APPENDIX E – DER FACILITIES CONNECTION REQUIREMENTS OVERVIEW

A. Connection Impact Assessment (CIA) and Documentation Requirements

All DER Facility Owners shall provide Hydro One with the documentation requested by Hydro One including any information specified in the Technical Interconnection Requirements ("TIR").

Hydro One performs a Connection Impact Assessment ("CIA") for any Facility with a name-plate rated capacity greater than 10 kW, or for any Micro-DER Facility when deemed required by Hydro One, in order to assess the impact of the connection of the proposed DER Facility to Hydro One's distribution system and where connection is feasible, to specify the connection requirements. The capacity will be allocated for the DER Facility upon the completion of the CIA in accordance with the Distribution System Code. The cost of performing the CIA will be paid by the DER Facility Owner, at the applicable OEB-approved rates.

If the DER Facility Owner changes the DER Facility's design, plans or equipment materially from that in the original application for connection, Hydro One is obligated to follow the treatment prescribed in Section 6.2.15 of the Distribution System Code.

B. Interface Protection and Isolating Devices

The DER Facility Owner shall provide an interface protection for their DER Facility that detects all applicable faults on the Hydro One distribution system for the purposes of the DER Facility Owner and disconnects the DER Facility from the Distribution System in the event of such faults. The DER Facility Owner shall provide, install and maintain a disconnecting device at the Point of Common Coupling with the Distribution System or some other acceptable location to Hydro One for the purpose of isolating the DER Facility in case of an Emergency and for work protection. The disconnecting device shall be installed in accordance with the technical requirements specified in CSA Standard C22.3 No. 9, the TIR, and the Electrical Safety Code.

C. Metering for DER Facilities

Meter Installations for Micro-DER Facilities

Any person proposing to connect a Micro-DER Facility is responsible for providing a Meter Installation in accordance with the requirements of the Distribution System Code, Hydro One's standard metering requirements and Hydro One's policy directive for Embedded Generation Facility metering. Hydro One shall supply and install the revenue meter. All costs associated with new or modified metering are the responsibility of the Micro-DER Facility Owner.

Metering for DER Facilities Larger than 10 kW

a) Meter Installations – Installed after July 14, 2000

The DER Facility Owner is responsible for providing a Meter Installation in accordance with the requirements of the Distribution System Code, Hydro One's standard metering requirements and Hydro One's policy directive for Embedded Generation Facility metering. Prior to installing the Meter Installation, the DER Facility Owner shall provide Hydro One with the technical details of the Meter Installation, for Hydro One's approval. All costs associated with new or modified metering are the responsibility of the DER Facility Owner.

The Meter Installation shall be installed at the Point of Common Coupling with the Distribution System or some other acceptable location at the sole discretion of Hydro One. If the Meter Installation is not installed at the Point of Common Coupling, Hydro One shall apply loss factors to the output of the DER Facility in accordance with the OEB-approved loss factors applied for retail settlements and billing.

The DER Facility Owner shall supply single line diagrams showing revenue metering connections in

the format specified by Hydro One. Such diagrams must be signed and stamped by a professional engineer registered in Ontario. The loss factors, if required, must be supplied by the DER Facility Owner in the format specified by Hydro One and signed and stamped by a Professional Engineer registered in the province of Ontario.

In all cases where the DER Facility Owner is responsible for any Meter Installation, the DER Facility Owner is also responsible for the quality of the equipment and installation including all work and materials related to the Meter Installation. Deficiencies in any Meter Installation that require remediation, as determined by Hydro One, including but not limited to replacement costs and labour, will be performed by Hydro One at the cost of the DER Facility Owner. The DER Facility Owner shall be responsible to Hydro One for Meter Installation deficiencies for a period of two (2) years after Hydro One becomes the owner of the Meter Installation.

b) Meter Installations – Installed Prior to July 14, 2000

Where the existing Meter Installation for an Embedded Generation Facility was installed prior to July 14, 2000, the Embedded Generator shall upgrade the Meter Installation to be in accordance with Hydro One's standard metering requirements and Hydro One's policy directive for Embedded Generation Facility metering by no later than the meter seal expiry date. All costs associated with metering are the responsibility of the Embedded Generator.

C.1 Metering Standards

Hydro One will apply the metering standards in Table 1 below for DER Facilities:

Table 1:

DER Facility Capacity	Metering Requirements
≤ 10 kW	Smart Bi-directional or 4-Quadrant MIST (if net-metering load is >50kW)
>10 kW to ≤ 250 kW	4-Quadrant MIST
>250 kW	4-Quadrant PQ

- Smart bi-directional: A dual register meter measuring kWh delivered and kWh received, which may be manually or remotely read.
- 4-Quadrant MIST: Bidirectional meter with a minimum of four recording channels kWh & kVArh delivered and received with telephone or other communication (interval meter and remotely read)
- MIST: Metering Inside the Settlements Timeframe (interval meter)
- 4-Quadrant PQ Meter: A meter with multiple recording channels that includes power quality information.

Any DER Facility Owner that sells energy and settles through Hydro One's retail settlement system will be responsible for all costs for Hydro One to provide and install metering as per Table 1 and for the costs to have a Communication Line installed if required, unless the DER Facility Owner makes other arrangements for the Meter Installation that are acceptable to Hydro One and provides Hydro One with the technical details of their Meter Installation. The DER Facility metering will conform to current Hydro One retail revenue metering standards at the time of construction and Hydro One will subsequently own and maintain the metering and the communication line. For an existing Meter Installation, on the meter's seal expiry date (unless an earlier transfer date is established by Hydro One), the DER Facility Owner shall be responsible for all costs for Hydro One to provide and install metering as per Table 1. For Embedded Retail Generation Facilities, the Embedded Retail Generator

shall replace the existing metering per Hydro One's current retail revenue metering standards.

Metering will conform to Measurement Canada requirements and be installed at the Point of Common Coupling and Ownership Demarcation Point. If it is not practical to install the meter at the Point of Common Coupling, Hydro One will apply loss factors to the generation output in accordance with the applicable loss factors for retail settlements and billing. Depending on meter location, the loss factors may be calculated to include transformer losses, line losses, or both.

Where an existing DER Facility's Meter Installation does not conform to Measurement Canada requirements or the accuracy class of instrument transformers cannot be confirmed, the DER Facility Owner must have the Meter Installation tested and apply a Measurement Canada correction factor to meter readings until such time as conformity to the standards is achieved. If pursuing an IESO contract, the DER Facility Owner will upgrade metering to meet Hydro's standards within a time period acceptable to Hydro One.

Where an existing DER Facility has non-standard voltage on the secondary side of the transformer and is metered at the secondary voltage, or the existing Meter Installation does not comply with Hydro One's retail revenue metering standards, the DER Facility Owner will own and maintain the metering, including the Communication Line, per Measurement Canada requirements. If pursuing an IESO contract, the DER Facility Owner will upgrade metering to meet Hydro One's standards within a time period acceptable to Hydro One.

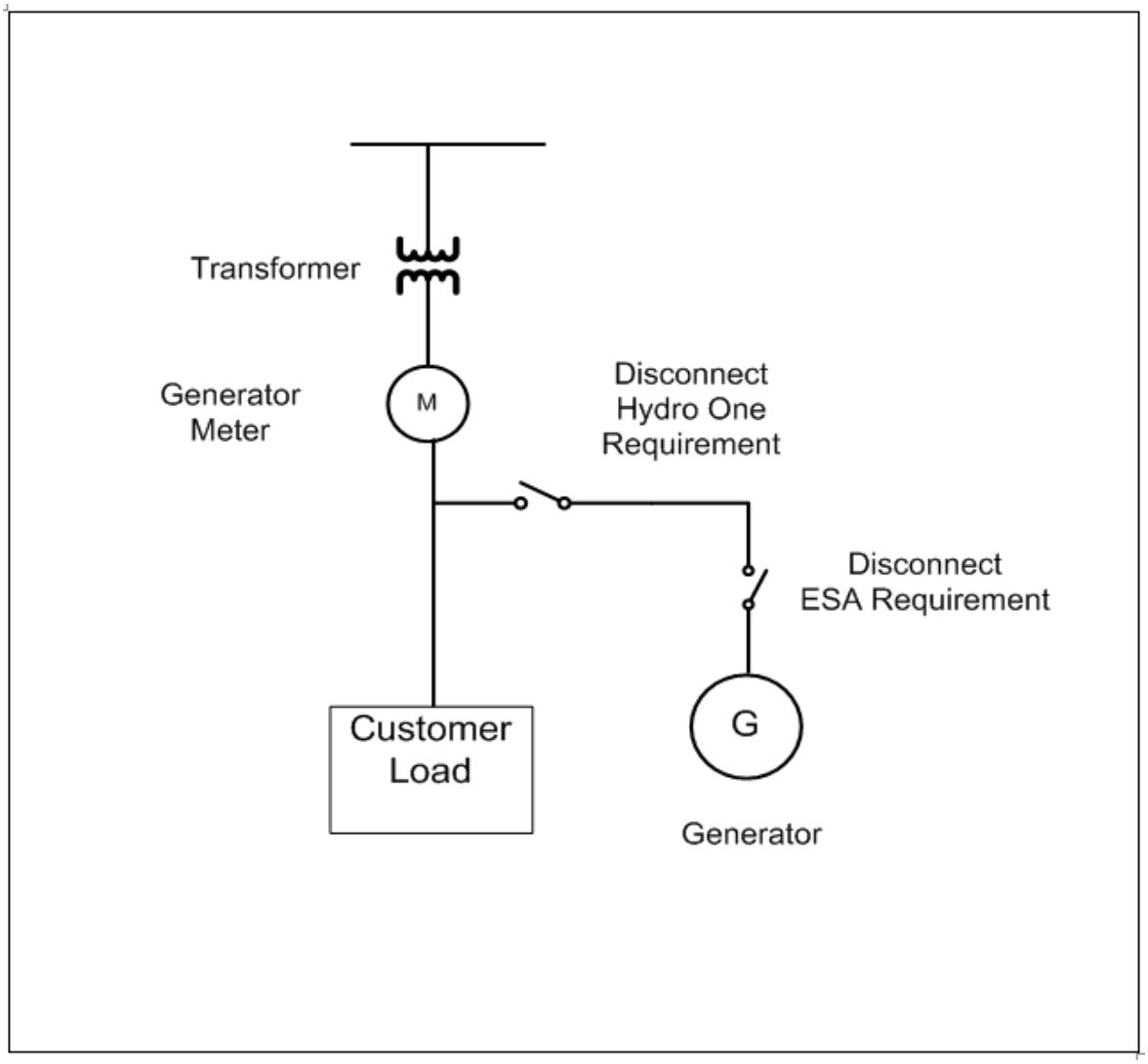
When Hydro One has agreed to allow separate metering for station service, the metering must meet all Hydro One metering requirements, including Hydro One's retail revenue metering standards, communication requirements and location requirements.

A DER Facility Owner that consumes energy (including for station use or back-up supply) from the distribution system will be placed in the appropriate Rate classification and billed for the energy consumed.

C.2 Typical DER Facility Meter Installations

The following figures demonstrate a typical Meter Installation for a load Customer with a DER Facility and are intended to show the location of the metering relative to the Customer Load and the DER Facility. These are not a complete list of all possible Meter Installations but represent a typical Meter Installation.

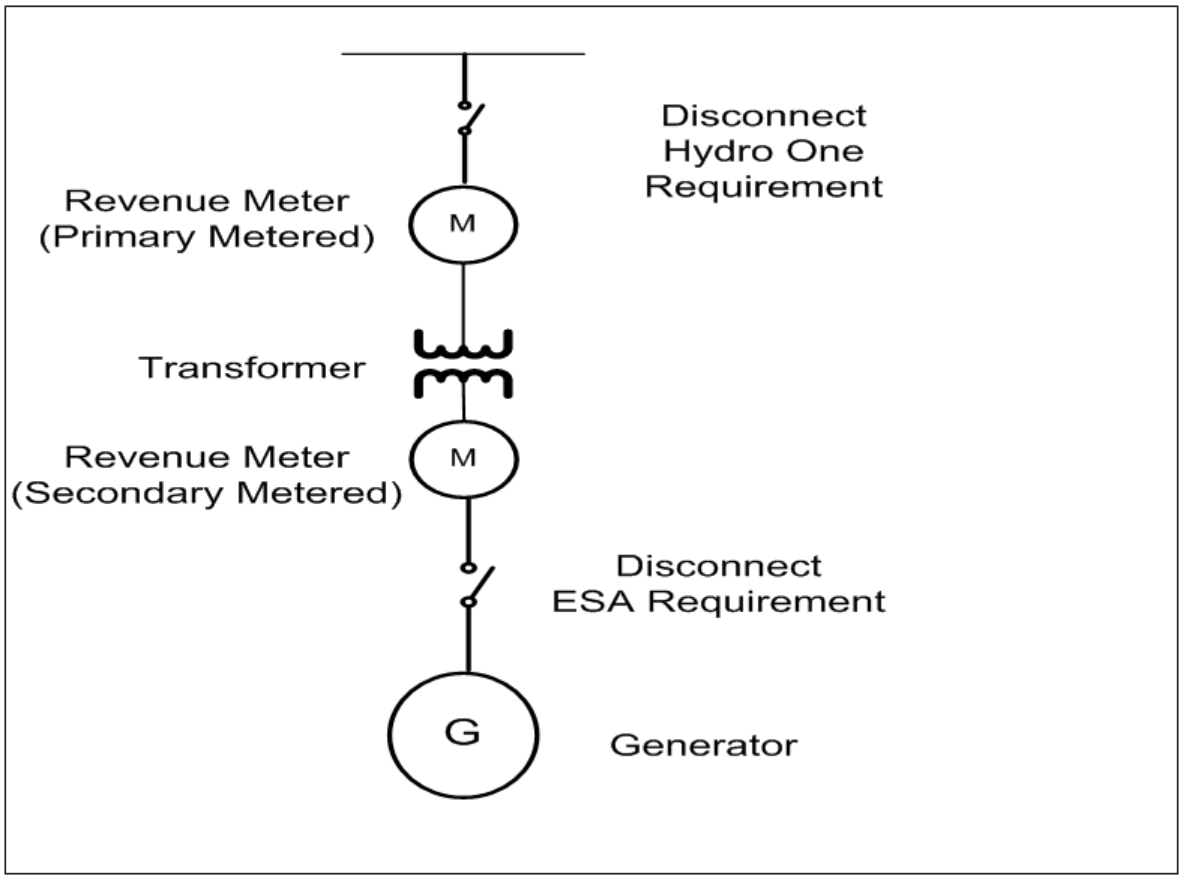
Figure 1: Metering Arrangement for a Load Customer with a DER Facility



This drawing is intended to show the location of the metering relative to the Customer Load and the DER Facility. The connection of the DER Facility must meet the requirements contained in the TIR

Net metering must be implemented using meters approved by Measurement Canada.

Figure 2: Metering Arrangement for Directly Connected Embedded Retail Generation Facilities



This drawing is intended to show the location of the metering for an Embedded Retail Generation Facility. Metering may be installed as primary metered or secondary metered. The Embedded Retail Generation Facility must meet the technical requirements contained in the TIR.

Metering for an Embedded Retail Generation Facility must be implemented using Hydro One meters approved by Measurement Canada. The Embedded Retail Generator will be responsible for all costs to supply and install metering. See Table 1 above for Embedded Retail Generation Facilities.

When the meter is not installed at the point of supply, loss factors will be applied to the generation output for retail settlements and billing.

Figure 3: Metering Arrangement for Indirectly (Parallel) Connected Embedded Retail Generation Facilities

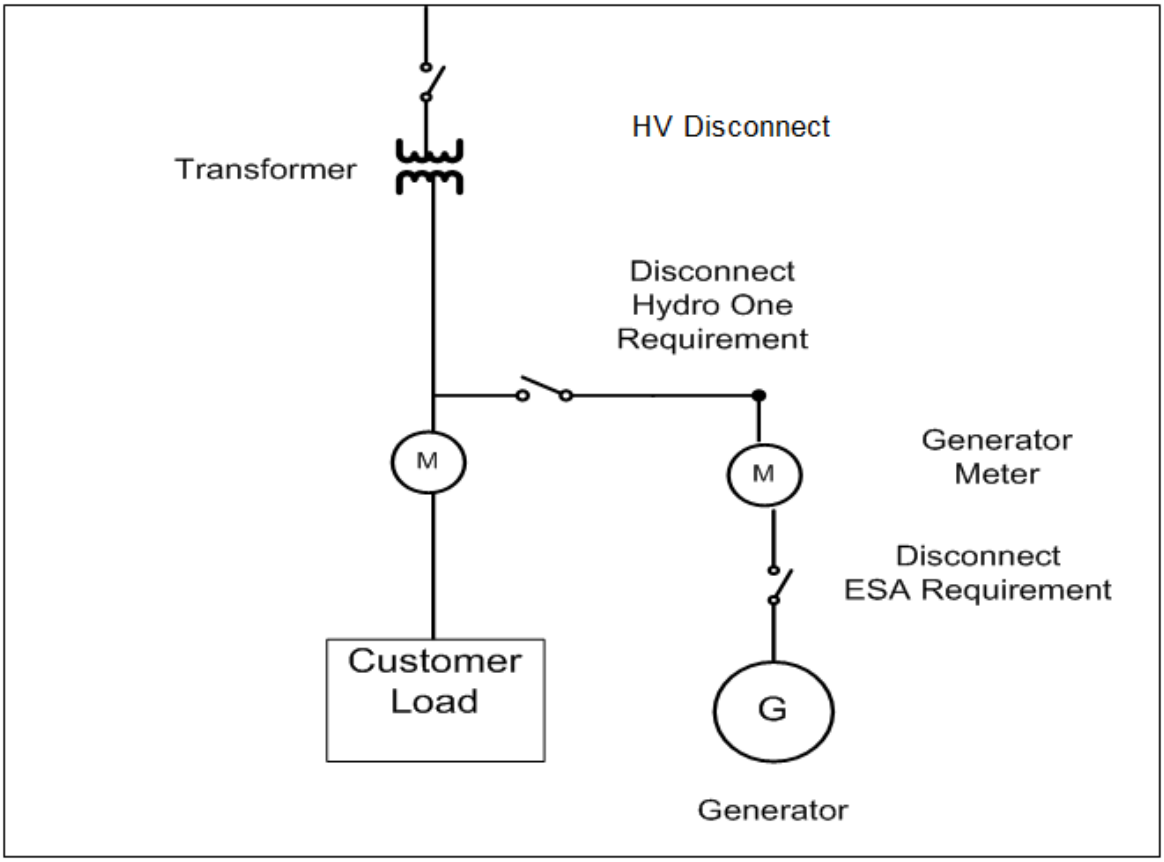


Figure 3 is intended to show the location of the metering relative to the Customer Load and the Embedded Retail Generation Facility. The Embedded Retail Generation Facility must follow the technical requirements contained in the TIR.

Metering for an Embedded Retail Generation Facility must be implemented using Hydro One meters approved by Measurement Canada. The Embedded Retail Generator will be responsible for all costs to supply and install metering as per Table 1 for the Embedded Retail Generation Facility.

When the meter is not installed at the point of supply, loss factors will be applied to the generation output for retail settlements and billing.

D. Transformer Requirements

a) Micro-DER Facilities

Any person connecting a Micro-DER Facility in parallel to a new or existing load service, may use the existing transformer to interface with the distribution system if it is of sufficient size as specified in the appropriate TIR. Any person connecting a Micro-DER Facility in a standalone fashion shall pay the Actual Costs for Hydro One to supply, install and maintain the step up transformation. In the situation where the connection of the Micro-DER Facility requires a transformer upgrade to a size over and above the requirements of the load, Hydro One will provide, install, own and maintain the transformer at standard Hydro One voltages. The transformation supplied by Hydro One is dependent on the load of the new or existing load service, is subject to the limitations noted in section 2.1 of Hydro One's Conditions of Service and is sized solely upon the new or existing load. All costs associated with the transformer upgrade (including procurement and installation of the new transformer and the decommissioning and removal of the existing transformer) will be performed at the DER Facility Owner's expense.

b) DER Facilities With a Name-plate Rated Capacity of Greater than 10 kW

Any DER Facility Owner connecting a DER Facility with a name-plate rated capacity greater than 10 kW in parallel to a new or existing load service, may use the existing transformer to interface with the distribution system if it is of sufficient size and provided that the net reverse power flow through the transformer is within the reverse flow limit established by Hydro One. In the case where a connection of the DER Facility requires a transformer upgrade to a size over and above the requirements of the load, Hydro One will provide, install, own and maintain the transformer for standard Hydro One voltages to a maximum size of 500 KVA. The transformation supplied by Hydro One is dependent on the load of the new or existing load service, is subject to the limitations noted in section 2.1 of Hydro One's Conditions of Service and is sized solely upon the new or existing load. All costs associated with the transformer upgrade (including procurement and installation of the new transformer and the decommissioning and removal of the existing transformer) will be at the DER Facility Owner's expense.

Excluding the above, any step-up transformation equipment that is required to step-up the DER Facility's output voltage to the primary voltage of Hydro One's distribution line shall be supplied, installed, owned and maintained by the DER Facility Owner at their own expense.

E. Embedded Generation Facilities Sharing Transfer trip/DGEO Path, Devices and Equipment

Where Hydro One in its sole discretion agrees to permit an Embedded Generator to use another Embedded Generation Facility's transfer trip/DGEO path devices and equipment ("**Project with TT/DGEO**") to cascade transfer trip/DGEO signals on the Embedded Generation Facility's behalf instead of installing its own transfer trip/DGEO path devices and equipment ("**Project(s) without TT/DGEO**") in a manner that the Project with TT/DGEO is not able to send and receive independent transfer trip/DGEO signals to and from the Project(s) without TT/DGEO e.g. Hydro One cannot discern the individual TT/DGEO signals being sent and received from the Project with TT/DGEO and the Project(s) without TT/DGEO, the following terms and conditions which will be included in the CCA and the Connection Agreement of the Project(s) without TT/DGEO, shall apply:

(a) acceptance of the following operational restrictions:

- Hydro One will treat all of the Project(s) without TT/DGEO's and the Project with TT/DGEO's generation facilities (collectively the "**Facilities Using Single TT/DGEO**") as one single Embedded Generation Facility for teleprotection purposes;
- a single transfer trip signal will be sent to the Project with TT/DGEO and a single DGEO signal will be received from the Project with TT/DGEO;
- all of the Facilities Using Single TT/DGEO must be disconnected in the event of an emergency or unavailability of the teleprotection;
- upon Hydro One's request, all of the Facilities Using Single TT/DGEO must disconnect in the event that the protection of one of the Facilities Using Single TT/DGEO is not available or fails;
- upon Hydro One's request, all of the Facilities Using Single TT/DGEO must cease generation if any one or more of the Facilities Using Single TT/DGEO's telemetry or alarms are not fully functional; and
- all of the Facilities Using Single TT/DGEO must cease generation if the transfer trip/DGEO path devices and equipment are not fully functional.

(b) the Generators and their common owner(s) must accept all risks associated with this arrangement including any impact on any agreement they have with the IESO in respect of the sale of the output of the Project(s) without TT/DGEO's Embedded Generation Facility(ies).

The above terms will cease to apply to any of the Project(s) without TT/DGEO where:

1. the Project(s) without TT/DGEO installs its own transfer trip/DGEO path devices and equipment and pay Hydro One's costs of installing transfer trip/DGEO path devices and

equipment; or

2. should the Project with TT/DGEO be able to send and receive independent transfer trip/DGEO signals to and from the Project(s) without TT/DGEO.

For greater certainty, the above terms do not apply where the Project(s) without TT/DGEO are able to send and receive TT/DGEO signals to and from Hydro One such that Hydro One is able to discern that the signals Hydro One is receiving are coming solely from an identifiable Project without TT/DGEO. However, the Connection Agreement may include information pertaining to the dependency of the Project without TT/DGEO on the other Embedded Generation Facility's path, devices and/or equipment as appropriate.

F. Connection Costs

F.1 All DER Facilities (Except for Micro-DER Facilities)

An estimate of the cost to connect the proposed DER Facility is provided at the time the CIA is completed. The estimate is a Class C estimate, which has a target accuracy range of plus or minus 50% unless specified otherwise. The applicant of the proposed DER Facility ("**Applicant**") has the option of requesting that Hydro One perform a detailed cost estimate at the Applicant's expense. The CIA and cost estimate are valid for six months from the date of the CIA release.

The Applicant is required to enter into a Connection Cost Agreement (CCA) within the timelines specified in the Distribution System Code (which are based on the size of the DER Facility and connection requirements) after receiving a capacity allocation from Hydro One as referenced in section A above for the DER Facility. Where two or more DER Facilities are being connected to Hydro One's distribution system at the same Point of Common Coupling, Hydro One will execute only one CCA with the Applicants, and the Applicants will be liable to Hydro One on a joint and several basis.

The Applicant is responsible for all cost of connecting their proposed DER Facility, and, if applicable, any required changes to the Distribution System. If the DER Facility Owner is proposing to connect a Renewable Embedded Generation Facility, the applicant may be exempt from paying the cost of certain required Expansion investments if these costs do not exceed the Renewable Energy Cost Cap or the connection work is defined as a Renewable Enabling Improvement in the Distribution System. When an Expansion is required to connect a DER Facility**,** Hydro One will perform an economic evaluation in compliance with sections 3.2.5, 3.2.5A and 3.2.5B of the Distribution System Code.

The DER Facility Owner proposing to connect a DER Facility is also required to pay all required deposits at the time the CCA is executed which will also include, where applicable, any amounts that Hydro One needs to collect from the DER Facility Owner to reimburse to third parties as Upstream Transmission Rebates or other rebates upon the connection of the DER Facility. Failure to pay the connection cost deposit or other required deposits or to have a signed CCA in relation to the connection of the DER Facility within the above-referenced timeline will result in Hydro One being required to remove the Applicant's capacity allocation in accordance with Section 6.2.4.1e of the Distribution System Code.

The Key provisions of the CCA are described in Appendix A of Hydro One's Conditions of Service.

F.2 Micro-DER Facilities

A DER Facility Owner proposing to connect a Micro-DER Facility that passes Hydro One's assessment will receive an Offer to Connect, which includes a cost estimate for the work required to be performed by Hydro One to connect the Micro-DER Facility, the appropriate meter, and/or other material and equipment, as required, and any other applicable charges attributable to the proposed facility. As of the date of these Conditions of Service, Hydro One's costs are charged on an Actual Cost basis. The offer to connect and cost estimate will be valid for six months from the date of their issue by Hydro One. For further information regarding the connection process for Micro-DER facilities, please visit www.hydroone.com/business-services/generators/microfit.

F.3 Capital Contributions in Respect of Expansions

F.3.1 Where an Expansion is required for the connection of a DER Facility, Hydro One will perform an economic evaluation using a discounted cash flow model in compliance with Appendix B of the Distribution System Code to determine the capital contribution payable by the DER Facility Owner in respect of the Expansion which shall not exceed the proposed DER Facility's share of the projected capital costs (equipment, labour, material) and ongoing maintenance costs of the Expansion facilities (the "**Expansion Costs**"). Projected revenue shall be assumed to be zero, unless otherwise determined by Hydro One or rates approved by the Board.

Hydro One shall deliver an offer to connect the DER Facility that meets the requirements of Section 3.2.8 of the Distribution System Code and where applicable, Section 3.2.9 of the Distribution System Code. Hydro One's offer to connect in respect of any Expansion required to connect the DER Facility will be attached to and form part of the CCA.

F.3.2 Expansion Capital Contributions - Renewable Energy Generation Facility

Where an Expansion is required for the connection of a Renewable Energy Generation Facility, the Generator shall pay Hydro One a capital contribution where the Expansion Costs exceeds their Renewable Energy Expansion Cost Cap. When an Expansion is undertaken in response to requests for the connection of more than one Renewable Energy Generation Facility, Hydro One will apportion the amount of the capital contribution among the requesting Generators on a pro-rata basis based on the total name-plate rated capacity of each Generator's Renewable Energy Generation Facility.

Hydro One will not charge a Generator for the construction of an Expansion to connect a Renewable Energy Generation Facility:

(a) if the Expansion is in a Board-approved plan filled with the Board by Hydro One as per Section 3.2.5 A of the Distribution System Code; or
(b) if the Expansion Costs are at or below the Renewable Energy Generation Facility's Renewable Energy Expansion Cost Cap as per Section 3.25 B of the Distribution System Code.

Subsection (a) above also applies to a request for the connection of more than one Renewable Energy Generation Facility. Subsection (b) above applies to any Embedded Generator where an Expansion is required to connect their Renewable Embedded Generation Facility, when the costs of constructing the Expansion are at or below the amount that results from adding the total name-plate rated capacity of each Renewable Energy Generation Facility (in MW) and then multiplying that number by $90,000.

F.3.3 Unforecasted Customers and Rebates

As per Section 3.2.27 of the Distribution System Code, unforecasted customers (including DER Facility Owners) that connect to the distribution system during the Customer Connection Horizon will benefit from the earlier Expansion and should contribute their share. In such an event, the initial contributors shall be entitled to a rebate from Hydro One.

When an unforecasted DER Facility Owner connects a Renewable Energy Generation Facility to which either section F.3.2 (a) or (b) above applies and the Customer entitled to a rebate is a Customer to which neither section F.3.2 (a) or (b) above applies, the initial contributors shall be entitled to a rebate. The amount of rebate is determined in accordance with Section 3.2.27 of the Distribution System Code. Hydro One reduces the connecting Renewable Energy Generation Facility's Renewable Energy Expansion Cost Cap by an amount equal to the rebate. If the amount of the rebate exceeds the connecting Renewable Energy Generation Facility's Renewable Energy Expansion Cost Cap, Hydro One collects the difference from the connecting Renewable Energy Generation Facility in accordance with Section 3.2.27 A of the Distribution System Code.

In accordance with Section 3.2.27 B of the Distribution System Code, when an unforecasted

Renewable Energy Generation Facility to which either sections F.3.2 (a) or (b) above applies (the "Unforecasted Renewable Generator") connects to the distribution system during the Customer Connection Horizon and benefits from an earlier Expansion made on or after October 21, 2009 to connect another Renewable Energy Generation Facility to which either section F.3.2 (a) or (b) above applies (the "Initial Renewable Generator"), the Initial Renewable Generator shall be entitled to a rebate. If the Expansion Costs of the earlier Expansion exceeded the Initial Renewable Generator's Renewable Energy Expansion Cost Cap, Hydro One will pay to the Initial Renewable Generator a rebate and collect a share from the Unforecasted Renewable Generator. The calculation of rebate and share will be on a pro-rata basis based on the total name-plate capacity of each Generator's Renewable Energy Generation Facility in accordance with Section 3.2.27 C of the Distribution System Code.

G. Commissioning

All DER Facilities with units with a name-plate rated capacity greater than 10 kW are required to successfully go through a series of commissioning tests before final Connection to the Distribution System will be permitted. Hydro One will provide the DER Facility Owner with a list of testing requirements applicable to the DER Facility. The requirements will be based on a number of factors, including the size and type of generation/electricity storage units and the type of connection. The person connecting the DER Facility shall complete and confirm the completion of the commissioning testing through the Confirmation of Verification Evidence Report (COVER) process, as established by Hydro One. All costs associated with commissioning are the responsibility of the DER Facility Owner.