



Expedited System Impact Assessment Report

Final Report - Public

CAA ID: 2026-EX1319

Project: Whitedog Falls GS: Electrical Infrastructure
Replacement

Connection Applicant: Ontario Power Generation Inc.

August 26, 2026



Acknowledgement

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

Disclaimer

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. The IESO provides no comment, representation or opinion, express or implied, with respect to who should bear the cost of IESO requirements for connection in this report and disclaims any liability in connection therewith.

Project Description

Ontario Power Generation Inc. (the “connection applicant”) is proposing the following changes at Whitedog Falls GS (the “project”), a transmission-connected generation facility in the Northwest Zone:

- Replacement of 115 kV disconnect switch 3T1-H with a new disconnect switch. All necessary high voltage bus upgrades to integrate the switch will be performed as well
- Replacement of 13.8 kV circuit breakers 52-G1, 52-G2, and 52-G3 with new breakers
- Replacement of 13.8 kV circuit breaker 52-SS1, the new breaker will instead be named 52-TSS1
- Replacement of 13.8 kV circuit breaker 52-SS2, the new breaker will instead be named 52-TSS2
- The main bus that G1-G3 are connected to will be split into two separate buses (BL2 and BL3). Then, G1 and G2 will be connected to Bus BL2 while G3 will be connected to Bus BL3. Each bus (BL2 and BL3) will in turn be connected to the new main bus component (Bus BL1) which then connects to Main Output Transformer (MOT) T1
- Install two new 13.8 kV circuit breakers (52-BL2 and 52-BL3) that can isolate the generators from MOT T1 if required. 52-BL2 isolates G1 and G2 while 52-BL3 isolates G3
- Protection system replacements and installations: The protection systems for the MOT, the generators, and the station service transformers will all be replaced with modern ‘A’ and ‘B’ fully redundant schemes. In addition, a new bus protection scheme is to be installed for busses BL2 and BL3 consisting of a modern ‘A’ and ‘B’ fully redundant scheme.
- Control system replacements: Station RTU and start/stop control will be replaced with a modern PLC-based control system that retains the ability to perform both local and remote operation for each generation unit. Overall, the proposed control systems are expected to provide either the same or better functionality than the existing systems.

The project will come in-service in two phases. First, the replacement 3T1-H disconnect switch will come in-service in Q4 2027. Then, the rest of the project will come in-service by October 2028 with G3-associated equipment specifically expected to come in-service as early as July 2028. Please note that the relevant changes from SIA 2025-852: Whitedog Falls GS: G1/G2/G3 Upgrades (latest in-service date of Q4 2027) and SIA 2024-798: Whitedog SS: Whitedog DS Relocation (in-service date of Q4 2027) have been considered and accounted for under this assessment.

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.

IESO Requirements for Connection

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.

Appendix A: General Requirements

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code (TSC) 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 project's equipment meet the voltage requirements specified in section 2.4.2 and section 2.4.3 of the Ontario Resource and Transmission Assessment Criteria (ORTAC).
3. 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.

4. 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 2.4.2 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.

The connection application must send the final 'as-applied' protection settings for each new, replaced or modified protection to protection.settings@ieso.ca. The final "as-applied" settings for each protection must be received by the IESO no later than 30 days after the in-service date of the project.

5. As currently assessed, the project is not required to participate in a Remedial Action Scheme (RAS). However, the connection applicant is required to have adequate provision in the design of the project's protections and controls to allow for future installation of RAS equipment in case needed to improve transfer capability in the vicinity of the project or to accommodate transmission reinforcement projects. If the project is required to participate in a RAS, its RAS facilities must comply with the NPCC Reliability Reference Directory #7 for Type 1 RAS and NERC RAS Standards. In particular, if the RAS is designed to have redundant 'A' and 'B' protection systems at a single location, they must be on different non-adjacent vertical mounting assemblies or enclosures. Two independent trip coils are required on any breakers to be selected for L/R as part of a RAS design.
6. 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.
7. The connection applicant will be required to take corrective actions that could include upgrades to the project, if the project is not able to meet the IESO's requirements specified in this SIA report, and/or the performance of their facilities becomes inadequate or causes any adverse impact on the IESO-controlled grid (e.g. sustained oscillations or excessive voltage decline) after the project is in-service. If upgrades are needed, the IESO may direct the transmitter or the distributor to disconnect the project until such upgrades are deployed, to the satisfaction of the IESO. Automatic reconnection of the facilities to the system is not allowed.
8. 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.
9. The connection applicant must initiate the IESO's Market Registration process at least four months prior to the commencement of any project related outages. 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.
10. As per [Market Manual 1.4: Connection Assessment and Approval](#), the connection applicant will be required to provide notification to the IESO (Connection.Assessments@ieso.ca) when the project

has reached a milestone to deem the project as committed. A common method of delivering this notification is by completing the project status report form ([IMO-FORM-1399](#)) A committed project is a project that has demonstrated to the IESO a high probability of being placed into service. Committed projects will be included, together with all projects that are in service, at the time of the SIA, in the basecase assumptions for the evaluation of all projects that are not yet committed, irrespective of the SIA status of those projects. As a result of this inclusion, projects that are not committed could receive additional requirements for connection or may be deemed withdrawn by the IESO.

To have your project recognized as committed, refer to [Market Manual 1.4: Connection Assessment and Approval](#), Section 3.3, which outlines the criteria for a project to be designated as committed.



Disclaimer of Confidentiality

Appendices B to C, inclusive, contain confidential information of the IESO, the connection applicant, the transmitter and, potentially, other third parties, including information that, if disclosed, could reasonably be expected to pose a potential security threat to the *integrated power system*, the *IESO-administered markets*, or those of neighbouring jurisdictions.

Appendices B to C are intended only to be disclosed to, and may only be used on a confidential basis by the connection applicant and transmitter. The connection applicant and transmitter may not, except as permitted by Section 5.3 of Chapter 3 of the Market Rules, disclose or use such information, other than for the purpose of carrying out its responsibilities as described in Section 6 of Chapter 4 of the Market Rules, the Transmission System Code and Market Manual 1.4.



Appendix B: Project Data (Confidential)

Appendix C: Technical Assessments (Confidential)

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