

**Testimony of Lisa Linowes**  
**NH SEC - Rulemaking - Docket 2014-04**  
**March 4, 2015**

**I. INTRODUCTION**

Mr. Chairman, members of the committee, thank you for this opportunity to appear before you today.

My name is Lisa Linowes. I am a resident of the State of New Hampshire and executive director of the Windaction Group, a national organization that tracks and reports on policies that incentivize renewable energy development, particularly wind energy. I have engaged on siting issues pertaining to wind power for over a decade, including being part of the ad hoc committee to draft rules around wind turbine siting back in 2007-08.

I also moderated the SB99 stakeholder group pertaining to public health and safety. My prepared comments address the safety setback distances proposed in the draft rules.

For decades, the wind industry has advanced the notion that industrial turbines can safely be erected a few hundred feet from where people live and gather. The industry's preferred setback has been 1.1x to 1.5x the height of the tower (including the blade) -- a setback that was derived from the fall-zone of the tower.

Draft rule Site 301.14(f)(2)c on Setback Standards deviates little from this allowing turbines to be sited:

- a) no less than 3x turbine height to nearest point of the foundation of the permanently occupied building;
- b) 1.1x turbine height to a non-participating landowner's property line; and
- c) 1.5x turbine height to nearest public road.

Simple math describing motion shows that ice or debris from a 100-foot long blade, especially one elevated high above the surrounding area under windy conditions, can be thrown nearly 1700 feet from the base of the turbine.

The Vestas safety manual for the V90 turbine recommends a 1300 foot safety buffer around its turbines. This is the basis of the 1300 feet approved by the SEC for the Granite Reliable wind project in Coos County. Vestas, reported to Chris Jensen of NH Public Radio that debris from its V90 turbine has been thrown as much as 1,600 feet.

Even a properly operating wind turbine will throw ice.

GE Wind<sup>1</sup> states that rotating turbine blades can propel ice fragments up to several hundred meters depending on turbine dimensions, rotational speed and other potential factors. GE refused to site wind turbines in Charleston MA and Falmouth MA due to proximity to property lines and public rights-of-way. In both cases the setback distances to property lines and rights-of-way (~800 feet) were greater than what the draft rules would require for the tallest turbines sited in the United States.

NH Fish and Game biologist, Will Staats<sup>2</sup>, testified before a Vermont committee that the danger of ice throw cannot be overstated.

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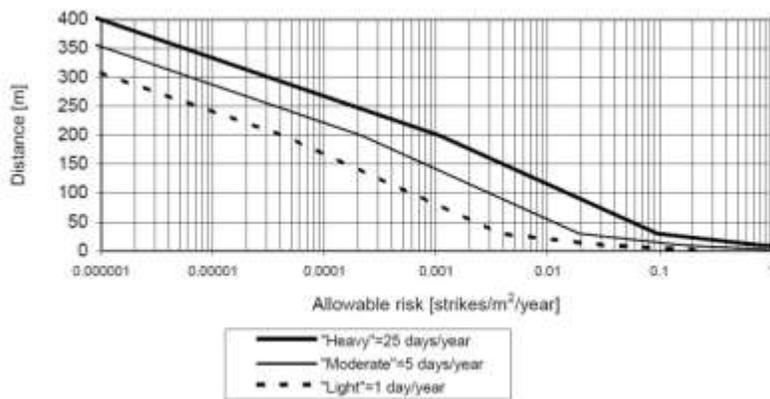
<sup>1</sup> [http://site.ge-energy.com/prod\\_serv/products/tech\\_docs/en/downloads/ger4262.pdf](http://site.ge-energy.com/prod_serv/products/tech_docs/en/downloads/ger4262.pdf)

<sup>2</sup> [http://www.windaction.org/posts/36424-testimony-of-will-staats#.VPZNY\\_nF98F](http://www.windaction.org/posts/36424-testimony-of-will-staats#.VPZNY_nF98F)

"I have often worked near these turbines on our research projects in the winter and witnessed the large divots in the snow where ice has been flung from the turning blades," he said. "I have seen the steel stairs leading to the doors of turbines bowed and broken by ice falling from the nacelle. And, on one terrifying occasion, my truck was struck by flying ice that, had it hit me or anyone else close by, could have killed or caused serious injury. One operator of a wind installation told me these machines will throw a four hundred pound chunk of ice one thousand feet."

Project developers often represent that ice throw is unlikely to occur because ice generally melts gradually and slips off the blade and to the ground below. Iberdrola Renewables made this claim in 2010 prior to receiving approval to construct its Groton Wind facility in New Hampshire. It wasn't until 2013 when Iberdrola's Emergency Plan<sup>3</sup> was written that we learn, "shedding ice may be thrown a significant distance as a result of the rotor spinning or wind blowing the ice fragments."

As more turbines are sited in cold climates, the wind industry has considered safety distances based on the level of allowable risk. The graph on the right maps distances from the turbines based on the estimated annual icing events at the project site and degree of risk. In colder climates, icing can occur during non-winter months.



Very little public information is available that documents the frequency of ice throw and the distances flung from the turbines. Surveys have been conducted of large project operators in an effort to track the size and distance of ice fragments being thrown but the results are

inconclusive as there is no way to assess how well the area around the turbines was searched, especially at great distances from the towers.

There is no justification for placing property owners and the public at risk. Safety setbacks should be a minimum of 3-5x total turbine height, including the blade in the 12 o'clock position, as measured from the property line or public gathering area. Elevation should also be considered when measuring distance. It is not in the public interest for the State to knowingly permit a wind turbine to be sited such that it can throw ice and debris onto land owned by a non-participating property owner or areas where people may gather or play.

Finally, last summer, Ohio Governor John Kasich approved a change to the state's safety setback distances for wind turbines<sup>4</sup>. Under the new law, setbacks are now to be measured at the property line of the nearest adjacent property as opposed to the wall of a nearby home. In practice, this will require minimum distances of at least 1,300 feet from property lines to each turbine base.

The wind industry cried foul claiming the legislature gave no warning of the setback rule change or opportunity for testimony. They insisted the provision was 'anti-wind' driven by coal and oil interests intent on destroying the economics of large-scale wind and called on the governor to veto the change.

<sup>3</sup> [http://www.nhsec.nh.gov/projects/2010-01/documents/131011safety\\_plan.pdf](http://www.nhsec.nh.gov/projects/2010-01/documents/131011safety_plan.pdf)

<sup>4</sup> <http://www.midwestenergynews.com/2014/06/19/industry-setback-changes-will-end-new-wind-farms-in-ohio/>

The rule change was not about politics and it wasn't about harming the wind industry. It was a recognition by the state of Ohio that 500-foot spinning towers can throw ice, fling blades and other debris, ignite into flames and, from time to time, collapse. And the only way to protect the public was to place distance between people and property and the turbines.

Thank you.

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