



**association to protect
AMHERST ISLAND**

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April 16th, 2013

Ms. Doris Dumais, Director,
Environmental Approvals Access,
Ministry of the Environment,
2, St. Clair Avenue West, Floor 12A,
Toronto, ON M4V 1L5

Summary of Critiques of the Algonquin Power Co. Windlectric REA Documents

Dear Ms. Dumais,

This letter is a summary of the critiques of the REA documents for the Windlectric wind energy project proposed for Amherst Island. Apart from the shadow-flicker assessment, the REA documents were made available to the public 60 days before the second public meetings held on March 5th and 6th, 2013.

As you will see there are many deficiencies with the documents. It is our belief, based upon the documents, that Algonquin Power is not serious about this project. Nevertheless, we must assume that it is and respond accordingly.

For the reasons outlined, the application must be considered incomplete and inadequate. On the surface, the deficiencies call for a new site plan, additional studies, a further 60 and 90 day public and municipal viewing time and additional public meetings. However, fatal flaws in the project should be cause for the Ministry of the Environment to deny approval at this stage in the REA process.

A later mailing will have the full critiques attached.

Noise Assessment

Our external reviewer was Richard James, an acoustician with many years of experience with industrial noise and its control. Mr. James concludes that all but 4 of the homes within the study area (1.5 km from a turbine) would be out of compliance with the worst-case scenario for the 40 dBA sound pressure limit. He bases this conclusion upon the following facts:

- The 1.5 dBA confidence limit of the Siemens sound power level has been ignored;
- The 3 dBA uncertainty inherent in ISO-9613 has been ignored;

- The worst case scenario has not been adopted as required by the MOE 2008 noise guidelines; measurements referred to by Mr. James point to an uncertainty of ± 5 dBA in the sound pressure level predictions based upon ISO-9613-2;
- The excess noise, the thumping, typically heard at night-time in a stable atmosphere has been ignored; this can be as much as 5 dBA.

Mr. James has reservations about the professionalism of the Environmental Noise Impact Assessment author(s). He writes that the preparer(s) of the Assessment “did not consider the information about successes and failures of other projects or the research into how to develop accurate models of wind turbine (noise)”.

The Association to Protect Amherst Island (APAI) critique focusses on the very high probability for the noise at many homes to be out of compliance with the MOE 40 dBA noise regulation and for the need for a realistic Environmental Noise Assessment. Hatch has not considered the stated uncertainty in the sound power level of the Siemens 2.3-113 turbine, the uncertainty in the noise prediction standard ISO 9613-2, the impact of turbulence from upwind turbines, refraction and amplitude modulation. Omitted from the present Noise Assessment is the turbulent intensity at the time of the Siemens 2.3-113 sound power level measurement, the variation of turbulent intensity with the time of day and time of the year, and the expected variation of the sound power level with turbulent intensity. Also omitted is the variation of the wind speed gradient at the centre of the project with the time of day and the time of the year.

Shadow-Flicker

As you will know, there is no Ontario regulation for shadow-flicker; as you also know, APAI considers this a serious oversight. There can be no better example for the need for regulation than this Windlectric proposal. As seen in other proposals from elsewhere in the province, developers have been respecting the spirit of the German regulation. This regulation is a limit of 30 hours/year (h/y) under worst case conditions and 8 h/y when the local cloud-cover is included. This limit is used through-out Europe either as a regulation or as a guideline and also used locally in some jurisdictions in the USA. Hatch Engineering finally produced a shadow-flicker assessment and found 48 homes (existing and potential) to be above the German limit and 9 above 50 h/y under the standard worst conditions. This is an unprecedented insult to a community and must be corrected with a new site plan.

The Hatch report was dated February 26th 2013, had been prepared by Dr. Moran, checked by Mr. Ilett, approved by Mr. Tsopelas of Algonquin Power and distributed to Mr. Lensink, Mr. Fairfield and Mr. Harrop of Algonquin Power. One wonders if any of these people had even looked at the report. The comparison of the numbers in the table of h/y for the German regulation (30 h/y) and the Danish guideline (10 h/y with cloud cover) is unfathomable! A shadow-flicker study by our own consultant, EMD of Denmark, confirms the Hatch numbers for the German regulation.

Health

The adverse health effects of turbine noise are not a concern of the Ministry of the Environment. No proof that there will be no adverse health effects is required as part of the REA process. Nevertheless, Algonquin Power chose to hire Intrinsik Environmental Sciences to present on their behalf at the first and second public meetings. The Intrinsik presentation was based upon the published 2011 paper by Knopper and Ollson.

Our external reviewer was Dr. Robert McMurtry. He has written a two-part critique. Part I addresses the key points raised by Knopper and Ollson. Dr. McMurtry notes that the consultants acknowledge the increase in annoyance with the sound pressure level at the home but he disputes their lack of clarity on sleep disturbance. Dr. McMurtry disputes the consultants' assertion "that it is the change in the environment that is associated with the self-reported health effects, not the presence of the wind turbines themselves". He disputes their contention that the observed linear relationship between annoyance and turbine noise has its origin in attitude to visual impact and attitude to wind turbines. Finally, he disputes the consultant's assertion that infrasound and low frequency sound are of no concern.

Part II starts with 11 significant errors of omission in the consultants' work and goes on to list 7 significant reports that have appeared since their published work that was the foundation for their presentations. These missing references point to the reality of adverse health effects resulting from turbine noise at permitted sound pressure levels.

The appendices to Dr. McMurtry's report list many other reports that demonstrate the reality of the adverse health effects of wind turbine noise at the level permitted by the Ontario noise limit of 40 dBA.

As a corollary to the McMurtry critique, APAI has written a critique of two government papers. The first is the May 2010 literature study published by the Ontario Chief Medical Officer of Health (CMOH). The second is the preamble to the Health Canada Study: "Health Impacts and Exposure to Wind Turbine Noise: Research Design and Noise Exposure Assessment", written by Michaud et al. (2012).

The major problems with the CMOH study and the Michaud et al. preamble are:

- The focus on direct adverse health effects as against the indirect effects that develop from annoyance, stress and sleep disturbance.
- Ignoring annoyance and sleep disturbance as adverse health effects.
- The misinterpretation of the field studies from Sweden and The Netherlands.
- The neglect of the special characteristics of wind turbine noise, including the predominance of infrasound and low frequency noise (ILFN) that cause annoyance, stress and sleep disturbance.
- The absence of diagnosis.
- The omission of recent work on ILFN.

Natural Heritage

The Natural Heritage and Environmental Impact Study has missing documentation, omissions and mistakes in the field studies, and insufficient survey time in the field studies. This assessment and impact study is far from complete and needs to be rejected by MNR and MOE. See the APAI Natural Heritage Assessment critique for a full analysis.

Insufficient Survey Time

- Waterfowl nesting surveys: 1 hour
- Amphibian breeding surveys: 14.5 hours.
- Spring migratory shorebird surveys: 9.5 hours.
- Fall migratory butterfly surveys: 0 hours

Omissions / Mistakes in Field Studies

The maps in Appendix A clearly indicate that the area on either side of the roads proposed to be used by Algonquin were included in the “area of study”. However, it does not appear that the fields 120 metres (m) on either side of the public and private roads proposed to be used by Algonquin for the construction phase were included in the field studies.

A review of the Ontario Wetland Evaluation System (OWES) documents for wetland '6' shows many issues of grave concern

According to Table 4B, the first Ecological Land Classification (ELC) and preliminary botanical inventories of vegetation communities occurred in July 26-29, 2011. However, many of the site surveys occurred prior to that date. How then, were the sites to be surveyed, selected? Following is a list of the field studies that occurred prior to ELC studies.

- Waterfowl Stopover and staging area (terrestrial and aquatic)
- Waterfowl nesting Area.
- Amphibian Breeding Wetland and Woodland. (Following from this, the number of potential amphibian movement corridors must be re-evaluated.)

Missing Information / Reports

Appendix K (Natural Heritage Assessment and Environmental Impact Study) contains numerous references to sightings of the following species-at-risk; Bobolink, Eastern Meadowlark, and Barn Swallow. These species are not addressed in the proposed 'mitigation measures'.

Furthermore Appendix K notes the presence of no less than 16 species at risk on Amherst Island including the following: Short-eared Owl, Black Tern, Great Blue Heron, Turkey Vulture, Red-headed Woodpecker, Canada Warbler, Golden-winged Warbler, Bald Eagle, Horned Grebe, Olive-sided Flycatcher, Monarch Butterfly and Peregrine Falcon. However, The Species at Risk

report mentioned in the Natural Heritage Assessment and Environmental Impact Study is not provided.

Within the context of O. Reg 359/09, endangered and threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements. Information required as part of these requirements is being submitted to MNR as part of the Amherst Island APRD Report (separate cover). Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process

Additionally, in 2012, during the months of May through August our consultant's Species at Risk Surveys documented the presence of many of the species noted above as well as the following additional Species at Risk:

- Eastern Whip-poor-will
- Butternut tree
- Eastern Milksnake

Appendix G, (the work-plan submitted to the MNR in 2001) is not attached to the report and a Site Investigation Report, providing rationale for "Alternative Investigation" is not attached to the report

Furthermore Algonquin has not provided the following to the public for the requisite 60 day review:

GEA Section 38 (2)

(b) written confirmation from the Ministry of Natural Resources that the report mentioned in clause (a) has been prepared in accordance with any procedures established by that Ministry, as amended from time to time; and

(c) any written comments provided by the Ministry of Natural Resources to the applicant in respect of the project.

Mitigation

Section 5.3 of the report states, "The primary mitigation measure employed to reduce impacts to natural features and functions was avoidance; micro-siting decisions made during the development of the Project layout considered minimizing impacts to natural features and wildlife habitat." These micro-siting decisions resulted in the following.

Woodlands:

- Components of the proposed project are located within 3 significant woodlands;
- 15 of 36 significant woodlands are located within 120m of project components;
- 3 turbines are sited at 11m, 47m and 48m from the drip-line of significant woodlands.

Wetlands:

- Components of the proposed project are located within 2 wetlands;
- 12 of 20 significant wetlands are located within 50m of project components, the turbines are sited at <1m, 1m, 3m (2 wetlands), 4m, 13m, 15m, 18m, 24m, 28m, 40m, 41m from the edge of the significant wetland.
- 6 of 20 significant wetlands and located within 102m of project components, the turbines are sited 52m, 58m, 74m, 77m, 78m and 102 m.

Grasslands:

- Section 5.3.3.8: “As the majority of the island is comprised of grassland habitat, avoidance of this habitat type was not possible; most project components are sited in the significant open country breeding bird habitat and Short-eared Owl breeding habitat”

Avoidance is listed as the primary mitigation strategy for the Amherst Island Project. However, all of the significant wetlands, with exception to one, are located in or within 120m of project components, almost ½ of the significant woodlands on the island will be in or within 120m of project components, and the avoidance of grassland habitat “was not possible”.

Due to its small landmass and the siting of turbines throughout the island, it is obvious that “avoidance” is not possible, therefore no effective mitigation strategy can be put in place to protect Amherst Island’s significant woodlands, wetlands and grasslands from the potential damaging effects of this installation. This is a clear indication that Amherst Island is not a suitable site for Industrial Wind Turbines.

In summary, the Stantec Natural Heritage and Environmental Impact Study is seriously deficient, significantly understates the existence, richness and variety of avian, amphibian and butterfly species-at-risk found on Amherst Island, and proposes no effective mitigation measures.

Archaeology and Cultural Heritage

As with the other Stantec assessments, those for archaeology and cultural heritage are seriously deficient:

Underwater Archaeological Assessment

- No reference to Federal Parks Canada Standards and Guidelines for Underwater Archaeological Survey. These guidelines must be used on Parks Canada Lands and lands underwater.
- No records review or survey for Kerr Bay which is the location of the permanent docking facility for the project and the consequent omission of a large schooner wreck in close proximity to the proposed docking site.

Stage 1 & Stage 2 Archaeological Assessment

- There was no consultation with local groups and individuals on locally known archaeological sites at any time in the REA process
- Three turbines have been sited in an area that is well known as a former local Island reserve;
- Lack of information and documentation (photos) in the report on artifacts and archaeological sites discovered. The report does not match the standard of documentation evidenced in other archaeological assessments by the same author.
- Dr. Jeff Seibert recommends Aboriginal monitors for all Stage 3 and Stage 4 survey work
- It appears that archaeological assessment of all collector cable sites, and fence lines and road allowances was not done in a number of cases.
- Changes to the site plan necessitate further archaeological work and reporting. How this is to be handled is not clear in the report.
- Residents must have an opportunity to review the results of archaeological work going forward and in particular the Report on all Stage 3 and 4 Assessments. How this will take place is not addressed in the report.

Draft Heritage and Protected Properties Assessment

Process

- early identification, consideration and management of heritage resources throughout the decision-making process was not done
- community and Aboriginal input was not sought
- the assessment does not demonstrate consideration of resources in the context of the community and surrounding area
- the developer does not minimize negative long-term impacts on the social cultural economic and physical aspects of heritage resources
- the assessment does not demonstrate consideration of the significance, type, use and condition of a resource and recommend changes that will offer the least harm to the resource or will provide the greatest potential to enhance the significance and appreciation
- the design of the project has not avoided or minimized impacts to heritage resources (e.g. heritage village of Stella is a main hauling route)

Content

- much of the local history is oral history; local residents and historical organizations were not consulted
- in depth historical research was not carried out
- key scholarly sources on Amherst Island were missed
- the developer did not capture the historical context and events that have shaped the Island

- hundreds of built heritage resources dating from the late 1700s to the 1970s were missed including homes, farm buildings, monuments, ruins, burial sites, stone fences, cemeteries and the Island's heritage carriage roads
- the archaeological findings were not included in the heritage assessment as is commonly done
- at least two potential cultural landscapes need to be assessed
- the whole of Amherst Island, needs to be assessed as a cultural heritage landscape
- in the absence of a complete inventory of heritage resources and an accurate and comprehensive historical background, the evaluation of cultural heritage value or interest of a resource cannot be determined
- Islanders were not consulted regarding their properties
- Turbine locations are in potential conflict with archaeological resources
- The negative impact of noise on the Island's cultural heritage resources has not been assessed
- The negative impact of shadow flicker on heritage resources has not been addressed
- The impacts of the project on the spectacular night time views has not been assessed e.g. moon rises; star gazing
- The visual simulations are completely inaccurate, outrageously underestimating the visual impacts on heritage resources and on the cultural landscape of Amherst Island
- Land disturbances resulting from the project and the construction are not addressed in this report. It is not acceptable to include this information in the roads use agreement given that this document may not be ready until Fall 2014. If the developer adheres to this course of action then it is clear that the heritage assessment cannot be signed off by the Ministry of Tourism, Culture and Sport until the roads use agreement is ready.
- The mitigation strategies are not sufficient to protect properties in the village of Stella that are situated very close to road. Avoidance of the Front Road through the heritage waterfront village of Stella is the only acceptable mitigation strategy – the proponent does not consider this.
- There is a high likelihood that heritage properties will be damaged or destroyed during the project. The assessment does not address what steps will be taken if this occurs.

Given the scope and scale of the omissions and errors of the Draft Cultural Heritage Assessment, Protected Properties and Archaeological Reports it is imperative that second draft archaeology and heritage reports be prepared for a sixty day review.

Decommissioning

The major problem with the decommissioning report is the omission of a financial guarantee that it will happen. There are too many instances of companies walking away from mining and industrial sites. In the case of the Amherst Island project, Windlectric Inc. is a shell company responsible for just two or three wind energy projects. Well before the end of the contract it could be closed down or sold. As noted in the April 9th Globe and Mail article by Richard Blackwell: *"The vast majority of Canadian Windpower is now controlled by a handful of large*

companies, many of them foreign owned ...". Mr. Sean Fairfield of Algonquin Power Co. has categorically stated that Algonquin will decommission the project but that is not as iron-clad as a bond to cover the cost 20 years from now.

Decommissioning is essentially the mirror-image of construction. A conservative estimate of the cost is \$100M in present dollars, about half the total cost of the turbines and their installation.

The Decommissioning Report is vague in many areas:

- The depth for removal of concrete foundations is variously given as 1.0 and 1.5 m.
- The report does not mention the nature of the back-filling, sub-soil, top-soil, agricultural drainage tile, replacement trees and vegetation and the nurturing of the trees and vegetation after planting.
- The use of surrounding fill and sub-soil guarantees that a further 2 or more acres will be impacted for each acre to be refurbished. The report demonstrates an ignorance of the geology of the island; in particular how close the bedrock is to the surface over much of the island. Sub-soil and top-soil will need to be brought onto the island.
- The report refers to the Emergency Response and Communications Plan which does not yet exist and which needs to be available to the public for the 60 day viewing period.
- There is no undertaking to produce a photographic record of the present landscape to warrant compliance with a complete refurbishment of the island.

Municipal Response to the REA Documents

Loyalist Township is the municipality responsible for Amherst Island. Loyalist Township staff and consultants retained by the Township were equally as critical of the REA documents as APAI and its members. The remit of the Township extends only to a limited range of the impacts of the Windlectric development on the island and the larger Township. The Municipal Consultation Form consists of a 31 page report followed by 53 pages of appendices. It was prepared by Township staff and approved by Loyalist Township Council at a special meeting held April 2nd, 2013

As a prelude to a detailed review of the REA documents, the Director of Planning and Development Services writes:

"The consultant's reports¹, as presented, lack detail that is necessary to provide informed comments and, as specifically stated by AECOM and the CRCA, an approval of the project is premature until the full scope of the project with an appropriate level of detail is supplied enabling a proper assessment of impact on municipal infrastructure, the natural environment, cultural heritage, and land use compatibility."

¹ Stantec and Hatch

Concerning road infrastructure, the municipality notes the omission of a traffic management plan, that the island roads are not up to the standard of the rest of Ontario and therefore there is need for a geotechnical assessment, chastises the developer for proposing to use roads in proximity to the school and through the village, notes the absence of a drainage assessment plan, and notes the absence of an assessment of the impact on residents' water supply.

The municipality shares many of the concerns of our heritage reviewers. It finds that the heritage inventory is incomplete, wondered if the whole island could be considered a Heritage Cultural Landscape, expresses concern for the impact on the village heritage, is puzzled that the developer chose not to consult with local persons and historians, expresses concern for the impact of truck traffic and ramming on heritage buildings and suggests that alternative haul routes, aside from through the village, should have been investigated.

The municipality Cemetery Committee expressed concern with siting the operation and maintenance building in proximity to the Pentland Cemetery with its headstones and historic stone fences.

The municipality retained staff from the local Cataraqui region Conservation Authority to review the Natural Heritage Assessment. Nine concerns were raised, with highlights being the significance of Amherst Island within local, provincial, national and continental contexts, the likely raptor mortality rate being higher than that of Wolfe Island (the highest in Canada), the impact on endangered and threatened species, and the cumulative impact of the many projects planned for the eastern end of Lake Ontario.

The municipality Emergency Services Department would like to review the Traffic Management Plan for construction and decommissioning but as noted above that plan does not yet exist, would like to know the plans for storing hazardous materials and lubricants and would like to see a fire safety plan, given that it has neither the training nor the equipment to fight a fire at hub height.

There is criticism that there is no reference to three relevant groundwater studies (2001, 2007 and 2011). Therefore the developer has failed to realize that some or all of the island is vulnerable to groundwater contamination, particularly with the existence of rock fissure/karstic formations. Associated with this concern for groundwater is the silence in the REA documents on the proposed source of water for the concrete batch plant.

The municipality notes that the developer is subject to the building, noise, entrance permit, excavation, trees, sign, fill/site, half loads and fence by-laws.

The municipality notes that the proposed concrete batch plant needs planning approval under the Planning Act. In particular, the municipality would use the Ministry of the Environment Land Use Guideline: "D6 Compatibility between Industrial Facilities and Sensitive Land Uses".

The REA documents are silent on the issue of setback and fugitive emissions (noise, dust, fumes etc.)

Finally, the municipality also expects some sort of financial assurance in the form of security for decommissioning.

Conclusion

Turbine noise at homes is going to be out of compliance with the MOE turbine noise guidelines. There is now a clear compliance protocol and this will be invoked as soon as there are complaints. The turbines are planned to be so packed together and so close to homes that there is no possible re-siting that will leave a viable project. The shadow flicker nuisance was not used as an input into the site plan with the result that 48 homes would be above the European guideline or regulation if the project went ahead. This possibility is outrageous. Amherst Island is one of the most famous places in Ontario for its natural heritage; it was rated number 1 of 17 winter bird survey sites for raptor density in a 2006 Environment Canada report. The island provides habitat for a large number of species-at-risk, certainly more than were discovered by Stantec in its hasty surveys. A wind energy development is quite inappropriate for the island.

This letter has outlined many deficiencies in the assessments of natural heritage, underwater archaeology, stages 1 and 2 archaeology and cultural heritage. These assessments would need to be revisited with further study, viewing periods and public meetings. Without a security bond of the order of \$100M, there is no confidence that Windlectric will exist in 20 years to decommission the project. The Ministry of the Environment needs to face this reality. As noted in the municipal response to the REA documents and in our response to the draft road-use agreement, there is no realistic plan to access the turbine sites, no traffic management plan, no fire safety plan, no communication plan and no honest plan for the transport or manufacture of concrete for the foundations.

This project has never made sense from the beginning and makes no more sense now that we are in possession of the REA documents. The sooner that MOE denies approval the easier it will be for all involved.

Yours Truly,

Peter Large P Eng., President

Cc: Hon. Jim Bradley, Minister of the Environment (MOE)
Hon. Michael Chan, Minister of Culture, Tourism and Sport (MCTS)
Hon. Bob Chiarelli, Minister of Energy
Hon. John Gerretsen, Attorney General

Hon. David Oraziotti, Minister of Natural Resources (MNR)
Ms. Agatha Garcia Wright, MOE
Mr. Vic Schroter, MOE,
Mr. Eric Prevost, MNR
Ms. Katherine Kirzati, MCTS
Mr. Jim Sherratt, MCTS
Ms. Paige Campbell, MCTS
Ms. Paula Kulpa, MCTS
Mr. Randy Hillier, MPP