

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

**In the Matter of the Application of Hardin Wind, LLC** )  
**for a Third Amendment to its Certificate to Install and** )  
**Operate a Wind-Powered Electric Generation Facility** ) **16-1717-EL-BGA**  
**in Hardin and Logan Counties, Ohio.** )

Members of the Board:

Chairman, Public Utilities Commission	Ohio House of Representatives
Director, Development Services Agency	Ohio Senate
Director, Department of Health	
Director, Department of Agriculture	
Director, Environmental Protection Agency	
Director, Department of Natural Resources	
Public Member	

To the Honorable Power Siting Board:

Please review the attached Staff Report of Investigation, which has been filed in accordance with Ohio Power Siting Board rules. The application in this case is subject to an approval process as required by Section 4906.03 of the Ohio Revised Code.

Sincerely,



Patrick Donlon  
Director, Rates and Analysis  
Public Utilities Commission of Ohio

## OPSB STAFF REPORT OF INVESTIGATION

**Case Number:** 16-1717-EL-BGA (amends 16-0725-EL-BGA, 13-1177-EL-BGN, and 14-1557-EL-BGA)

**Project Name:** Scioto Ridge Wind Farm

**Project Location:** Hardin and Logan counties

**Applicant:** Hardin Wind, LLC

**Application Filing Date:** August 16, 2016

**Report Date:** October 7, 2016

**Applicant's Waiver Requests:** one

**Staff Assigned:** J. Whitis, A. Conway, M. Bellamy

### Application Description

In case number 13-1177-EL-BGN, the Ohio Power Siting Board (Board) authorized Hardin Wind, LLC (Applicant) to construct, operate, and maintain a wind-powered electric generation facility consisting of up to 105 wind turbines, with a maximum nameplate capacity of 300 megawatts (MW) (the Original Certificate). The turbine manufacturers and models approved for this project through the Original Certificate and subsequent amendments (case numbers 14-1557-EL-BGA and 16-0725-EL-BGA) are listed as follows: the REpower MM100 (2.05 MW) and M122 (3.0 MW); the Nordex N117 (2.4 MW); the Vestas V110 (2.0 MW) and V117 (3.3 MW); the Gamesa G97 (2.0 MW), G114 (2.0 MW) and G114 (2.5 MW); the General Electric GE100 (1.7 MW) and GE103 (1.7 MW); and the Suzlon S111 (2.1 MW).

In this application, the Applicant proposes a capacity increase to the Vestas V110 turbine model from 2.0 MW to 2.2 MW. The turbine model capacity increase is the result of technological improvements to the turbine, including the gearbox.

The Vestas V110 turbine's dimensions, including rotor diameter and hub height, would remain the same. Furthermore, the Applicant is not proposing to revise the location of any turbine or associated facility through this application. Additionally, the overall facility maximum nameplate capacity of 300 MW approved in the Original Certificate would remain the same.

On August 16, 2016, the Applicant filed a motion for waiver from Rule 4906-3-011(B)(2)(a)(iii) of the Ohio Administrative Code, which requires the Applicant to serve a copy of the application upon "any property owner(s) along the new route." On September 9, 2016, an Administrative Law Judge granted the motion for waiver.

### Application Review

Staff's review of the application focuses solely on whether the proposed change in turbine capacity would be minimal in nature; pose any significant additional adverse environmental impacts as compared to the original project; substantially comply with the conditions of the previously granted certificate; or create additional adverse impacts for any property owner.

### *Blade Shear and Ice Throw*

Blade shear occurs when a wind turbine blade, or segment, separates from the rotor and is thrown or dropped from the tower. Ice throw occurs when accumulated ice on the wind turbine blades separates from the blade and falls, or is thrown, from the blade.

Staff reviewed the potential for blade shear and ice throw in both the Original Certificate and the present application. Staff determined that the range of potential blade velocities and cut-out speeds for both the certificated and the proposed turbine model are the same, thereby resulting in similar probabilities for blade shear and ice throw associated with this turbine model at both a 2.0 MW and a 2.2 MW capacity.

Therefore, Staff determined the conditions of the Original Certificate adequately address the potential blade shear and ice throw impacts of the proposed Vestas V110 (2.2 MW) turbine model.

### *Noise*

Noise will be generated during both construction and operation of the wind farm facility. Construction noise will be associated with construction equipment and construction procedures that are common to many large-scale construction activities. However, Staff believes that the adverse impact of this noise will be minimal because of the transient nature of the construction activities, the distance of the activities from most residential structures, the limitation of construction activities to normal daytime working hours, and noise mitigation that has been proposed in the application.

During facility operation, noise will be associated with the nacelle and turbine blades when the units are generating electricity. Staff reviewed the potential noise impacts in both the Original Certificate and the present application. The noise study model in the original application showed that a turbine model noisier than either the Vestas V110 (2.0MW) or Vestas V110 (2.2MW) will not impact any non-participating residence at sound levels greater than the ambient noise level plus five dBA. The Applicant stated, and Staff determined, that the Vestas V110 (2.2MW) turbine model has lower sound power output levels at all wind speeds than the Vestas V110 (2.0 MW) version.

Therefore, Staff determined Conditions 13 and 15 of the Original Certificate adequately address the potential noise impact of the proposed Vestas V110 (2.2 MW) turbine model.

### *Shadow Flicker*

Shadow flicker from wind turbines occurs when rotating wind turbine blades pass between the sun and the viewer at low solar elevation angles. Shadow flicker is generally experienced in areas near wind turbines where the distance between the viewer and blade is short enough that the glare from the sunlight is insufficient to conceal the blade. When the blades rotate, this shadow creates a visual effect with the sun known as shadow flicker.

Staff determined that rotor diameters, turbine hub height, and turbine locations for both the certificated and the proposed turbine model are the same, thereby resulting in similar probabilities for shadow flicker associated with this turbine model at both a 2.0 MW and a 2.2 MW capacity.

Therefore, Staff determined Condition 14 of the Original Certificate adequately addresses the potential shadow flicker impact of the proposed Vestas V110 (2.2 MW) turbine model.

### *High Winds*

Wind turbines are designed to withstand high wind speeds. Staff reviewed the safety features of the Vestas V110 and its ability to withstand high winds in both the Original Certificate and the present application.

Staff determined the conditions of the Original Certificate adequately address high wind issues relative to the proposed Vestas V110 (2.2 MW) turbine model.

### *Safety Manual*

Staff reviewed the safety manual for the proposed turbine model. The Applicant reiterated that it will adhere to Condition 4 from the Original Certificate and submit the safety manual for the turbine selected for the project prior to construction.

Staff determined that Conditions 1, 4, and 17 of the original Certificate adequately address safety considerations relative to the proposed Vestas V110 (2.2 MW) turbine model.

### **Conclusion**

Staff finds, if the Applicant increased the capacity from 2.0 MW to 2.2 MW for the previously certificated Vestas V110 turbine model, the proposed changes would be minimal in nature, would not create additional adverse impacts for any property owner and would not pose any significant additional adverse environmental impacts as compared to the original project. Additionally, Staff determined the proposed change would not impact the Applicant's ability to substantially comply with the conditions of the previously granted certificate, but rather the conditions of the Original Certificate are adequate to ensure that adverse environmental impacts would continue to be minimized for this project.

### **Recommended Findings**

Staff recommends that the Board approve the application, provided that the certificate continues to include all conditions specified in the Opinion, Order, and Certificate for case number 13-1177-EL-BGN.

### **Condition**

- (1) The Applicant shall adhere to all conditions of the Opinion, Order, and Certificate for the Scioto Ridge Wind Farm in case number 13-1177-EL-BGN.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

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**Case No(s). 16-1717-EL-BGA**

Summary: Staff Report of Investigation electronically filed by Mr. Matt Butler on behalf of Staff of OPSB