



**association to protect
AMHERST ISLAND**

P.O. Box 6, 5695 Front Road,
Stella, ON K0H 2S0.

24th Oct. 2014

Technical Review Committee, MOECC
c/o Ms. Susanne Edwards

Further Submission to the MOECC Technical Review Team Concerning Ice Throw from the Amherst Island Windlectric Wind Energy Development.

A month ago, on behalf of APAI, I submitted a report to the MOECC Technical Review Team concerning ice throw. The substance of the report was that Algonquin Power had not treated the hazard associated with ice throw with the diligence owed to the residents of Amherst Island. Algonquin Power had asserted that ice build-up monitors would be installed and that turbines would be shut down when the blades were ice covered.

What had come to light in September was an article in the wind energy trade journal Wind Energy Update that made clear that ice detection sensors do not work reliably. The APAI submission pointed out that six turbines could throw ice far enough to reach travelled roads and that 27 turbines could throw ice far enough to reach neighbouring lots.

Since then, more reason to doubt that ice detection will eliminate the hazard of thrown ice has come to light. As the technical review committee is perhaps aware there will be a conference on Wind Turbine Optimization, Maintenance and Repair in Toronto in December.¹ The conference is organized by Wind Energy Update and will feature a wide range of speakers from the wind energy industry. An extract from the latest conference announcement is attached to this letter. The extract highlights the series of talks on operating wind turbines under icing and cold climate conditions. The conference registration fee is far beyond my means but I hope the one or more engineers from MOECC will be in attendance.

Of the six abstracts three are, understandably, mainly concerned with the economic impact of ice build-up on company revenue and turbine deterioration. However, two abstracts focus on icing mitigation and ice detection.

Raphaël Roy (GDF) will discuss ice mitigation modifications for the expansion of the Caribou Wind Park based upon experience with the first phase, now in operation. These include blade coatings, heating strips on the blades, forced hot air within the blades, external de-icing and advances in ice-detection. Clearly, GDF is not satisfied with the ice-detection and mitigation of the present operation.

¹ <http://www.windenergyupdate.com/optimization-maintenance-repair-canada/>

The Caribou Wind Park is 70 km west of Bathurst in northern New Brunswick. Meteorological records show that the impact of freezing rain is comparable between eastern Ontario and northern New Brunswick: 11 days per annum for Kingston compared to 15 days for Bathurst.²

Matthew Wadham-Gagnon (TechnoCentre éolien) will address the topic of ice-detection. He notes the “the Holy Grail of ice-detection has yet to be invented”.

The conference session will wrap up with a panel discussion on anti-icing and de-icing systems with panel members from Nordex USA Inc., ENERCON and Senvion.

Together with the material submitted in our September submission, these conference presentations make clear that as yet there is no reliable mitigation of ice throw from wind turbines and that the only solution is to separate wind turbines operating in a northern climate far enough from where people, animals and built structures are likely to be. There is no sense in Algonquin Power’s REA documents that the company understands this.

In our September 2014 submission we demonstrated that a reasonable setback from travelled roadways, built properties and neighbouring lots is 300 metres. The site plan submitted by Algonquin Power has 6 turbines less than 300 metres from travelled roads and 27 turbines less than 300 metres from the lots of neighbouring non-participants. The Windlectric proposal must be returned to Algonquin Power for major revision of the site plan.

We conclude with a repetition of the final paragraph of the September submission:

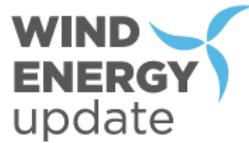
Ice throw is another example of why the Windlectric project, with its high turbine density and proximity of so many turbines to homes, is wrong for Amherst Island. The winter threat of ice-throw is yet one more reason why this project should never have been proposed, never given a contract by the Ontario Power Authority and should never be approved by the Ministry of the Environment and Climate Change.

Yours Faithfully,

John Harrison, Vice President, on behalf of the Association to Protect Amherst Island
harrisjp@physics.queensu.ca

² <http://www.weatherstats.ca/winners.html?location=kingston;category=33>

Researched & Organized by:



Wind Turbine Optimization, Maintenance & Repair Canada 2014

DEC 8-9, 2014 // Westin Price Toronto, ON, Canada

Expert technical and commercial speakers include:

Owners & Operators

GDF SUEZ



TechnoCentre éolien
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THE WIND TOLL

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<http://www.windenergyupdate.com/optimization-maintenance-repair-canada/>

Companies already registered to attend include:



Cold Climate O&M

Wind turbine operation optimization under icing and cold climate

It is widely known that ice accretion on wind turbine structures can affect energy production or impact the safety of people and their surroundings. Nevertheless, the impact of icing is difficult to precisely measure and quantify. As a result, a consensus on the optimal approach in dealing with ice has not yet been reached. This session will focus on:

- A concept that manages the risks resulting from icing conditions in order to optimize energy production under these conditions
- Solidifying knowledge in order to protect the mechanical integrity of the various turbine components
- Optimizing the ice operation mode while ensuring minimal risk of extreme loads and mitigating health and safety risks

Amélie Camion, *Technical Support, Icing and Cold Climate, Americas*, **Senvion**

Cost effective access to turbines during winter months

Snow removal plan or winterised vehicles? This is a question that is actually quite common among wind farm operators. The answer is often different from one site to another. This seminar will:

- Evaluate the pros and cons of snow removal vs winterised vehicles – depending on location and cluster size, what is best?
- Show the results of a survey conducted among Canadian operators revealing what (universally) works best
- Tips on determining what is the most cost effective way of accessing your wind turbines during winter months

Bruno Boucher, *O&M Manager*, **TechnoCentre éolien**

CASE STUDY Caribou Wind Park ice mitigation

Overview of the multiple R&D projects & modifications done for balance of plant at Caribou Wind Park since 2011 in regards icing mitigation, including:

- Various blade coatings
- After market electrical heating strips installed on the blades
- Forced Air Heaters installed inside blades
- Helicopter de-icing
- Ice detection and advance meteorological tower for ice detection and modeling
- Ice protection vehicle for accessing turbines when iced
- Review of collector line and substation upgrades for heavy ice loading

Raphaël Roy, M.Sc.A., P.Eng. *Site Engineer, Health & Safety Coordinator, Environmental Officer,*
Caribou Wind Park LP, GDF SUEZ Energy Canada

State-of-the-art for ice detection for Operational Turbines

New ice detection methods and technologies keep appearing every year. Yet the Holy Grail of ice detection has yet to be invented. In the meantime, this seminar will:

- Review existing methods and technologies for forecasting and detecting ice build up
- Discuss which methods/technologies may be best suited for specific ice detection needs
- Explore the most promising new technologies to date and whether they can become commercialised

Matthew Wadham-Gagnon, *Project Manager*,
TechnoCentre éolien

CASE STUDY Turbine lifetime prediction from iced turbine load analysis

- Explore the real market potential for cold climate wind energy – it is more different than you think
- Case studies from Canada & Sweden:
Explore the latest research and development in iced turbine load analysis and what implications it has on a company's profits
- Understand the real impacts of an iced turbine on your O&M so that you are fully equipped – with or without an asset of your own – to deal it correctly

Jeroen Dillingh, *Senior Scientist*, **VTT**

PANEL SESSION Increased reliability of anti-icing and de-icing systems

This panel discussion is designed to allow the turbine manufacturers to explain how their latest de-icing systems will maintain high productivity in order to obtain the required return on your investment

- Understand how accurate icing measurements are taken even when the turbine is involved in severe icing conditions
- Explore ways to best control a turbine to help mitigate problems due to ice, like production losses, fatigue loadings, ice throws and increased noise

James Crouse, *Senior Sales Engineer*, **Nordex USA, Inc.**

Hassan Shahriar, *Commercial Manager Ontario*, **ENERCON**

Amélie Camion, *Technical Support, Icing and Cold Climate, Americas*, **Senvion**