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Jonathan Myers jmyers@torys.com P. 416.865.7532

May 29, 2015

RESS, EMAIL & COURIER

Ontario Energy Board P.O. Box 2319 27th Floor 2300 Yonge Street Toronto, ON M4P 1E4

Attention: Ms. K. Walli, Board Secretary

Dear Ms. Walli:

Re: Windlectric Inc. - Application for Leave to Construct Transmission Facilities (EB-2014-0300)

We are counsel to Windlectric Inc. ("Windlectric") in respect of its application for leave to construct transmission facilities (EB-2014-0300).

On March 9, 2015, which was one week before Windlectric's Argument-in-Chief was due, the Board issued a letter requesting that Windlectric provide either updated SIA and CIA reports or letters from the Independent Electricity System Operator (the "IESO") and Hydro One Networks Inc. ("Hydro One") confirming that the SIA and CIA reports remain accurate despite the time that has elapsed since they were prepared and despite the change to the project description in those reports as compared to Windlectric's application to the Board.

As noted in its Argument-in-Chief dated March 16, 2015, upon receipt of the Board's request Windlectric immediately made the necessary requests to the IESO and Hydro One. Windlectric requested that given the timing of the Board's request the Board should determine the application and consider granting leave to construct on the condition that the updated reports or letters be filed at a later date. Staff subsequently advised that the Board has refrained from issuing a decision pending receipt of the updated reports or letters.

Windlectric received the SIA Addendum Report (attached hereto as Schedule 'A'), together with a Notification of Addendum of Conditional Approval (attached hereto as Schedule 'B'), from the IESO each dated May 12, 2015. The SIA Addendum notes the minor change in project description and confirms that the modified proposal will have no material adverse impacts on the reliability of the integrated power system. Windlectric also received a letter from Hydro One dated May 29, 2015 (attached hereto as Schedule 'C') referencing the minor change in project description and confirming that the changes do not significantly impact the results of the CIA and, therefore, no CIA addendum needs to be issued.

Also enclosed are an updated Single Line Drawing (Schedule 'D') and an updated Substation Plan (Schedule 'E') which address the additional requirements set out in Section 2 of the SIA

Addendum Report.

We trust that the enclosed materials satisfy the Board's March 16, 2015 request and that the Board will now be in a position to determine the application. Given the passage of time needed to satisfy the Board's late request, we respectfully ask that the application be determined without further delay.

Yours truly, Jonathan Myers Tel 416.865.7532 jmyers@torys.com

cc: Mr. A. Tsopelas, Windlectric Inc. Intervenors

SCHEDULE 'A'

SIA Addendum Report

PUBLIC

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System Impact Assessment Report (Addendum)

CONNECTION ASSESSMENT & APPROVAL PROCESS

Final Report

CAA ID: 2011-433 Project: Amherst Island WF Applicant: Windlectric Inc.

Connections & Registration Department Independent Electricity System Operator

Date: May 12, 2015

Public

Document ID Document Name Issue Reason for Issue Effective Date

CAA 2011-433 System Impact Assessment Report (Addendum) 2.0 Addendum Report May 12, 2015

System Impact Assessment Report (Addendum)

Acknowledgement

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

Disclaimers

IESO

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of conditional approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Conditional approval of the proposed connection is based on information provided to the IESO by the connection applicant and Hydro One at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by Hydro One at the request of the IESO. Furthermore, the conditional approval is subject to further consideration due to changes to this information, or to additional information that may become available after the conditional approval has been granted.

If the connection applicant has engaged a consultant to perform connection assessment studies, the connection applicant acknowledges that the IESO will be relying on such studies in conducting its assessment and that the IESO assumes no responsibility for the accuracy or completeness of such studies including, without limitation, any changes to IESO base case models made by the consultant. The IESO reserves the right to repeat any or all connection studies performed by the consultant if necessary to meet IESO requirements.

Conditional approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed project to the IESO-controlled grid. However, the conditional approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

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 and the IESO in accordance with Chapter 4, section 6 of the Market Rules. This report does not in any way constitute an endorsement of the proposed connection for the purposes of obtaining a contract with the IESO for the procurement of supply, generation, demand response, demand management or ancillary services.

The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO 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 IESO provides a draft of this report to the connection applicant, the connection applicant must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to the connection applicant. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that the most recent version of this report is being used.

Hydro One

The results reported in this report are based on the information available to Hydro One, at the time of the study, suitable for a System Impact Assessment of this connection proposal.

The short circuit and thermal loading levels have been computed based on the information available at the time of the study. These levels may be higher or lower if the connection information changes as a result of, but not limited to, subsequent design modifications or when more accurate test measurement data is available.

This study does not assess the short circuit or thermal loading impact of the proposed facilities on load and generation customers.

In this report, short circuit adequacy is assessed only for Hydro One circuit breakers. The short circuit results are only for the purpose of assessing the capabilities of existing Hydro One circuit breakers and identifying upgrades required to incorporate the proposed facilities. These results should not be used in the design and engineering of any new or existing facilities. The necessary data will be provided by Hydro One and discussed with any connection applicant upon request.

The ampacity ratings of Hydro One facilities are established based on assumptions used in Hydro One for power system planning studies. The actual ampacity ratings during operations may be determined in real-time and are based on actual system conditions, including ambient temperature, wind speed and project loading, and may be higher or lower than those stated in this study.

The additional facilities or upgrades which are required to incorporate the proposed facilities have been identified to the extent permitted by a System Impact Assessment under the current IESO Connection Assessment and Approval process. Additional project studies may be necessary to confirm constructability and the time required for construction. Further studies at more advanced stages of the project development may identify additional facilities that need to be provided or that require upgrading.

1. Notification of Conditional Approval

Windlectric Inc. (the "connection applicant") is developing a new 75 MW wind generation facility, Amherst Island Wind Farm (the "project"), in Amherst Island, Ontario. The project will be connected to the IESO-controlled grid via 115 kV circuit Q6S, about 20 km from Cataraqui transformer station (TS). The project has been awarded a Power Purchase Agreement under the Feed-In Tariff (FIT) program with the formerly Ontario Power Authority (now IESO). The scheduled project in-service date is December 2016.

The System Impact Assessment for Amherst Island Wind Farm (CAA ID 2011-433) was completed on April 18, 2012. Recently, the connection applicant has notified the IESO of following change for the project's 115 kV tap line:

• Install a 1.1186 km overhead line, a 4.114 km submarine cable and a 0.5682 underground cable to connect the project to Q6S.

In addition, the connection applicant confirmed that it is not operationally possible to disconnect the project's collector systems when the wind turbine generators (WTGs) automatically disconnect themselves from the grid during high or low wind conditions.

This assessment examines the impact of the proposed change to the 115 kV tap line and of the confirmation that it is not possible to automatically disconnect the project's collector system on the amount of reactive power compensation required at the facility to meet IESO Market Rules requirements.

This assessment concludes that subject to the requirements specified in this report and the original SIA report, the modified proposal is expected to have no material adverse impact on the reliability of the integrated power system. It is recommended that a *Notification of Conditional Approval for Connection* be issued for the Amherst Island wind project subject to implementation of the requirements outlined in this report and the original SIA report.

2. IESO Requirements for Connection

Connection Applicant Requirements

Specific requirements:

 The project is required to have the capability to inject or withdraw reactive power continuously (i.e. dynamically) at the connection point up to 33% of its rated active power at all levels of active power output.

Based on the proposed change to the 115 kV tap line and the confirmation provided by the connection applicant that it is not possible to automatically disconnect the project's collector system when the WTGs automatically disconnect, static reactive power compensation of 8 Mvar capacitive and 8 Mvar inductive at 34.5 kV would need to be installed at the project's collector bus to satisfy the Market Rules requirements for reactive power.

The connection applicant has an obligation to ensure that the project has the required reactive power capabilities and to be able to confirm these capabilities during the commission tests.

This requirement supersedes the connection applicant's specific requirement (1) in the Executive Summary of the original SIA report.

(2) The connection applicant is required to provide a copy of the functionalities of the Wind Farm Management System (WFMS), including the voltage control process, during the IESO Market Registration process in order for the project to receive final approval to connect.

3. Data Verification

Updated 115 kV Tap Line Parameters

The updated 115 kV tap line parameters are listed as follows:

Table	1:	Impedance	of tap line	
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115 kV Tap Line	R (pu*)	X (pu*)	B (pu*)	Length (km)	
Section 1 (Overhead)	0.00101	0.00101 0.00387 0.000534			
Section 2 (Submarine Cable)	0.0022	0.00514	0.0289	4.114	
Section 3 (U/G Cable)	0.00035	0.00102	0.004	0.5682	

*Per unit data are based on 100 MVA & 115 kV.

The updated connection arrangement is shown in Figure 1 below.

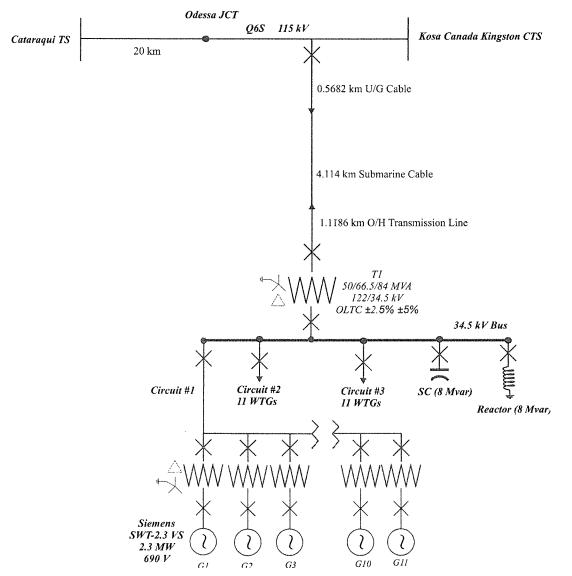


Figure 1: Updated connection arrangement

4. Assessments

Reactive Power Compensation

The Market Rules (MR) require that a generation facility injects or withdraws reactive power continuously (i.e. dynamically) at its connection point up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the IESO. A generating unit with a power factor range of 0.90 lagging and 0.95 leading at rated active power, connected through an impedance between the generator and the connection point that is not greater than 13% based on rated apparent power, provides the required range of dynamic reactive power capability at the connection point.

A dynamic reactive compensation device (e.g. STATCOM or SVC) is required for a generation facility which employs generating unit(s) that cannot provide a reactive power range of 0.90 lagging power factor and 0.95 leading power factor at rated active power.

A wind farm can compensate for reactive power losses in the facility's collector system using static shunts (e.g. capacitors and reactors).

This Addendum proposes a solution for the project to meet the reactive power capabilities. However, the connection applicant can deploy any other solutions which result in its compliance with the requirements. The connection applicant shall be able to confirm required reactive power capabilities during the commission tests.

It should be noted that these reactive power calculations used the equivalent electrical model of the project (WTGs, unit step-up transformer and collectors) that was provided by the connection applicant for these studies. This equivalent model cannot accurately represent the voltage at each individual WTG. When deployed, some WTGs may reach the limit of their terminal voltage before injecting or withdrawing their maximum reactive power. The connection applicant should ensure, during the detailed design of the project, that the WTGs are not limited in their capability to produce reactive power due to terminal voltage limits or other project's internal limitations. For example, the transformation ratio of the WTG step up transformers can be set in such a way that it will offset the voltage profile along the collector, and all the WTG would be able to contribute to the reactive power production of the project in a shared amount.

Dynamic Reactive Power Capability

The following summarizes the IESO required level of dynamic reactive power and the available capability of SWT-2.3 VS from Siemens document "Reactive Power Capability" (Document PG-R3-30-0000-0113-06).

	Terminal Voltage	Active Power	Reactive Power Capability per WTG				
IESO Required	690 V	2.3 MW	$Q_{gen} = 2.55 \times \sin [\cos^{-1} (0.9)] = 1.11 \text{ Mvar}$				
			$Q_{abs} = 2.55 \times sin [cos^{-1} (0.95)] = 0.8 Mvar$				
SWT-2.3 VS	690 V	2.3 MW	$Q_{gen} = 1.22 \text{ Mvar}$				
Capability			$Q_{abs} = 1.15 \text{ Mvar}$				

The project's SWT-2.3 VS WTGs can deliver IESO required dynamic reactive power to the generator terminal at rated active power and at rated voltage. Thus, there is no need to install any additional dynamic reactive power compensation.

Static Reactive Power Capability

In addition to any dynamic reactive power requirement identified above, the project has to compensate for the reactive power losses within the facility, to ensure that it has the capability to inject or withdraw reactive power up to 33% of its rated active power at the connection point. As mentioned above, the IESO accepts this compensation to be made with switchable static shunts.

As such, the project must have a minimum capability of supplying approximately +24.75 Mvar (capacitive) to -24.75 Mvar (inductive) at the connection point at all active power outputs.

Load flow studies were performed to calculate the need for static shunts, based on the equivalent parameters for project's collectors provided by the connection applicant.

The capacitive reactive power capability of the project was assessed under the following assumptions:

- typical voltage of 123 kV at the connection point;
- maximum active power output from the each equivalent WTG (three in total, one per collector);

- maximum reactive power output (lagging power factor) from the equivalent WTG, unless limited by the maximum acceptable WTG terminal voltage;
- maximum WTG terminal voltage of 1.05 pu.

The inductive reactive power capability of the project was assessed under the following assumptions:

- typical voltage of 123 kV at the connection point;
- minimum (zero) active power output from each equivalent WTG (three in total; one per collector);
- maximum reactive power consumption (leading power factor) from the equivalent WTG, unless limited by the minimum acceptable WTG terminal voltage;
- minimum WTG terminal voltage of 0.95 pu.

The studies showed that the reactive power output of the WTGs were not limited by the WTG terminal voltage; however, due to extra losses in the facility the project can only inject 16.7 Mvar and absorb 22.3 Mvar at the connection point. As a result, additional static shunts of 8 Mvar capacitive and 2 Mvar inductive must be installed at the collector bus by the connection applicant to meet the reactive power requirements at the connection point.

Tap Line and Collector System Charging

During high or low wind conditions, the project's WTGs may automatically disconnect themselves from the IESO-controlled grid. This leaves the project's tap line and collector system connected to the grid and providing charging reactive power to the grid. Simulation results show that under this situation, the project will inject 8 Mvar of reactive power into the grid at the connection point, which may aggravate high-voltage situations under some system conditions. The project must be capable of reducing the reactive power injection at the connection point to zero at the request of the IESO.

This can be achieved by disconnecting the project's collector systems; however, the connection applicant confirmed that it is not operationally possible to disconnect the project's collector systems since each individual WTGs requires auxiliary power for communications, heating and other loads which are supplied from the collector system. Therefore, a static shunt of 8 Mvar inductive at 34.5 kV must installed at the collector bus to reduce the reactive power output to zero at the connection point.

Static Reactive Power Switching

The IESO requires the voltage change on a single capacitor switching to be no more than 4 % at the any point in the IESO controlled grid. A switching study was carried out to investigate the effect of switching 8 Mvar static shunt on the voltage changes in the original SIA study. The results showed that switching a single shunt of 8 Mvar results in less than 4 % voltage change at the connection point, therefore meeting the Market Rules' requirement.

Wind Farm Management System

For any generation facility connecting to the IESO-controlled grid, the IESO requires that the facility assists in system voltage performance. It is expected that the project reserves dynamic reactive power capability as much as possible pre-contingency so the project possess the ability to supply/absorb sufficient dynamic reactive power to the high voltage system during voltage declines/rises.

The project shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal within $\pm 0.5\%$ of any set point within $\pm 5\%$ of rated voltage. If the AVR target voltage is a function of reactive output, the slope $\Delta V / \Delta Q$ max shall be adjustable to 0.5%.

The Wind Farm Management System (WFMS) installed at the project must coordinate the voltage control process, as follows:

(1) The WTGs control the main 34.5 kV bus voltage such that it is within $\pm 0.5\%$ of any set point within $\pm 5\%$ of rated voltage.

(2) The shunt capacitor and reactor switch in/off to minimize the reactive power output of the WTGs.

The connection applicant must submit a description of the functionalities of the WFMS that will be installed at the project for approval during Market Registration process.

End of Document -

SCHEDULE 'B'

Notification of Addendum of Conditional Approval

ndependent Electricity System Operator

> Station A, Box 4474 Toronto, Ontario M5W 4E5 1 905 855 6100 www.ieso.ca

Mr. Alex Tsopelas Project Manager, Renewables Algonquin Power Co. 354 Davis Road, Oakville, Ontario L6J 2X1

Dear Mr. Tsopelas: Amherst Island Wind Farm Notification of Addendum of Conditional Approval to Connection Proposal CAA ID Number: 2011-433

Thank you for the updated information regarding the proposed Amherst Island Wind Farm. From the new information provided, we have concluded that the proposed changes at Amherst Island Wind Farm will not result in a material adverse impact on the reliability of the integrated power system.

The IESO is therefore pleased to grant conditional approval for the modification detailed in the attached addendum to the System Impact Assessment (SIA) report. Please note that any further material change to your proposed connection may require re-assessment by the IESO and may result in a nullification of this conditional approval.

In addition, please note that this conditional approval does not in any way constitute an endorsement of the proposed connection, with or without the proposed changes, for the purposes of obtaining a contract with the IESO for the procurement of supply, generation, demand response, demand management or ancillary services.

You may now initiate the IESO's Market Registration process. To do so please contact Market Registration at market.registration@ieso.ca at least eight months prior to your expected energization date. The addendum to the SIA report, attached hereto, details the requirements that your company must fulfill during this process, including demonstrating that the facility as installed will not be materially different from the facility as approved by the IESO.

Your conditional right to connect is balanced by an obligation to demonstrate installed equipment meets performance requirements. During the Market Registration process, you shall be required to demonstrate this obligation has been fulfilled in accordance with Market Manual 2: Market Administration Part 2.20: Performance Validation.

When your company has successfully completed the IESO's Market Registration process, the IESO will provide you with a final approval, thereby confirming that the facility is fully authorized to connect to the IESO-controlled grid.

For further information, please contact me.

Yours truly,

Ahmed Maria Manager - Connections & Registration (905) 855-6457 *Telephone:* (905) 855-6319 Fax: E-mail: ahmed.maria@ieso.ca IESO Records CC:

All information submitted in this process will be used by the IESO solely in support of its obligations under the Electricity Act, 1998, the Ontario Energy Board Act, 1998, the Market Rules and associated polices, standards and procedures and in accordance with its licence. All information submitted will be assigned the appropriate confidentiality level upon receipt.

SCHEDULE 'C'

Hydro One Letter re No CIA Addendum

Hydro One Networks Inc. 483 Bay Street North Tower, 13th Floor Toronto, Ontario M5G 2P5 www.HydroOne.com

Tel: (416) 345-5958 Email: j.currie@hydroone.com

J. Brent Currie Network Management Engineer Network, Connections & Development



May 29, 2015

Mr. Alex Tsopelas Algonquin Power Co. 354 Davis Road, Oakville, ON L6J 2X1

Attention: Mr. Alex Tsopelas Project Manager, Renewables

Dear Mr. Tsopelas:

Re: SIA-CAA ID: 2011 - 433 Addendum dated May 12, 2015

The System Impact Assessment for Amherst Island Wind Farm (CAA ID 2011 - 433) was completed on April 18, 2012. The Independent Electricity System Operator (IESO) notified Hydro One Networks Inc. (HONI), on May 22, 2015, that the connection applicant made the following changes to the original proposal:

1. Install a 1.1186 km overhead line, a 4.114 km submarine cable and a 0.5682 underground cable to connect the project to Q6S

This letter is to inform you that the above changes to the application do not significantly impact the results of the CIA and therefore no CIA addendum will be issued by HONI.

Yours truly,

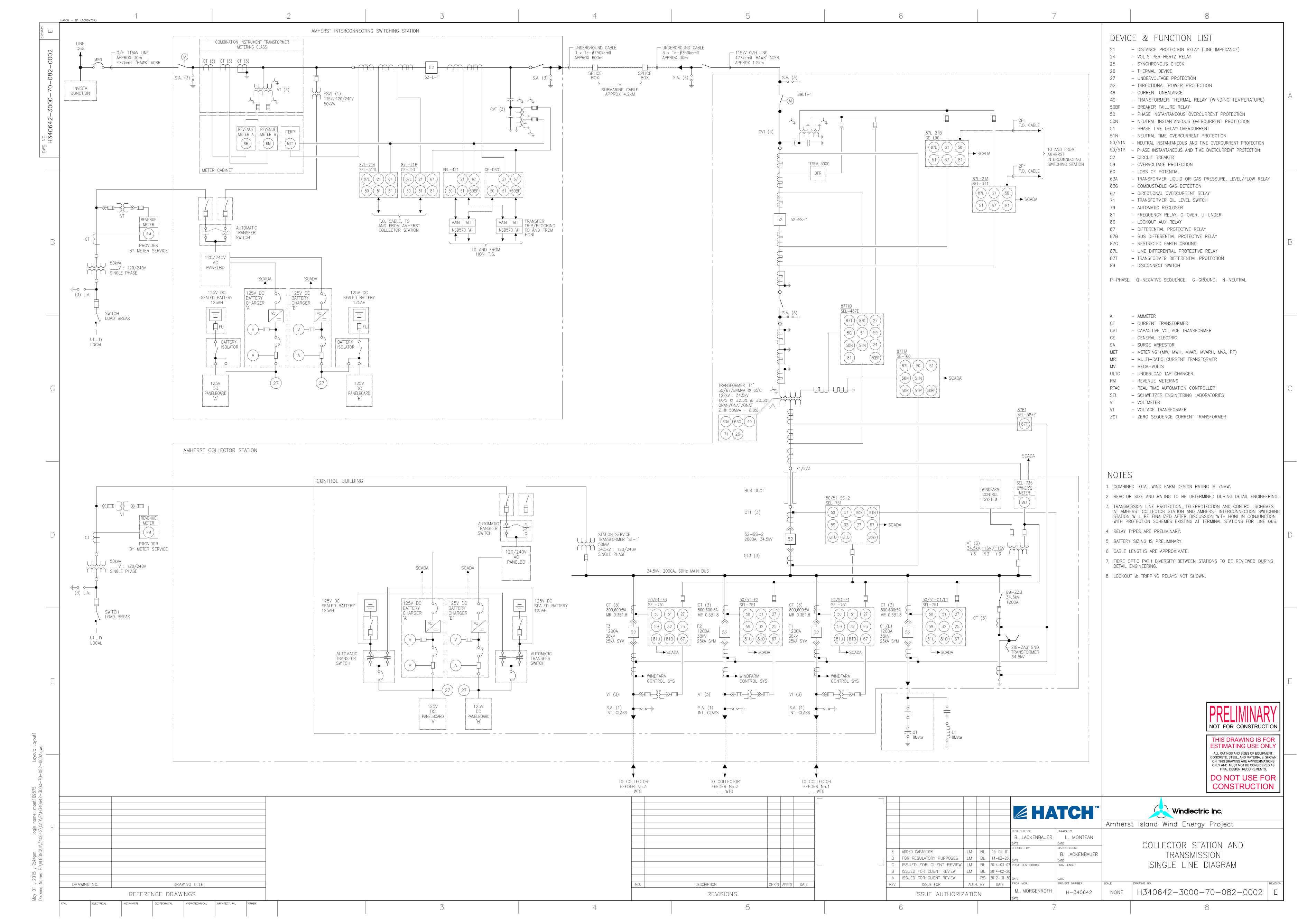
HYDRO ONE NETWORKS INC.

J. Brent Currie Network Management Engineer

- cc: Farooq Qureshy Manager Transmission Planning
- cc: Quyen Diep Network Management Engineer
- cc: John H. Walewski Manager, Network Connections

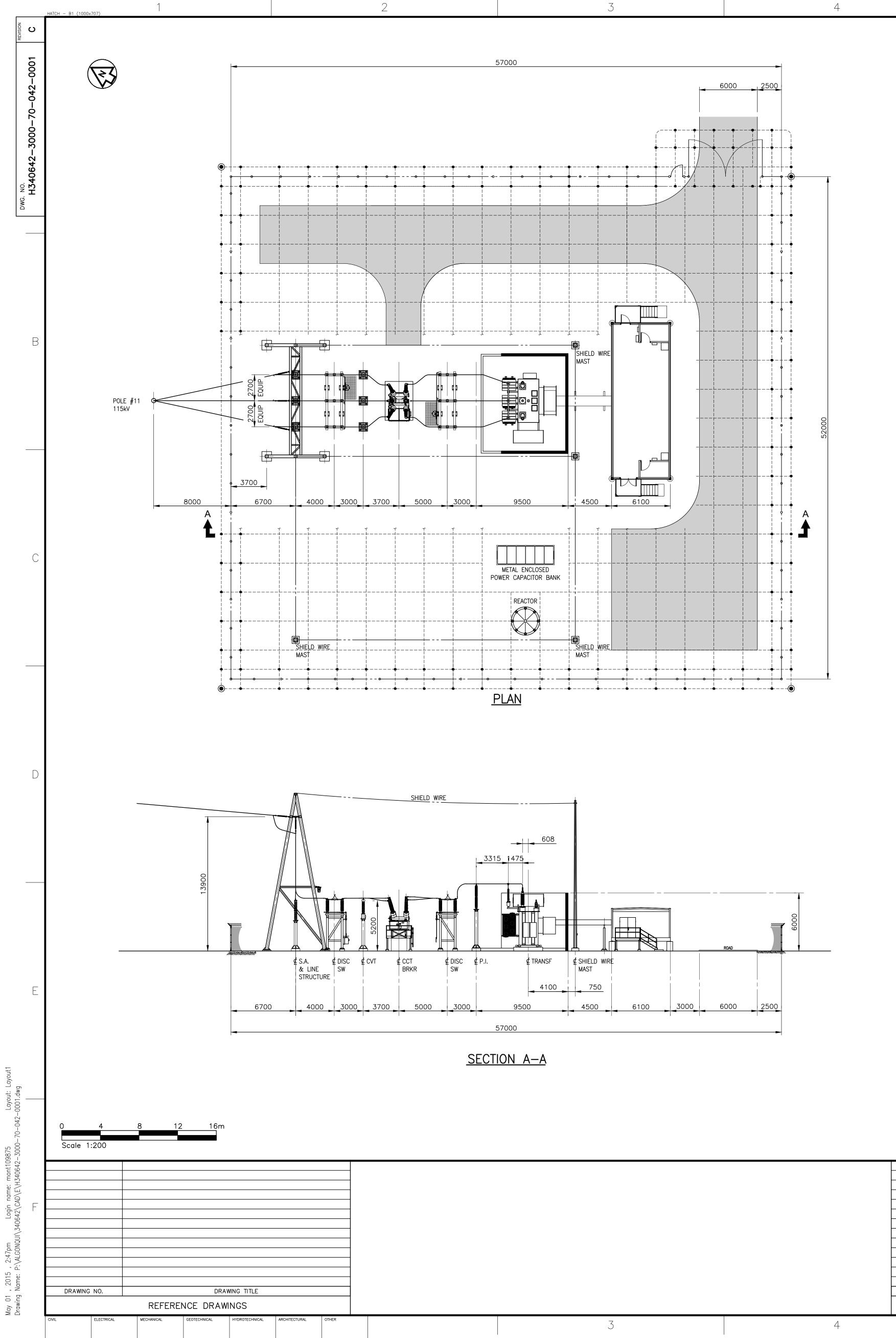
SCHEDULE 'D'

Updated Single Line Drawing



SCHEDULE 'E'

Updated Substation Plan





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	REVISIONS				
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NOTES:

1. GROUNDING OF ELECTRICAL APPARATUS IS NOT SHOWN.

2. FINAL EXTENT OF GROUND GRID WILL BE DETERMINED AFTER GEOTECHNICAL INVESTIGATION.

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