tip of its highest blade, from any natural gas and/or hazardous liquids pipeline in the ground at the time of commencement of facility construction.

That the Applicant shall adhere to all terms and conditions as outlined in the ODNR-DOW Cooperative Agreement, to which the Applicant is a signatory. In the event that the Applicant and/or ODNR-DOW chooses to exercise their option to terminate the Agreement, the Applicant shall utilize best management practices as referenced in the Cooperative Agreement and shall adhere to the condition that turbines will not operate at wind speeds greater than four meters per second (as measured within the rotor swept area) from dusk to dawn, July 1 to October 31 annually. Furthermore, the Applicant shall adhere to the mitigation measures in ODNR's On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio, as also referenced in the ODNR-DOW Cooperative Agreement.

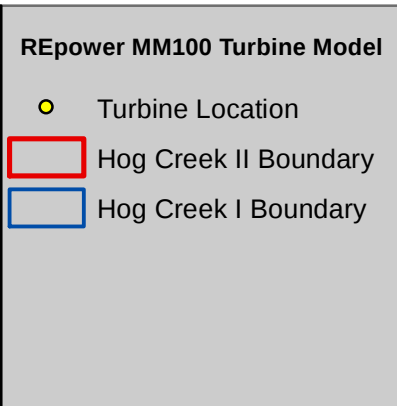
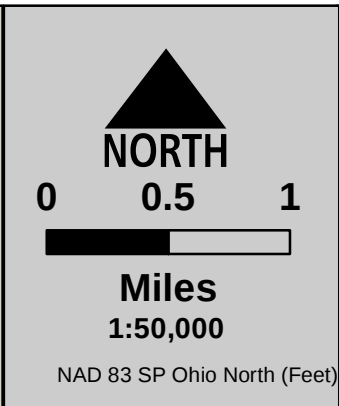
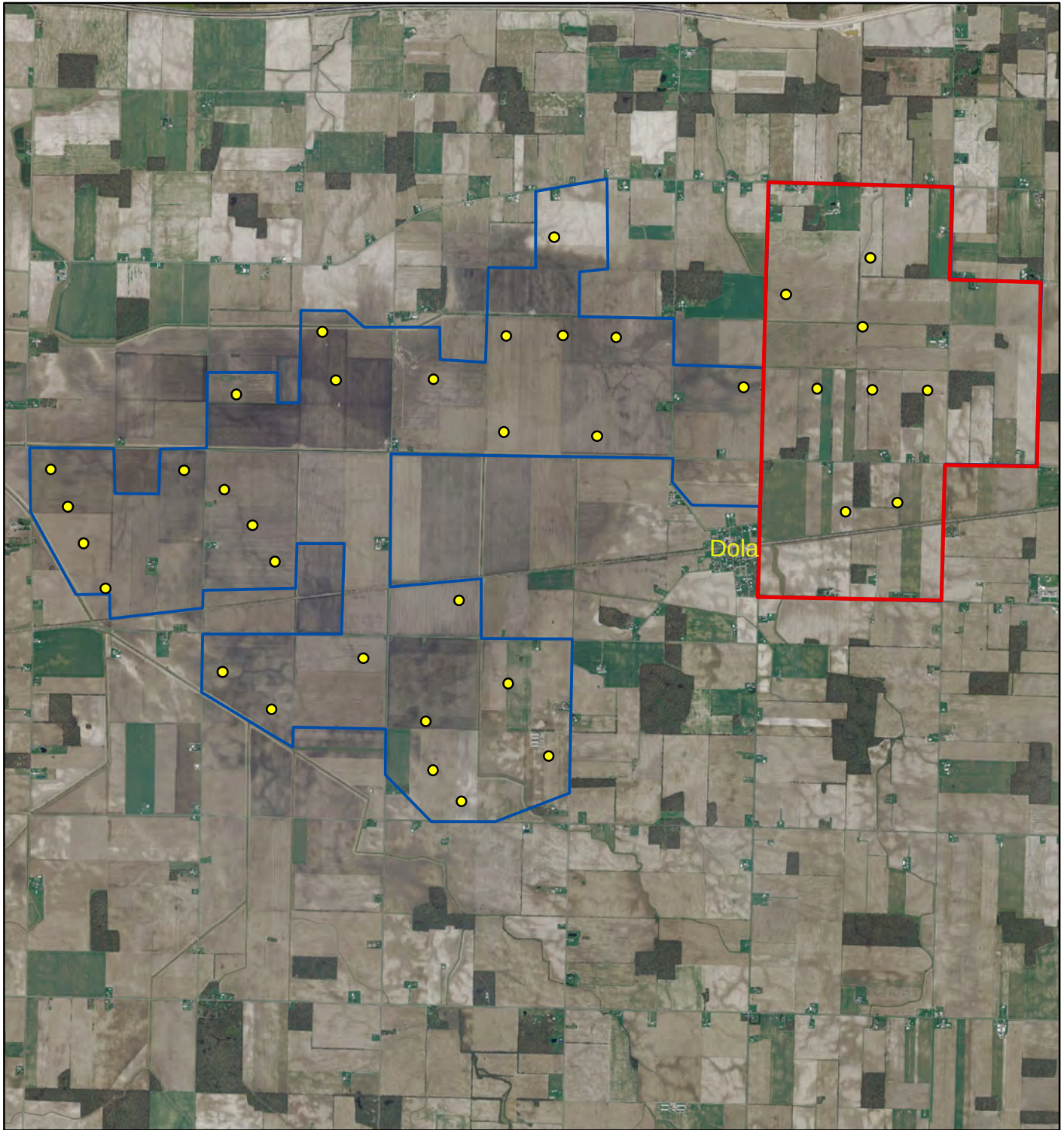


Nordex N100 Turbine Model

- Turbine Location
- Hog Creek II Boundary
- Hog Creek I Boundary

**Hog Creek I
11-5542-EL-BGA
and
Hog Creek II
11-5543-EL-BGA**

Maps are presented solely for the purpose of providing a visual representation of the project in the staff report, and are not intended to modify the project as presented by the Applicant in its certified application and supplemental materials.



**Hog Creek I
11-5542-EL-BGA
and
Hog Creek II
11-5543-EL-BGA**

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Summary: Staff Review and Recommendation electronically filed by Mr. Donald E. Rostofer on behalf of OPSB Staff