

Connection Assessments – Load displacement generation or electricity storage units

Market participants that own transmission connected¹ load facilities are reminded that they need to participate in the Connection Assessment and Approval (CAA) process before installing any load displacement generation or electricity storage units.

Although load displacement generation or storage units may be located behind the meter², they can still adversely impact the reliability of the transmission system. Consequently, they must participate in the CAA process independent of their size and technology. The following are examples of potential adverse impacts that may need to be addressed before a load displacement unit is connected:

- increased short circuit levels above the capability of existing equipment;
- impaired function of transmission line protections;
- unexpected modes of power system oscillation;
- injection of undesired electricity into the IESO-controlled grid; and
- system wide events, such as frequency and voltage excursions, exacerbated by the inadvertent tripping of
- multiple load displacement units.

Market participants who intend to install load displacement units must contact the IESO and their transmitter for a system impact assessment (SIA) and a customer impact assessment (CIA), respectively. Distribution connected load customers who intend to install generation or electricity storage units within their facilities must contact their [distributor](#) who will guide them through the appropriate processes. For units larger than 10 MW, the distributor needs to file an application for connection assessment with the IESO and applicable transmitter on behalf of their distribution customer.

Load displacement units are, at a minimum, subject to the performance requirements related to off-nominal frequency operation, speed/frequency control and voltage ride-through specified in [appendix](#)

¹ Transmission connected load facilities are typically identified as those with a connection point voltage above 50 kV.

² In this document "behind the meter", when referring to a load displacement generation or electricity storage unit, means that the unit is not separately metered by a revenue meter that is registered with the IESO for settlements purposes, but instead its operation will be reflected in the readings of the wholesale revenue meter(s) associated with the transmission connected load facility where the unit is installed. Also the unit operates strictly for the needs of the transmission connected load facility and does not participate in the IESO's administered markets for energy and/or ancillary services.

[4.2](#) of the Market Rules. The transmission-connected load facility must avoid any injection of electricity into the IESO-controlled grid and ensure that it does not increase the maximum load allocated or approved for their existing facility.

Prior to placing load displacement units in-service, market participants may be required to provide telemetry for the units, update their load facility registration data with the IESO by way of the [IESO's market registration process](#), undergo [performance validation](#) testing of the units and update their Transmission Connection Agreements with the applicable transmitter.

After installation of a generation or electricity storage load displacement unit, the transmission connected load facility continues to be subject to all performance requirements of [appendix 4.3](#) of the market rules, including operation at a power factor within the range of 0.9 lagging to 0.9 leading as measured at its defined meter point, and the Transmission System Connection Point Performance Standards in [appendix 2](#) of the Transmission System Code (TSC).

Those market participants that intend to re-purpose their existing load displacement units to provide ancillary services³, intentionally inject power into the system or increase the maximum load of the facility, should contact the IESO and their transmitter to determine if additional assessments are required.

To initiate the [Connection Assessment and Approval \(CAA\) process](#), market participants must submit an application package to both the [Connection Assessments group](#) at the IESO and to the applicable transmitter. This includes completing [IESO form 1536](#) or [IESO form 21](#) if connected to Hydro One Networks Inc. or Hydro One Sault Ste. Marie transmission systems, respectively. The application must indicate on page 4, that the "intent of generation" is "load displacement". The form must be signed by an authorized representative of the market participant, as registered with the IESO. Please note that a description of the operating philosophy and standard dynamic models (per section 5.6 of [Market Manual 1.6](#)) are required.

The IESO is committed to working together with connection applicants through the CAA process to connect new facilities and modify existing facilities in a timely manner while preserving the reliability of the Ontario electricity grid. Having accurate and complete information is key to successfully completing the CAA process.

Please direct any questions or feedback on the Connection Assessments process to connection.assessments@ieso.ca. The Connections Assessment group is always looking to improve the delivery of their services and encourages your input.

³ IESO ancillary services include: regulation, operating reserve, reactive support, voltage control and black-start capability