Micro-Embedded Generation Facility Connection Agreement

In consideration of the proposed connection of generation by _____(Customer) to the Waterloo North Hydro Inc. (LDC) power distribution grid, the following terms and conditions apply:

1.0 ELIGIBILITY

1.1 The Customer agrees that its generation connection shall be subject to all applicable laws and regulations, including but not limited to the Distribution System Code and the Ontario Electrical Safety Code.

1.2 The connection is bound by the terms and conditions of the LDC's Conditions of Service as amended from time-to-time as well having been filed with the OEB, available upon request.

2.0 TECHNICAL REQUIREMENTS

2.1 The Customer represents and warrants that they have installed, or will install prior to the connection of the generation facility, an isolation device satisfying Section 84 of the Ontario Electrical Safety Code and in a location satisfactory to the LDC. The Customer shall allow the LDC's staff access to and operation of this as required for the maintenance and repair of the distribution system.

2.2 The Customer agrees to perform regular scheduled maintenance to the generation facility as outlined by the equipment 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 The Customer agrees that during a power outage on the LDC system, the generation facility will shut down, unless special transfer and isolating capabilities are installed on the generation facility. Further, the Customer agrees to the automatic disconnection of its generation facility from the LDC's distribution system, as per the generator protective relay settings provided in Table 1 and 2 of 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 The Customer covenants and agrees that the design, installation, maintenance, and operation of the 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, the Customer acknowledges and agrees that, in the event the LDC determines that the generation facility (i) causes damage to; and/or (ii) is producing adverse effects affecting other distribution system customers or the LDC's assets, the Customer will disconnect generation facility immediately from the distribution system upon direction from the LDC and correct the problem at the Customer's own expense prior to reconnection.

3.0 LIABILITIES

3.1 The Customer 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 the generation facility or the LDC's distribution system.

3.2 Both parties 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 If the Customer is not an embedded retail generator, they agree that, subject to any applicable law:

a) the LDC will not pay for any excess generation that results in a net delivery to the LDC between meter reads; and

b) there will be no carryover of excess generation from one billing period to the next unless the Customer is, at the relevant time, a net metered generator (as defined in section 6.7.1 of the Distribution System Code).

4.2 If the Customer is an embedded retail generator selling output from the generation facility to the Ontario Power Authority under contract, the Customer agrees that the LDC will pay for generation in accordance with the Retail Settlement Code.

4.3 If the Customer is an embedded retail generator delivering and selling output to the LDC, the LDC will pay for generation in accordance with the Retail Settlement Code.

5.0 TERMINATION

5.1 The Customer has right to terminate this agreement at any time, and that by doing so the generation facility shall be disconnected with notification provided to the LDC.

6.0 ASSIGNMENT

6.1 The Customer may assign their 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 the consent of the Customer.

7.0 AGREEMENT:

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.

LDC Account Number:_____OPA Reference Number: _____

Customer Signature:_____Date:_____

I confirm that the following information is true and accurate:

Type of Generator:		**Ratings:**		**Inverter Utilized:**	
Wind Turbine		Nameplate kW		**Certification:**	
Photovoltaic (solar)		Total Installed kW		C22.2 #107.1	
Hydraulic Turbine		**Connection:**		UL 1741	
Fuel Cell		Series		ESA	
Other:_____		Parallel		Prospective Lender	

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 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 LDC's distribution system.