Ice Shedding & Distributed Wind

DWEA Briefing Paper

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Summary

Given the right conditions, ice can accumulate on a wind turbine and its tower. If proper siting and setback guidelines are followed ice accumulation and ice shedding do not cause problems.

What happens with Ice Accumulation?

Ice accumulation on a wind turbine depends on local weather conditions and the turbine's blade rotational speed. (Ice accumulation on the tower and turbine will be the same as it is on surrounding trees, buildings, and utility towers.) The higher rotational speeds of smaller turbine rotors present less opportunity for ice accumulation than the slower rotational speeds of larger turbine rotors. However, vibration and/or ice detection sensors are typically available for larger turbine rotors that shut down the turbine when specific conditions create a possible risk.

When ice accumulates on structures, it accumulates in thin layers. Accumulated ice will be shed from a turbine or tower just as it is shed from other common overhead structures, such as roofs, power lines, and trees. Any ice that is shed breaks into fragments as it falls. The highest risk of damage or injury from ice shedding from any structure is directly below that structure. An increase in wind, temperature, or solar radiation may cause ice to loosen and fall. In isolated cases, fragmented ice may be carried by a strong wind.

DWEA Recommendations

DWEA recommends that common-sense safety measures associated with ice shedding from any structure be followed with wind turbines. Keeping a safe distance during freezing temperatures when ice accumulates is the best way to avoid injury from ice shedding from a wind turbine or any other overhead structure. Standing under any ice-covered structure should be avoided until the ice has shed.

Wind turbines with accumulated ice are safe when setbacks are observed. DWEA recommends following the standard industry siting guidelines that inherently reduce the risk of ice-related mishap, including siting the turbine according to standard setback rules and performance guidelines, and proper education about proposed operational risk.

For more information about this topic or membership in the Distributed Wind Energy Assocatio (DWEA), contact us:

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