

DER Hosting Capacity Calculation Methodology

Distributed Energy Resource (DER) Hosting Capacity represents the maximum amount of DER generation that can be connected to the distribution system without violating system operating limits or necessitating distribution or station upgrades.

This methodology applies to:

- Inverter-based DERs
- Non-inverter-based DERs
- Both exporting and non-exporting DER installations

EPCOR Electricity Distribution Ontario Inc. (EEDO) maintains a complete and up-to-date inventory of all generations connected to each distribution feeder. Generator inventory info includes:

- Nameplate rating of each generating unit
- Generation technology type (e.g., inverter-based, synchronous, induction, etc.)
- Associated feeder and point of connection

When performing Distributed Energy Resource (DER) hosting capacity calculations, EEDO considers all existing connected generators, as well as any DER projects with a valid Connection Impact Assessment (CIA). Capacity screens are performed in a hierarchical manner across the transformer, bus, and feeder levels. A generation interconnection must pass each level of testing to proceed; failing a test upstream automatically means no test downstream will pass. EEDO references the Upstream Hosting Capacity information provided by Hydro One to identify the upstream thermal and short-circuit limits for the relevant supply stations.

Please contact dxgeneration.eedo@epcor.com if you have any questions.

Micro-DER (≤ 12 kW) Limit

For micro-generation installations (12 kW per installation), the cumulative generation on a feeder is limited to:

- No more than 7% of feeder peak load on F-class feeders, or
- No more than 10% of feeder peak load on M-class feeders

DER (> 12 kW) Limit

EEDO defines the applicable hosting capacity limits for each feeder. These limits typically fall into the following categories:

1. Thermal Feeder Limit (Test 1)

Generation on a feeder is constrained by conductor thermal ratings and is limited to:

- 200 A (4.16kV or 8.32kV feeder voltage) or 400 A (44kV feeder voltage)

2. Thermal Station Limit (Test 2)

Total generation connected at a distribution station must not exceed:

- 60% of the transformer MVA nameplate rating, plus the minimum station load

3. Short-Circuit Capacity (SCC) (Test 3)

During a station fault condition, all connected DERs contribute fault current to the system. The cumulative contribution from DERs increases the total short-circuit current experienced by station equipment. Accordingly, the total DER hosting capacity must be constrained to ensure that short-circuit current levels do not exceed the rated capabilities of installed equipment or applicable regulatory limits. Short-circuit capacity calculations are based on the following standard contribution assumptions for DER technologies:

- Inverter-based DERs fault contribution is estimated using a short-circuit (SC) multiplier of 1.33 times the nameplate rating.
- Non-inverter-based (e.g. synchronous or induction generators) DERs fault contribution is estimated using a SC multiplier of 5.57 times the nameplate rating.

Short Circuit Contribution = Available capacity (Nameplate MW) * SC Multiplier

Available capacity (SCC MW) = (Equipment SCC Rating – Existing Station Short-Circuit Level – DER Short-Circuit Contribution)

EEDO will verify the calculated available hosting capacity against limits provided by the upstream transmission provider. The governing hosting capacity shall be the lower of:

- The local distribution company (LDC) calculated feeder or station limit, or
- The upstream transmission-imposed limit.