

Reference projects

Region feasibility: Gaspé icing map presented at Québec's 8th Wind Energy Conference (2014) in Gaspé, Québec, Canada

Operational assessment: case example from France presented at WinterWind 2014 conference in Sundsvall, Sweden

Wind power

Ice assessment for reducing project financial risks and uncertainties

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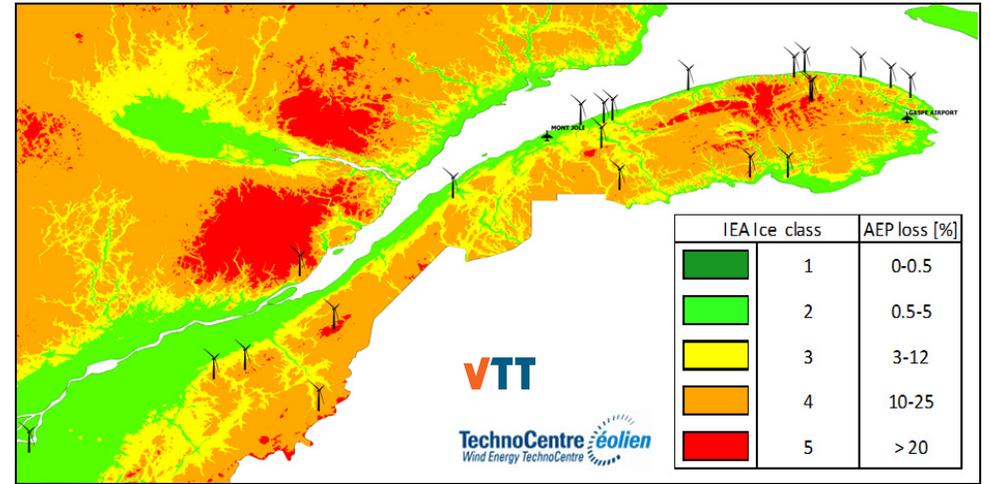
Expected long-term production losses due to wind turbine blade icing remains today as one of the largest sources of risk and uncertainty in project financial estimates for example in Scandinavia, Canada and other high altitude locations in cold climate regions. Iced rotor production losses can lead to much larger interannual production fluctuations than typical annual wind speed variations. These common cold climate challenges need to be investigated in the site assessment phase (before any large site installations) in order to better plan for risk mitigation procedures and the appropriate technological solutions to assure a solid business case in cold climates.



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By using VTT's over 20 years of cold climate wind power expertise, assessment of expected long-term production losses due to icing is now possible with VTT's Wind Power Icing Atlas (WIceAtlas) anywhere in Canada and elsewhere around the world.

WIceAtlas consists of over 3000 meteorological stations globally with +20 years of measurement and observation data for evaluating the upcoming 20 years of wind power lifetime economics. By analysing extensive historical icing weather conditions, we can estimate the resulting long-term iced turbine production losses thus giving valuable Annual Energy Production (AEP) estimates for financial calculations.



Region feasibility: Gaspé peninsula icing map for wind energy.

Our ice assessment service is targeted to four different phases in the overall project development phase.



Four main ice assessment products

1. Region feasibility:

- Estimate preliminary icing conditions for a region
- Analysis of financial losses due to icing
- Icing map of a specific region
- Decision support for site selection
- Recommendations for mitigating financial risks due to icing

2. Site feasibility / selection project:

- Estimate preliminary icing and/or wind conditions for a site
- Analysis of financial losses due to icing
- Decision support for site selection
- Recommendations for meteorological mast equipment and mitigating financial risks due to icing

3. Site assessment:

- Extrapolate short-term icing and/or wind measurements to expected long-term conditions
- Analysis of expected, long-term production and financial losses due to icing
- Recommendations for mitigating financial risks due to icing

4. Operational assessment:

- Calculate short-term production losses due to icing from measured turbine performance
- Extrapolate short-term measured turbine production losses to expected long-term production losses due to icing