

**Section 27**  
**Public Safety**

Recently enacted legislation requires a demonstration that the proposed generating facilities will be constructed with setbacks adequate to protect public safety.<sup>1</sup> Subsequent guidance from the Department of Environmental Protection states that this requirement is fulfilled by a narrative providing evidence that the turbine design meets accepted safety standards, has appropriate overspeed control, and evidence that the generating facilities have been sited with appropriate safety related setbacks.<sup>2</sup>

### **1.0 Turbine design certification**

The Rollins Wind Project will use General Electric 1.5 MW (sle) wind turbine generators. The turbines are National Electric Code compliant and are designed to withstand Class IIa wind gusts of 55 meters per second, as established by the International Electrotechnical Commission (see Appendix 27-1, Technical data). GE's 1.5 sle turbine design is also certified by Germanischer Lloyd, the leading wind power product certification authority.

### **2.0 Overspeed control**

The GE 1.5 MW turbines are protected from speed variation by a "safety chain" system---if any link in the chain senses vibration or overspeed, it triggers shutdown of the turbine.

Sensors within the nacelle will trigger braking if:

- the rotor is spinning overspeed (1.135 times nominal speed);
- the generator is spinning overspeed (1.135 times nominal speed);
- there is vibration beyond tolerance;
- the pitch control mechanism fails; or
- control systems fail ("fail-safe" mode).

In addition, safety chain braking can be initiated by emergency stop switches located at three locations within the turbine---the base, the nacelle and the hub. The turbine is not generating electricity once the safety chain is initiated. Once stopped for speed variation, the turbine cannot be restarted remotely.

There are two independent methods of speed control in each turbine: blade pitch control and hydraulic disc braking. Either or both of these systems can initiate to prevent overspeed. The three rotor blades have pitch control which adjusts to wind conditions. Once optimal rotation speed is achieved, operational braking will occur by the blades automatically adjusting their pitch to spill excess wind and keep the turbine spinning at optimum speed. In addition, the turbines will "cut out" and the braking system will be initiated if wind speeds exceed 25 meters per second for 10 minutes. The blades will automatically adjust to a feathered position at 85 degrees to the wind, and the hydraulic braking will be applied to bring the turbine to a neutral position, then in fully feathered position, the blades will be allowed to idle.

The blade pitch control is rotated to test it every 168 partial load hours, and the disc brake is tested every 1400 hours. In the event of a power failure, the pitch control for the three blades is automatically switched to a backup battery system, which moves the blades to a feathered position.

### **3.0 Public safety setbacks**

Recent guidance associated with DEP's Site Location of Development application requires evidence that the wind turbines have been sited with appropriate safety related setbacks from adjacent properties and adjacent existing uses. The guidance recommends minimum setback equal to the local setback requirements or 1.5 the maximum turbine blade height, whichever is greater.

The Project has been sited with appropriate safety related setbacks. The DEP's recommended setback of 1.5 the maximum blade height is 584 feet for the GE turbines, greater than any local setback

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<sup>1</sup> 38 M.R.S.A. §484(10)(B).

<sup>2</sup> Maine DEP revised *General Instructions* for a Site Location of Development Application issued August 29, 2008.

requirements. Forty (40) of the forty one (41) proposed turbine locations are more than 584 feet from the property boundary of a landowner who is not participating in the project. The one turbine closer than 584 feet, turbine S20, is 150 to 200 feet from the nearest non-participating property boundary.

The parcel abutting turbine S20 is a large, non-residential parcel that is actively managed for forest products. The owner of that parcel has been contacted by Evergreen, and has no objection to siting the wind turbine closer than 584 feet to their property boundary (see Appendix 27-1).

## **Appendix 27-1**

**KATAHDIN LAND PRESERVATION CORPORATION**  
130 Middle Street  
Portland, Maine 04101  
Telephone 207.772.0548 ~ Facsimile 207.772.0481

September 24, 2008

Mr. Ryan Chaytors  
FIRST WIND  
85 Wells Avenue, Suite 305  
Newton, MA 02459

RE: Rollins Wind Project

Dear Mr. Chaytors:

I am writing at your request for an acknowledgement of the Rollins Wind Project, which abuts my property. As you have described it, there will be a turbine located adjacent to my property boundary which is less than the Department of Environmental Protection (DEP) recommended setback of 1.5 times the turbine height (approximately 584 feet). In the case of the nearest point to my property, the turbine will be approximately 150 to 200 feet away from my boundary.

I am not concerned that the project poses a safety risk to me or my property, and have not objection to the setback being less than the DEP's recommended distance.

If you need any further assistance from me, please let me know.

Sincerely,



Michael A. Liberty  
President

MAL/slm