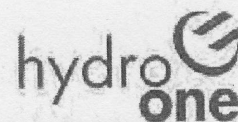


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John Sabiston
Manager, Transmission Planning
Transmission System Development Division

APPENDIX 3



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**NIAGARA ESCARPMENT
COMMISSION**

November 22, 2012

Mr. Harald M. Thiel
Mountainview Niagara Escarpment Community Association
4152 Locust Lane
Beamsville, ON L0R 1B2

Dear Mr. Thiel:

Further to my letter to you dated October 3, 2012, we mentioned that "Hydro One will undertake studies to assess the feasibility and effectiveness of shifting load from lines south of the escarpment to lines north of the escarpment, to accommodate the 230 MW output of the proposed wind farm". Please find enclosed the feasibility study as promised.

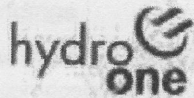
If you have any questions or concerns, please contact me and I trust that this information helpful and useful.

Sincerely,

John Sabiston
Manager, Transmission Planning

Encl.

- cc Mr. Mervin Croghan, Chairman and CEO
Niagara Region Wind Corporation
- Ms. Nancy Mott-Allen, Senior Strategic Advisor
Niagara Escarpment Commission
- Ms. Ann Louise Heron, Chief Administrative Officer
Town of Lincoln



483 Bay St., Toronto, Ontario M5G 2P5

John Sabiston,
Manager – Transmission Planning
Transmission System Development

November 13th, 2012

Re: Letter from Mountainview Niagara Escarpment Community Association

Feasibility Report

Background

The Niagara Region Wind Corporation (NRWC) is proposing to connect a 230 MW wind farm located in the Niagara Peninsula. The NRWC's Feed-In Tariff (FIT) contract with the Ontario Power Authority (OPA) designates a 115 kV connection to the grid at Hydro One's Beach Transformer Station (Beach TS) in Hamilton. The proposed solution to reach Beach TS – and subsequently fulfill the contract – is the construction of a new 115 kV circuit by NRWC to connect its substation northward, across the Niagara Escarpment to the idle Q5G transmission line, and utilize Q5G to access Beach TS.

The Niagara Escarpment Commission, during its hearing on June 21st, 2012, passed a motion requiring a third-party peer review of the proposed solution. A further requirement of the approved motion is to "identify options that do not require the installation of a power line down the face of the escarpment" by the peer review.

Mr. Harald Thiel and the Mountainview Niagara Escarpment Community Association has proposed the possibility of shifting or reducing the supply flow from the south of the escarpment to increase the flow north of the escarpment at either St. John's Valley or Rosedene Junctions. This could eliminate the need to connect to the Q5G circuit north of the escarpment. The following information is intended to assist in rendering the required peer view as complete as possible.

Feasibility Study

Scope

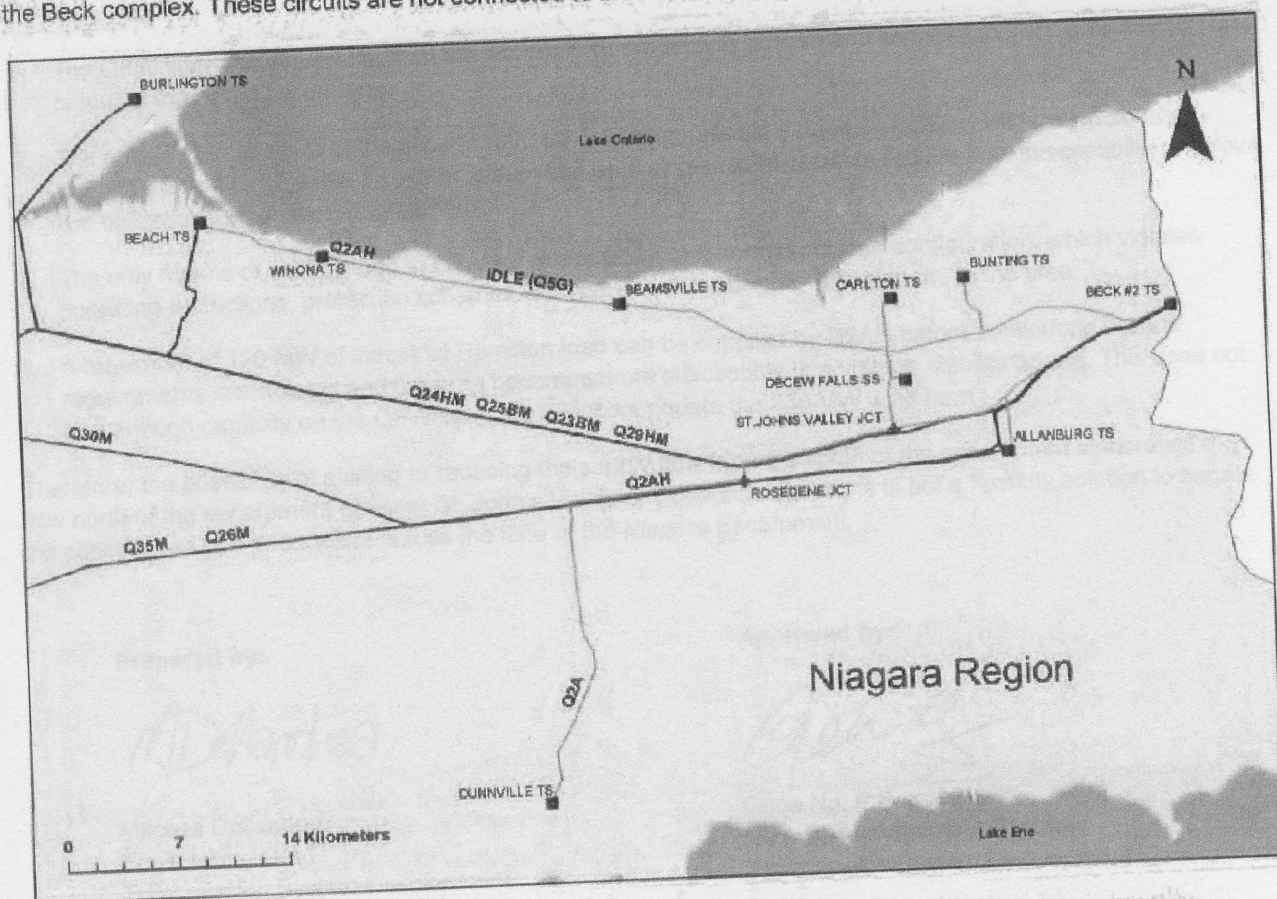
Hydro One will undertake a feasibility study to identify the possibility of shifting the supply flow from the south of the escarpment to the north of the escarpment to accommodate the 230 MW output of the proposed wind farm. If successful, this could negate the construction of a new HV line across the face of the Niagara Escarpment. This study will:

- Assess the current configuration of the HV lines in the Niagara Peninsula.
- Verify the practicability of shifting line flows at either St. John's Valley or Rosedene Junctions.
- Quantify the load shift required to accommodate the wind farm south of the escarpment.
- Identify significant issues that may occur due to shifting the current load.

A load flow study will be executed to determine the required load shift to accommodate connecting the NRWC wind farm south of the escarpment. This study will examine reconfiguring Hamilton-area circuits and transferring load from the south to the north, thus freeing capacity along the south to accommodate the wind farm.

Findings

The main transmission corridor in the Niagara Peninsula, referred to as the Queenston Flow West (QFW) interface, is composed of five 230 kV circuits that run from Beck #2 TS to Middleport TS, Beach TS and Burlington TS. This corridor is heavily utilized due to the zone's generation, primarily from the two Sir Adam Beck generating stations, and imports on the NY Niagara interconnection. Approximately 400 MW of the zone's load is located east of St. John's Valley and Rosedene junctions. There are also 115 kV transmission circuits both north and south of the escarpment. These are used to supply local load and to connect generation located at Decew Falls GS and part of the Beck complex. These circuits are not connected to the Hamilton load centre for technical reasons.¹



All of the QFW circuits, as well as most of the 115 kV circuits, are located south of the escarpment. With the exception of the circuits that supply Niagara-on-the-Lake and St. Catharines, the only circuit north of the escarpment is Q2AH – a long radial 115 kV line. In theory, additional load in the Hamilton area can be connected to the Q2AH so that the output of the NRWC will be utilized locally.

To quantify the load shift, it must be hypothetically assumed that Q2AH can be forced to operate in its closed configuration. This will allow industrial loads west of Beach TS to be supplied via Q2AH by closing Q2AH between Beamsville and Winona and by disconnecting the three Beach TS 115/230 kV auto transformers. This configuration changes the load supply from a double circuit supply to a single radial circuit

¹ Connecting the Niagara 115 kV circuits to the Hamilton load centre results in the following: a direct violation of Q2AH/ Winona TS Operating Restriction, affecting the Allanburg and Beck's remote protection operations; it creates a circular flow from Niagara to Hamilton to Winona, reducing the efficiency of the system in the area; it increases the susceptibility to faults for customers supplied by the circuits; it creates possible overloading and voltage support concerns in the Allanburg area.

APPENDIX 4

The study concludes that approximately 120 MW of additional load can be transferred in this arrangement, which is not enough to offset the 230 MW of generation from NRWC.

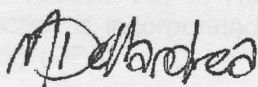
Even though approximately 120 MW of load can be transferred to the single radial circuit, this is not a feasible or recommended practice. The security and reliability of power to the additional industrial loads, from a double circuit supply to a single circuit supply, is greatly compromised. In addition, the fault susceptibility for all load customers on the circuit is significantly increased.

Conclusions

1. The QFW interface circuits south of the escarpment are heavily utilized and cannot accommodate the 230 MW output of the NRWC wind farm.
2. The only HV circuit north of the escarpment, Q2AH, is operated in a normally-open configuration so that Winona TS and Beamsville TS are both supplied on a single radial circuit to reduce fault susceptibility, improve line utilization and customer reliability.
3. The only means of shifting load to Q2AH is to operate it in a normally closed configuration, which violates operating restrictions, protection schemes and reduces the efficiency and security of the area.
4. A maximum of 120 MW of industrial Hamilton load can be supplied by Q2AH before continuous voltage requirements are violated and the area becomes more susceptible to a voltage stability issues. This does not free enough capacity on the QFW interface to accommodate the 230 MW wind farm.

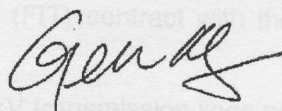
Therefore, the possibility of shifting or reducing the supply flow from the south of the escarpment to increase the flow north of the escarpment at either St. John's Valley or Rosedene Junctions is not a feasible solution to negate the construction of a 115 kV line across the face of the Niagara Escarpment.

Prepared by:



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Engineering Grad
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Approved by:



Gene Ng, P.Eng
Network Management Engineer
Transmission System Development