



DER Hosting Capacity – Calculation Methodology

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Overview

The Distributed Energy Resource (DER) Hosting Capacity represents the maximum available limit of power generation (in kW or MW) that can be connected to a given distribution Feeder. These limits are in place to prevent excessive generation from causing damage to, or maloperation of, Burlington Hydro and/or customer facilities.

The Burlington Hydro system defines M-Class feeders as those operating at 27.6 kV and F-Class feeders as those operating at either 13.8 kV or 4.16 kV. The M-Class and F-Class feeders have separate constraints for establishing the available Hosting Capacity limits.

DER Types

DERs are separated into five (5) categories which contribute to the main tests (below) in separate ways, which produce separate Hosting Capacity results. Therefore, there are 5 layers on the Centralized Capacity Information Map (CCIM) for Available DER Hosting Capacity. The five (5) DER types include:

- 1. Micro DER**
- 2. Inverter-based Exporting DER**
- 3. Inverter-based Non-Exporting DER**
- 4. Non-Inverter-based Exporting DER**
- 5. Non-Inverter-based Non-Exporting DER**

Tests for Establishing Hosting Capacity

Hosting Capacity limits are established by performing a series of tests on the system. All tests produce individual allowable limits of generation from which the lowest limit will establish the Feeder Hosting Capacity. The main tests that are performed include:

1. Station Thermal Tests

Thermal tests ensure that reverse power flow, from all exporting DERs, does not exceed the allowable equipment thermal limits at any Municipal Station (MS) and/or Transformer Station (TS).

2. Short Circuit Tests

Short Circuit tests ensure that the total short circuit contributions from all DERs do not exceed the upstream MS and/or TS individual equipment limits and the upper limits defined by the Transmission System Code (TSC) for any TS bus.

Short Circuit contribution is dependant on Inverter or non-Inverter type generators, where: Inverters contribute $1.33 \times$ nameplate and Non-Inverters contribute $5.67 \times$ nameplate.

Short Circuit tests at an MS level must also pass the applicable upstream TS test.

3. Feeder Limit Tests

Feeder Limit tests include thermal tests for all DERs and anti-islanding tests for all Micro-DERs.

The total generation must not exceed the thermal limits of 200A for F-Class feeders and 400A for M-Class feeders.

The aggregated Micro-DER nameplate generation must not exceed 33% of the minimum feeder-segment loading for F-Class Feeders and 50% of the minimum feeder-segment loading for M-Class Feeders.

Available hosting capacity is high-level calculation based on station, feeder and upstream transmitter constraints and capacities. DER Hosting Capacity does not include project related technical evaluations, constraints or requirements that may be identified in a Connection Impact Assessment, if required.