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Vice President and Chief Regulatory Officer
Regulatory Affairs



BY COURIER

March 13, 2008

Ms. Kirsten Walli
Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON.
M4P 1E4

Dear Ms. Walli:

EB-2008-0023 – Hydro One Networks' Section 92 Vanessa to Norfolk Transmission Reinforcement – Application and Prefiled Evidence

I am attaching ten (10) copies of the Hydro One Networks' Application pursuant to Section 92 of the Ontario Energy Board Act for leave to construct transmission facilities in Norfolk County.

An electronic copy (text searchable Acrobat format) has been submitted to the Board using the Regulatory Electronic Submission System and the proof of successful submission slip is also enclosed.

Hydro One Networks' contacts for service of documents associated with this Application are listed in Exhibit A, Tab 1, Schedule 1.

Sincerely,

ORIGINAL SIGNED BY ANDY PORAY SUSAN FRANK

Susan Frank

Attach.

ONTARIO ENERGY BOARD

In the matter of the *Ontario Energy Board Act, 1998*;

And in the matter of an Application by Hydro One Networks Inc. for an Order or Orders granting leave to construct new transmission line facilities in Norfolk County (the “Vanessa to Norfolk Transmission Reinforcement Project” or the “Project”).

APPLICATION

1. The Applicant is Hydro One Networks Inc. (“Hydro One”), a subsidiary of Hydro One Inc. The Applicant is an Ontario corporation with its head office in the City of Toronto. Hydro One carries on the business, among other things, of owning and operating transmission facilities within Ontario.
2. Hydro One hereby applies to the Ontario Energy Board (the Board) pursuant to section 92 of the *Ontario Energy Board Act, 1998* for an order or orders granting leave to construct transmission line reinforcement facilities in Norfolk County. These facilities are required to:
 - Increase the adequacy of electricity supply to meet forecast load by upgrading the existing 115kV single-circuit line A1N from Vanessa Junction to Norfork TS, a distance of 12 kilometers, with a higher capacity conductor
 - Improve the reliability and quality of electricity service by adding a second 115 kV three phase transmission circuit to the same 12 kilometer section of line A1N from Vanessa Junction to Norfolk TS. Currently there is only one radial circuit from Vanessa Junction to Norfolk TS; loss of this circuit will result in loss of supply
 - Provide a second line tap at Bloomsburg MTS to this 115 kV line

1 3. The need for the proposed upgrade of the existing transmission line in Norfolk
2 County arises from increased electricity demand in the area, largely due to economic
3 growth, based on the load forecasts of the local distribution companies, Norfolk
4 Power Distribution Inc. ("Norfolk Power") and Hydro One Distribution. In addition,
5 as a single contingency on the existing line section would result in load loss, due to
6 the existing line section being the only single element on the local transmission
7 system, installation of a companion circuit is required to improve reliability in the
8 area. The need for the project is described in detail in Exhibit B, Tab 1, Schedule 4.
9 The proposed facilities are supported by Norfolk Power and Hydro One Distribution.
10 The target in-service date is April 2009.

11
12 4. The IESO has carried out its System Impact Assessment (SIA) of the proposed
13 facilities in accordance with the Grid Connection Requirements of the Market Rules
14 and the associated IESO Connection Assessment and Approval Process. The IESO's
15 SIA confirms the need for this project and indicates that Hydro One's proposed
16 transmission solution is adequate and does not adversely impact the IESO-controlled
17 grid.

18
19 5. The necessary land rights (easements) for the project consist of existing easement
20 rights Hydro One holds on the provincially-owned corridor lands, as well as
21 permanent easements rights on private property. No new land rights beyond
22 temporary access rights are needed to construct the required line and station facilities.
23 A map showing the general location of the proposed transmission facilities may be
24 found in Exhibit B, Tab 2, Schedule 2.

25
26 6. Based on an Environmental Study Report for a predecessor project that was filed with
27 the Ministry of Environment in 1999, there are no requirements for the current project
28 under the Environmental Assessment Act. However, Hydro One has completed an

1 environmental screening for due diligence purposes for the subject project. This
2 screening has been completed and the Ministry of Environment notified.
3

4 7. Hydro One has notified stakeholders who may have an interest in the proposed
5 transmission line upgrade. Hydro One will ensure stakeholders' issues are addressed.
6 Hydro One will continue to inform municipal staff, elected officials, and relevant
7 provincial government ministries and agencies of the project status. During the
8 construction and commissioning stages of the proposed upgrade, Hydro One will
9 consult with the local community and other interested stakeholders to ensure potential
10 concerns are addressed.
11

12 8. This Application is supported by written evidence. This evidence includes details of
13 the Applicant's proposal for the construction of the proposed transmission line
14 facilities. The written evidence is pre-filed as attached and may be amended from
15 time to time, prior to the Board's final decision on this Application. Further, the
16 Applicant may seek meetings with Board Staff and intervenors in an attempt to
17 identify and reach agreements to settle issues arising out of this Application.
18

19 9. Hydro One requests a written hearing for this proceeding.
20

21 10. Hydro One requests that a copy of all documents filed with the Board be served on
22 the Applicant and the Applicant's counsel, as follows:
23

24 a) The Applicant:

25
26 Mr. Glen MacDonald

27 Senior Advisor - Regulatory Research and Administration

28 Hydro One Networks Inc.

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6 Telephone: (416) 345-5913
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9

10 b) The Applicant's counsel:
11
12 Michael Engelberg
13 Assistant General Counsel
14 Hydro One Networks Inc.
15

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18 Toronto, Ontario
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24

SUMMARY OF PREFILED EVIDENCE

Hydro One Networks Inc. (“Hydro One”) has applied to the Board for an order granting leave to construct transmission line facilities in Norfolk County pursuant to Section 92 of the *OEB Act, 1998* (the “*OEB Act*”).

The proposed facilities to be constructed, owned and operated by Hydro One include:

Line Facilities

- Remove and replace 12 km of 115 kV single-circuit line (A1N) conductor from Vanessa Junction to Norfolk TS with a new higher capacity conductor
- Install a second 12 km 115 kV three phase transmission circuit and support arms from Vanessa Junction to Norfolk TS on the existing structures
- Install 0.02 km of 115 kV line tap at Bloomsburg MTS and connect to the 115 kV line

Station Facilities

- New relays, racks, and switches at Norfolk TS
- Install new 115 kV structure at Norfolk TS

The planned in-service date for the proposed facilities is April 2009. A map showing the location of the proposed transmission facilities is provided in Exhibit B, Tab 2, Schedule 2.

The proposed facilities are in the public interest because they satisfy the needs summarized below:

- they will ensure the adequacy of electricity supply to consumers in Norfolk

- 1 County;
- 2 • they will not have a material impact on the price of electricity;
- 3 • they will increase transmission capacity in the area to meet forecast load growth;
- 4 • they will maintain and improve reliability of supply with the availability of a
- 5 second circuit.
- 6

7 The Independent Electricity System Operator (“IESO”) carried out a System Impact
8 Assessment (“SIA”) of the proposed facilities in accordance with the Grid Connection
9 Requirements of the Market Rules and the associated IESO Connection Assessment and
10 Approval Process. The IESO’s SIA for this project, filed as Exhibit B, Tab 6, Schedule
11 3, confirms the need for this project. The report states that this project meets the objective
12 of the SIA and that Hydro One’s proposed transmission solution is adequate and will not
13 adversely impact the IESO Controlled Grid.

14

15 The need for the upgrade of the existing circuit was also confirmed by a load forecast and
16 capacity analysis which was recently completed with input from the local distribution
17 companies in Norfolk County. A copy of the load forecast and capacity analysis is filed
18 as Exhibit B, Tab 6, Schedule 4.

19

20 Hydro One has determined that consistent with the Transmission System Code, a formal
21 Customer Impact Assessment (“CIA”) is not required as the addition of the second circuit
22 does not negatively impact the two customers (Norfolk Power Distribution Inc. and
23 Hydro One Distribution).

24

25 The total cost of the project is estimated to be \$3.6 million. The proposed transmission
26 facilities are line connection assets with the costs to be funded through incremental
27 transmission Line Connection pool rates and customer capital contributions as required.
28 Details of the project economics are filed in Exhibit B, Tab 4, Schedule 3.

1
2 The design of the proposed facilities is in accordance with good utility practice and meets
3 the requirements of the Transmission System Code for licensed transmitters in Ontario.
4

5 Hydro One has notified stakeholders in Norfolk County of the proposed transmission line
6 upgrade. Hydro One will hear stakeholder concerns and ensure they are addressed, as
7 well as ensure that public authorities are kept informed of the project status. Details
8 regarding the consultation process are filed as Exhibit B, Tab 6, Schedule 5.
9

10 An Environmental Study Report was filed with the Ministry of the Environment for the
11 predecessor *Vanessa Jct X Norfolk TS 115 kV Refurbishment* project in March 1999.
12 There was no expressed opposition to the project and all concerns were satisfactorily
13 resolved. There are no requirements under the *Environmental Assessment Act* for the
14 current project; however, Hydro One has completed an environmental screening for due
15 diligence purposes. This screening has been completed and the Ministry of Environment
16 notified.
17

18 A letter of support for the proposed facilities has been obtained from Norfolk Power
19 Distribution Inc. ("Norfolk Power") and is filed in Exhibit B, Tab 6, Schedule 2. Hydro
20 One Distribution also supports the proposed facilities. These are the two local
21 distribution companies affected by the project.
22

23 A detailed construction schedule is filed as Exhibit B, Tab 5, Schedule 2. This schedule
24 assumes Board leave to construct approval under Section 92 of the *OEB Act* by August
25 2008. An approval by this date should enable Hydro One to meet the required April 2009
26 in-service date.
27

1 Hydro One requests a written hearing for this proceeding and submits that the evidence
2 supports granting the requested Order based on the following grounds:

- 3
- 4 • The need for new line connection facilities has been established;
 - 5 • The need for the project is supported by the local distribution companies in
6 Norfolk County;
 - 7 • The need for the project is endorsed by the IESO;
 - 8 • The facilities will increase the capacity of the transmission system and enhance
9 reliability and adequacy of supply;
 - 10 • There are no adverse system or customer impacts from the project;
 - 11 • The project is fully compliant with the relevant codes, rules and licences.
- 12

13 For the reasons provided in support of this Application, Hydro One respectfully submits
14 that the proposed transmission line facilities are in the public interest and should be
15 approved under Section 92 of the *OEB Act*. Accordingly, Hydro One requests an Order
16 from the Board pursuant to Section 92 of the *OEB Act* by August 2008, granting leave to
17 construct the proposed transmission line facilities.

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Exhibit A

Tab 3

Schedule 1

Page 1 of 1

1 **PROCEDURAL ORDERS / AFFIDAVITS / CORRESPONDENCE**

2

1

NOTICES OF MOTION

2

EXHIBIT LIST

1
2

<u>Exh</u>	<u>Tab</u>	<u>Schedule</u>	<u>Contents</u>
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<u>A</u>			<u>Administration</u>
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	1	1	Application
	2	1	Summary of Prefiled Evidence
	3	1	Procedural Orders/Affidavits/Correspondence
	4	1	Notices of Motion
	5	1	Exhibit List

<u>B</u>			<u>Applicant's Prefiled Evidence</u>
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	1	1	Project Location and Existing Transmission System
		2	Map of Existing Facilities
		3	Schematic of Existing Facilities
		4	Need for the Proposed Facilities
	2	1	Proposed Facilities
		2	Map of Proposed Facilities
		3	Schematic of Proposed Facilities
		4	Cross Section of the Tower Types - Existing and Proposed
	3	1	Transmission Alternatives
	4	1	Project Costs, Economics, and Other Public Interest Considerations

<u>Exh</u>	<u>Tab</u>	<u>Schedule</u>	<u>Contents</u>
		2	Project Costs
		3	Project Economics
		4	Other Public Interest Considerations
5		1	Construction and Project Administration
		2	Table Showing Construction and In-Service Schedule
6		1	Other Matters / Agreements / Approvals
		2	Customer Letters of Endorsement for the Project
		3	The IESO's Notification of Approval and System Impact Assessment
		4	Load Forecast and Capacity Analysis
		5	Stakeholder and Community Consultation
		6	Land Matters

PROJECT LOCATION AND EXISTING TRANSMISSION SYSTEM

1.0 PROJECT LOCATION

The study area addressed by this project covers Norfolk County in southwestern Ontario, which includes the Towns of Waterford and Simcoe and their outlying areas. The study area is served by Norfolk Power and Hydro One Distribution.

A map of the existing facilities is provided in Exhibit B, Tab 1, Schedule 2, and a schematic electrical diagram of the existing facilities is provided in Exhibit B, Tab 1, Schedule 3.

2.0 EXISTING TRANSMISSION FACILITIES

The total Norfolk County load is approximately 81 MW. Norfolk TS (owned and operated by Hydro One) and Bloomsburg MTS (owned and operated by Norfolk Power) are supplied by 115 kV lines from Caledonia TS.

There is one transmission line corridor in the Norfolk Area, comprising two sections:

1. A double circuit 115 kV line (C9/C12) running east-west from Caledonia TS, in Caledonia, Town of Haldimand in the east, to Vanessa Junction in the west. This line runs north of Regional Road 19 approaching Caledonia TS and south of Regional Road 19 approaching Vanessa Junction
2. A single circuit 115 kV line (A1N to be re-designated as C12 in future) running north-south located from Vanessa Junction to Bloomsburg MTS and Norfolk TS east of Highway 24. The circuit A1N has limited capability to provide for the loads supplied by circuits C9/C12.

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Exhibit B

Tab 1

Schedule 1

Page 2 of 2

1 There are two transformer stations in Norfolk County:

2

3 1. **Norfolk TS** (Hydro One-owned) – About 55 MW of load is radially supplied via
4 the 115 kV single-circuit line A1N.

5

6 2. **Bloomsburg MTS** (Norfolk Power-owned) – About 26 MW of load is radially
7 supplied via a tap from the 115 kV single-circuit line A1N.

8

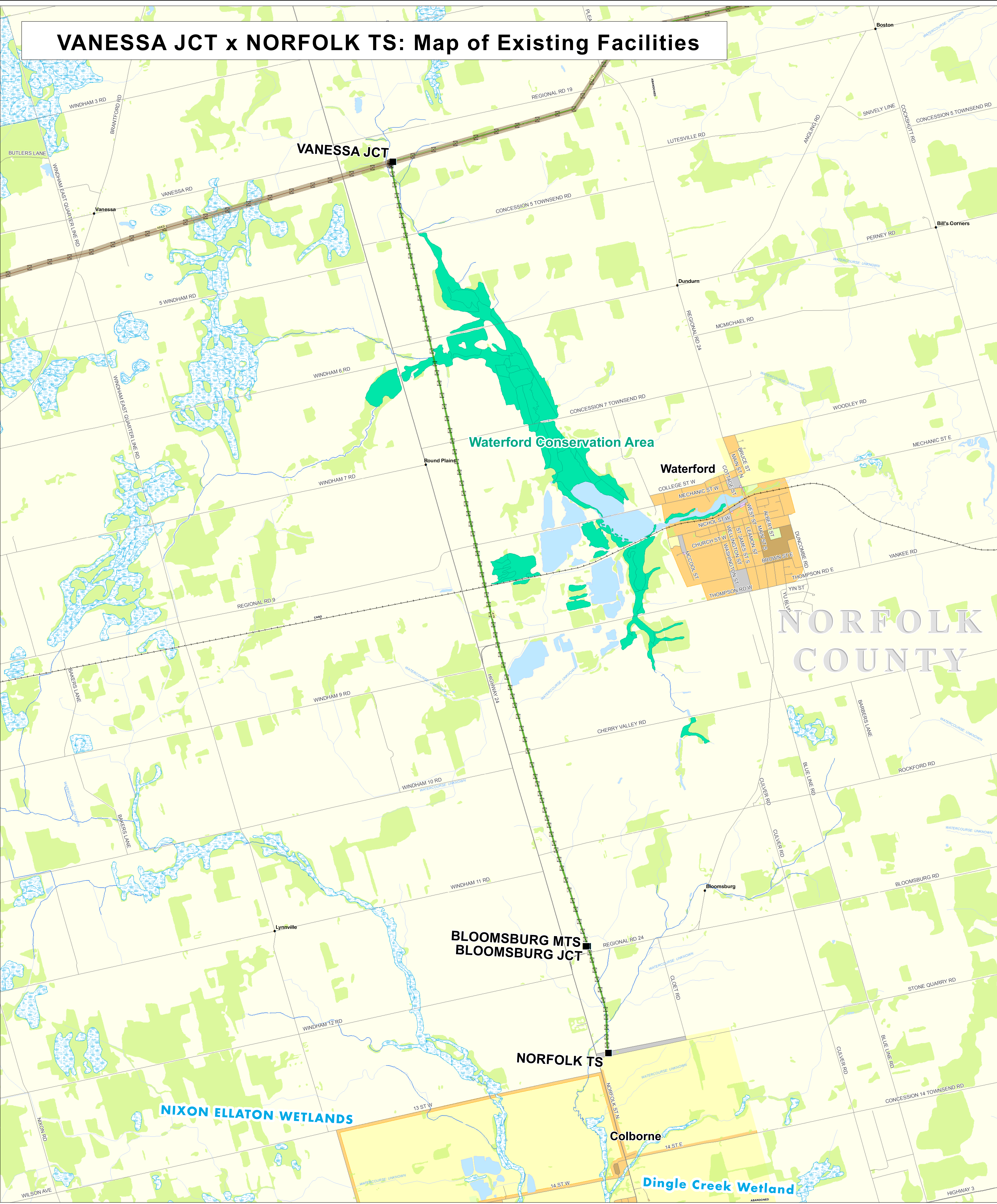
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Tab 1
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1

MAP OF EXISTING FACILITIES

2

VANESSA JCT x NORFOLK TS: Map of Existing Facilities



Environmental Features Map

• Place Name	Transmission Line	Expressway	Stream	ANSI	Provincial Park	Land Use	Parks and Recreational
■ Station	500 kV	Highway	Cold Water Stream	ESA	Wooded Area	Commercial	Residential
	230 kV	Major Road	500kV TxLine ROW	Wetland	Municipal Boundary	Gov't and Institutional	Resource and Industrial
	115 kV	Railway	115kV TxLine ROW	Water Body	Waterford Con. Area	Open Area	



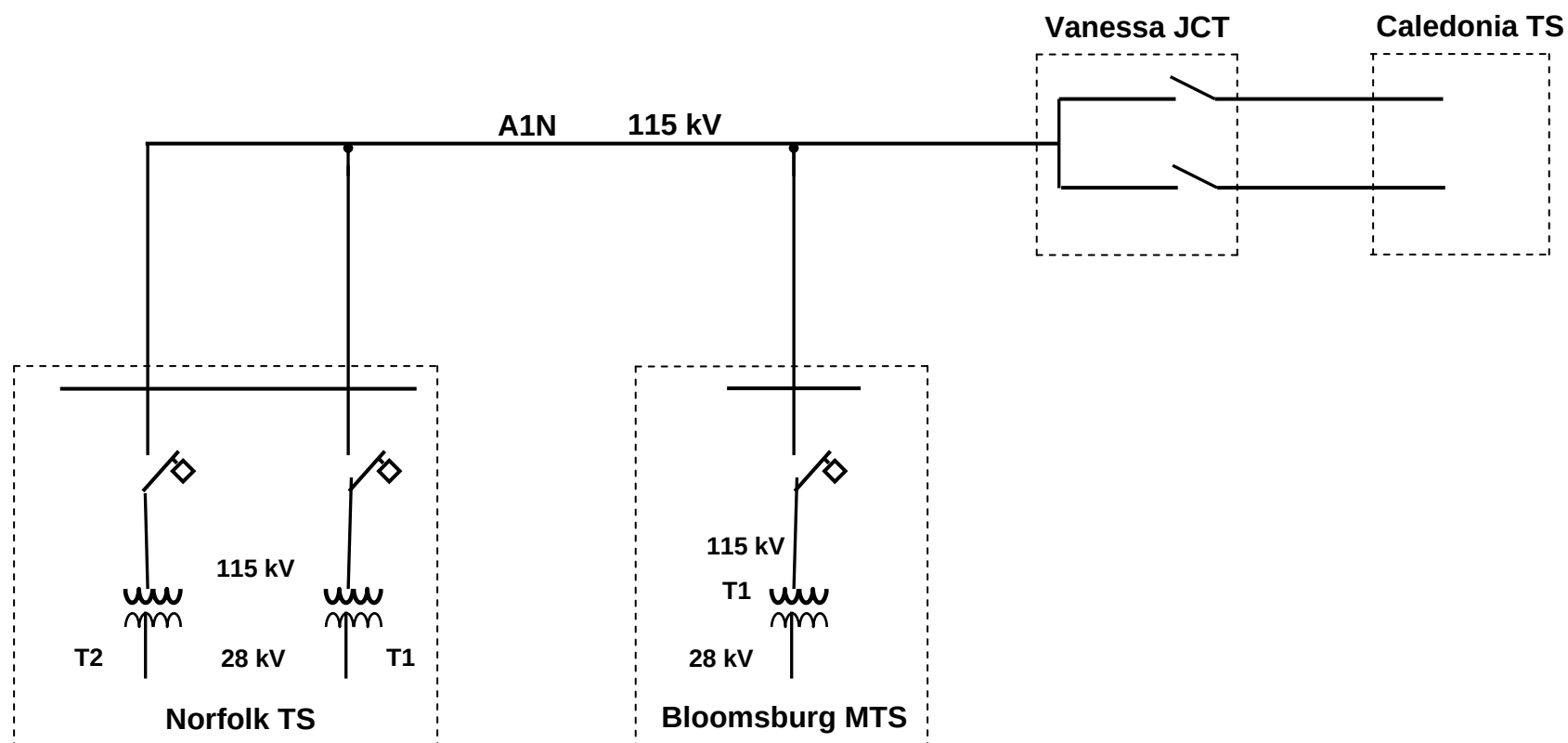
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2
3

SCHEMATIC DIAGRAM OF EXISTING FACILITIES

Simplified Schematic Electrical Diagram of Existing Facilities



NEED FOR THE PROPOSED FACILITIES

1.0 BACKGROUND

This Schedule describes the need to reinforce Norfolk County transmission system to meet the increased electricity demand in the area. The existing facilities are described in Exhibit B, Tab 1, Schedule 1.

Historically, load in Norfolk County has grown at a rate of 1% – 2 % per year, and it is forecast to continue to grow at a similar rate. Contributing to the increased electricity demand is the economic growth in Norfolk County in the form of industrial load ancillary to the auto manufacturing sector, such as parts fabrication, as well as increased residential and commercial load.

Working with the affected local distribution companies, Hydro One completed a load forecast and capacity analysis that identified the need to increase the transmission capacity to Norfolk County as a result of increased customer demand. This analysis is provided as Exhibit B, Tab 6, Schedule 4.

2.0 LOAD GROWTH FORECAST

The existing load in Norfolk County supplied by the 115kV system is 81.0 MW. By 2010, the 115kV supplied load is forecast to increase to 86.8 MW, which is above the thermal limit of 86 MW for the existing single circuit 115kV line that supplies the area (see Section 2.1 below). By 2017, the 115kV supplied load in Norfolk County is forecast to be about 98.5 MW, as shown in Table 1. This forecast is from the local distribution companies, which projected these load increases based on new industrial load and increased residential and commercial loads.

Table 1: Norfolk County 115 kV Coincident Summer Peak Load Forecast (MW)

Station	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Norfolk TS	58.9	59.7	60.5	61.4	62.2	63.1	63.9	64.8	65.7	66.6
Bloomsburg MTS	24.9	26.0	26.3	27.7	29.1	30.4	30.8	31.2	31.5	31.9
115 kV Load -Total	83.8	85.7	86.8	89.1	91.3	93.5	94.7	96.0	97.2	98.5

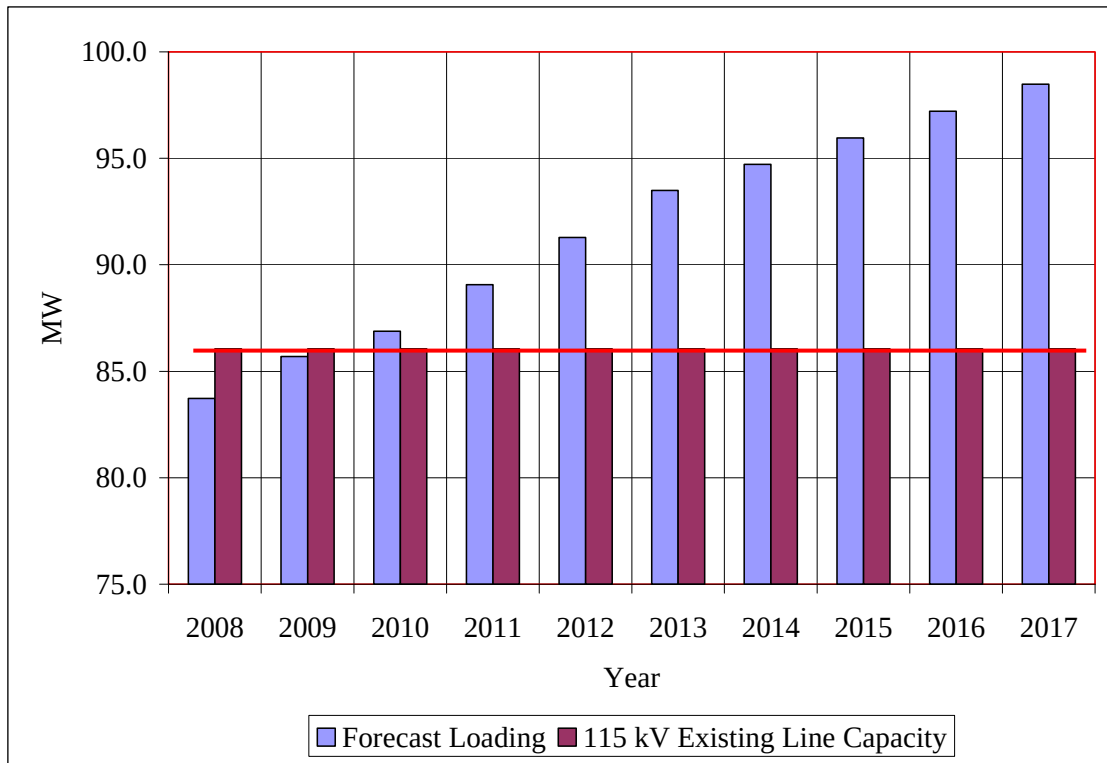
2.1 Relevant Transmission Planning Guidelines

The transmission planning guidelines relevant to assess the need for transmission reinforcement proposed in this application are as follows:

- i. **Transmission line thermal overload guideline** - *With all transmission elements in service, any single element contingency (outage) shall not result in loading of any circuit post-contingency such that it exceeds its MW rating.* Note that as there is currently only one radial circuit on AIN, loss of this circuit will result in loss of total load supplied from both Bloomsburg MTS and Norfolk TS. For that reason, the pre-contingency thermal limit is used in the analysis, and it is also the reason that the addition of a second circuit is proposed as a means to mitigate reliability concerns. The IESO in its assessment for the Caledonia TS auto transformer option also recommended that the load in the area should be restorable by switching. This need is met by installing a second circuit in the proposed alternative.

As shown in Figure 1 below, which is based on data provided from the load forecast and capacity analysis in Exhibit B, Tab 6, Schedule 4 the loading of the A1N 115 kV circuit is expected to exceed its applicable thermal limit of 86 MW starting in 2010.

Figure 1. Thermal Loading on Existing Line A1N



2.2 Investment Classification

In the context of Section 92 applications, per the Board's filing guidelines there are four non-discretionary investment triggers that may determine the need for new or modified transmission expansion investments. These four triggers are investments:

1. that are required to achieve Government objectives or that are prescribed in governmental directives or regulations
2. that are required to satisfy reliability standards and guidelines within a specified operating timeframe
3. that are required to connect new customers (i.e. load or generator)

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Exhibit B

Tab 1

Schedule 4

Page 4 of 4

- 1 4. that are required to address concerns with near-term equipment or facility loading or
2 ratings when their capacities are, or are about to be, exceeded.

3

- 4 The need for this project is driven by the second and fourth triggers noted above, as
5 discussed in Section 2.1 of this Schedule.

6

PROPOSED FACILITIES

In order to meet the need described previously in Exhibit B, Tab 1, Schedule 4, Hydro One proposes to increase the transmission capability and maintain required quality of electricity supply in Norfolk County by installing a second 115 kV transmission circuit and upgrading the existing 115 kV single-circuit from Vanessa Junction to Norfolk TS, and by installing a new line tap to the existing Bloomsburg MTS.

The proposed facilities will be owned and operated by Hydro One. The following is the specific work and facilities required as part of the proposed project:

Line Work

- Build 12 km of new 115 kV circuit on the existing structures between Vanessa Junction and Norfolk TS
- Connect new 115 kV circuit at existing Norfolk TS
- Install 2 new arms and insulators on existing structures
- Install 3 new structures and associated footings at Vanessa Junction
- Remove 12 km of the existing 115 kV single-circuit line, A1N, from Vanessa Junction to Norfolk TS and replace with higher capacity conductor
- Install dampers for the phase conductors
- 0.02 km of new 115 kV line tap at Bloomsburg MTS, connecting to the 115 kV circuit

Station Work

- New relays, racks, and switches at Norfolk TS
- Install new 115 kV structure at Norfolk TS

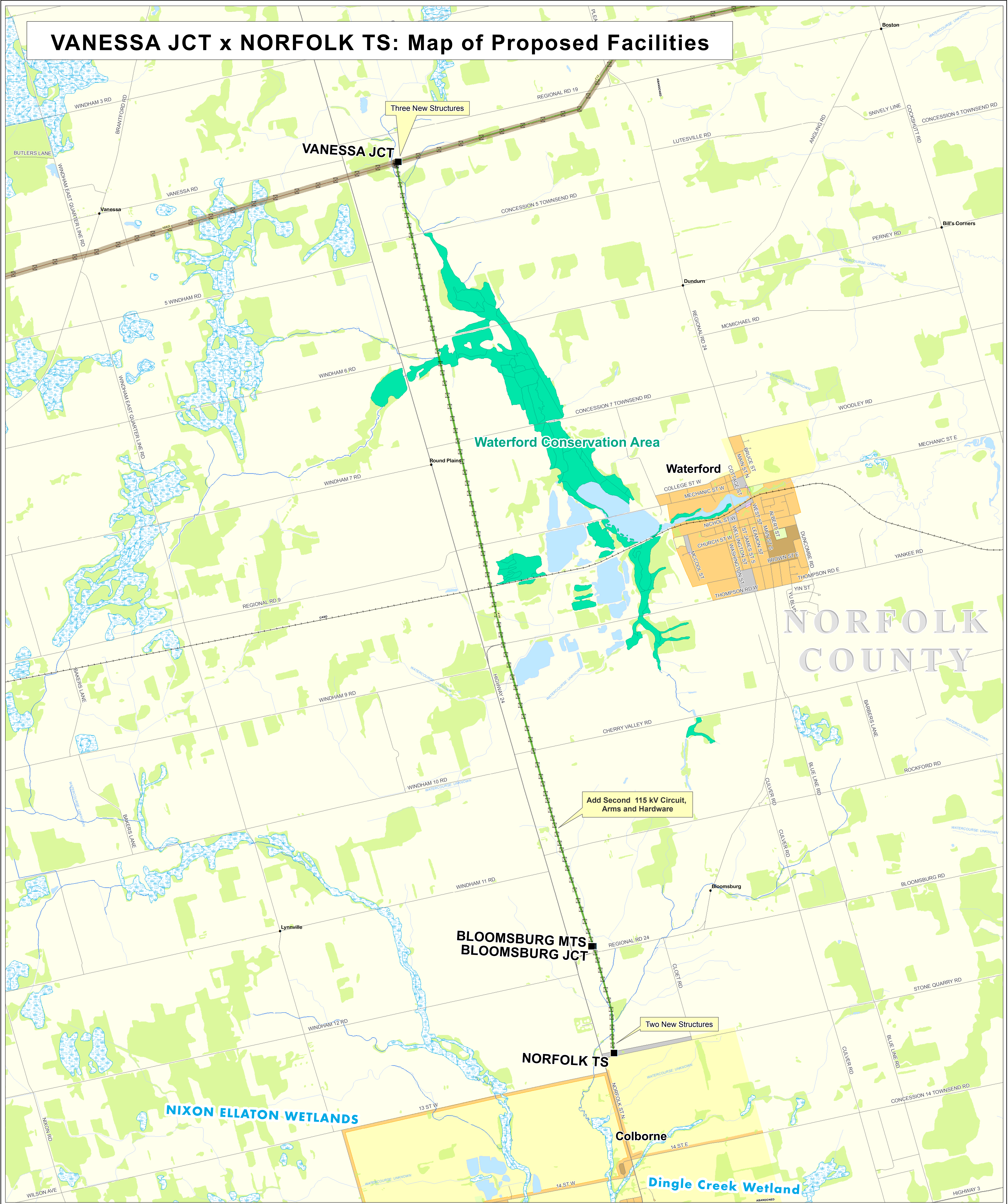
1 The planned in-service date for the proposed facilities is April 2009.
2
3 A map showing the proposed transmission facilities is provided at Exhibit B, Tab 2,
4 Schedule 2. A schematic electrical diagram of the proposed facilities is provided in
5 Exhibit B, Tab 2, Schedule 3. Cross-sections of both the existing and proposed
6 transmission structures on the right-of-way are provided in Exhibit B, Tab 2, Schedule 4.
7

1

MAP OF PROPOSED FACILITIES

2

VANESSA JCT x NORFOLK TS: Map of Proposed Facilities



Environmental Features Map

- | | | | | | | |
|--------------|--------------------------|------------|-------------------|------------|---------------------|-------------------------|
| • Place Name | Transmission Line | Expressway | Stream | ANSI | Provincial Park | Land Use |
| ■ Station | 500 kV | Highway | Cold Water Stream | ESA | Wooded Area | Commercial |
| | 230 kV | Major Road | 500kV TxLine ROW | Wetland | Municipal Boundary | Gov't and Institutional |
| | 115 kV | Railway | 115kV TxLine ROW | Water Body | Waterford Con. Area | Open Area |

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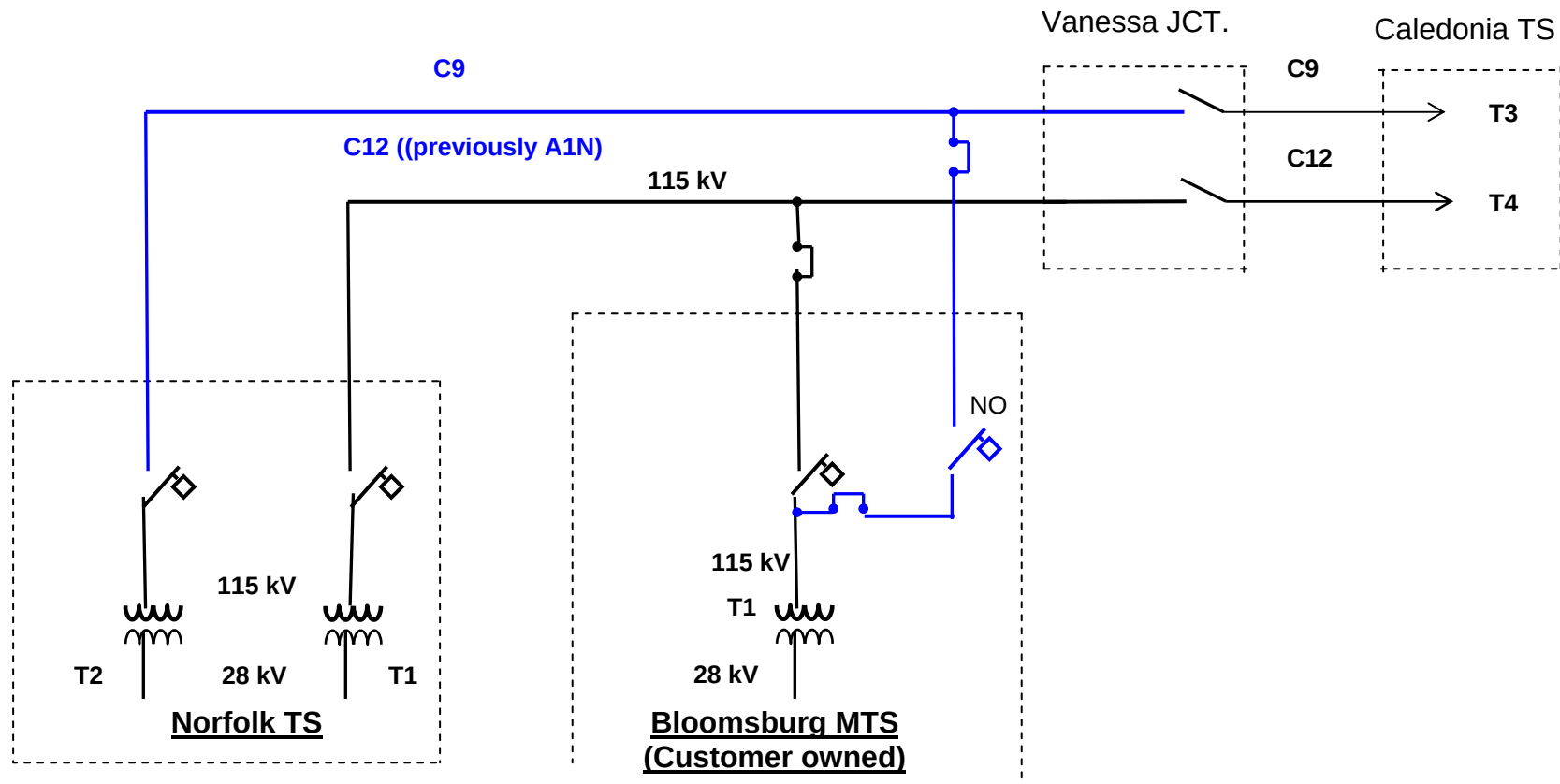
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1

SCHEMATIC OF PROPOSED FACILITIES

2

Simplified Schematic Electrical Diagram of Proposed Facilities



1

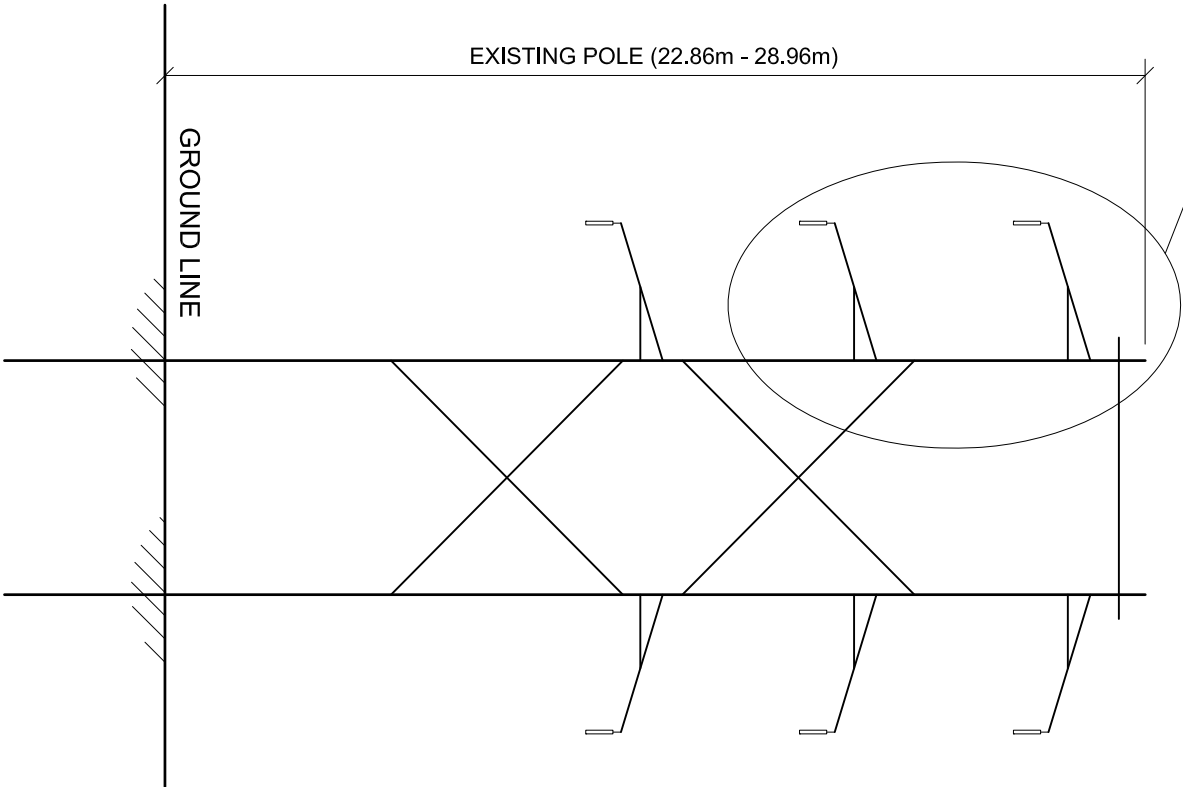
CROSS SECTION OF THE TOWER TYPES

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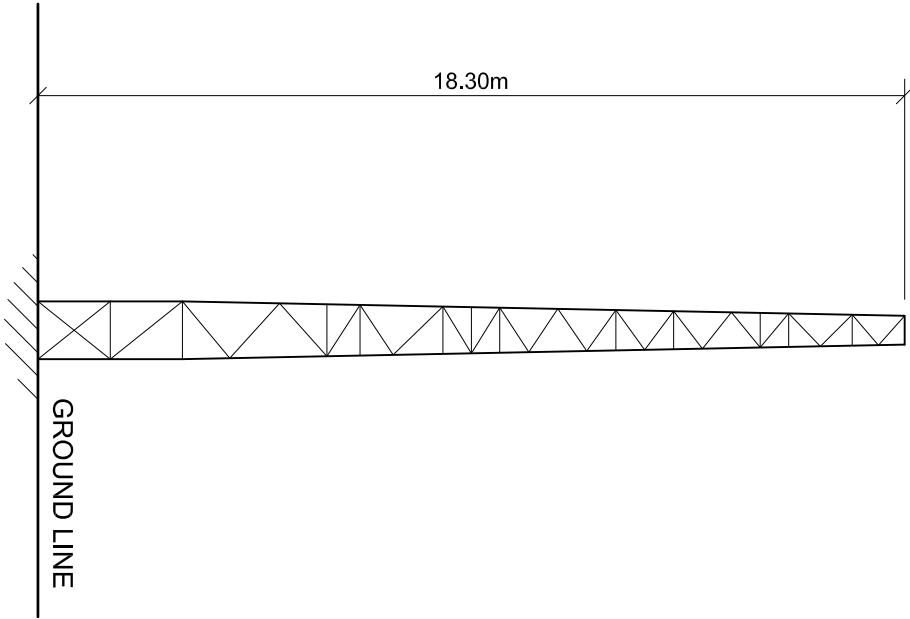
(Existing and Proposed)

NEW ARMS

CROSS SECTION OF TOWER TYPES



EXISTING WOOD POLE STRUCTURE



NEW STEEL POLE
STRUCTURE AT
VANESSA JCT AND NORFOLK JCT

TRANSMISSION ALTERNATIVES CONSIDERED

1.0 TRANSMISSION ALTERNATIVES

An Ontario Hydro study was conducted in 1998 for long-term electricity needs in Norfolk County. This study evaluated the following alternatives:

1. *Refurbishment of A8N/A11N line (Allanburg TS x Hartford Junction) and A1N line (Vanessa Junction x Norfolk TS).* Based on the study's conclusions, the refurbishment of the A8N/A11N line (Allanburg TS to Hartford Junction section) was deferred, as the future use of the part of the line from Allanburg TS to St. Anne Junction was identified as a potential 230 kV line route for the Sir Adam Beck generation plan. Refurbishment of the 115 kV line A1N was completed (see Alternative 3 below).
2. *Building a 230 kV double circuit line (21 km) to Norfolk TS and converting the station to 230-27.6 kV from 115-27.6kV.* This alternative was rejected due to the high cost.
3. *Installation of a 230/115 kV auto transformer at Caledonia TS plus refurbishment of the A8N/A11N line (the Caledonia TS x Hartford Junction section) and refurbishment of A1N line (Vanessa Junction. x Norfolk TS), including a provision for adding a future second circuit.* This set of projects was the preferred solution and these projects, with modifications, were completed over the course of several years by first Ontario Hydro and then Hydro One. They constituted Stage 1 of the Norfolk County electricity needs project. The current project is the next stage.

1 The Ontario Hydro study concluded that the 115 kV supply option, involving
2 refurbishment of line A1N with provision for a future second circuit, was the most
3 economical long term supply for the Norfolk area. Early in the current project's planning
4 process, it became apparent that the 115kV supply option, as planned in 1998 and with
5 modifications to meet current needs, remained by far the most economic alternative to
6 address future transmission needs in Norfolk County. For that reason (explained in more
7 detail below), no other alternatives were given detailed study.

8
9 The preferred solution now being proposed, involving reconductoring of the existing 115
10 kV circuit A1N to add capacity and installing the previously-contemplated second 115
11 kV circuit to improve reliability, is the most economic solution as it would build on the
12 series of projects completed in Stage 1. These projects include:

- 13 • the installation in 2004 of two 230-115 kV autotransformers at Caledonia TS to
14 supply Norfolk TS, as a replacement for the long and aging 115 kV line from
15 Allanburg TS that was the previous source of supply. Major sections of this line were
16 reaching end of life. The Caledonia TS autotransformers are connected to two 230
17 kV Nanticoke TS x Middleport circuits (line N5M/N6M)
- 18 • the refurbishment of the 230 kV A8N/A11N line (in particular the Caledonia TS x
19 Hartford Junction section) to supply Caledonia TS. This project was completed in
20 2004
- 21 • the installation of the 115 kV line A1N from Vanessa Junction to Norfolk TS,
22 completed in 1999. These line structures were designed and built at the time to
23 accommodate a second circuit.

24
25 These major prior investments in the local and broader area supply serve to set the stage
26 for the current upgrade project and make the proposed solution, which is essentially a
27 follow-on investment, the most economic alternative. In particular, taking advantage of
28 the fact that line A1N supplying Norfolk TS was designed and built to accommodate a

1 second circuit provides clear cost and environmental benefits by allowing the use of the
2 existing structures and right-of-way for the proposed facilities.

3
4 For these reasons, the 115 kV alternative being proposed was identified as likely to be
5 superior to all reasonable alternatives, and no alternatives, such as different routing
6 alignments that would involve a new, more expensive greenfield right-of-way, or
7 conversion of the existing 115 kV circuit to a 230 kV circuit that would involve
8 considerable expense, were considered in detail.

10 **4.0 RECOMMENDED ALTERNATIVE AND RATIONALE**

11
12 The recommended alternative is to replace the existing 115 kV circuit with a higher-
13 capacity conductor and add a second 115 kV circuit. This alternative:

- 14 • is technically feasible and will meet the need outlined in Exhibit B, Tab 1,
15 Schedule 4
- 16 • makes use of an existing transmission ROW
- 17 • makes use of the existing pole line that was designed to accommodate a second
18 circuit
- 19 • makes use of the previously installed capacity of the Caledonia TS auto
20 transformer and the refurbishment of the 115 kV lines A8N/A11N, both
21 completed in 2004
- 22 • is supported by Norfolk Power and Hydro One Distribution.

**PROJECT COSTS, ECONOMICS, AND OTHER
PUBLIC INTEREST CONSIDERATIONS**

This set of exhibits describes the costs of the proposed facilities and the economics of the project including the economic feasibility, rate impacts, and benefits to Ontario electricity consumers. Other public interest considerations are also discussed.

Under the *OEB Act, 1998*, “public interest” is defined to mean the interest of consumers with respect to prices and the adequacy, reliability and quality of electricity service. Consumers are defined as those who use electricity that was not self-generated for their own consumption.

PROJECT COSTS

The total estimated capital cost for replacing the existing 115 kV single-circuit line conductor, installation of a new second 115 kV three-phase transmission circuit between Vanessa Junction and Norfolk TS and the provision of a new line tap to the Bloomsburg MTS, including overheads and an Allowance for Funds Used During Construction ("AFUDC"), is summarized as follows:

Table 1

Total Project Costs (Lines & Stations)

Estimated Cost
(\$000's)

Transmission Line Facilities (Table 2)	\$2,792
Station and Telecommunication Facilities (Table 3)	447
Line Tap to Bloomsburg MTS (Tables 4 and 5)	250
Line and Telecommunication Facilities	91
Total	\$3,580

Table 2
Cost of Line Work

Estimated Cost
((\$000's))

Project Management*	100
Engineering	166
Materials	938
Construction	975
Removals	125
Commissioning	0
Contingencies	230
Costs before Overhead and AFUDC	2,534
Overhead **	241
AFUDC ****	17
Total Line Work	\$2,792

* Includes potential purchase of property rights, if required

** All overhead costs allocated to the project are for asset management and corporate services costs. These costs are charged to capital projects through a standard overhead capitalization rate. As such they are considered "Indirect Overheads". Hydro One does not allocate any project activity to "Direct Overheads" but rather charges all other costs directly to the project.

*** The AFUDC amount is derived by applying Hydro One's forecast of interest to the OEB's prescribed CWIP interest rates. The forecast AFUDC rates are:

2008	5.1%
2009	5.5%

Table 3

Cost of Station Work

Estimated Cost

(\$000's)

1		
2		
3		
4		
5	Project Management	7
6	Engineering	137
7	Materials	109
8	Construction	73
9	Commissioning	40
10	Contingencies	37
11	Costs before Overhead and AFUDC	403
12	Overhead	40
13	AFUDC	4
14		
15	Total Station Work	\$ 447

Table 4

Cost of Line Tap to Bloomberg MTS (Line)

	<i>Estimated Cost</i>
	(\$000's)
Project Management	13
Engineering	81
Materials	27
Construction	73
Commissioning	10
Contingencies	19
Costs before Overhead and AFUDC	223
Overhead	23
AFUDC	4
Total Line Tap Work (Line)	\$250

Table 5

Cost of Line Tap to Bloomburg MTS (Station Work)

	<i>Estimated Cost</i>
	(\$000's)
Project Management	8
Engineering	40
Materials	9
Construction	10
Commissioning	8
Contingencies	7
Costs before Overhead and AFUDC	82
Overhead	1
AFUDC	9
Total Line TapWork (Telecommunications)	\$ 91

RISKS AND CONTINGENCIES

As with most projects, there is some risk associated with estimating costs. Hydro One's cost estimate includes an allowance for contingencies in recognition of these risks.

Based on past experience, the estimates for the work include contingencies to cover the following potential risks:

- Cancellation or delays to required power and telecommunications system outages, for line and station construction and commissioning activities;
- Fluctuations in equipment and material costs;
- Soil conditions worse than anticipated requiring larger foundations or different types of foundations; and/or if impacted soil is discovered requiring disposal;
- Construction equipment failures.

PROJECT ECONOMICS

1.0 ECONOMIC FEASIBILITY

The proposed transmission reinforcement facilities in Norfolk County comprise both line and transformation assets. The line assets, which include the installation of the second three phase transmission circuit between Vanessa Junction and Norfolk TS, and the replacement of the A1N single-circuit line, will be included in the Line Connection Pool for rate-making purposes. The transformation assets will be included in the Transformation Connection pool. The line tap to Bloomsburg MTS will be funded 100% by Norfolk Power. A Discounted Cash Flow (DCF) calculation has been completed for each pool consistent with the economic evaluation requirements of the Transmission System Code to determine whether a capital contribution is required. For the Line Connection Pool, a capital contribution \$0.5 million, excluding GST, is required. There is no capital contribution required for the Transformation Connection Pool.

<i>in \$ millions</i>	Line Pool	Transformation Pool
Contribution Required excluding GST	\$0.5	\$0.0

1.1 COST RESPONSIBILITY

Line Connection Pool

In determining the capital contribution regarding the line connection assets, the costs assigned to customers for cost responsibility purposes are \$1.1 million. This amount covers the cost of replacing the existing single-circuit line (A1N) with a higher capacity conductor to meet the forecast load growth. The remaining \$1.7M of line connection costs covers the cost of installing a second circuit between Vanessa Junction and Norfolk TS. This work, which has been identified and planned for several years, is being done for

1 local system reliability needs rather than to add capacity. As such it has been assigned to
2 the pool for cost responsibility purposes and excluded from the project economic
3 analysis, in accordance with the exception provided in Section 6.3.6 of the *Transmission*
4 *System Code*. Please see the discussion in Need for the Proposed Facilities (Exhibit B,
5 Tab 1, Schedule 4) and Transmission Alternatives Considered (Exhibit B, Tab 3,
6 Schedule 1) for details regarding the area supply needs and transmission plans, including
7 the installation of a second circuit on line A1N.

8
9 Transformation Connection Pool

10 The costs assigned to customers for cost responsibility purposes in relation to the
11 Transformation Connection pool are \$0.4 million, for the upgrading and modifications to
12 existing protections and controls (Exhibit B, Tab 4, Schedule 2, Table 3). These are all of
13 the costs for the work to be done.

14
15 Bloomsburg MTS

16 The costs for the work regarding the Bloomsburg MTS line tap and related changes to
17 customer-owned protection and control equipment are charged 100% to the customer.
18 No costs are borne by the pool.

19
20 The table below indicates the cost responsibility for the elements of work to be done on
21 the project.

Cost Responsibility

<i>in \$ millions</i>	Pool	Amount per B-4-2	Cost Responsibility		Amount included in DCF	Capital Contribution
			Customers	Pool		
Transmission Line Facilities (Table 1 & 3)	Line Connection	2.8	1.1	1.7	1.1	0.5
Station and Telecommunication Facilities (Table 2 & 4)	Transformation Connection	0.4	0.4	-	0.4	-
Line Tap to Bloomsburg MTS	N/A	0.3	0.3	N/A	N/A	0.3
Station and Telecommunication Facilities for Bloomsburg MTS	N/A	0.1	0.1	N/A	N/A	0.1
Total		3.6	1.9	1.7		0.9

1.2 Line Pool Connection

A 25-year discounted cash flow analysis for the Line Connection facilities is provided in Table 1 below. The results indicate that the forecast incremental revenues are expected to be insufficient to pay for the incremental capital and operating costs and therefore as noted above a capital contribution will be required. The capital contribution, based on agreed capacity share, will be split between two proponents, Norfolk Power (\$0.4 million) and Hydro One (\$0.1 million).

1.2 Transformation Pool Connection

A 25-year discounted cash flow analysis for the Transformation Connection facilities is provided in Table 2 below. The results indicate that the forecast incremental revenues are

1 expected to be sufficient to pay for the incremental capital and operating costs and
2 therefore no capital contribution will be required.

3 4 **2.0 RATE IMPACT ASSESSMENT**

5
6 The analysis of the Line Connection Pool and Transformation Connection Pool rate
7 impacts has been carried out on the basis of Hydro One's transmission revenue
8 requirement for the year 2008, and the most recently approved Ontario Transmission Rate
9 Schedules. The network pool revenue requirement would be unaffected by the new
10 reinforcement facilities, based on the criteria used to allocate transmission costs to the
11 three pools as approved by the Board in its RP-1999-0044 decision.

12 13 Line Connection Pool

14 Based on the Line Connection Pool incremental cash flows associated with the project,
15 there will be only a minor change in the Line Connection pool revenue requirement once
16 the project's impacts are reflected in the transmission rate base at the projected in-service
17 date in April of 2009. The maximum revenue deficiency related to the proposed Line
18 Connection facilities will be \$75,000 in the year 2011, which will result in no impact on
19 the provincial Line Connection pool rates after rounding. The detailed analysis
20 illustrating the calculation of the incremental Line Connection revenue deficiency and
21 rate impact is provided in Table 3 below.

22 23 Transformation Connection Pool

24 Based on the Transformation Connection pool incremental cash flows associated with the
25 project, there will be a minimal change in the Transformation Connection pool revenue
26 requirement once the project's impacts are reflected in the transmission rate base at the
27 projected in-service date in April of 2009. The maximum revenue deficiency related to
28 the proposed Transformation Connection facilities will be \$66,000 in the year 2010,

which will result in no impact on the provincial Transformation Connection pool rates after rounding. The detailed analysis illustrating the calculation of the incremental Transformation Connection revenue deficiency and rate impact is provided in Table 4 below.

Given that adding the costs of the new facilities to the respective pools will not cause either the Line Connection or the Transformation Connection rate to change, there will be no bill impact to end-use customers. The table below shows this result for a typical residential customer.

Impact on Typical Residential Customer

A. Typical monthly bill (12¢ per kWh x 1,000 kWh per month)	\$120 per month
B. Transmission component of monthly bill (A x 8%)	\$9.60 per month
C. Line Connection Pool and Transformation Connection Pool share of Transmission component (B x 42%)	\$4.03 per month
D. Impact on Line Connection Pool and Transformation Connection Pool Provincial Uniform Rates (as shown in Table 1 and Table 2)	0.00 %*
E. Increase in Transmission costs for typical monthly bill (C x D)	\$0.00 per month or \$0.00 per year*
F. Net increase on typical residential customer bill (E / A)	0.00 %*

* after rounding

Table 1 – DCF Analysis, Line Connection Pool, page 1

Date: 11-Feb-08		SUMMARY OF CONTRIBUTION CALCULATIONS															
Project # 11101																	
Facility Name:		Norfolk Project 1 - Reconductor A1N															
Scope:		Combined capital contribution for Norfolk Power and Hydro One Distribution															
			In-Service Date Apr-30 2009	←	Project year ended - annualized from In-Service Date					→	Apr-30 2015	Apr-30 2016	Apr-30 2017	Apr-30 2018	Apr-30 2019	Apr-30 2020	Apr-30 2021
		Month Year		Apr-30 2010 1	Apr-30 2011 2	Apr-30 2012 3	Apr-30 2013 4	Apr-30 2014 5		6	7	8	9	10	11	12	
Revenue & Expense Forecast																	
Load Forecast (MW)				0.2	1.3	3.1	4.9	6.5	7.5	8.5	9.5	10.6	11.6	12.7	13.8		
Tariff Applied (\$/kW/Month)				0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59		
Gross Revenue - \$M				0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
OM&A Costs (Removals & On-going Incremental) - \$M			(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)		
Ontario Capital Tax and Municipal Tax - \$M			0.0	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)		
Net Revenue/(Costs) before taxes - \$M				(0.1)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1		
Income Taxes (incl. LCT)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)		
Operating Cash Flow (after taxes) - \$M				(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1		
		Cumulative PV @ 5.68%															
PV Operating Cash Flow (after taxes) - \$M (A)			0.7	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Expenditures - \$M																	
Upfront - capital cost before overheads & AFUDC			(1.0)														
- Overheads			(0.1)														
- AFUDC			(0.0)														
Total upfront capital expenditures			(1.1)														
On-going capital expenditures				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total capital expenditures - \$M			(1.1)														
PV Proceeds on disposal of assets - \$M			0.0														
PV CCA Residual Tax Shield - \$M			0.0														
PV Working Capital - \$M			(0.0)														
PV Capital (after taxes) - \$M (B)			(1.1)	(1.1)													
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)			(0.4)	(1.1)	(1.1)	(1.1)	(1.1)	(1.1)	(1.0)	(1.0)	(1.0)	(0.9)	(0.9)	(0.9)	(0.9)	(0.8)	(0.8)

Discounted Cash Flow Summary (Based on Economic Study Horizon - Years):			
		25	
Discount Tariff - %		5.68%	
	Before Contribution	After Contribution	Impact of Contribution
	\$M	\$M	\$M
PV Incremental Revenue	1.1	1.1	
PV Incremental OM&A Costs	(0.3)	(0.3)	
PV Ontario Capital Tax and Municipal Tax	(0.1)	(0.1)	
PV Income Taxes and LCT	(0.3)	(0.3)	0.1
PV CCA Tax Shield	0.2	0.1	(0.0)
PV Capital - Upfront	(1.1)	(1.1)	(0.1)
Add: PV Capital Contribution	0.0	0.5	0.5
PV Capital - On-going	0.0	0.0	
PV Proceeds on disposal of assets	0.0	0.0	
PV Working Capital	(0.0)	(0.0)	
PV Surplus / (Shortfall)	(0.4)	0.0	0.4
Profitability Index*	0.6	1.0	
*PV of total cash flow, excluding net capital expenditure & on-going capital & proceeds on disposal / PV of net capital expenditure & on-going capital & proceeds on disposal			

Contribution Required (before GST) - \$M		0.5
GST @ 5% - \$M		0.0
Contribution Required (incl. GST)* - \$M		0.5
* Payment from customer must include GST.		

Start Date:

1-Aug-08

In-Service Date:

30-Apr-09

Payback Year:

2034

No. of years required for payback:

25

Table 1 – DCF Analysis, Line Connection Pool, page 2

Date:11-Feb-08

Project #11101

SUMMARY OF CONTRIBUTION CALCULATIONS

hydroone

Facility Name:

Norfolk Project 1 - Reconductor A1N

Scope:

Combined capital contribution for Norfolk Power and Hydro One Distribution

	Month Year	Apr-30 2022	Apr-30 2023	Apr-30 2024	Apr-30 2025	Apr-30 2026	Apr-30 2027	Apr-30 2028	Apr-30 2029	Apr-30 2030	Apr-30 2031	Apr-30 2032	Apr-30 2033	Apr-30 2034
		13	14	15	16	17	18	19	20	21	22	23	24	25
Revenue & Expense Forecast														
Load Forecast (MW)		14.8	15.9	17.1	18.2	19.3	20.4	21.6	22.8	23.9	25.1	26.3	27.6	28.8
Tariff Applied (\$/kW/Month)		0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Gross Revenue - \$M		0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
OM&A Costs (Removals & On-going Incremental) - \$M		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Ontario Capital Tax and Municipal Tax - \$M		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Net Revenue/(Costs) before taxes - \$M		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Income Taxes (incl. LCT)		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)
Operating Cash Flow (after taxes) - \$M		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PV Operating Cash Flow (after taxes) - \$M	(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Expenditures - \$M														
Upfront - capital cost before overheads & AFUDC														
- Overheads														
- AFUDC														
Total upfront capital expenditures														
On-going capital expenditures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures														
Total capital expenditures - \$M														
PV Proceeds on disposal of assets - \$M														
PV CCA Residual Tax Shield - \$M														
PV Working Capital - \$M														
PV Capital (after taxes) - \$M	(B)													
Cumulative PV Cash Flow (after taxes) - \$M	(A) + (B)	(0.8)	(0.8)	(0.7)	(0.7)	(0.7)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(0.5)	(0.4)	(0.4)

2

3

Table 2 – DCF Analysis, Transformation Connection Pool, page 2

Date:11-Feb-08

Project #11101

SUMMARY OF CONTRIBUTION CALCULATIONS



Facility Name:

Norfolk Project 2 - Station Work

Scope:

Combined capital contribution for Norfolk Power and Hydro One Distribution

	Month Year	Apr-30 2022	Apr-30 2023	Apr-30 2024	Apr-30 2025	Apr-30 2026	Apr-30 2027	Apr-30 2028	Apr-30 2029	Apr-30 2030	Apr-30 2031	Apr-30 2032	Apr-30 2033	Apr-30 2034
		13	14	15	16	17	18	19	20	21	22	23	24	25
Revenue & Expense Forecast														
Load Forecast (MW)		14.8	15.9	17.1	18.2	19.3	20.4	21.6	22.8	23.9	25.1	26.3	27.6	28.8
Tariff Applied (\$/kW/Month)		1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Gross Revenue - \$M		0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6
OM&A Costs (Removals & On-going Incremental) - \$M		(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Ontario Capital Tax and Municipal Tax - \$M		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Net Revenue/(Costs) before taxes - \$M		0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
Income Taxes (incl. LCT)		(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
Operating Cash Flow (after taxes) - \$M		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
PV Operating Cash Flow (after taxes) - \$M	(A)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Capital Expenditures - \$M														
Upfront - capital cost before overheads & AFUDC														
- Overheads														
- AFUDC														
Total upfront capital expenditures														
On-going capital expenditures		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures														
Total capital expenditures - \$M														
PV Proceeds on disposal of assets - \$M														
PV CCA Residual Tax Shield - \$M														
PV Working Capital - \$M														
PV Capital (after taxes) - \$M	(B)													
Cumulative PV Cash Flow (after taxes) - \$M	(A) + (B)	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2

Revenue Requirement and Line Pool Rate Impact	(After Capital Contribution)
Revenue Requirement	
Line Pool Rate Impact	

3

Ontario Capital Tax	0.225%	2008 Ontario capital tax rate
Grants in Lieu of Municipal tax	0.625%	Transmission system average
Depreciation	2.0%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land
Interest and Return on Rate Base	6.86%	Includes OEB-approved ROE of 8.35%, 5.14% on short-term debt, 5.92% forecast of long-term debt and 40/60 equity/debt split
Income Tax Provision	33.50%	2008 federal and provincial corporate income tax rate including surtax
Large Corporations Tax	0.000%	2008 large corporations tax rate
Capital Cost Allowance	8.0%	100% Class 47 assets
Incremental OM&A	1.6%	1.6% of Initial Capital per year

Table 4 – Revenue Requirement and Transformation Connection Pool Rate Impact, page 1

Revenue Requirement and Transformation Pool Rate Impact						(After Capital Contribution)							
<u>Norfolk Project 2 - Station Work</u>		Project YE 30-Apr 2010	Project YE 30-Apr 2011	Project YE 30-Apr 2012	Project YE 30-Apr 2013	Project YE 30-Apr 2014	Project YE 30-Apr 2015	Project YE 30-Apr 2016	Project YE 30-Apr 2017	Project YE 30-Apr 2018	Project YE 30-Apr 2019	Project YE 30-Apr 2020	Project YE 30-Apr 2021
<u>Calculation of Incremental Revenue Requirement (\$'000)</u>		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	30-Apr-09												
Capital Cost	447												
Removal Cost	-												
Less: Capital Contribution Required	0												
Net Project Cost	447												
Average Rate Base		219	434	425	416	407	398	389	380	371	362	353	344
Incremental OM&A Costs		42	42	42	42	42	42	42	42	42	42	42	42
Ontario Capital Tax	0.225%	1	1	1	1	1	1	1	1	0	0	0	0
Grants in Lieu of Municipal tax	0.625%	3	3	3	3	3	3	3	3	3	3	3	3
Depreciation	2.0%	9	9	9	9	9	9	9	9	9	9	9	9
Interest and Return on Rate Base	6.86%	15	30	29	29	28	27	27	26	25	25	24	24
Income Tax Provision	33.50%	1	5	4	3	2	1	(0)	(1)	(1)	(2)	(3)	(3)
Large Corporations Tax	0.000%	-	-	-	-	-	-	-	-	-	-	-	-
REVENUE REQUIREMENT PRE-TAX		70	89	88	86	84	82	81	80	78	77	76	75
Incremental Revenue		5	26	60	95	125	145	164	184	204	225	245	266
SUFFICIENCY/(DEFICIENCY)		(66)	(64)	(27)	10	41	62	83	105	126	148	169	191
Transformation Pool Revenue Requirement including sufficiency/(deficiency)	Base Year 339,987	340,058	340,077	340,075	340,073	340,071	340,070	340,068	340,067	340,066	340,064	340,063	340,062
Transformation MW	211,085	211,087	211,100	211,122	211,144	211,162	211,174	211,187	211,199	211,212	211,224	211,237	211,250
Transformation Pool Rate (\$/kw/month)	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61
Increase/(Decrease) in Network Pool Rate (\$/kw/month), relative to base year		-	-	-	-	-	-	-	-	-	-	-	-
RATE IMPACT relative to base year		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Assumptions													
Ontario Capital Tax	0.225%	2008 Ontario capital tax rate											
Grants in Lieu of Municipal tax	0.625%	Transmission system average											
Depreciation	2.0%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land											
Interest and Return on Rate Base	6.86%	Includes OEB-approved ROE of 8.35%, 5.14% on short-term debt, 5.92% forecast of long-term debt and 40/60 equity/debt split											
Income Tax Provision	33.50%	2008 federal and provincial corporate income tax rate including surtax											
Large Corporations Tax	0.000%	2008 large corporations tax rate											
Capital Cost Allowance	8.0%	100% Class 47 assets											
Incremental OM&A	9.4%	■\$42 K for years 1-15 and \$65 K for years 16-25.											

Table 5 – Derivation of Load used in DCF, page 1

		Annual Non-Coincident Peak Load Forecast for Norfolk County												
		0	1	2	3	4	5	6	7	8	9	10	11	12
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Relevant Norfolk Area Loads														
Hydro One Distribution	MW	28.3	28.7	29.1	29.4	29.8	30.1	30.5	30.9	31.2	31.6	31.9	32.3	32.7
Norfolk Power	MW	57.4	58.2	60.0	61.9	63.7	64.6	65.5	66.3	67.3	68.2	69.1	70.1	71.0
115kV Load Sub-total	MW	85.7	86.9	89.1	91.3	93.5	94.7	96.0	97.2	98.5	99.8	101.0	102.3	103.7
Line Capacity	MW	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0
Load in excess of capacity, calendar-year basis	MW	0.0	0.9	3.1	5.3	7.5	8.7	10.0	11.2	12.5	13.8	15.0	16.3	17.7
PLI-adjustment		82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
PLI-adjusted load in excess of capacity	MW	-	0.7	2.5	4.3	6.1	7.1	8.2	9.2	10.2	11.3	12.3	13.4	14.5
Adjust for in-service month:														
Project Year														
		30-Apr 2009	30-Apr 2010	30-Apr 2011	30-Apr 2012	30-Apr 2013	30-Apr 2014	30-Apr 2015	30-Apr 2016	30-Apr 2017	30-Apr 2018	30-Apr 2019	30-Apr 2020	30-Apr 2021
		to	to	to	to	to	to	to	to	to	to	to	to	to
		29-Apr 2010	29-Apr 2011	29-Apr 2012	29-Apr 2013	29-Apr 2014	29-Apr 2015	29-Apr 2016	29-Apr 2017	29-Apr 2018	29-Apr 2019	29-Apr 2020	29-Apr 2021	
Load in excess of capacity, project-year basis*	MW	0.2	1.3	3.1	4.9	6.5	7.5	8.5	9.5	10.6	11.6	12.7	13.8	

* Project-year load = 4/12 of current calendar-year load + 8/12 of previous calendar-year load, based on April 30, 2010 in-service date

Table 5 – Derivation of Load used in DCF, page 2

		Annual Non-Coincident Peak Load Forecast for Norfolk County												
		13	14	15	16	17	18	19	20	21	22	23	24	25
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Relevant Norfolk Area Loads														
Hydro One Distribution	MW	33.0	33.4	33.7	34.1	34.4	34.8	35.1	35.5	35.8	36.2	36.5	36.9	37.3
Norfolk Power	MW	72.0	73.0	74.0	75.0	76.0	77.1	78.2	79.2	80.3	81.4	82.6	83.7	84.9
115kV Load Sub-total	MW	105.0	106.3	107.7	109.1	110.5	111.9	113.3	114.7	116.2	117.6	119.1	120.6	122.2
Line Capacity														
Load in excess of capacity, calendar-year basis	MW	19.0	20.3	21.7	23.1	24.5	25.9	27.3	28.7	30.2	31.6	33.1	34.6	36.2
PLI-adjustment		82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
PLI-adjusted load in excess of capacity	MW	15.6	16.7	17.8	18.9	20.1	21.2	22.4	23.5	24.7	25.9	27.2	28.4	29.6
Adjust for in-service month:														
Project Year		30-Apr 2021 to 29-Apr 2022	30-Apr 2022 to 29-Apr 2023	30-Apr 2023 to 29-Apr 2024	30-Apr 2024 to 29-Apr 2025	30-Apr 2025 to 29-Apr 2026	30-Apr 2026 to 29-Apr 2027	30-Apr 2027 to 29-Apr 2028	30-Apr 2028 to 29-Apr 2029	30-Apr 2029 to 29-Apr 2030	30-Apr 2030 to 29-Apr 2031	30-Apr 2031 to 29-Apr 2032	30-Apr 2032 to 29-Apr 2033	30-Apr 2033 to 29-Apr 2034
Load in excess of capacity, project-year basis*	MW	14.8	15.9	17.1	18.2	19.3	20.4	21.6	22.8	23.9	25.1	26.3	27.6	28.8

* Project-year load = 4/12 of current calendar-year load + 8/12 of previous calendar-year load, based on April 30, 2010 in-service date

Table 6 – DCF Assumptions

1
2

**Hydro One Networks – Transmission Connection Economic Evaluation Model
2008 Parameters and Assumptions**

Transmission rates are based on 2007/2008 uniform provincial transmission rates, per EB-2006-0051.

Monthly Rate (\$ per kW)	
Network	2.31
Transformation	1.61
Line	0.59

Grants in lieu of Municipal tax (% of up-front capital expenditure, a proxy for property value):

0.63%

Based on Transmission system average

Ontario Capital tax based on currently enacted rates, per TSC Appendix 5
(% of UCC, a proxy for taxable capital):

0.225%

2008 provincial rate

Overhead rate on capital:

Varies from year to year; latest forecast as follows:
Grandfathered projects - project specific overhead (\$ k):

Line Tap	\$50
Feeder Position	\$25
Transformer Station	\$100

Grandfathered projects are those projects for which economic evaluations were carried out prior to the July 25/05 effective date of the revised TSC, per section 3.0.9

Non-grandfathered projects - varies from year to year; latest forecast as follows:

2008	11.0%
2009	9.0%
2010	10.0%
2011	10.0%
2012	10.0%

Fully allocated overheads per TSC section 6.5.2 (c) using Hydro One Networks forecast Transmission capitalized overhead rate

AFUDC rate:

Varies from year to year; latest forecast as follows:

2008	5.1%
2009	5.5%
2010	5.6%
2011	5.6%
2012	5.7%

Based on Hydro One Networks Transmission forecast of OEB-prescribed CWIP rate. Charged on construction work in progress to in-service date of capital.

Income taxes (based on currently enacted rates, per TSC Appendix 5):

Basic Federal Tax Rate (before surtax) -
% of taxable income:

2008 **19.50%**

Current rate

Federal Surtax - % of taxable income:

2008 **0.00%**

Current rate

Ontario corporation income tax -
% of taxable income:

2008 **14.00%**

Current rate

Large Corporation Tax - % of UCC (a proxy for taxable capital)

2008 **0.000%**

Current rate

Capital Cost Allowance Rate, Class 47:

"Rate change retroactively enacted in 2006 to 8% for assets added after Feb. 22/05; formerly Class 1"

2008 **8.0%**

Current rate *

After-tax Discount rate:

2007 **5.68%**

Based on OEB-approved ROE of 8.35% on common equity, 5.14% forecast short-term debt rate, 5.92% forecast long-term debt rate, 40/4/56 common equity/short-term debt/long term debt split, and 2008 enacted income tax rate of 33.5%

OTHER PUBLIC INTEREST CONSIDERATIONS

1.0 ADEQUACY, RELIABILITY, AND QUALITY IMPACTS

The proposed facilities will improve the reliability and quality of electricity service to consumers in Norfolk County by adding a second 115kV three phase transmission circuit over a distance of 12 km from Vanessa Junction to Norfolk TS using an existing right-of-way and existing towers, and re-conductoring the existing 115kV circuit A1N.

The line from Vanessa Junction to Norfolk TS will exceed its thermal limit starting in 2010. To address this need in the event of a contingency on the 12 km circuit A1N between Vanessa Junction and Norfolk TS, the proposed line with higher capacity and a second circuit added will limit the load loss thus enhancing adequacy of electricity service to consumers in Norfolk County.

As confirmed by the IESO's SIA filed as Exhibit B, Tab 6, Schedule 3 the facilities will improve the adequacy, reliability, and quality of electric service to consumers and will not have an adverse impact on the system or other transmission customers.

CONSTRUCTION AND PROJECT ADMINISTRATION

Hydro One can achieve an April 2009 in-service date for the proposed facilities assuming that the Board grants leave to construct the proposed facilities by September 2008.

To complete the project, Hydro One will:

- Remove and replace the existing 12 kilometers of 115 kV single-circuit line (A1N) conductor from Vanessa Junction to Norfolk TS with a new higher capacity conductor. Install a second 12 kilometers of 115 kV three-phase transmission circuit from Vanessa Junction to Norfolk TS on existing line structures. The new 115 kV circuit will be commissioned and energized prior to the replacement of the existing 115 kV line conductor in order to maintain load to Norfolk TS and Bloomsburg MTS. Install a second line tap at Bloomsburg MTS and connect to the new 115 kV circuit.
- Carry out line construction activities that include setting up construction yards, building access roads on the right-of-way (if required), clearing trees and brush from the right-of-way, installing foundations, erecting new structures, and stringing new conductor.
- Station construction activities will consist of installing foundations and various protection, control and telecom racks, and cabinets and cabling.

A project schedule showing the tasks leading up to the in-service date is provided in Exhibit B, Tab 5, Schedule 2.

1

CONSTRUCTION AND IN-SERVICE SCHEDULE

TASK	START	FINISH
Submit Section 92		March 2008
Projected Section 92 Approval		August 2008
Projected EA Approval	N/A	N/A
Projected Access to Property under Expropriation Act Approval	N/A	N/A
STATIONS		
Detailed Engineering	April 2008	August 2008
Tender & Award Major Station Equipment	August 2008*	September 2008*
Receive Major Station Equipment	October 2008	December 2008
Construction	October 2008	April 2009
Commissioning	March 2009	April 2009
LINES		
Detailed Engineering	April 2008	August 2008
Tender & Award Structural Steel	August 2008*	September 2008*
Receive Structural Steel	October 2008	December 2008
Construction	October 2008	April 2009
Construction (Road Removal, Restoration)	March 2009	April 2009
In Service		April 2009

2

* Decision to be made re: tendering and awarding contracts prior to OEB decision based on progress of approvals

OTHER MATTERS / AGREEMENTS / APPROVALS

1.0 SYSTEM IMPACT ASSESSMENT

Under the market rules, any party planning to construct a new or modified connection to the IESO-controlled grid must allow for an IESO assessment of these facilities. The IESO has completed the System Impact Assessment (SIA) of the proposed facilities included in the Norfolk County Transmission Reinforcement project under the IESO Connections Assessment and Approval process.

The IESO assessment addresses the impact of the proposed facilities on system operating voltage, system operating flexibility, and on the ability of other connections to deliver or withdraw power supply from the IESO-controlled grid. The IESO's SIA filed at Exhibit B, Tab 6, Schedule 3 confirms the need for this project and indicates that Hydro One's proposed transmission solution is adequate and does not adversely impact the IESO-controlled grid.

2.0 CUSTOMER IMPACT ASSESSMENT

Hydro One has determined that, consistent with the Transmission System Code requirements, a formal Customer Impact Assessment (CIA) is not required as the addition of the second circuit does not negatively impact the two customers (Norfolk Power and Hydro One Distribution).

3.0 STAKEHOLDER AND COMMUNITY CONSULTATION

Hydro One has notified stakeholders in Norfolk County of the proposed transmission line upgrade. Hydro One will hear stakeholders concerns and ensure that they are addressed, as well as ensure that public authorities are kept informed of the project status. The

1 details of Hydro One's Stakeholder consultation process may be found in Exhibit B, Tab
2 6, Schedule 5.

4 **4.0 ENVIRONMENTAL ASSESSMENT APPROVAL**

6 In March 1999, an Environmental Study Report was completed and filed with the
7 Ministry of the Environment for the *Vanessa Jct X Norfolk TS 115 kV Refurbishment* to
8 comply with the *Class Environmental Assessment for Minor Transmission Facilities*. At
9 the time, there was no expressed opposition to the project and all concerns were
10 satisfactorily resolved. It was stated in the report that only one circuit would be strung
11 initially and the second circuit would be strung at a later date.

13 Although there are no requirements under the Environmental Assessment Act for the
14 project, now that the second circuit is required, Hydro One has completed an
15 environmental screening for due diligence purposes. Environmental data was updated
16 from existing data bases and a field visit was conducted. Personnel at the Ministry of
17 Natural Resources and Long Point Region Conservation Authority have been contacted
18 for any additional information that should be taken into account for this project. The
19 screening has been completed and the Ministry of the Environment notified.

21 A public notification plan has been developed and implemented. Notices have been
22 posted for a period of two weeks in the local newspapers. Homeowner notifications will
23 be sent out to the affected landowners after the project receives Ontario Energy Board
24 approval.

26 **5.0 COMPLIANCE WITH INDUSTRY STANDARDS AND CODES**

28 The proposed facilities will be constructed, owned and operated by Hydro One. The
29 design and maintenance of these facilities will be in accordance with good utility

1 practice, as established in the Transmission System Code and in accordance with
2 Northeast Power Coordinating Council (NPCC) and North American Electric Reliability
3 Council (NERC) planning and operating standards.

4

5

6

1 **CUSTOMER LETTERS OF ENDORSEMENT FOR THE PROJECT**

2

3 Letters of support for the proposed facilities have been obtained from:

4

- 5 • Norfolk Power Distribution Inc.
- 6 • Norfolk County

7

January 29, 2008

HydroOne Networks Inc.
483 Bay Street
North Tower, 15th Floor
Toronto ON M5G 2P5

Attn : Mike Penstone
Director, System Investment

**Re: HydroOne Networks Proposal - Reconductoring of the A1N Circuit
- Extension of the C9 Circuit**

At the August 23, 2007 meeting of the Norfolk Power Board of Directors, Hydro One Networks made a presentation regarding the addition of a second 115kV line between Vanessa Junction and Norfolk TS. The new circuit is slated to become an extension of the Caledonia C9 circuit and will be in parallel with the existing C12 circuit (previously A1N). This project has been heartily endorsed by the Norfolk Power Board and has similarly been welcomed by the shareholder, Norfolk County.

We understand that the project is tentatively slated for completion by spring of 2009, assuming OEB approval is forthwith. At this point, it is also understood that capital contribution costs will be shared with HydroOne based on load proportionality and future growth. Though we disagree with the OEB interpretation of this cost responsibility, we recognize the importance of proceeding with this project to meet reliability concerns.

The A1N circuit now feeds Norfolk TS and our Bloomsburg TS. In total, these two transformer stations feed more than 70% of Norfolk Power customers. In anticipation of the extension of the C9 circuit, we are planning to add a second 50MVA transformer as a reliability contingency at Bloomsburg TS. This project will provide an additional echelon of security to more than 13,000 customers.

We await revisions to the CCRA which should detail appropriate costing. In principle, we are prepared to sign the updated agreement. This project has been anticipated for many years and is essential for the economic well being of our community. Approval to proceed is long-awaited.

Yours truly,

Brad Randall, P.Eng.
President & CEO

pc: D. Bahra – Hydro One Networks
A. Urbanowicz – Hydro One Networks



February 6, 2008

Mr. Enza Cancilla
Manager, Public Affairs
Hydro One Networks Inc.
483 Bay Street, 8th Floor, South Tower,
Toronto, Ontario M5G 2P5

Dear Sir:

This letter will signify to Hydro One Networks the wholehearted support of Norfolk County Council for this system enhancement which will provide reliability of supply to our area.

If there is anything that Norfolk County can do to ensure the timely start and completion of this project, please let me know.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Travale".

Dennis Travale
Mayor, Norfolk County

cc: Brad Randall, CEO Norfolk Power
Norfolk County Councillors
Bill Allcock, Norfolk County Manager

Office of the Mayor
Governor Simcoe Square
P.O. Box 545
50 Colborne Street South, Simcoe, Ontario N3Y 4N5
519-426-5870 Fax: 519-426-7633
www.norfolkcounty.on.ca

1 **THE IESO's NOTIFICATION OF APPROVAL AND SYSTEM**
2 **IMPACT ASSESSMENT**

3

4

5 Attachment A: IESO Notification of Conditional Approval and Connection Proposal

6

7 Attachment B: IEMO Connection Assessment and Approval Process

1 **IESO Notification of Conditional Approval and Connection Proposal**
2

January 18, 2008

Mr. Ajay Garg
Manager, Transmission Load Connections
Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario M5G 2P5

Mr. Bruno Ciccotelli
V.P. Engineering & Operations
Norfolk Power Distribution Inc.
P.O. Box 588 , 70 Victoria St
Simcoe, Ontario N3Y 4N6

Dear All:

115 kV Line tap from C9 to Bloomsburg MTS & New Bus Tie Switch
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2007-EX353

Thank you for the detailed information regarding the installation of a line tap to Bloomsburg MTS and the addition of a bus tie switch at Bloomsburg MTS.

From the information provided, our review concludes that the proposed changes will not result in a material adverse effect on the reliability of the IESO-controlled grid. The IESO is therefore pleased to grant conditional approval for the proposed modifications, subject to your signed acknowledgement of the requirements detailed in the attached assessment report. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Final approval will be granted upon successful completion of the IESO Facility Registration process. During facility registration you will be expected to demonstrate that you have fulfilled the requirements and the modification is in line with the proposal assessed by the IESO. Please contact market.entry@ieso.ca if you have not received a Facility Registration Summary package within the next 10 days.

For further information, please contact the undersigned.

Yours truly,

Michael Falvo
Manager - Transmission Assessments & Performance
Telephone: (905) 855-6209
Fax: (905) 855-6129
E-mail: mike.falvo@ieso.ca
cc: IESO Records

Hydro One Networks Inc. and Norfolk Power Distribution Inc. acknowledges receipt of the System Impact Assessment Report setting out the IESO requirements for final approval, and commits to fulfill these requirements, and all other applicable Market Rules, before receiving final approval to connect to the IESO-controlled grid.

Dated:_____

Per:_____

Name:_____

Title:_____

Dated:_____

Per:_____

Name:_____

Title:_____

ASSESSMENT SUMMARY

Hydro One Networks Inc. and Norfolk Power Distribution Inc.

1. GENERAL DESCRIPTION

Norfolk TS and Bloomsburg MTS are supplied by a single 115 kV circuit (A1N). At Vanessa Jct, circuit A1N is connected to a double 115 kV circuit (C9 & C12) which connects to Caledonia TS.

An earlier SIA report, [CAA # 2002-EX070](#), assessed the installation of a second 115 kV line (C9) between Vanessa Jct and Norfolk TS to provide a dual supply to Norfolk TS. This line will be placed in-service by April 30, 2009.

In addition, Hydro One is planning to upgrade A1N to the same rating as the new C9 and to rename A1N as C12. A new line tap will be installed between Bloomsburg MTS and the new C9. This work will be addressed in this assessment. The targeted in-service date for this work is April 30, 2009.

Bloomsburg MTS currently consists of one 3-phase 110/28 kV transformer T1 rated at 42 MVA. Norfolk Power Distribution is planning to install a bus tie switch, a line disconnect switch and a Q bus to facilitate future plans to upgrade Bloomsburg MTS to a DESN. This work will also be addressed in this assessment. The targeted in-service date for this work is April 30, 2009.

Hydro One is responsible for constructing C9, upgrading A1N (to be renamed C12), and constructing the line tap from C9 to Bloomsburg MTS. Norfolk Power Distribution is responsible for station work at Bloomsburg MTS.

Changes to the existing configuration are shown in Figure 3.

2. PROPOSED MODIFICATION

Upon completion of the new line tap to Bloomsburg MTS, Norfolk Power will install an ABB surge arrester rated at 132 kV.

A new disconnect switch T1A1N will be added to the existing line tap to be the transformer disconnect switch. The existing transformer disconnect switch will become the tie breaker switch T2A1N. A new disconnect switch T2A12N will be added to the new line tap to provide a supply for the future transformer. The ratings of the new disconnect switches will be similar to the rating of the existing disconnect switch, shown below. The locations of the disconnect switches are shown in Figure 3.

New 115 kV Disconnect Switches at Bloomsburg MTS	
Designation	T1A1N & T2A12N
Configuration	three phase
Nominal Voltage	115 kV
Maximum Voltage	138 kV
Load Interrupting Current	1200 A rms
Interrupting Capability	xx kA
Manufacturer	Southern States
Serial Number	

The summer continuous rating of the new line C9 and the upgraded line C12 will be 650 A or 129 MVA at 30 °C and 4 km/h wind speed. The summer continuous rating of the new line tap to Bloomsburg will be 550 A or 109.5 MVA at 30 °C and 4 km/h wind speed.

3. ASSESSMENT

3.1 Bloomsburg MTS T1 Loading Data

The 2006 peak load at Bloomsburg MTS T1 of 29.1 MVA occurred on August 1, 2006 at 15:00. The 2007 peak load at Bloomsburg MTS T1 of 30.6 MVA occurred on June 26, 2007 at 15:00. Figure 1 shows the loading at the LV side of Bloomsburg MTS T1.

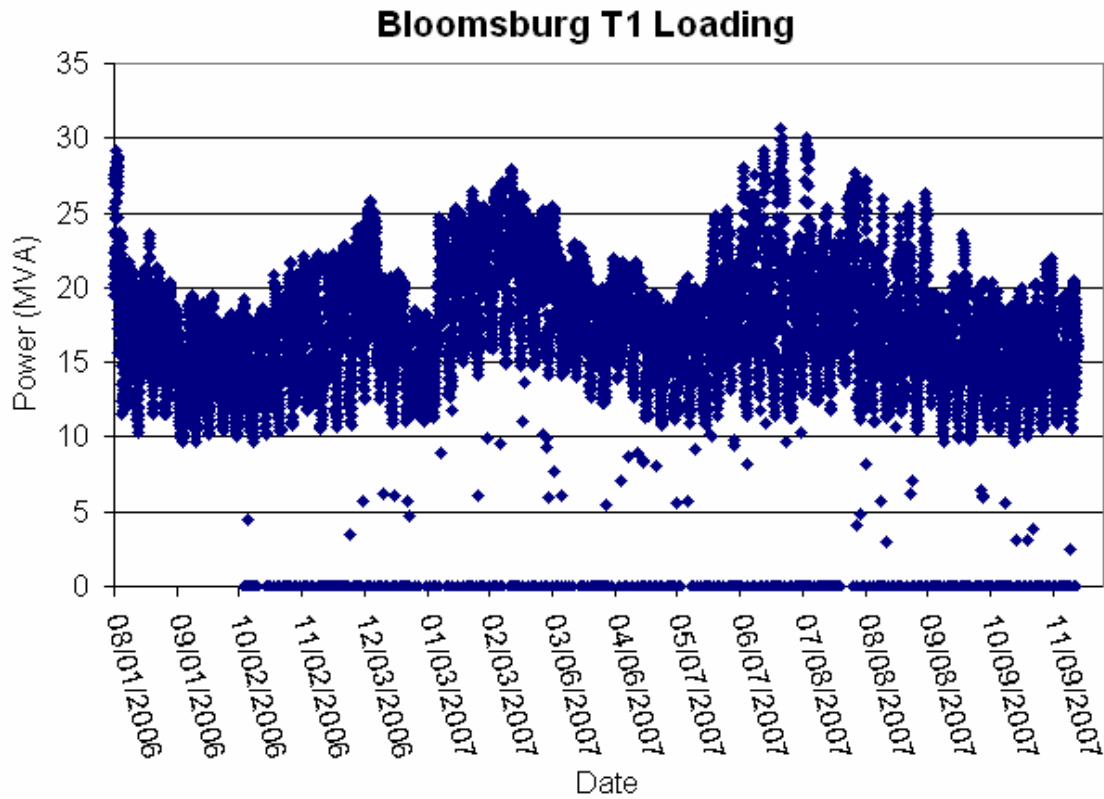
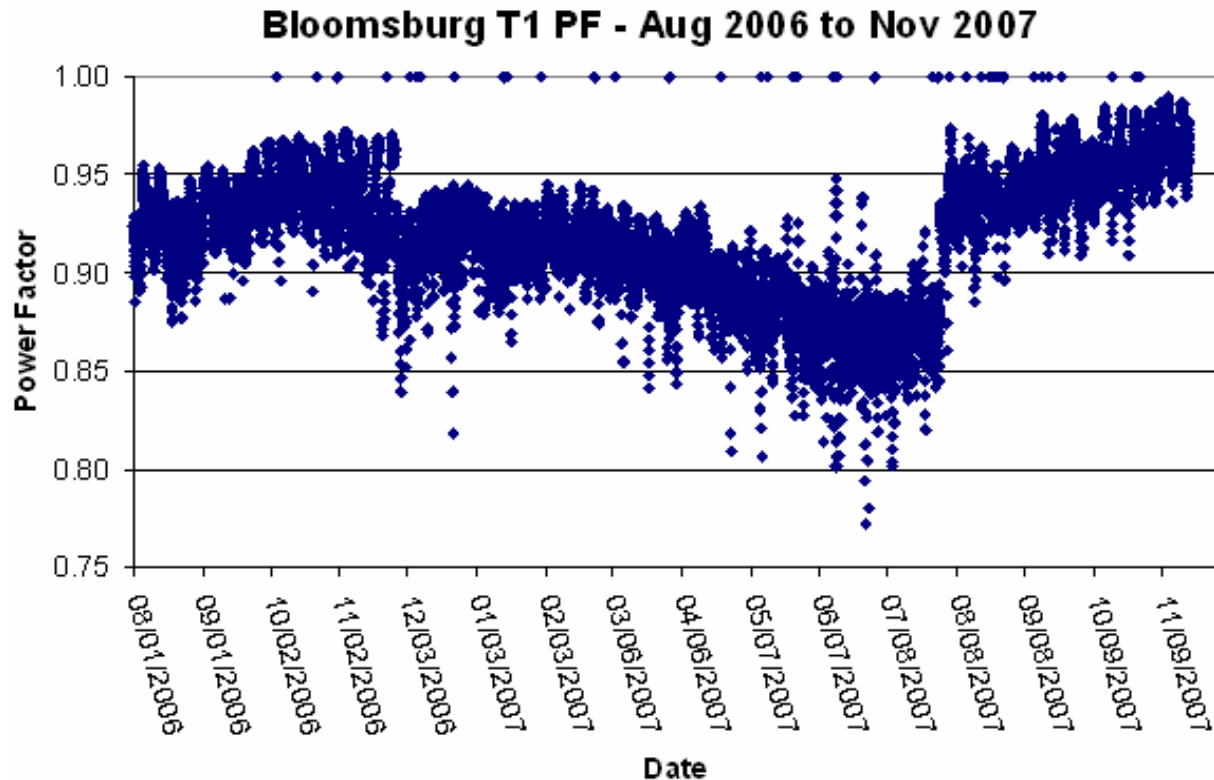


Figure 1 – Bloomsburg T1 Loading

This peak load is well below the new Cp tap rating of 109.5 MVA.

3.2 Power Factor

The power factor at Bloomsburg T1 was often lower than 0.9 during the summer before August 1, 2007 as shown in figure 2. On August 1, 2007, Norfolk Power Distribution placed a 1.8 MVar capacitor at Bloomsburg MTS. After the capacitor was put in service, the lowest power factor of 0.86 at the high voltage side of T1 occurred on August 3 and 4 2007.



It can be concluded that Bloomsburg TS meets and exceeds the Market Rules requirements with respect to power factor since the capacitor was placed in service.

Figure 2 – Bloomsburg T1 PF

3.3 Load Forecast

The following load forecast for Bloomsburg TS and Norfolk TS was provided by Norfolk Power Distribution and Hydro One Networks.

	2008	2010	2015	2020	2025	2030
Bloomsburg MTS Load	24.9 MW	26.3 MW	31.2 MW	33.1 MW	35.2 MW	37.4 MW
Norfolk TS Load	58.9 MW	60.5 MW	64.8 MW	69.2 MW	73.9 MW	78.7 MW
Total Load	83.7 MW	86.9 MW	96 MW	102.3 MW	109.1 MW	116.2 MW
Total S @ 0.9 PF	93 MVA	96.5 MVA	106.6 MVA	113.7 MVA	121.2 MVA	129.1 MVA

The continuous rating of T1 at Bloomsburg MTS is 42 MVA. Therefore, T1 is capable of supplying its load until at least 2025. The line tap is also capable of supplying the load until 2025.

In CAA report # 2002–EX070, 575 A was used for the continuous summer rating at 30°C ambient. The new line being built will have a higher summer rating of 650 A. According to future load growth at Norfolk TS and Bloomsburg MTS, either line should be capable of supplying the load till 2030 (assuming 0.9 power factor).

4. CONCLUSIONS

The rating of either the new or the upgraded 115 kV line exceeds the sum of Norfolk TS load and Bloomsburg MTS loads until 2030. The rating of the 115 kV line tap to Bloomsburg TS exceeds the load of Bloomsburg until 2025.

The rating of the equipment provided by Norfolk Power satisfies the requirement of the market rules.

This expedited System Impact Assessment concludes that the addition of the line, a line tap to Bloomsburg MTS, and reconstruction at Bloomsburg MTS is not expected to have a material adverse impact on the IESO-controlled grid.

5. REQUIREMENTS

Hydro One Distribution Inc. and Norfolk Power Distribution Inc. are required to meet the requirements with respect to protection systems for the new line as outlined in the Transmission System Code.

The status of all disconnect switches, breakers and active and reactive power flows should be available to IESO on a continual basis.

6. NOTIFICATION OF APPROVAL

It is therefore recommended that a Notification of Approval of the Connection Proposal be issued subject to the implementation of the requirements listed in section 5.0.

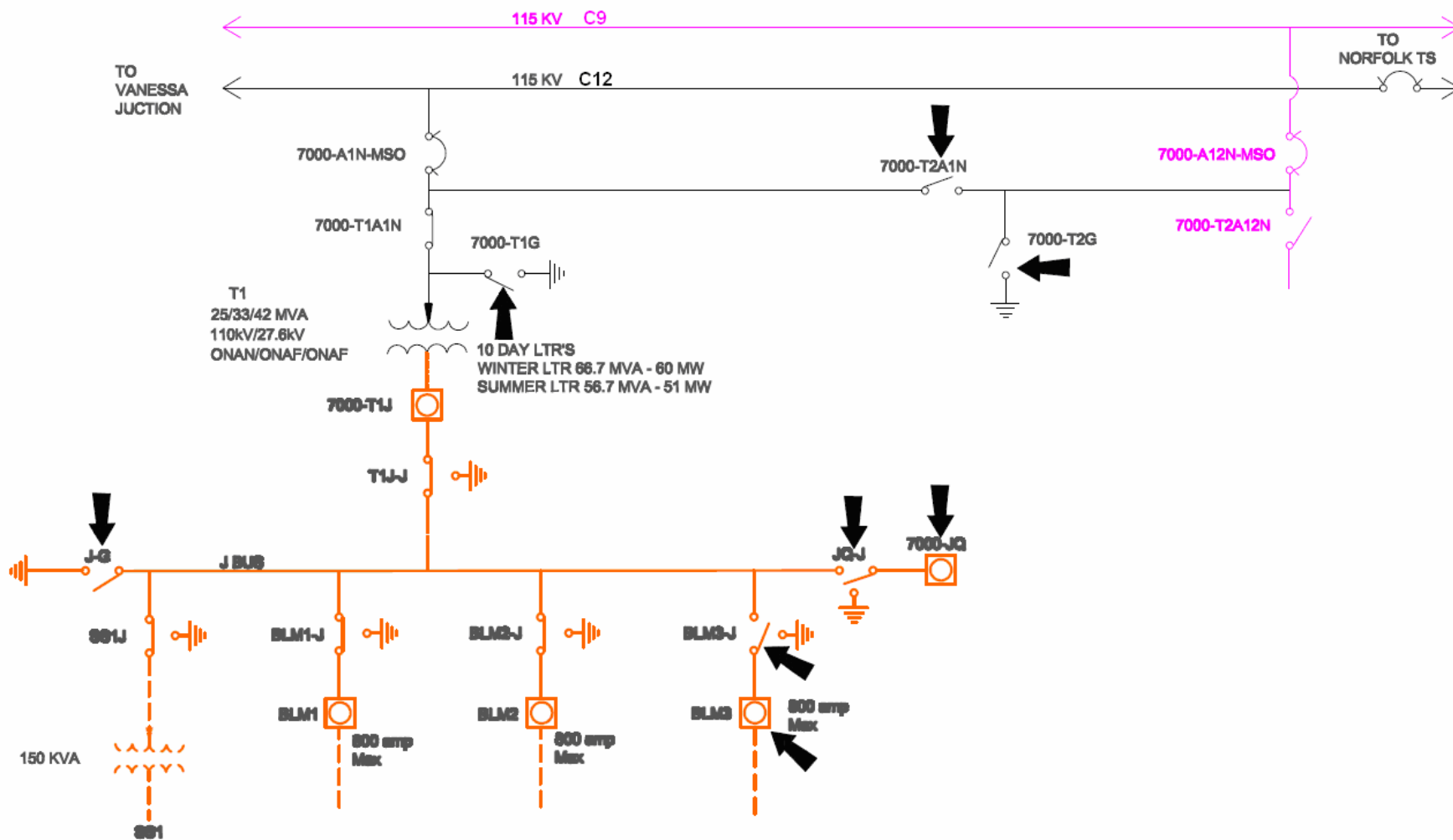


Figure 3: Future Configuration

1

IEMO Connection Assessment and Approval Process

2

CONNECTION ASSESSMENT & APPROVAL PROCESS

Connection Assessment Report for

***Norfolk TS Transformer Replacement
CAA ID 2002-EX058***

***Installation of the Second 115 kV Circuit from Vanessa Jct. to
Norfolk TS
CAA ID 2002-EX070***

Connection Applicant: Hydro One Networks Inc.

Final Report

Prepared by
Long Term Forecasts & Assessments Department &
Consistent Information Set Department

November 12, 2002

Norfolk TS Transformer Replacements
115 kV Circuit from Vanessa jct. to Norfolk TS

Disclaimers

IMO

This report has been prepared solely for the purpose of assessing, on a preliminary basis, whether the connection applicant's proposed connection with the IMO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether a System Impact Assessment of the proposed connection should be conducted under Chapter 4, section 6 of the *Market Rules*. This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant, Hydro One and the IMO in accordance with Chapter 4, section 6 of the *Market Rules*. The IMO assumes no responsibility to any third party for any use which it makes of this report. Any liability which the IMO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the *Market Rules*. In the event that the IMO provides a draft of this report to the connection applicant, you must be aware that the IMO may revise drafts of this report at any time in its sole discretion without notice to you. Although the IMO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that it is using the most recent version of this report.

1.0 Project Description

Presently Norfolk TS is equipped with two 110-28.4 kV transformers rated 33.6/56 MVA and is supplied via a single 115 kV circuit line, A1N, emanating from Vanessa jct..

Hydro One Network Inc. has submitted two separate connection assessment applications for installation of:

- (A) Two 110-28.4 kV, 50/66.6/83.3 MVA transformers at Norfolk TS which will replace the existing lower rated transformers (CAA ID 20020-EX058), and
- (B) One second 115 kV circuit between Vanessa jct. to Norfolk TS, which will provide for a dual supply to Norfolk TS (CAA ID 2002-EX070) by completing the 115 kV double circuit line A8N/A11N.

Since the two connection applications involve the replacement and addition of adjacent transmission facilities, the IMO has decided to cluster the projects and performed a single assessment.

However, because these are separate plans individual Notifications of Approval will be issued for each project, as requested by the applicant.

CAA ID 2002-EX058

The new transformers are identical and each has the following specifications:

- Transformation from 110kV to 28.4 kV,
- Capability 50/66.6/83.3 MVA,
- The 10 day summer LTR will be about 105 MVA,
- High voltage winding configuration will be wye,
- Low voltage winding configuration will be zigzag with 1.5 ohms neutral grounding reactor,
- Transformer impedance, 12.5% on 50 MVA
- Under-load tap changers will be place on the high voltage side with a range to be determined,
- Surge arresters will be installed on each side of both transformers.

The existing station switching facilities on the high voltage and low voltage sides and the high voltage connection facilities to the *IMO-controlled grid* are to be retained. The existing LV breakers have an interrupting capability of 20.9 kA.

The scheduled in service date for this project is Q4 2003.

A schematic diagram of the existing transformer station together with the proposed facilities is shown in Figure 1.

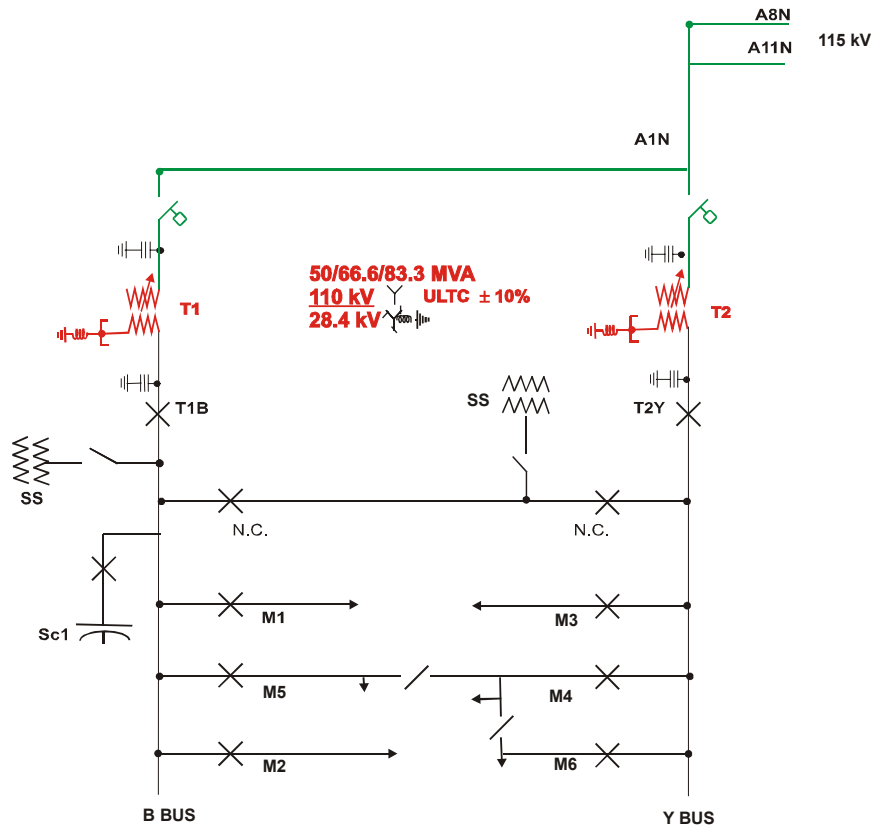


FIGURE 1. Norfolk TS - Proposed New Transformer Facilities

CAA ID 2002-EX070

The new 12 km, 115 kV circuit will be installed on the existing double circuit wood pole structures which presently carry the 115 kV circuit A1N from Vanessa jct. to Norfolk TS,

The existing 115 kV circuit, A1N, was upgraded in 1999. During the upgrade work, a fourth conductor was installed to ensure the continued power supply to Norfolk TS. This conductor is now idle and it will be used as one phase in the new circuit.

Hydro One indicated that presently, the maximum summer continuous current rating of A1N is 475 A (93 MVA). Under the proposed project the new circuit will be built to a summer continuous rating of 575 A (112 MVA) and the existing line will also be re-tensioned to achieve the same summer continuous rating.

The existing 115 kV tap into Norfolk TS will be modified to provide for the dual connection of the transformer station.

The scheduled in service date for this project is Q4 2003.

If possible, the connection of the new circuit will be coordinated with the commissioning of the new 115/230 kV Caledonia autotransformers (CAA ID 2002-056).

Hydro One has indicated that protective relaying, supervisory control and teleprotection are to be provided as required by the Transmission System Code.

Figure 2 represents a schematic diagram of the proposed modification to transformer connections.

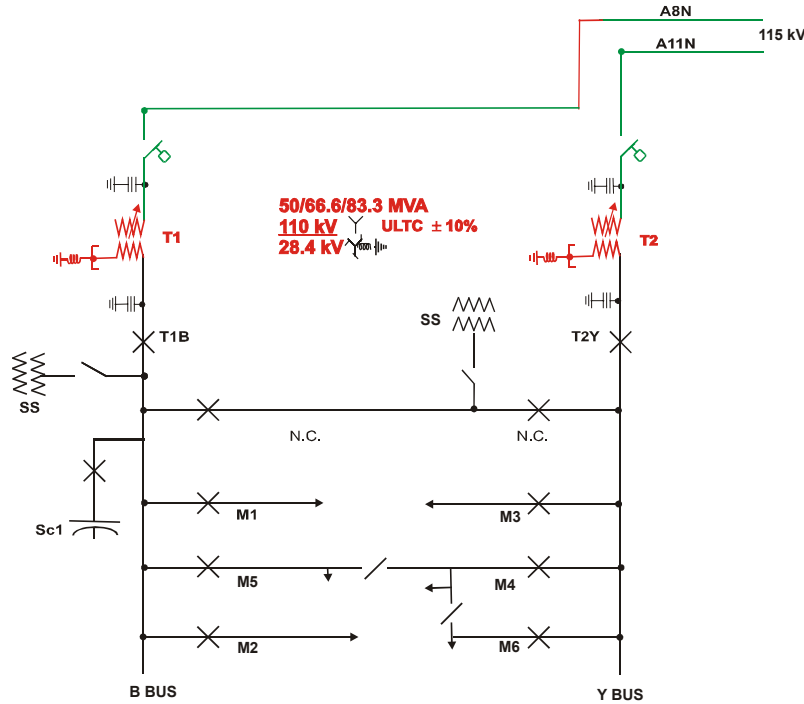


FIGURE 2. Norfolk TS - With New 115 kV Circuit

2.0 Connection Assessment

2.1 Underfrequency Load Shedding Requirements

The *Market Rules* (Chapter 5 section 10.4) require that each distributor and connected wholesale customer, in conjunction with the relevant transmitter, make arrangements to enable the automatic disconnection of up to 35% of its peak demand for conditions of system under-frequency. To meet this requirement an underfrequency load shedding (UFLS) scheme must be available at the station. The single line diagram does not show the presence of the UFLS scheme.

2.2 Voltage Reduction Facilities Requirements

The *Market Rules* (Chapter 4 Appendix 4.3) requires that distributors connected to the *IMO controlled grid* with directly connected load facilities of aggregated rating of 20 MVA or more

and the capability to regulate distribution voltage under load, shall install and maintain facilities to provide *voltage reduction capability* to achieve load reduction during periods when supply resources are limited. *Voltage reduction capability* represents the capability of reducing demand by lowering the customer voltage by 3% and 5% and having the controlling authority to be able to effect the voltage reduction within five minutes of receipt of the direction from the IMO.

2.3 On-line Monitoring

The *Market Rules* (Chapter 4 section 7.4) require that each transmitter shall provide the IMO on a continual basis with on-line monitored quantities as specified in Appendix 4.16. It is required that Hydro One Networks Inc. install all the equipment needed to monitor the information required by the IMO on a continuous basis.

The existing on-line monitoring facilities at Norfolk TS meet the requirements of the IMO and are to be retained after the installation of the new transformers.

The on-line monitoring requirements that were established for the reconnection of A8N/A11N to the new Caledonia TS should be sufficient to provide all the information required by the IMO, when the installation of the double circuit line to Norfolk TS is complete.

2.4 Power Factor

The *Market Rules* require that wholesale customers and distributors connected to the IMO-controlled grid shall operate at a power factor within the range 90% lagging to 90% leading as measured at the *defined meter point*.

Norfolk TS is equipped one low voltage shunt capacitor rated at 10.8 Mvar.

Hydro One is required to install sufficient reactive power compensation at the station to ensure that the load meets the power factor requirements of the *Market Rules*.

2.5 Effect on System Reliability

CAA ID 2002-EX058

The replacement of the Norfolk 110/28.4 kV transformers with higher rated units was initiated because of concerns related to the maintenance and reliability of the aging transformer units.

A cursory analysis which assumed a load growth rate of 1.0% per year, showed that the new transformers spare capacity, (105 MVA-87MVA=18MVA), could accommodate the station peak load increase for the next twenty years.

The short circuit studies that were performed for Caledonia TS connection assessment indicated that with the Norfolk load connected to the new Caledonia autotransformers, the maximum symmetrical fault level at Norfolk 27.6 kV bus will be about 8.2 kA. This value is well within the fault interrupting capability of the existing LV breakers that are rated at 20.8 kA.

The station equipment that will be retained, including disconnect switches and bus work must be adequately rated to match the continuous and limited time ratings of the new transformers.

CAA ID 2002-EX070

With the present arrangement the total Norfolk TS load supply relies on a 12 km single 115 kV circuit from Vanessa jct. to Norfolk TS. Any contingency associated with this circuit would result in a supply interruption to the entire Norfolk TS load. This arrangement would not comply with the proposed IMO load supply guidelines which state that for a single circuit line loss, the supply to a load between 76 and 150 MW should be restorable by switching.

With the addition of the second 115 kV circuits the exposure to load interruptions due to the loss of a single transmission element will be reduced considerably. The level of load supply reliability will improve because for any contingency involving one of the 115 kV circuits the remaining one will be capable to carry the entire Norfolk station peak load.

Table 1. Rating of 115 kV circuits

Circuit, Sections (Conductor)		Max Op. Temp. (°C)	Thermal ratings	
			Continuous (30°C ambient) operating at 93°C Or op. Temp Amps MVA @113 kV	Emergency Continuous at Max Op Temp or 127 C Amps, MVA @113 kV
A8N A11N	Caledonia x Hartford	93°C	550 A 108 MVA	550 A 108 MVA
	Hartford x Vanessa	127°C	850 A 166 MVA	1090 A 213 MVA
A1N existing	Vanessa x Norfolk	80°C	475 A 93 MVA	N/A
New Double	Vanessa x Norfolk	93°C	575 112 MVA	N/A*

* To be provided when the new facilities are registered.

After the installation of the new Caledonia autotransformers and the second 115 kV circuit between Vanessa jct. and Norfolk TS, this load will be supplied via a 115 kV double circuit line with rated at 575 A for continuous summer operation.

The continuous thermal rating of one of the 115 kV circuits from Caledonia to Norfolk is sufficient to accommodate the continued supply of the Norfolk TS peak load, in the event of permanent loss of the companion circuit.

3. Conclusions and Requirements

Hydro One Networks Inc. is required to follow the facility registration process and provide complete equipment rating information for all the new or modified facilities that are to be installed under the two projects.

CAA ID 2002-EX058

This assessment concluded that the proposed 110/28.4 kV transformer replacement project:

- will not have an adverse impact on the security and adequacy of the *IMO-controlled grid* and

- will increase the reliability of customer load supply and provide spare station capacity to accommodate the load growth for the next twenty years approximately.

Hydro One Networks Inc. is required to install sufficient reactive power compensation at Norfolk TS to ensure that the load meets the power factor requirements of the *Market Rules*.

Hydro One Networks Inc. is required to ensure that the new transformers' ULTC capability meets the Market Rules voltage reduction requirements of 3% to 5%.

CAA ID 2002-EX070

This assessment concluded that the proposed addition of the second 115 kV circuit between Vanessa and Norfolk TS and the upgrading of the existing circuit will result in an improved level of load supply reliability to the Norfolk TS connected customers.

Hydro One Networks Inc. is required to provide protective relaying, supervisory control and teleprotection are as specified by the Transmission System Code.

4. Notification of Approval

It is thus recommended that notification of approval be granted, subject to the implementation of the requirements listed in section 3.0, for the installation of the following transmission facilities:

- (A) Two new 110-28.4 kV, 50/66.6/83.3 MVA transformers at Norfolk TS (CAA ID 2002-EX058), and
- (B) A second 115 kV circuit between Vanessa jct. to Norfolk TS (CAA ID 2002-EX070).

Filed: March 13, 2008
EB-2008-0023
Exhibit B
Tab 6
Schedule 4
Page 1 of 4

1

2

LOAD FORECAST AND CAPACITY ANALYSIS

Norfolk Power Inc. and Hydro One Distribution - Load & Capacity Analysis

NP= Norfolk Power, H1DX= Hydro One Distribution

						Forecast:										
Norfolk TS T1/T2				2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Norfolk Power- MW				30.0	30.7	30.9	31.4	31.8	32.3	32.8	33.3	33.8	34.3	34.8	35.3	
	Annual growth rate (%)				2.3	0.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
H1 DX- MW				27.2	24.0	28.0	28.3	28.7	29.1	29.4	29.8	30.1	30.5	30.9	31.2	
	Annual growth rate (%)				-11.7	16.5	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	
Total Non-coincident (MW)				57.2	54.7	58.9	59.7	60.5	61.4	62.2	63.1	63.9	64.8	65.7	66.6	
Coincidence Factor				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Total Coincident (MW)				57.2	54.7	58.9	59.7	60.5	61.4	62.2	63.1	63.9	64.8	65.7	66.6	
MVAR Factor				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Capacitors (TS) (MVAR)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TS MVAR				27.7	26.5	28.5	28.9	29.3	29.7	30.1	30.5	30.9	31.4	31.8	32.2	
TS Peak (MVA)				63.5	60.8	65.4	66.3	67.2	68.2	69.1	70.1	71.0	72.0	73.0	73.9	
	as % of TS LTR			62.1	59.4	63.9	64.8	65.7	66.6	67.6	68.5	69.4	70.4	71.3	72.3	
	Annual growth rate (%)				-4.3	7.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	
TS LTR				102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	
TS Capacity - Peak load (MVA)				38.8	41.5	36.9	36.0	35.1	34.1	33.2	32.2	31.3	30.3	29.3	28.4	

Transformer 10-D LTR after transformer replacement

102.3 MVA

92.1 MW

A1N ampacity prior to 2nd line and upgrade

95.6 MVA

86.0 MW

Bloomsburg MTS				2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Norfolk Power- MW				22.0	26.3	24.9	26.0	26.3	27.7	29.1	30.4	30.8	31.2	31.5	31.9	
	Annual growth rate (%)			1.4	19.5	-5.5	4.6	1.3	5.1	4.9	4.7	1.2	1.2	1.2	1.2	
Total Non-coincident (MW)				22.0	26.3	24.9	26.0	26.3	27.7	29.1	30.4	30.8	31.2	31.5	31.9	
Coincidence Factor				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Total Coincident (MW)				22.0	26.3	24.9	26.0	26.3	27.7	29.1	30.4	30.8	31.2	31.5	31.9	
MVAR Factor				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Capacitors (TS) (MVAR)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TS MVAR				10.6	12.7	12.0	12.6	12.8	13.4	14.1	14.7	14.9	15.1	15.3	15.4	
MTS Peak (MVA)				24.4	29.2	27.6	28.9	29.3	30.8	32.3	33.8	34.2	34.6	35.0	35.5	
	as % of TS LTR			45.1	53.9	51.0	53.3	54.0	56.8	59.6	62.3	63.1	63.9	64.6	65.4	
MTS 10 D LTR (s)				54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2	
MTS Capacity - Peak load (MVA)				29.8	25.0	26.6	25.3	24.9	23.4	21.9	20.4	20.0	19.6	19.2	18.7	

Forecast:

			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Load (Total) -A1N Line														
NP (Norfolk TS)- MW			30.0	30.7	30.9	31.4	31.8	32.3	32.8	33.3	33.8	34.3	34.8	35.3
NP (Bloomberg MTS)- MW			22.0	26.3	24.9	26.0	26.3	27.7	29.1	30.4	30.8	31.2	31.5	31.9
NP (Norfolk TS+ Bloomberg TS)- MW			52.0	57.0	55.8	57.4	58.2	60.0	61.9	63.7	64.6	65.5	66.3	67.3
NP(Norfolk TS+ Bloomberg TS)- MVA			57.8	63.3	62.0	63.7	64.6	66.7	68.7	70.8	71.7	72.7	73.7	74.7
H1 DX (Norfolk TS)- MW			27.2	24.0	28.0	28.3	28.7	29.1	29.4	29.8	30.1	30.5	30.9	31.2
H1-DX (Norfolk TS) MVA			30.2	26.7	31.1	31.5	31.9	32.3	32.7	33.1	33.5	33.9	34.3	34.7
Total (Norfolk TS+ Bloomberg MTS) -MW			79.2	81.0	83.7	85.7	86.9	89.1	91.3	93.5	94.7	96.0	97.2	98.5
Total(Norfolk TS+ Bloomberg MTS)-MVA			88.0	90.0	93.0	95.2	96.5	99.0	101.4	103.9	105.2	106.6	108.0	109.4
NP load % of Total			0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
H1DX laod % of Total			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

A1N Existing Capacity (MVA)			95.6	MVA	86.0	MW								
A1N Capacity (MVA)			95.6	95.6	95.6	95.6	95.6	95.6	95.6	95.6	95.6	95.6	95.6	95.6
A1N Capacity (MW)			86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1	86.1
NP (Assigned cap)			62.8	67.3	63.7	64.0	64.0	64.4	64.8	65.1	65.2	65.2	65.2	65.3
H1 Dx			32.8	28.3	31.9	31.6	31.6	31.2	30.8	30.5	30.4	30.4	30.4	30.3

Incremental Load (relative to existing A1N capacity) MVA

Nofolk Power Load-LTR			-5.0	-3.9	-1.7	-0.3	0.6	2.3	3.9	5.6	6.6	7.5	8.5	9.4
H1 Dx Load-LTR			-2.6	-1.7	-0.9	-0.1	0.3	1.1	1.9	2.6	3.1	3.5	3.9	4.4
A1N Load-LTR			-7.6	-5.6	-2.6	-0.4	0.9	3.4	5.8	8.3	9.6	11.0	12.4	13.8

Incremental Load (relative to existing capacity) peak MW

Nofolk Power Load-MW			-4.5	-3.6	-1.5	-0.2	0.6	2.0	3.5	5.1	5.9	6.8	7.6	8.5
H1 Dx Load-MW			-2.4	-1.5	-0.8	-0.1	0.3	1.0	1.7	2.4	2.8	3.2	3.5	3.9
Total A1N			-6.9	-5.0	-2.3	-0.4	0.8	3.0	5.2	7.4	8.7	9.9	11.2	12.4

After Upgrade and add 2nd line

129.0 MVA

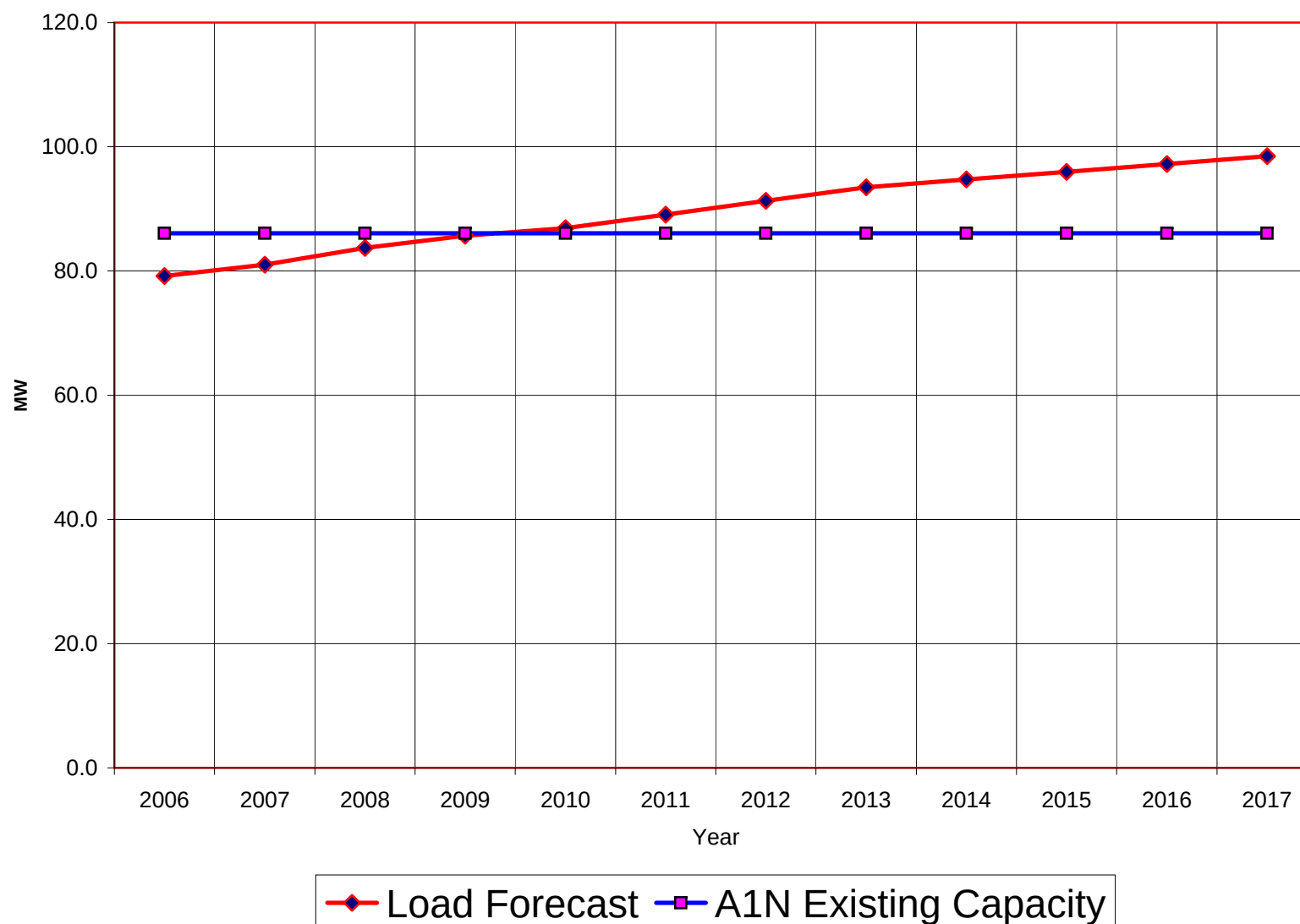
116.1 MW

A1N LTR (MVA)			95.6	95.6	95.6	129.0	129.0	129.0	129.0	129.0	129.0	129.0	129.0	129.0
Nofolk Power allocation	0.7		66.9	66.9	66.9	90.3	90.3	90.3	90.3	90.3	90.3	90.3	90.3	90.3
H1 Dx allocation	0.3		28.7	28.7	28.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7
Nofolk Power Load-LTR		MVA	-9.1	-3.6	-5.0	-26.6	-25.7	-23.6	-21.6	-19.5	-18.6	-17.6	-16.6	-15.6
H1 Dx Load-LTR		MVA	-1.5	-4.7	-0.7	-10.4	-10.0	-9.6	-9.3	-8.9	-8.6	-8.2	-7.8	-7.5
A1N Load-LTR		MVA	-10.7	-8.3	-5.7	-36.9	-35.7	-33.3	-30.9	-28.4	-27.1	-25.8	-24.4	-23.1

Incremental Capacity by installing higher rated circuit (650 A)

			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
C9	MVA					33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4
Nofolk Power allocation	0.7					23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
H1 Dx allocation	0.3					10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
C9	MW					30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1	30.1
Nofolk Power allocation	0.7					21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
H1 Dx allocation	0.3					9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
NEW CAPACITY(129 MVA) BASED ON 650 A,@115 KV						129	MVA		116.1	MW				

Vanessa Junction x Norfolk TS Line (A1N) Load Forecast and Existing Capacity



STAKEHOLDER AND COMMUNITY CONSULTATION

1.0 Introduction

Hydro One identified and notified stakeholders who may have an interest in the proposed transmission line upgrade. This exhibit describes Hydro One's communication process and input received to date. Hydro One will address stakeholder issues to ensure any concerns regarding the proposed transmission facilities are addressed, and that municipal staff, elected officials, as well as relevant provincial government ministries and agencies are kept informed of the project status. At the construction phase of the project, Hydro One staff will deal directly with individual landowners whose properties are affected by the construction of the line.

2.0 Objectives and Consultation Process

The intent of the process is to inform stakeholders and the general public about the project, identify any issues, and develop plans that address those issues, where appropriate. Given the nature of the project, which is limited largely to the use of existing towers with modifications, it is expected that any issues will be addressed directly with property owners prior to the start of construction.

2.2 Communication with Elected Officials

The initial step in the consultation process involved meeting with Norfolk Power to identify key issues and other potentially affected stakeholders. On August 23, 2007, Hydro One provided an overview of the project to the Norfolk Power Board, whose members include the Mayor of Norfolk, Dennis Travale, and a local councillor, John Wells. The mayor was supportive of the project and indicated that once the project was finalized, the municipality would work with Hydro One to jointly announce the project.

1 Following the Hydro One presentation to the Norfolk Power Board of Directors, the CAO
2 of Norfolk County was contacted, and Hydro One offered to conduct a briefing for all
3 council. Since the mayor and a council member sit on the Board, a presentation was not
4 requested by the CAO.

5 6 **2.2 First Nations Notification**

7 The transmission corridor for this project is located on private property. Hydro One has
8 easements rights which are sufficient to undertake this project. Hydro One has contacted
9 the Ministry of Aboriginal Affairs and been advised that while the Ministry is not aware
10 of any First Nation land claims that may be impacted by this project, there are a number
11 of Aboriginal communities in the area that may have an interest. As such, Hydro One has
12 informed the following First Nations:

- 13 • Six Nations of the Grand River
- 14 • Mississaugas of the New Credit
- 15 • Oneida Nation of the Thames
- 16 • Chippewas of the Thames

17 about the project in writing on January 31, 2008 (Attachment A) and will address any
18 issues raised.

19 20 **2.3 Public Notifications**

21
22 Hydro One published a newspaper ad in the *Simcoe Recorder* on January 18, 2008
23 (Attachment B), to provide notice and details on the project, as well as to provide a
24 Hydro One contact name and project website information. The public was encouraged to
25 contact Hydro One with any questions or concerns.

26
27 Norfolk County's mayor, council and staff, the MPP and the MP representing the
28 affected area were notified in writing on January 11, 2008 (Attachment C) about the

1 project and provided advance copies of the newspaper advertisement. To date, no issues
2 have been raised by these stakeholders.

3
4 A public project information page was created on the Hydro One Networks web site
5 www.HydroOneNetworks.com/newprojects to further facilitate public access to
6 information about the project and communication with Hydro One staff. This site
7 provided information about the project and timeline, as well as details on the
8 Environmental Screening process. A copy of the initial Environmental Assessment Study
9 for this project, submitted in 1999 is included on this website. The site will be kept up to
10 date as new information becomes available. To date, no issues have been raised.

ATTACHMENT A

1
2
3
4
5
6
7
8
9

Copy of letter to:

- Six Nations of the Grand River
- Mississaugas of the New Credit First Nation
- Oneida Nation of the Thames
- Chippewas of the Thames

Hydro One Networks Inc.

483 Bay Street TCT12
Toronto, ON M5G 1X6
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Tel: 416-345-6597
Fax: 416-345-6919
Cell: 416-525-1051



Brian McCormick

Manager, Environmental Services and Approvals

January 31, 2008

Chief William Montour,
Six Nations of the Grand River
PO Box 5000
Ohsweken, ON NOA 1MO

RE: Transmission Line Upgrade, Vanessa Jct X Norfolk TS

Dear Chief William Montour:

This letter is to inform you that Hydro One Networks Inc. (Hydro One) plans to upgrade the wood pole transmission line in Norfolk County, which parallels Highway 24 and starts south of Regional Road 19 and ends at our Norfolk Transformer Station on Stone Quarry Road. A map of the line location has been attached.

A Class Environmental Assessment was completed in 1999 for this project. It was recognized in the study that only one circuit would be strung at the time, with the second one to be strung at a future date. There is now a requirement for the second circuit. The proposed undertaking involves the addition of two new arms on each of the existing wood poles along with the associated required hardware. The existing circuit will be re-strung and the second circuit will be strung. There will be new structures added at Vanessa Jct. and in the vicinity of Norfolk TS.

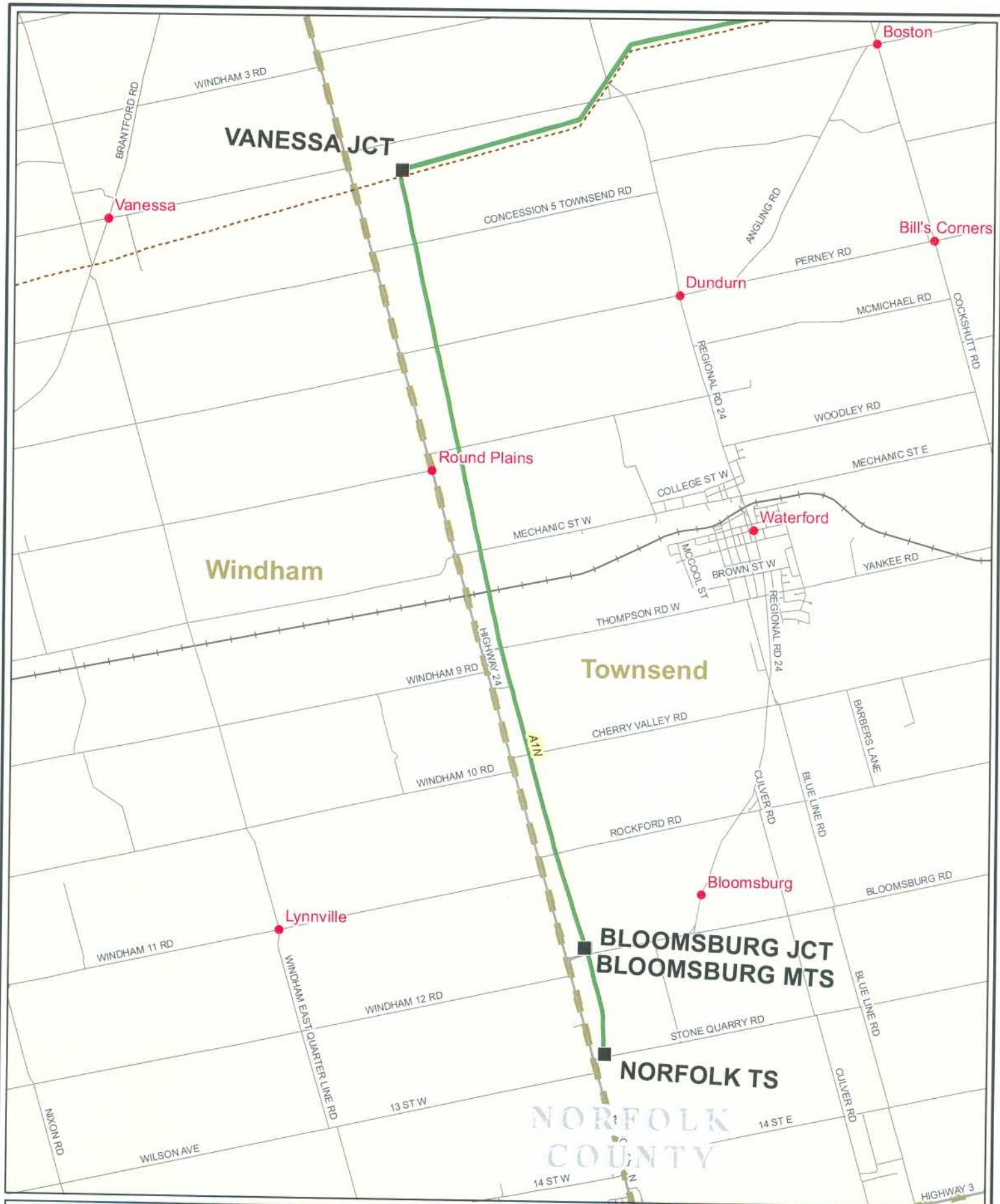
A Public Information Centre is not planned because the impact of the project is anticipated to be minor. This project requires "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the OEB Act. Construction will begin in the fall of 2008, and it is planned to have the new circuit in service as early as spring 2009, subject to the approvals process. All activities will follow Hydro One's *Environmental Guidelines for Construction and Maintenance of Transmission Facilities*.

If you have any questions regarding this project please feel free to contact me at (416) 345-6597. Information regarding this project is also available on our website at www.HydroOneNetworks.com/newprojects

Sincerely,

A handwritten signature in black ink, appearing to read "Brian McCormick", written over a circular scribble.

Brian McCormick
Manager Environmental Services and Approvals
Cc. Rob Thomson, Hydro One
Att.



**Transmission Line Upgrade -
Vanessa Junction (JCT) to
Norfolk Station (TS)**



- Place Name
- Station

- Transmission Line
- 500 kV
- 230 kV
- 115 kV

- Expressway
- Highway
- Major Road
- Railway

- Municipal Boundary
- Townships



1:62,000

0 0.5 1 km

Produced by Inerg LP GIS Service
Date: 24 July 2007
File #: Map07-70_PP (Letter Size)

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Cell: 416-525-1051

Brian McCormick
Manager, Environmental Services and Approvals

January 31, 2008



Chief Bryan LaForme,
Mississaugas of the New Credit First Nation
2789 Mississauga Rd., RR # 6
Hagersville, ON. NOA 1110

RE: Transmission Line Upgrade, Vanessa Jct X Norfolk TS

Dear Chief Bryan LaForme:

This letter is to inform you that Hydro One Networks Inc. (Hydro One) plans to upgrade the wood pole transmission line in Norfolk County, which parallels Highway 24 and starts south of Regional Road 19 and ends at our Norfolk Transformer Station on Stone Quarry Road. A map of the line location has been attached.

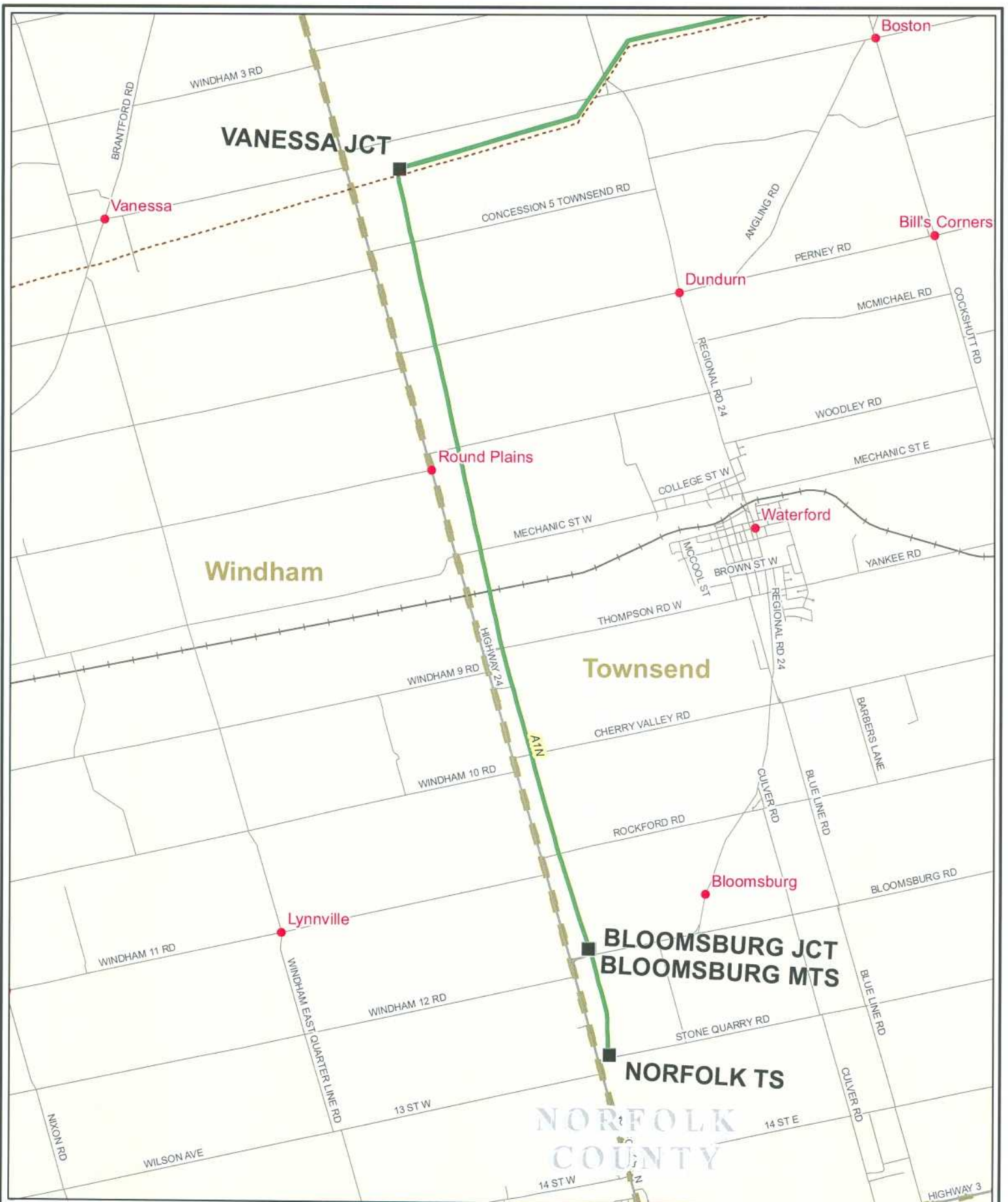
A Class Environmental Assessment was completed in 1999 for this project. It was recognized in the study that only one circuit would be strung at the time, with the second one to be strung at a future date. There is now a requirement for the second circuit. The proposed undertaking involves the addition of two new arms on each of the existing wood poles along with the associated required hardware. The existing circuit will be re-strung and the second circuit will be strung. There will be new structures added at Vanessa Jct. and in the vicinity of Norfolk TS.

A Public Information Centre is not planned because the impact of the project is anticipated to be minor. This project requires "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the OEB Act. Construction will begin in the fall of 2008, and it is planned to have the new circuit in service as early as spring 2009, subject to the approvals process. All activities will follow Hydro One's *Environmental Guidelines for Construction and Maintenance of Transmission Facilities*.

If you have any questions regarding this project please feel free to contact me at (416) 345-6597. Information regarding this project is also available on our website at www.HydroOneNetworks.com/newprojects

Sincerely,


Brian McCormick
Manager Environmental Services and Approvals
Cc: Rob Thomson, Hydro One
Att.



**Transmission Line Upgrade -
Vanessa Junction (JCT) to
Norfolk Station (TS)**



● Place Name
■ Station

Transmission Line
— 500 kV
— 230 kV
— 115 kV

Expressway
— Highway
— Major Road
— Railway

Municipal Boundary
Townships

1:62,000

0 0.5 1 km



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Date: July 2007
File #: Map07-70_PP_1(LetterSize)
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Hydro One Networks Inc.

483 Bay Street TCT12
Toronto, ON M5G 1X6
mccormick.bj@hydroone.com

Tel: 416-345-6597
Fax: 416-345-6919
Cell: 416-525-1051

Brian McCormick

Manager, Environmental Services and Approvals

January 31, 2008



Chief Randall Philips,
Oneida Nation of the Thames
2212 Elm Avenue
Southworld, ON NOL 2G0

RE: Transmission Line Upgrade, Vanessa Jct X Norfolk TS

Dear Chief Randall Philips:

This letter is to inform you that Hydro One Networks Inc. (Hydro One) plans to upgrade the wood pole transmission line in Norfolk County, which parallels Highway 24 and starts south of Regional Road 19 and ends at our Norfolk Transformer Station on Stone Quarry Road. A map of the line location has been attached.

A Class Environmental Assessment was completed in 1999 for this project. It was recognized in the study that only one circuit would be strung at the time, with the second one to be strung at a future date. There is now a requirement for the second circuit. The proposed undertaking involves the addition of two new arms on each of the existing wood poles along with the associated required hardware. The existing circuit will be re-strung and the second circuit will be strung. There will be new structures added at Vanessa Jct. and in the vicinity of Norfolk TS.

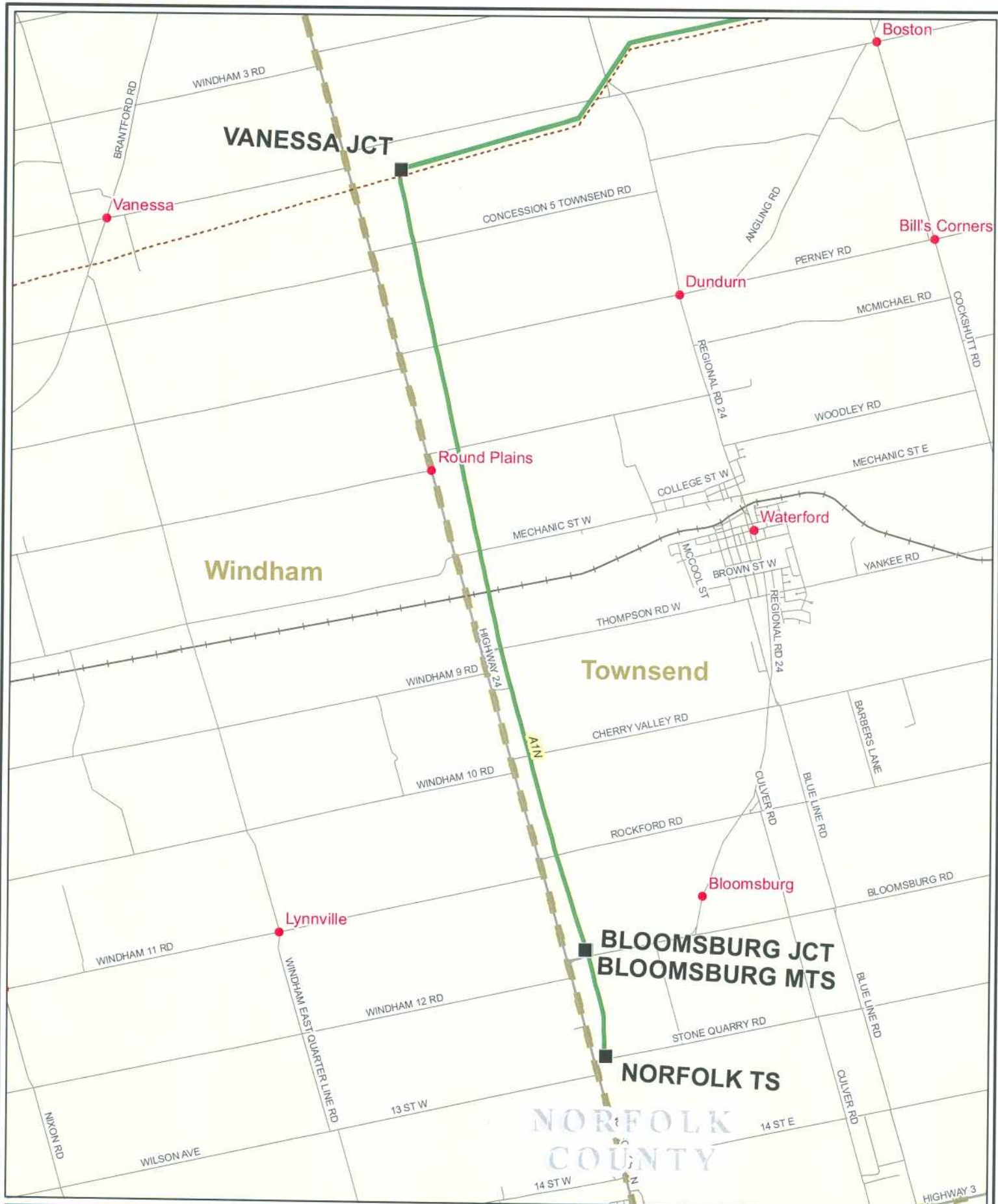
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Sincerely,

A handwritten signature in black ink, appearing to read "Brian McCormick", written over a circular scribble.

Brian McCormick
Manager Environmental Services and Approvals
Cc. Rob Thomson, Hydro One
Att.



**Transmission Line Upgrade -
Vanessa Junction (JCT) to
Norfolk Station (TS)**



- Place Name
- Station

- Transmission Line
- 500 kV
- 230 kV
- 115 kV

- Expressway
- Highway
- Major Road
- Railway

- Municipal Boundary
- Townships

1:62,000

0 0.5 1 km



Produced by: Inerg LP GIS Services
Date: July 2007
File #: Map017-75_PDF_LetterScale
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Cell: 416-525-1051

Brian McCormick

Manager, Environmental Services and Approvals

January 31, 2008



Chief Kelly Riley
Chippewas of the Thames
RR# 1
Muncey, ON. NOL 1YO

RE: Transmission Line Upgrade, Vanessa Jct X Norfolk TS

Dear Chief Kelly Riley

This letter is to inform you that Hydro One Networks Inc. (Hydro One) plans to upgrade the wood pole transmission line in Norfolk County, which parallels Highway 24 and starts south of Regional Road 19 and ends at our Norfolk Transformer Station on Stone Quarry Road. A map of the line location has been attached.

A Class Environmental Assessment was completed in 1999 for this project. It was recognized in the study that only one circuit would be strung at the time, with the second one to be strung at a future date. There is now a requirement for the second circuit. The proposed undertaking involves the addition of two new arms on each of the existing wood poles along with the associated required hardware. The existing circuit will be re-strung and the second circuit will be strung. There will be new structures added at Vanessa Jct. and in the vicinity of Norfolk TS.

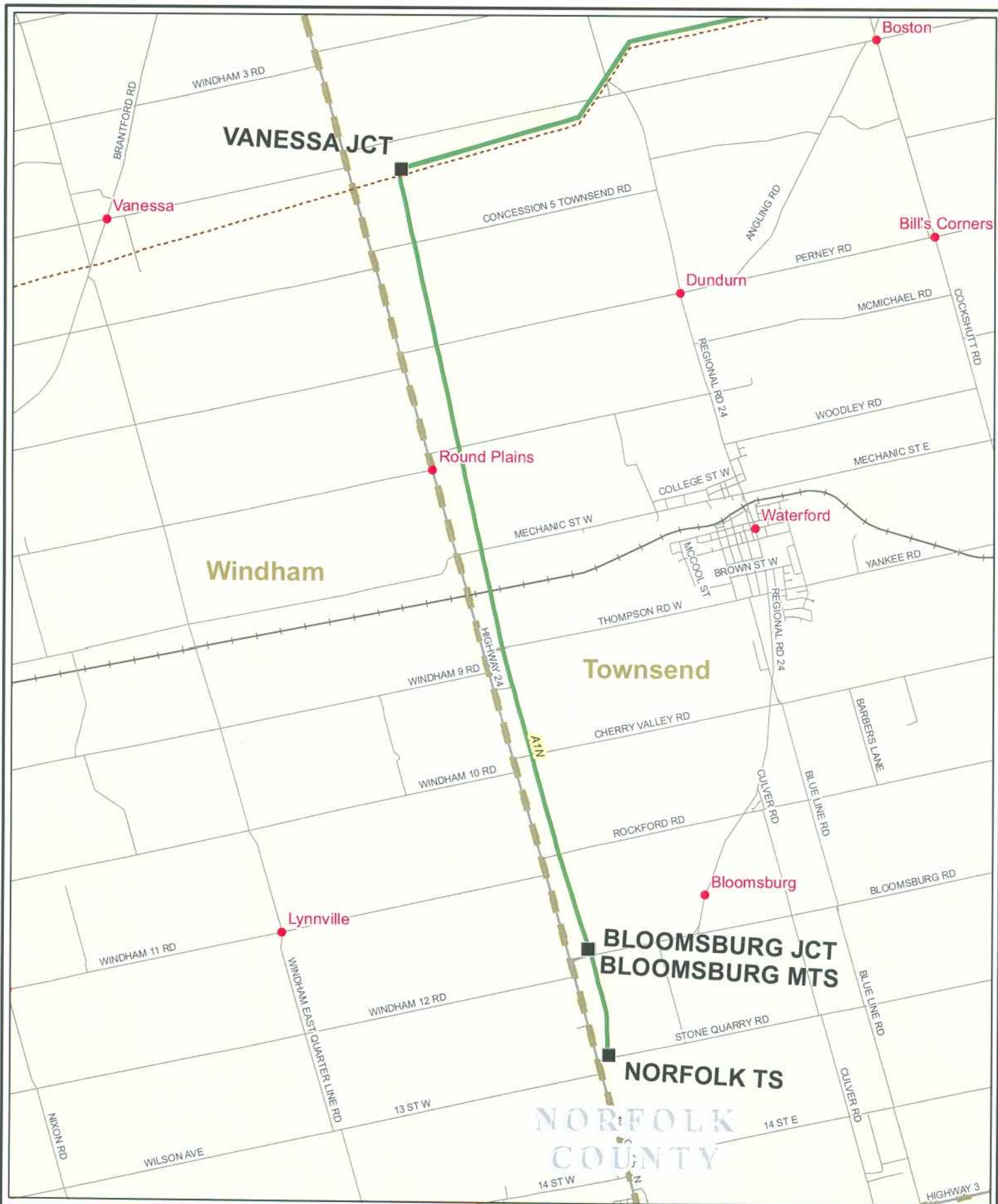
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If you have any questions regarding this project please feel free to contact me at (416) 345-6597. Information regarding this project is also available on our website at www.HydroOneNetworks.com/newprojects

Sincerely,

A handwritten signature in black ink, appearing to be "B. McCormick", written over a circular stamp or seal.

Brian McCormick
Manager Environmental Services and Approvals
Cc: Rob Thomson, Hydro One
Att.



**Transmission Line Upgrade -
Vanessa Junction (JCT) to
Norfolk Station (TS)**



Place Name

Station

Transmission Line

500 kV

230 kV

115 kV

Expressway

Highway

Major Road

Railway

Municipal Boundary

Townships

1:62,000

0 0.5 1 km



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ATTACHMENT B

1

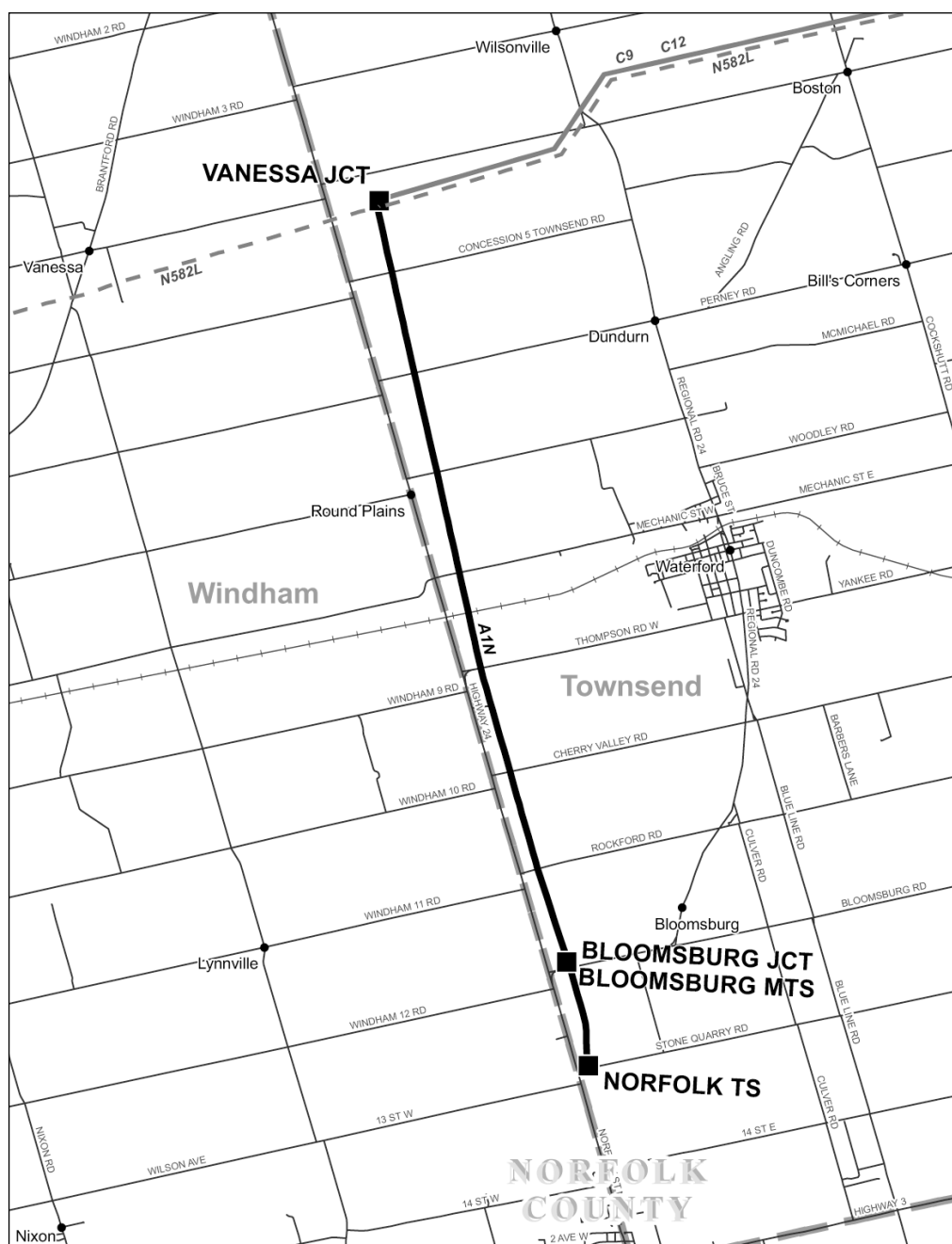
2

3 Copy of the Notice Published

4

TRANSMISSION LINE UPGRADE

Vanessa Junction to Norfolk Transformer Station Environmental Screening



Hydro One Networks is proposing to upgrade its 115 kV transmission line that currently runs from Vanessa Junction (Jct) to Norfolk Transformer Station (TS) in Norfolk County. The existing line is expected to reach capacity by 2009 and this upgrade is essential to maintain the long-term reliability of the electricity supply to this area.

The project involves replacing the existing 115 kV line with one that operates at a higher capacity, adding a second 115 kV line to the existing structures; installing new arms on the existing 89 pole structures and an additional 3 pole structures at Norfolk TS and 2 at Vanessa Jct.

An Environmental Study Report was completed and filed with the Ministry of the Environment in 1999, in accordance with the Environmental Assessment Act. This report is being updated with an Environmental Screening for this proposed undertaking. This project also requires a "Leave to Construct" approval from the Ontario Energy Board (OEB) under Section 92 of the OEB Act.

The need for this project has been identified by Hydro One and Norfolk Power, and it will facilitate the addition of a new transformer at Norfolk Power's Bloomsburg Municipal Transformer Station (MTS).

If approved, construction will begin in fall 2008. Hydro One will notify local residents in advance of construction activities. The planned in-service date for the new line is February 2009.

If you have any questions or would like more information please contact:

Marylena Stea

Hydro One Networks

Corporate Communications

Tel: 416-345-6799; or toll free at 1-877-345-5706

Email: Community.Relations@HydroOne.com

Visit our project website at www.HydroOneNetworks.Com/newprojects



Bringing Power to the People of Ontario™

ATTACHMENT C

1

2

3 Copy of letter to Norfolk County Mayor

4

Hydro One Networks Inc.

483 Bay Street
South Tower, 8th Floor
Toronto, Ontario M5G 2P5
www.HydroOne.com

Tel: 416.345.5892
Fax: 416.345.6984



Enza Cancilla

Manager
Public Affairs

MP Diane Finley
Simcoe Riding Office
70 Queensway West
Simcoe, ON N3Y 2M6

January 11, 2008

Dear Ms. Finley:

RE: Transmission Line Upgrade - Vanessa Junction (Jct) to Norfolk Transformer Station (TS)

Hydro One Networks is proposing to upgrade the 115 kV transmission line that runs from Vanessa Jct. located near the hamlet of Vanessa, to Norfolk TS, near the town of Waterford (see attached map). The existing line is expected to reach capacity by 2009 and this upgrade is essential to maintain the reliability of supply to this area. This important work has been endorsed by Norfolk Power and will also facilitate the addition of a second transformer at Norfolk Power's Bloomsburg Municipal Transformer Station (MTS).

The project would involve:

- ❖ replacing the existing 115 kV line conductor with one that operates at a higher capacity
- ❖ adding a second 115 kV circuit to the existing structures
- ❖ adding a second 115 kV line tap at Bloomsburg MTS that will be connected to the new 115 circuit; and
- ❖ installing two new structures at Norfolk TS, and three new structures at Vanessa Jct.

Two new arms at each of the 89 structures along the corridor would also be added, as well as supporting equipment and poles for tapping the new circuit to Bloomsburg MTS.

An Environmental Study Report was completed and filed with the Ministry of the Environment in 1999 (*Vanessa Junction to Norfolk TS 115kV Line Refurbishment*), in accordance with the *Environmental Assessment Act*. This report is being updated with an Environmental Screening for this proposed undertaking. This project also requires a "Leave to Construct" approval from the *Ontario Energy Board* (OEB) under Section 92 of the OEB Act. Hydro One is planning to file this application in February 2008.

If approved, construction would begin in fall 2008 Hydro One will notify affected residents in advance of any construction activities. A newspaper notice announcing this project will run in the *Simcoe Reformer* on Friday, January 18th. A copy of the notice is attached, for your information.

Please do not hesitate to contact me at 416-345-5892 if you require further information or Marylena Stea, Community Relations Officer at 1-877-345-6799; or by email at Marylena.Stea@HydroOne.com.

Sincerely,

Enza Cancilla
Manager, Public Affairs

Enc

LAND MATTERS

1.0 DESCRIPTION OF LAND REQUIRED

The Norfolk County proposed transmission facilities will include 12 km of new 115 kV single-circuit line on the existing 115 kV overhead transmission line right-of-way between the existing Vanessa Junction to the existing Norfolk Transformer Station. The existing corridor running from the Vanessa Junction to Norfolk TS is a combination of:

- provincially owned property segments held under title to the Ministry of Public Infrastructure and Renewal, and managed by the Ontario Realty Corporation
- easement rights on private properties
- municipal road corridors
- Hydro One-owned land at Norfolk Transformer Station

The proposed transmission line facilities will be accommodated largely by land rights Hydro One has secured along the existing corridor. These rights consist of the existing easement rights Hydro One enjoys on all of the provincially-owned corridor lands, as well as its existing permanent easements rights on private property.

2.0 DESCRIPTION OF LAND RIGHTS

The existing transmission line corridor crosses approximately 30 privately-owned properties. The transmission line right-of-way crosses the Longpoint Region Conservation Authority, the CASO railway right-of-way and a total of 9 road allowances, including rural roads.

Hydro One has certain existing permanent easement rights along the length of the existing corridor that allow for the construction and use of the lands for the project.

1

2 **3.0 LAND ACQUISITION PROCESS**

3

4 Hydro One will be using its existing land rights along the corridor from Vanessa Junction
5 to Norfolk TS, and no additional land rights are expected to be required. Temporary
6 access rights may be required.

7

8 Landowners have been informed of this project as part of the stakeholdering and
9 community consultation process described in Exhibit B, Tab 6, Schedule 5. Landowners
10 will also be notified of the routing of the proposed facilities as part of the OEB's Section
11 92 notice requirements and as part of the EA approval process.

12