Stray Voltage





What is Stray Voltage?

Varying amounts of low-level voltage often exist between the earth and electrically-grounded farm equipment such as metal stabling, feeders, or milk pipelines. Usually, these voltage levels present no harm to animals. However, if an animal touches a grounded metal object where these low voltages are found, a small electric current may pass through the animal. The voltage that causes this small current is known as "animal contact voltage," "stray voltage" or "tingle voltage."

Reported symptoms for dairy cows include:

- Reluctance to enter milking parlour
- Reduced water or feed intake
- Nervous or aggressive behaviour
- Uneven and incomplete milkout
- Increased somatic count
- Lowered milk production

These symptoms can also be the result of other nonelectrical farm factors such as disease, poor nutrition, unsanitary conditions or milking equipment problems. Farmers should consider and investigate all possibilities, including stray voltage, when attempting to resolve these symptoms.

What causes Stray Voltage?

Stray voltage can be produced by a wide variety of off-farm and on-farm sources.

Off-farm sources:

In a properly functioning electrical distribution system, some voltage will always exist between the neutral system (ground conductors) and the earth. The level of this neutral-to-earth voltage (NEV) can change on a daily or seasonal basis, depending on changes in electrical loading, environmental conditions and other factors. For safety reasons, Hydro One's neutral system is connected to a farm's grounding system. While this bond protects people and animals from shocks caused by faulty electrical equipment and lightning strikes, it can also result in a stray voltage equal to a fraction of the NEV appearing on grounded farm equipment, such as feeders, waterers, metal stabling, metal grates and milk pipelines.

On-the-farm sources:

Poor or faulty farm wiring, improper grounding, unbalanced farm system loading, defective equipment or voltages from telephone lines or gas pipelines are all possible sources of stray voltage.



If you think you have a Stray Voltage problem

Call our Customer Communications Centre at 1-888-664-9376 (Monday to Friday, 7:30 a.m. to 8 p.m.). Your local field business centre will call you within five business days to arrange an appointment.

- First Site Visit: We'll meet with you at your property to perform pre-test inspections, conduct a site layout and carry out an animal contact test.
- Second Site Visit: Five to ten business days after the first site visit, we will return to your property and install a farm stray voltage recording device.
- Third Site Visit: Two to three business days after the second site visit, we'll remove the recording device and analyze the recorded data. We'll discuss the results of the testing with you at this time.
- The Ontario Energy Board (OEB) has specified that voltage levels of less than 1.0 volt to be of no concern. If the measured threshold falls below this level, the investigation will conclude. Nevertheless, if you choose to purchase a stray voltage filter from us, we'll install it at no cost.
- If the stray voltage measured is above 1.0 volt,
 we'll do further OEB-defined testing during a fourth site visit to determine whether corrective measures need to be taken by us.
- Final Site Visit: If corrective measures were
 implemented by us, we'll return to your property to conduct final testing to see whether any additional corrective measures need to be taken by us.

For more information, go to www.HydroOneNetworks.com/strayvoltage

For additional information on the effects of stray voltage on livestock, see the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) website, www.omafra.gov.on.ca/english/livestock/dairy/facts/strayvol.htm







Partners in Powerful Communities

BORNISH WIND ENERGY CENTRE Stage 1 and 2 Archaeological Assessment Reports Summary

APRIL 2012

Bornish Wind LP is proposing to develop the Bornish Wind Energy Centre (the "Project"). Bornish Wind LP is a wholly-owned subsidiary of NextEra Energy Canada ULC. The parent company of NextEra Energy Canada ULC is NextEra Energy Resources, LLC, with a current portfolio of nearly 8,500 operating wind turbines across North America. The Project is located in the Municipality of North Middlesex and will consist of 45, 1.62 MW turbines with a total nameplate capacity of 72.9 MW, though 48 turbine locations will be permitted.

The purpose of a Stage 1 Archaeological Assessment is to find out whether there are any known archaeological sites on or near the Project area. If the Stage 1 Assessment determines there is archaeological potential, a Stage 2 Assessment is completed to identify any archaeological resources and confirm if further archaeological studies are required.







STAGE 1 ARCHAEOLOGICAL ASSESSMENT

The Stage 1 Archaeological Assessment was completed in 2009-2011 and involved reviewing background research, such as land use history and historic maps of the area, a property inspection and a review of the Ontario Archaeological Sites Database.

CONCLUSIONS

The presence of 31 pre-contact Aboriginal sites has been documented to be within 1 km of the Project Study Area. They span from early Archaic to the Late woodland periods, indicating that this area was favoured by pre-contact Aboriginal peoples for over 10,000 years. Due to the proximity of the Study Area to the Ausable River watershed, which functioned as a potable water source and a transportation route, as well as the presence of a historic reference to a homestead within the Study Area, the proximity of the Study Area to the historic communities of Bornish, Nairn, and Parkhill and to historic transportation routes, the potential for historic Euro-Canadian resources was judged to be high.



BORNISH WIND ENERGY CENTRE Stage 1 and 2 Archaeological Assessment Reports Summary

Stage 2 Archaeological Assessment

FIELD METHODS

The Stage 2 Assessment was completed in February 2012. The study involved "pedestrian surveys" (i.e. archaeologists walking ploughed fields). Pedestrian surveys were completed for approximately 95% of the Study Area, the remaining 5% was deemed to be disturbed by previous construction activity.

Three First Nations monitors also participated in the stage 2 Archaeological Assessment.

CONCLUSIONS

A total of 67 archaeological sites were identified through pedestrian surveys; these included:

- 45 pre-contact Aboriginal, 14 recommended for stage 3
- 21 euro-Canadian, 19 recommended for stage 3
- 1 multi component find, 1 recommended for stage 3

Twenty-four of the 67 finds have been recommended for a Stage 3 Assessments.



BORNISH WIND ENERGY CENTRE Stage 1 and 2 Archaeological Assessment Reports Summary





Have A Question?

We hope you find this Plain Language Summary helpful. In case you would like additional information or have any questions, please contact us directly:

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The purpose of the Decommissioning Plan Report is to describe all activities involved in dismantling or decommissioning the Project at the end of the operations phase. The report also explains the Project owner will restore the land and manage excess water or waste.





DECOMMISSIONING PLAN OVERVIEW

The anticipated life of the Project is approximately 30 years. Decommissioning typically occurs following the operations phase.

At the end of the Project life, the wind turbines may be 're-powered', meaning turbine components could be replaced to extend the life of the Project and delay any decommissioning activities. Alternatively, the wind turbines may be decommissioned. Project decommissioning will follow the Ontario Health and Safety Act along with any applicable municipal, provincial and federal regulations and standards.

The following components will be removed during dismantling:

- 1. Turbines;
- 2. Overhead lines and poles; and,
- 3. Transformer substation.

RESTORATION OF LAND AND WATER

All areas, including the access roads, transformer pads and crane pads will be restored as much as practical to their original condition with native soils and seeding.









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BORNISH WIND ENERGY CENTRE Heritage Assessment Report Summary

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The purpose of the Heritage Assessment Report is to identify known and potential heritage resources in the Study Area in order to identify potential effects on these areas from the Project.







STUDY PROCESS

A self-assessment was conducted for the Bornish Wind Energy Centre, the self-assessment is allowed under the Renewable Energy Approvals regulation (O.Reg. 359/09) issued under the Environmental Protection Act (2009). A self-assessment will determine if there are archaeological or heritage resources at the project location, and confirm if there will be any anticipated, direct or indirect, impact on those resources. Consultation with the Ontario Heritage Trust, the Municipal/Deputy Clerk and a property inspection was conducted to ensure that there were no properties, protected, or of potential heritage significance or interest, on the areas of proposed infrastructure or areas of indirect impact. A heritage resource may be a building, structure or landscape that has cultural heritage value or interest.

EVALUATION

Following the assessment, it was determined that no protected properties or cultural heritage landscapes with heritage value or interest are situated at the Project Location or beside the Project Location (the Heritage Assessment Report defines Project Location as the participating parcels within the Study Area where project components are proposed to be located).

A field visit was conducted on October 27th, 2011. All areas that were to be impacted by access roads, substations and turbines were investigated, and it was determined that there were no buildings, structures, monuments, etc. of any kind located on the proposed development areas. There were no other identified areas of cultural heritage concern, as determined by the checklist system of the Ministry of Tourism, Culture and Sport, or by the property visit conducted.



BORNISH WIND ENERGY CENTRE Heritage Assessment Report Summary





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BORNISH WIND ENERGY CENTRE Natural Heritage Assessment Report Summary

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The purpose of the Natural Heritage Assessment Report is to first identify ecologically significant natural features (for example, important wildlife habitat) within 120 metres (m) of the proposed Project Location (the Project Location is defined as the outer limit of where disturbance may occur due to construction or operation of the Project), and then to determine potential effects, mitigation measures and residual effects, in any. Residual effects are "left over" effects once mitigation measures have been applied for these natural features.





