



System Impact Assessment Report

Final Report - Public

CAA ID: 2022-726

Project: Windsor NextStar TS – New DESN Station

Connection Applicant: Hydro One Networks Inc.

July 10th, 2023



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 project 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 facility 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 facility 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.



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Project Description

Hydro One Networks Inc. (the “connection applicant” and “transmitter”) is planning to connect a new Transformer Station (TS), namely Windsor NextStar TS, to provide electric supply to a maximum load of 150 MW in Windsor area (the “project”). The project will connect to the transmitter owned 230 kV circuits, H53Z and H54Z, from Lakeshore TS to Lauzon TS, at 0.8 km from Lauzon TS. The project will include two 75/100/125 MVA, 215.5/27.6/27.6 kV transformers, each with a 230 kV disconnect switch on the high voltage side of the transformer.

Figure 1 in Appendix B of this report shows a simplified single line diagram for the connection of the project to the local transmission system.

The connection applicant understands that the new load at Windsor NextStar TS, in addition to other area loads, could result in thermal overloads on the 230 kV circuits between Lambton TS and Chatham SS, and has started working with the IESO to reinforce the transmission system to address this problem. During the interim period before future transmission reinforcement is in place, the connection applicant will allow the use of higher ratings for L28C and L29C, as shown in Table 16 in Appendix C of this report.

The connection applicant understands that the load addition at Windsor NextStar TS could result in under-voltage conditions and thermal overloads during system outages; thus the connection applicant will automatically trip up to the entire load at Windsor NextStar TS for system under-voltage conditions, and will update Lakeshore Remedial Action Scheme (RAS) selection matrix as shown in Appendix D of this report.

The planned in-service date for the project is in January, 2024.

Notification of Conditional Approval

This assessment concludes that the proposed connection of the project is expected to have no material adverse impact on the reliability of the integrated power system, provided that all requirements in this report are implemented. Therefore, the assessment supports the release of the Notification of Conditional Approval for connection of the project.

Assessment Findings

System studies were carried out to identify the impact of the project on loading of transmission facilities, system voltages, voltage stability, relay margin, load security and restoration in accordance to the Ontario Resource and Transmission Adequacy Criteria (ORTAC) and in line with applicable reliability standards. The studied scenarios and main assumptions are available in Appendix D of this report. The detailed study results are available in Appendix E of this report. Based on the assessment results, we have identified the following assessment findings.

I. Findings applicable after Q1, 2028

ORTAC load security and restoration criteria are expected to be met for the project after the incorporation of both the new Chatham to Lakeshore and Lambton to Chatham 230 kV circuits.

II. Findings applicable after the incorporation of the new Chatham to Lakeshore 230 kV circuits, scheduled to come into service in Q1, 2026, and before the incorporation of the new Lambton to Chatham 230 kV circuits scheduled to come into service in Q1, 2028.

1. With all transmission elements in-service and with Brighton Beach Customer Generation Station (CGS) out-of-service, under peak load conditions and with no transfers on J5D, the incorporation of the project could result in:
 - a. thermal overloads above short-term emergency (STE) ratings on L28C and L29C following the loss of L28C, the loss of L29C, the loss of W44LC, the loss of W45LS or the loss of S47C. Up to the total South Middle Road TS and Windsor NextStar TS load, 562 MW, would need to be interrupted to prevent flows exceeding long-term emergency (LTE) ratings. Under these system conditions, interrupting more than 150 MW of load is a violation of the ORTAC load security criteria.
 - b. thermal overloads above STE ratings on L28C and L29C immediately following recognized double contingencies: simultaneous loss of L29C and L24L, simultaneous loss of W44LC and S47C, or simultaneous loss of W44LC and W45LS. Up to 533 MW of load at South Middle Road TS and the project would need to be interrupted to prevent flows exceeding LTE ratings. Under these system conditions, interrupting 533 MW of load is acceptable under ORTAC load security criteria.
2. With all transmission elements in-service and with Brighton Beach CGS out-of-service, under peak load conditions and with the current maximum import level from Michigan (i.e., 1500 MW), the incorporation of and the project could result in:
 - a. pre-contingency thermal overloads on L28C and L29C. The issue could be mitigated by reducing the import from 1500 MW to 1350 MW or by dispatching Brighton Beach CGS in-service;
 - b. thermal overloads above STE ratings on L28C and L29C following the loss of J5D. Up to the total South Middle Road TS and Windsor NextStar TS load, 562 MW, would need to be interrupted to prevent ORTAC thermal violations. Under these system conditions, disconnecting more than 150 MW of load is a violation of the ORTAC load security criteria.
3. During either L28C or L29C outages and with Brighton Beach CGS in-service, under peak load conditions and with no transfers on J5D, the incorporation of the project will reduce the power transfer capability out of Lambton and Scott area by more than 5%, violating the ORTAC transfer capability criterion. Up to 275 MW of load at South Middle Road TS and the project would need to be interrupted to prevent the ORTAC transfer capability criterion violation. Under these system conditions, interrupting any load is a violation of the ORTAC load security criteria.
4. During either L28C or L29C outages and with Brighton Beach CGS in-service, under peak load conditions and with no transfers on J5D, the incorporation of the project could result in:
 - a. thermal overloads above STE ratings on either L29C or L28C following the loss of Brighton Beach CGS, W44LC, W45LS or S47C. Up to 562 MW of load at South Middle Road TS and Windsor NextStar TS is to be interrupted to prevent exceeding LTE ratings. Under these system conditions, interrupting more than 150 MW of load is a violation of the ORTAC load security criteria;

- b. thermal overloads above STE ratings on either L29C or L28C following recognized double contingencies: simultaneous loss of W44LC and S47C, or simultaneous loss of W44LC and W45LS. Up to 562 MW of load at South Middle Road TS and Windsor NextStar TS is to be interrupted to prevent exceeding LTE ratings. Interrupting 562 MW of load is acceptable under ORTAC load security criteria for these system conditions.
- 5. During either L28C or L29C outages and with Brighton Beach CGS in-service, under peak load conditions and maximum import levels from Michigan (i.e., 1500 MW), the incorporation of the project could result in thermal overloads above STE ratings on either L29C or L28C following the loss of Brighton Beach CGS. Up to the total South Middle Road TS and Windsor NextStar TS load, 562 MW, would need to be interrupted to prevent flows exceeding LTE ratings. Under these system conditions, interrupting more than 150 MW of load is a violation of the ORTAC load security criteria.
- 6. More than 250 MW of load at South Middle Road TS and Windsor NextStar TS could be interrupted as identified in findings #1, #2b, #3, #4, and #5. The ORTAC requires all load in excess of 250 MW to be restored within 30 minutes. Hydro One has indicated that this restoration target cannot be met.
- III. Findings, in addition to the findings under section II above, applicable before the incorporation of the new Chatham to Lakeshore 230 kV circuits scheduled to come into service in Q1, 2026.
- 7. With all transmission elements in-service and with Brighton Beach CGS out-of-service, under peak load conditions and with no transfers on J5D, the incorporation of the project could result in:
 - a. thermal overloads above STE ratings on C43H and/or C65H following the loss of C42H, C43H, C64H or C65H. Up to 265 MW of load at South Middle Road TS and Windsor NextStar TS would need to be interrupted to prevent exceeding LTE ratings. Under these system conditions, interrupting more than 150 MW of load is a violation of the ORTAC load security criteria;
 - b. thermal overloads above STE ratings on the remaining circuits in the Chatham to Lakeshore corridor following recognized double contingencies: simultaneous loss of C42H and C64H, or simultaneous loss of C43H and C65H. Up to 562 MW of load at South Middle Road TS, and Windsor NextStar TS would need to be interrupted to prevent exceeding LTE ratings. Interrupting 562 MW of load is acceptable under ORTAC load security criteria for these system conditions.
- 8. During either C42H, C43H, C64H or C65H outages and with Brighton Beach CGS in-service, under peak load conditions and with no transfers on J5D, the incorporation of the project could result in thermal overloads above STE ratings on the remaining circuits in the Chatham to Lakeshore corridor following recognized double contingencies: simultaneous loss of C42H and C64H, or simultaneous loss of C43H and C65H. Up to 562 MW of load at South Middle Road TS and Windsor NextStar TS would need to be interrupted to prevent exceeding LTE ratings. Interrupting 562 MW of load is acceptable under ORTAC load security criteria for these system conditions.
- 9. With all transmission elements in-service and with Brighton Beach CGS out-of-service, under peak load conditions, the maximum export to Michigan on J5D, L4D, L51D and B3N could be reduced from 1200 MW to 1050 MW in both summer and winter due to pre-contingency thermal overloads on C43H and C65H. If Brighton Beach CGS is assumed in-service, the maximum export to Michigan on these circuits will remain unchanged.

10. More than 250 MW of load at Windsor NextStar TS, South Middle Road TS, Leamington TS, Double Diamond II CTS (formerly Aphria CTS) and Mastron II CTS could be interrupted as identified in Findings #7 and # 8. The ORTAC requires all load in excess of 250 MW to be restored within 30 minutes. Hydro One has indicated that this restoration target cannot be met.

IESO Requirements for Connection

Specific Requirements

The following specific requirements are applicable for the incorporation of the project and its connection facilities. Specific requirements pertain to the level of reactive power compensation needed, operation restrictions, remedial action scheme, upgrading of equipment and any project specific items not covered in the general requirements.

1. Hydro One shall install RAS facilities to include the project in the Lakeshore RAS. During the IESO Market Registration process, a revised Facility Description Document (FDD) for Lakeshore RAS must be provided and finalized at least nine months prior to in-service. The FDD must contain the finalized RAS matrix as well as expected operating times. The actual operating times must be measured during commissioning and documented as a Performance Validation Record.

If the FDD or performance testing as per the Performance Validation Record indicates a change in design or slower than expected operating times, as compared to what was assumed in this assessment, then further analysis of the project will need to be done by the IESO. This may delay the grant of IESO final approval to place the project in-service.

To reject Windsor NextStar TS load on 27.6 kV feeder 7F3, automatic disconnection shall be implemented by simultaneously tripping the 27.6 kV breakers 7CB13, 7CB15 and 7CB19 at Windsor NextStar TS, and 7CBF3 and 7CB9 at Hydro One's customer switchyard. Similarly, for load on 27.6 kV feeder 7F8, automatic disconnection shall be implemented by simultaneously tripping the 27.6 kV breakers 7CB14, 7CB16 and 7CB19 at Windsor NextStar TS, and 7CB8 and 7CB9 at Hydro One's customer switchyard. There will be no accompanying breaker failure initiated in association with these actions.

Hydro One shall ensure that the RAS facilities comply with NPCC Reliability Reference Directory #7 as per the RAS type classification which will be finalized during the Market Registration process. To avoid any delay to the project, it is strongly recommended the RAS facilities be designed to meet NPCC Reliability Reference Directory #7 for NPCC Type I RAS before the RAS type classification is finalized. If deemed or expected to be a Type II or Limited Impact RAS, the transmitter shall ensure the RAS facilities have provisions to comply with NPCC Reliability Reference Directory #7 for Type I RAS in case the RAS is re-classified as NPCC Type I RAS in the future as the system evolves.

Telemetry, including but not limited to, MW, Mvar and breaker status for the feeders/equipment tripped by the RAS, as specified by the IESO at the time of registration, shall be provided.

2. Since the ORTAC load security criteria cannot be met after incorporation of the project as identified in Findings #1a, #2b, #3, #4a, #5 and #7a, Hydro One, is required to obtain an exemption from satisfying the load security criteria, as per Section 7.5 of the ORTAC, for the loads supplied by the project.

3. Since the ORTAC load restoration criteria cannot be met after the project as identified in Findings #6, and #10, Hydro One is required to obtain an exemption from satisfying the load restoration criteria, as per Section 7.5 of the ORTAC, for the loads at Windsor NextStar TS.
4. Hydro One is required to install a local under-voltage L/R scheme that will automatically trip Windsor NextStar TS load in two equal stages if the voltage at any of Windsor NextStar TS 230 kV buses is below 207 kV for more than 5 seconds, with a delay of 3 seconds between stages.
5. Hydro One is required to have an internal instruction that addresses the principles of load interruption and restoration priority and supports coordination of outage planning and real time operation.

General Requirements

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code (TSC) and reliability standards. Some of the general requirements that are applicable to this project are presented in detail in Appendix A: General Requirements of this report.

Recommendation

Power transformers with a high side, wye grounded winding with terminal voltage greater than 200 kV are subject to North American Electric Reliability Corporation (NERC) standard TPL-007, Transmission System Planned Performance for Geomagnetic Disturbance Events. As per NERC standard TPL-007, the Planning Coordinator in conjunction with its Transmission Planner are required to implement a process(es) to obtain Geomagnetic Disturbance (GMD) measurement data, via geomagnetically-induced currents (GIC) monitors, which will aid in model validation and situational awareness. This data will more accurately support the owner of the applicable power transformer(s) to conduct a thermal impact assessment if required in the future. As such, it is recommended that the connection applicant makes provision(s) to install monitoring equipment for GIC on the new transformer(s).

Appendix A: General Requirements

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code and reliability standards. This Section highlights some of the general requirements that are applicable to the project.

1. The connection applicant must notify the IESO at connection.assessments@ieso.ca as soon as they become aware of any changes to the project scope or data used in this assessment. The IESO will determine whether these changes require a re-assessment.
2. The connection applicant shall ensure that the BPS elements are in compliance with the applicable NPCC criteria, and the BES elements in compliance with the applicable NERC reliability standards. To determine the standard requirements that are applicable, the IESO provides mapping tools titled "NPCC Criteria Mapping Spreadsheet" for BPS elements and "NERC Reliability Standard Mapping Tool/Spreadsheet" for BES elements at the IESO's website of [Applicability Criteria for Compliance with Reliability Requirements](#).

Note, the transmitter may request an exception to the application of the BES definition. The procedure for submitting an application for exemption can be found in Market Manual 11.4: "[Ontario Bulk Electric System \(BES\) Exception](#)" at the IESO's website.

The IESO's criteria for determining applicability of NERC reliability standards and NPCC Criteria can be found in the Market Manual 11.1: "[Applicability Criteria for Compliance with NERC Reliability Standards and NPCC Criteria](#)" at the IESO's website.

Compliance with these reliability standards will be monitored and assessed as part of the IESO's Ontario Reliability Compliance Program. For more details about compliance with applicable reliability standards, the transmitter is encouraged to contact orcp@ieso.ca and also visit the [Ontario Reliability Compliance Program webpage](#).

3. In accordance with Appendix 4.3 of the Market Rules, the connection applicant shall ensure that the project have the capability to maintain the power factor within the range of 0.9 lagging and 0.9 leading as measured at the defined meter point of the project.
4. The connection applicant shall ensure that the project's equipment meet the voltage requirements specified in section 4.2 and section 4.3 of the Ontario Resource and Transmission Assessment Criteria (ORTAC).
5. According to Section 6.1.2 of the TSC, the connection applicant must ensure the project's transmission connection equipment is designed to withstand the fault levels in the area. According to Section 6.4.4 of the TSC, if any future system changes result in an increased fault level higher than the project's equipment capability, the connection applicant is required to replace that equipment with higher rated equipment capable of withstanding the increased fault level, up to the maximum fault level specified in Appendix 2 of the TSC.

It is the connection applicant's responsibility to verify that all equipment and circuit breakers within the project are appropriately sized for the local fault levels. The connection applicant shall ensure that the circuit breakers/switchers installed at the project have rated interrupting time that satisfies Appendix 2 of the TSC. Fault interrupting devices installed at the project must be able to

interrupt fault currents at the applicable maximum continuous voltage as specified in Section 4.2 and Section 4.3 of ORTAC.

6. The connection applicant shall ensure that the protection systems are designed to satisfy all the requirements of the TSC. New protection systems must be coordinated with existing protection systems. Protection systems within the project shall only trip the appropriate equipment isolating the fault.

Associated overvoltage protective relaying must be set to ensure that the project's equipment does not automatically trip for voltages up to 5% above the equipment's corresponding maximum continuous voltage as specified in section 4.2 of the ORTAC.

BPS elements are deemed by the IESO to be essential to system reliability and security and must be protected by redundant protection systems in accordance with Section 8.2 of the TSC. These redundant protection systems must satisfy all requirements of the TSC, and in particular, they must be physically separated and not use common components, common battery banks, or common instrument transformer secondary windings.

The protection systems for transmission voltage BES elements (whose rated voltage is higher than 100 kV) must be redundant. Redundancy must be present in protective relaying for normal fault clearing and control circuitry associated with protective functions including trip coils of the circuit breakers or other interrupting devices. These redundant protection systems must not use common instrument transformer secondary windings. A single communication system, if used, must be monitored and reported and a single DC supply, if used, must be monitored and reported for both low voltage and open circuit.

As the electrical system evolves, transmission voltage non-BPS or non-BES elements (whose rated voltage is higher than 100 kV) within the project, may be re-classified as BPS elements or BES elements. The connection applicant is recommended to design the protection systems for these elements according to the protection requirements for BPS elements or have adequate provisions for future upgrade to meet those requirements.

7. In accordance to Reference 4 of Appendix 4.3 of the Market Rules, distributors connected to the IESO-controlled grid with directly connected load facilities of aggregated rating above 20 MVA and with the capability to regulate distribution voltages under load, shall install and maintain facilities and equipment to provide voltage reduction capability. After connecting the project, the connection applicant will have directly connected load facilities of aggregated rating above 20 MVA and the project has the capability to regulate voltages under load. As such, the connection applicant shall install and maintain facilities and equipment to provide voltage reduction capability at the project. Voltage reduction capability represents the capability of reducing demand by lowering the distribution voltage by 3% and 5% within five minutes from receiving directions from the IESO. The IESO uses voltage reductions to reduce load when supply resources are limited. The voltage reduction capability can be provided using the proposed under-load tap changers (ULTC) at the project.
8. The connection applicant has a total peak load at all its owned facilities, including the project, which is greater than 25 MW. According to Section 10.4.6 of Chapter 5 of the Market Rules and Section 11.3 of the Market Manual 7.1, the connection applicant is required to participate in the automatic Under-Frequency Load Shedding (UFLS) program and must select 35% of total peak

load among its owned facilities for under-frequency tripping, based on a date and time specified by the IESO that approximates system peak, according to Section 10.4 of Chapter 5 of the Market Rules.

The UFLS relay connected loads shall be set to achieve the amounts to be shed as stated in Section 11.3 of Market Manual 7.1. Table 1: UFLS Relay Settings summarizes UFLS relay settings as a function of the total peak load of all facilities, including the project, owned by the connection applicant.

Table 1: UFLS Relay Settings

Aggregate Summer Peak Load	UFLS Stage	Frequency Threshold (Hz)	Total Nominal Operating Time (s)	Load Shed at stage as % of Connection Applicant's Load	Cumulative Load Shed at stage as % of Connection Applicant's Load
25 MW or more and less than 50 MW	1	59.5	0.3	≥ 35	≥ 35
50 MW or more and less than 100 MW	1	59.5	0.3	≥ 17	≥ 17
	2	59.1	0.3	≥ 18	≥ 35
100 MW or greater	1	59.5	0.3	7 – 9	7 – 9
	2	59.3	0.3	7 – 9	15 – 17
	3	59.1	0.3	7 – 9	23 – 25
	4	58.9	0.3	7 - 9	32 - 34
	Anti-Stall	59.5	10.0	3 – 4	35 - 37

The connection applicant, in conjunction with the transmitter, must also ensure that capacitor banks connected to the same station bus as the load are shed by UFLS facilities at 59.5 Hz with a time delay of 3 seconds.

The maximum load that can be connected to any single UFLS relay is 150 MW to ensure that the inadvertent operation of a single under-frequency relay during the transient period following a system disturbance does not lead to further system instability.

The IESO will review the requirements annually and inform the relevant market participants of their automatic UFLS obligations.

9. The connection applicant shall ensure that the connection equipment is designed to be fully operational in all reasonably foreseeable ambient conditions. Failures of the connection equipment must be contained within the project and have no adverse impact on the IESO-controlled grid.
10. In accordance with Section 7.4 of Chapter 4 of the Market Rules, the connection applicant shall provide to the IESO the applicable telemetry data listed in Appendix 4.16 of the Market Rules on a continual basis. The data shall be provided in accordance with the performance standards set forth in Appendix 4.20 and Appendix 4.21, subject to Section 7.6A of Chapter 4 of the Market Rules. The whole telemetry list will be finalized during the IESO's Market Registration process.

The connection applicant must install monitoring equipment that meets the requirements set forth in Appendix 2.2 of Chapter 2 of the Market rules. As part of the IESO's Market Registration process, the connection applicant must also complete end to end testing of all necessary telemetry points with the IESO to ensure that standards are met and that sign conventions are understood. All found anomalies must be corrected before IESO's final approval to connect any phase of the project is granted.

11. The connection applicant must initiate the IESO's Market Registration process at least eight months prior to the commencement of any project related outages.

The connection applicant is required to provide "as-built" equipment data for the project during the IESO Market Registration process. If the submitted equipment data differ materially from the ones used in this assessment, then further analysis of the project may need to be done by the IESO before final approval to connect is granted.

At the sole discretion of the IESO, performance tests may be required at generation and transmission facilities. The objectives of these tests are to demonstrate that equipment performance meets the IESO requirements, and to confirm models and data are suitable for IESO purposes. The transmitter may also have its own testing requirements. The IESO and the transmitter will coordinate their tests, share measurements and cooperate on analysis to the extent possible.

Once the IESO's Market Registration process has been successfully completed, the IESO will provide the connection applicant with a Registration Approval Notification (RAN) document, confirming that the project is fully authorized to connect to the IESO-controlled grid. For more details about this process, the connection applicant is encouraged to contact IESO's Market Registration at market.registration@ieso.ca.

12. The connection applicant shall ensure that wholesale revenue metering installations comply with Chapter 6 of the Market Rules. This includes any intermediate project stages such as installation of temporary equipment or the use of mobile transformers. For more details, the connection applicant is encouraged to seek advice from their Metering Service Provider (MSP) or from the IESO metering group in early stages of project design.
13. If the connection applicant is currently a participant in the Ontario Power System Restoration Plan, its restoration participant attachment is required to be updated to include the project according to Market Manual 7.8. For either an existing or newly identified participant in the Ontario Power System Restoration Plan, details regarding restoration participant requirements will be finalized during the IESO Market Registration process.
14. As per Market Manual 1.4: Connection Assessment and Approval, the connection applicant will be required to provide a status report of its proposed project with respect to its progress upon request of the IESO using the project status report form on the IESO website. Failure to comply with project status requirements listed in Market Manual 1.4: Connection Assessment and Approval will result in the project being withdrawn.

The connection applicant will be required to also provide updates and notifications in order for the IESO to determine if the project is "committed" as per Section 3.3 of Market Manual 1.4: Connection Assessment and Approval.



Appendix B: Project Data (Confidential)

Appendix C: Study Scope of Work (Confidential)

Appendix D: Detailed Study Results (Confidential)

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