Distributed Energy Resource (DER) Hosting Capacity Calculation Methodology

This document outlines the methodology NT Power used to calculate DER hosting capacity on the feeders, as presented on the Ontario Energy Board's Centralized Capacity Information Map (Centralized Capacity Information Map | Ontario Energy Board).

DER Hosting Capacity represents the maximum amount of DER generation that can be connected to the distribution system without exceeding system limits or requiring system upgrades. The high-level methodology outlined below applies to both inverter-based and non-inverter-based DERs, as well as to exporting and non-exporting DER configurations.

DER Hosting Capacity Methodology

The DER hosting capacity in the distribution system is based on the following criteria:

1. Station Thermal Capacity
    a. Reverse power flow of station transformer – 60% rule
    b. Minimum station loading

2. Feeder Thermal Capacity
    a. Based on feeder operating limits
    b. Minimum feeder loading

3. Station Short Circuit Capacity
    a. Based on the Transmission System Code (TSC) code station limits
    b. Station Equipment short circuit rating

4. Upstream Transmission Constraints
    a. The governing available capacity is always the lower of:
        i. The LDC-calculated feeder/station limit, or
        ii. The upstream transmitter limit

5. Connected DER projects
    a. Connected DER project contributes/increases short circuit values on the station

Determine Remaining Station/Feeder Capacity

Remaining Capacity = Applicable Limit − Existing Connected Generation

Applicable limit is the lowest number of the Short Circuit and Thermal station constraints.

Overview

NT Power provides general information about common costs associated with connecting Distributed Energy Resources (DERs), including:

- Micro-embedded generation facility connection costs
- Connection Impact Assessment (CIA) fees
- Other common connection costs for DERs with a nameplate capacity of 250 kW or less

Where applicable, NT Power indicates whether a cost is a fixed service charge. The table below outlines other common connection costs for DERs. To provide clearer and more meaningful information, costs may be grouped by DER type or capacity.

Common Cost Items for Micro and Small DERs ≤ 250kW

Cost item	Single Phase	Three Phase – Small DER			
	Micro DER ≤ 12 kW	**>12kW & ≤30kW** on <15kV system	**>12kW & ≤100kW** on ≥15kV system	**>30kW & ≤250kW** on <15kV system	**>100kW & ≤250kW** on ≥15kV system
Application/Connection Impact Assessment (CIA) fee	n/a	$1,800.00		$5,950.00	
Design, engineering, project management and clerical costs	$210.00	$480.00			
Inspection costs	$161.50	$323.00			
Meter installation and labelling costs*	$445.05	$1,023.50			
Monitoring and control solution (SCADA)	n/a	n/a			
Commissioning, testing and verification costs	n/a	$210.00			

**varies based on main service specifications*

The table that follows present connect on cost data for DER projects connected to NT Power's distribution system over the past 1–2 years. Projects are grouped into three size-based categories reflecting the general complexity of the connection.

This information on is provided for informational purposes only and is intended to illustrate NT Power's historical performance in estimating connect on costs within each size category. It should not be interpreted as a guarantee of estimate accuracy or as establishing a specific tolerance range for any proposed DER project, even if it is similar in size or connect on characteristics.

Historical Connection Cost Variance

DER Group/ kW Size Range	Project Type (Exporting/ Non-Exporting)	Connection Cost Estimate ($)	Actual Connection Cost ($)	Variance (Actual - Estimate) ($)	Variance %	Expansion Required (Y/N)	Transfer Trip Required (Y/N)	Build & Energization Duration (Months)
Micro DERs (≤12kW)	Exporting	$816.55	$1,006.54	$189.99	23.3%	N	N	3
	Exporting	$816.55	$1,081.95	$265.40	32.5%	N	N	4.5
Three-Phase Small DERs (>12kW & ≤30kW on <15kV system)	Exporting	$2,036.50	$1,842.31	-$194.19	-9.5%	N	N	18
Three-Phase Small DERs (>12kW & ≤100kW on ≥15kV system)	n/a – no connections within last five years							
Three-Phase Small DERs (>30kW & ≤250kW on <15kV system)	n/a – no connections within last five years							
Three-Phase Small DERs (>100kW & ≤250kW on ≥15kV system)	n/a – no connections within last five years							