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**BEFORE THE OHIO POWER SITING BOARD**

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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

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**SUPPLEMENTAL TESTIMONY OF JAY HALEY**

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**Q.1 Are you the same Jay Haley who caused to be filed direct testimony in this matter on September 8, 2011?**

A.1 Yes, I am.

**Q.2 What is the purpose of your supplemental testimony?**

A.2 The purpose of my supplemental testimony is to supplement my direct testimony by addressing and supporting the revisions to Condition 55 contained in the Joint Stipulation and Recommendation. I am also providing testimony regarding Conditions 44 and 45 in the Joint Stipulation and Recommendation which relate to icing on turbines.

**Q.3 Have you reviewed the Joint Stipulation and Recommendation?**

A.3 Yes.

**Q.4 Do you find Condition 55 in the Joint Stipulation and Recommendation to be reasonable?**

A.4 Yes, I do. Condition 55 has been revised from the original Staff recommended condition to clarify that a receptor must be habitable in order to be considered for mitigation.

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**Q.5 Do you find Condition 44 in the Joint Stipulation and Recommendation to be reasonable?**

**A.5** Yes, I do. Condition 44 was revised from the original Staff recommended condition to allow for the utilization of automatic vibration monitoring software as an ice warning system, provided the manufacturer warrants that the system will detect ice. There are many methods to implement a warning system when ice builds up on turbine blades. One such method is to monitor the vibrations in the turbine blades using manufacturer installed sensors and software. As written, I believe Condition 44 is reasonable and appropriate.

**Q.6 Do you find Condition 45 in the Joint Stipulation and Recommendation to be acceptable?**

**A.6** As Scott Hawken testified in his direct testimony, Condition 45 is acceptable to the Applicant. In my opinion, however, the setback formula presented in Condition 45 should not be applied on a general basis considering the extremely low risk of ice throw to individuals, buildings and automobiles for this project.

**Q.7 Can you please explain further why you believe the setback formula presented in Condition 45 should not be applied on a general basis?**

**A.7** The setback formula referenced in Condition 45 and at page 37 of the Staff Report originated from a publication by Seifert, Westerhellweg, and Kroning (2003), *Risk Analysis of ice throw from wind turbines*. I have reviewed that publication, and it is clear from the publication that the setback formula is a simple empirical equation that is meant to be a rough guideline for initial siting efforts. When you start reviewing the actual risk of ice throw, it becomes apparent that the setback formula is excessive and not warranted.

For example based on the ice throw risk assessment performed for the Colebrook South Phase of the wind project in Litchfield County, Connecticut, which has more icing days per year than the Black Fork site (12 days versus 8 days for Black Fork), the estimated probability of being struck by a 1 kg ice fragment at a distance of 280 meters from a GE 1.6 – 100 wind turbine was less than once in 100,000 years. The low risk of ice throw is also evidenced by the fact that I am not aware of any incidents in the United States or for that matter, around the world, of individuals being struck or injured by ice thrown from wind turbines. The risk of ice throw will be lowered even further by simply implementing strategies for detecting ice buildup on turbines such as those referenced in Condition 44. The risk of ice throw on this project does not warrant the application of the Seifert setback formula, which even the authors admit is a “rough guess.”

**Q.8 Does this conclude your supplemental testimony?**

**A.8** Yes, it does.

## 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, 6<sup>th</sup> Floor, Columbus, OH 43215 and via overnight mail upon the following persons listed below this 5th day of October 2011:

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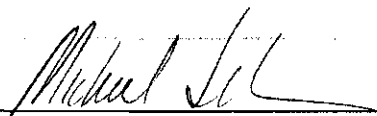
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