

Appendix E

Contracts and Applications for Connecting a Generator to the Local Distribution System

INFORMATION IN A CONNECTION AGREEMENT WITH A GENERATOR

A Connection Agreement between a distributor and a generator shall contain specific terms and conditions relating to connection and access to the distributor's distribution system. Such terms and conditions include, but are not limited to, the following:

1. Requirements for the inspection and testing of equipment.
2. Requirements for maintenance of the equipment.
3. Worker protection and safety considerations, and measures to protect the public and the environment.
4. Requirements for protection systems associated with the connection and the need for periodic maintenance and testing.
5. Requirements for reporting any change affecting connected equipment of the configuration of this equipment.
6. Protocols for the provision of load forecast or forecasts of information.
7. Terms and conditions for disconnection and reconnection, including as to the responsibility for the payment of costs associated with reconnection.
8. Requirements for coordinating maintenance and operations.
9. Duration and termination conditions.
10. Details of the connection point, including the ownership of the facility.
11. Connection service charges and payment conditions.
12. Requirements for reporting changes affecting access to metering, monitoring and telemetry equipment.
13. Circumstances that would require re-negotiation of the Connection Agreement.
14. Exchange procedures for information requirements.
15. Communication and operating protocols between distributor and generator for routine day- to day operating matters and under emergency conditions.
16. Access to connection facilities.
17. Assignment of Controlling Authority.
18. Work Protection.

Micro-Embedded Load Displacement Generator

The Connection Agreement for a micro-embedded load displacement generator would be in the form set out below.

Micro-Embedded Load Displacement Generation Facility Connection Agreement

In consideration of the Local Distribution Company (LDC) agreeing to allow you to connect your 10 kW name-plate rated capacity or smaller generation facility to the LDC's distribution system, you hereby agree to the following terms and conditions.

1.0 Eligibility

- 1.1 You agree that your generation connection shall be subject to all applicable laws and bound by the terms and conditions of the LDC's Conditions of Service as amended from time-to-time, which have been filed with the OEB and are available on request.
- 1.2 You agree that the power produced by this generation facility shall be only for your own use.

2.0 Technical Requirements

- 2.1 You represent and warrant that you have installed or will install prior to the connection of your generation facility to the LDC's distribution system, an isolation device satisfying Section 84 of the Ontario Electrical Safety Code and agree to allow the LDC's staff access to and operation of this as required for the maintenance and repair of the distribution system.
- 2.2 You agree to perform regular scheduled maintenance to your generation facility as outlined by the manufacturer in order to assure that connection devices, protection systems, and control systems are maintained in good working order and in compliance with all applicable laws.
- 2.3 You agree that during a power outage on the LDC system your generation facility will shut down, unless you have installed special transfer and isolating capabilities on your generation facility. You agree to the automatic disconnection of your generation facility from the LDC's distribution system, as per the generator protective relay settings set out in this Agreement, in the event of a power outage on the LDC's distribution system or any abnormal operation of the LDC's distribution system.
- 2.4 You covenant and agree that the design, installation, maintenance, and operation of your generation facility are conducted in a manner that ensures the safety and security of both the generation facility and the LDC's distribution system.
- 2.5 Due to the LDC's obligation to maintain the safety and reliability of its distribution system, you acknowledge and agree that in the event the LDC determines that your generation facility (i) causes damage to; and/or (ii) is producing adverse effects affecting other distribution system customers or the LDC's assets, you will disconnect your generation facility immediately from the distribution system upon direction from the LDC and correct the problem at your own expense prior to reconnection.

3.0 Liabilities

- 3.1 You and the LDC will indemnify and save each other harmless for all damages and/or adverse effects resulting from either party's negligence or willful misconduct in the connection and operation of your generation facility or the LDC's distribution system.
- 3.2 The LDC and you shall not be liable to each other under any circumstances whatsoever for any loss of profits or revenues, business interruptions losses, loss of contract or loss of goodwill, or for any indirect, consequential, incidental or special damages, including but not limited to punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, tort or otherwise.

4.0 Compensation and Billing

- 4.1 Subject to any applicable law, you agree that the LDC will not pay you for any excess generation that results in a net delivery of energy to the LDC between meter reads.
- 4.2 Subject to any applicable law, you acknowledge and agree that there will be no carryover of excess generation from one billing period to the next.

5.0 Termination

- 5.1 You understand that you have the right to terminate this agreement at any time, and that by doing so you are required to disconnect your generation facility and notify the LDC of such action.

6.0 Assignment

- 6.1 You may assign your rights and obligations under this Agreement with the consent of the LDC, which shall not withhold its consent unreasonably. The LDC shall have the right to assign its rights and obligations under this Agreement without your consent.

I understand, accept and agree to comply with and be bound by the above terms and conditions governing the connection of my generation facility to the LDC's distribution system.

Customer Signature: _____ Date: _____

Print name and LDC account number: _____

I confirm that the following information is true and accurate:

Nameplate rating of Generator: _____KW Total installed generation _____KW

Type: Wind Turbine Photovoltaic (Solar) Hydraulic Turbine Fuel Cell
 Other _____

Inverter Utilized: Yes No

Inverter Certification: C22.2 #107.1 UL 1741 Site Certified by the ESA

For office use: Station _____ Feeder _____ Date Connected _____

Generator Protective Relay Settings

Table 1 – Inverter Based Generation

The following relay settings shall be used for inverters built to the CSA standard:

Source: CSA C22.2 No. 107.1-01 Table 16

System Voltage Vn = V nominal V (Volts)	Frequency F (Hertz)	Maximum number of cycles to disconnect	
		Seconds	Cycle
V < 0.5 Vn	60	0.1	6
0.5 Vn # V < 0.88 Vn	60	2	120
1.10 Vn # V < 1.37 Vn	60	2	120
V > 1.37 Vn	60	0.033	2
Vn	F < 59.5*	0.1	6
Vn	F > 60.5	0.1	6

* The UL1741 & IEEE P1547 Standards use F < rated-0.7 i.e. 59.3 Hz. To update if CSA C22.2 No. 107.1-01 is changed

Table 2 – Non – Inverter Generation

LDC's minimum requirements, for other generation are as follows:

System Voltage Vn =V nominal V (Volts)	Frequency F (Hertz)	Maximum clearing time*	
		Seconds	Cycles
V < 0.5 Vn	60	0.16	9.6
0.5 Vn # V < 0.88 Vn	60	2	120
1.10 Vn # V < 1.20 Vn	60	1	60
V \$ 1.20 Vn	60	0.16	9.6
Vn	F < 59.3	0.16	9.6
Vn	F > 60.5	0.16	9.6

*Clearing time is the time between the start of the abnormal condition and the generation ceasing to energize the LDC's distribution system

- If you are uncertain about your generation equipment's protective relay settings, please check with your generating equipment supplier.
- Automatic reconnect setting time for your generator is after 5 minutes of normal voltage and frequency on the LDC's distribution system.

OTHER POTENTIAL CONTRACTS

Contract Name	Parties	Purpose
Construction Agreement	Distributor, Generator	Describes obligations of the distributor and generator to complete connection, including terms of cost recovery.
Construction Agreement	Distributor, Transmitter	In the event a transmission system requires modifications to connect the generator, this document describes the obligations of distributor and transmitter to complete the connection, including terms of cost recovery.
Conditions of Service	Distributor, Transmitter	In the event the generator is a load customer of distributor, this document describes terms and applicable rates.
Connection Agreement	Distributor, Generator	Identifies language and procedures to be used for normal and emergency situations, installed protection equipment, ownership and operating control of equipment, expected levels of maintenance and testing by both parties, contact names and telephone numbers, definitions, and containing all necessary schematic diagrams for proper communication between the distributor and the generator.
Additional Operations Agreement (if required) ¹	Distributor, Transmitter	Modifications as necessary to existing Connection Agreement to include provisions for safe and effective operation in presence of the generator on the distribution system.

¹ Additional Operations Agreement(s) or Construction Agreement(s) may be required where other parties are affected by generation connection, e.g.: embedded distributors.