Micro-Generation Connection Request Form

For Connection of Micro-Generation Facilities of ≤ 10 kW

This form is applicable to individual or multiple generating units at the Customer's facility with total nameplate rating of 10 kW or less. Your generation facility must generate electricity from a renewable energy source that is wind, water, solar radiation, or agricultural biomass.

Inverter-based generating units must not inject DC greater than 0.5% of the full rated output current at the point of connection of the generating units. The generated harmonic levels must not exceed those given in the CAN/CSA-C61000-3-6 Standards.

For generation size up to 10 kW, a Connection Impact Assessment will not be required and SYNERGY NORTH will not perform such an assessment. There may be a limitation on the number of micro-generation facilities that can be connected to the same distribution feeder.

IMPORTANT: All fields below are mandatory, except where noted. Incomplete applications may be returned by SYNERGY NORTH CORPORATION ("SYNERGY NORTH").

If you have any questions please e-mail SYNERGY NORTH at generator.connections@synergynorth.ca or call 807-343-1037.

Completed Micro-Generation Connection Request Form and other required documents may be returned:

By mail to:
SYNERGY NORTH CORPORATION
Attn: Asset Management and Engineering
Generation Connection Application
37 Front Street
Thunder Bay, Ontario P7A 8B2

or by email to:
generator.connections@synergynorth.ca

NOTE: Applicants are cautioned NOT to incur major expenses until SYNERGY NORTH responds with an "Estimate to Connect".

CHECKLIST

Please ensure that the following items are completed prior to submission. Your application will not be processed if any part is omitted or incomplete:

- ☐ **Completed Micro-Generation Connection Request Form**, must be signed and dated by the project owner or the consultant.
- ☐ **Manufacturer's Technical specifications and the model number of the generator and/or inverter selected for the project.**
- ☐ **Single-line Diagram (SLD)**
- ☐ **Micro-Embedded Generation Facility Connection Agreement (found in Appendix B) -** completed, signed and dated by the project owner.

DATE: _____(dd / mm / yyyy)

PROJECT NAME: _____

PROGRAM TYPE:

Net Metering _____ **OTHER:**_____

PROPOSED IN-SERVICE DATE: _____(dd / mm / yyyy)

PROJECT SIZE:

Number of Units*: _____

Nameplate Rating of Each Unit (AC): _____ kW ☐ Single-phase ☐ Three-phase

Generator Connecting on: ☐ Single-phase

☐ Three-phase ☐ 208 volt ☐ 600 volt

Existing Total Nameplate Capacity (AC): _____ kW (if applicable)

Proposed Total Nameplate Capacity (AC): _____ kW

If photovoltaics, generating unit(s) = inverter(s)

PROJECT LOCATION:

Address: _____

City / Town / Township: _____

Lot Number(s): _____

Concession Number(s): _____

CONTACT INFORMATION:

Choose a Single Point of Contact: Owner ☐ Consultant ☐

	Owner *(Mandatory)*	Consultant *(Optional)*
Company/Person		
Contact Person		
Mailing Address Line 1		
Mailing Address Line 2		
Telephone		
Cell		
Fax		
E-mail		

Preferred method of communication with SYNERGY NORTH:

☐ E-mail
☐ Telephone
☐ Mail
☐ Fax

CUSTOMER STATUS:

Existing SYNERGY NORTH Customer? ☐ Yes ☐ No

If yes, SYNERGY NORTH Account Number: _____

Customer name registered in this Account: _____

Are you a GST registrant? ☐ Yes ☐ No

If yes, provide your GST registration number: _____ - _____ RT _____

FUEL TYPE:

Wind Turbine	☐	Biomass	☐
Hydraulic Turbine	☐	Bio-diesel	☐
Ground-Mounted Solar/Photovoltaic	☐	Rooftop-Mounted Solar/Photovoltaic	☐
Other (Please Specify)	☐	_____	

CONNECTION TYPE*:

Indirectly in Parallel ☐ Directly ☐

Net-Metered ☐

Refer to Appendix A for available connection configurations

CUSTOMER OWNED STEP-UP INTERFACE TRANSFORMER (IF APPLICABLE):

Transformer rating: _____ kVA

Nominal voltage of high (distribution) voltage winding: _____ kV

Nominal voltage of low (generator) voltage winding: _____ kV

Transformer type: ☐ Single-phase ☐ Three-phase

Transformer Impedances on: _____ kVA base _____ kV base R _____ pu X _____ pu

High voltage winding connection: ☐ Delta ☐ Wye

Grounding method of wye connected high voltage winding neutral: ☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

Low voltage winding connection: ☐ Delta ☐ Wye

Grounding method of wye connected low voltage winding neutral: ☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

CUSTOMER ACCESSIBLE MAIN DISCONNECT SWITCH

Is there an existing customer accessible main disconnect switch or breaker?

☐ Yes

☐ No

UTILITY INTERCONNECTION CHARACTERISTICS – COMPLETED BY SYNERGY NORTH:

Voltage at Point of Connection:	kV
Point of Connection Feeder:	
Originating Station of Point of Connection Feeder:	

ADDITIONAL DOCUMENTATION REQUIRED:

In addition to the completed "Micro-Generation Connection Request Form", the Customer must also provide the following documents:

1) The manufacturer's technical specifications for the generator and/or inverter complete with the model number of the generator and/or inverter selected for the project.
2) A single-line diagram of the proposed system which includes:
    a. The arrangement of the Customer's electrical load and the proposed generation facility;
    b. The existing revenue metering arrangement;
    c. The proposed isolating/disconnecting device for isolation of the generating unit(s) from the SYNERGY NORTH system.

Note: SYNERGY NORTH may request additional information if required.

Applicant: _____ **Date:** _____

(Signature) (dd/mm/yyyy)

Appendix A: Illustrations of Connection Type

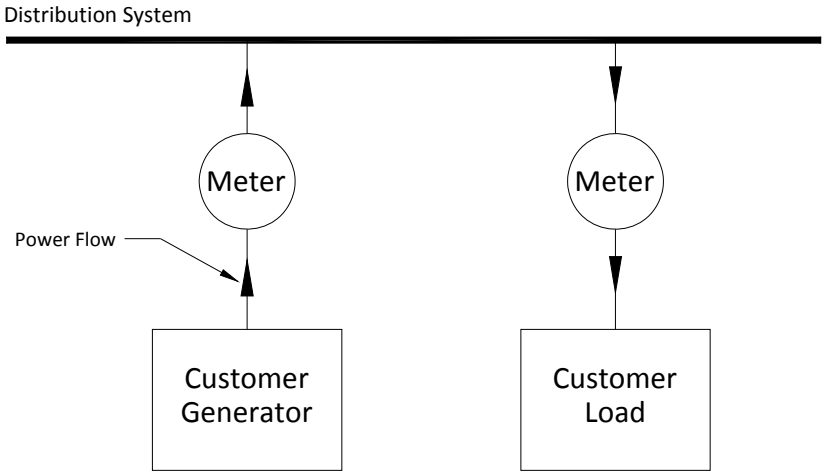

Figure 1 - Directly Connected

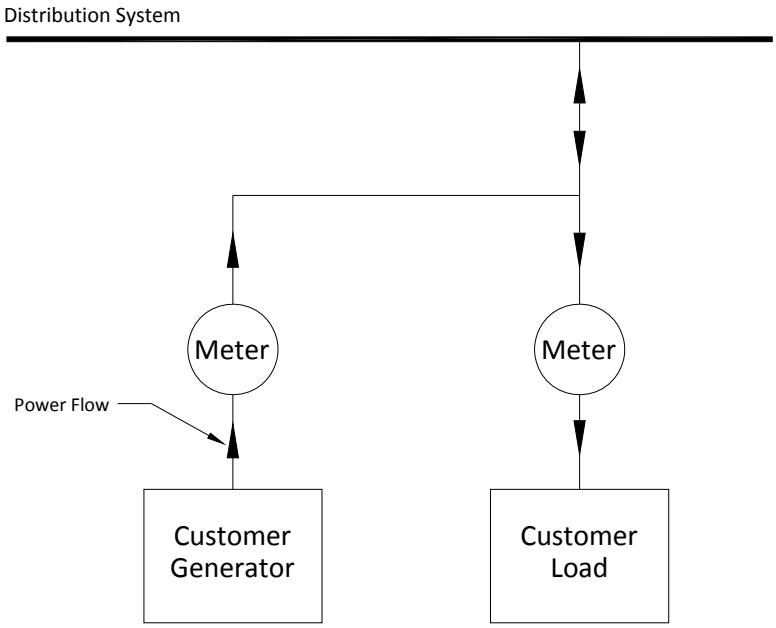

Figure 2 - Indirectly Connected In Parallel

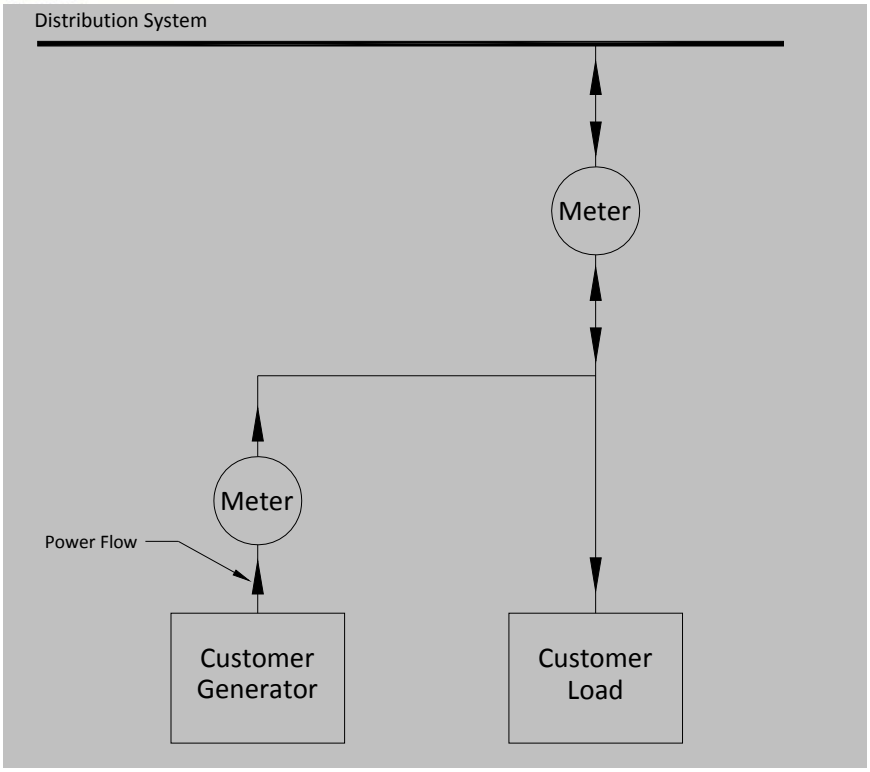

Figure 3 - Indirectly Connected In Series

****THIS CONFIGURATION IS UNDER REVIEW BY MEASUREMENT CANADA AND IS NOT CURRENTLY AVAILABLE AS AN OPTION****

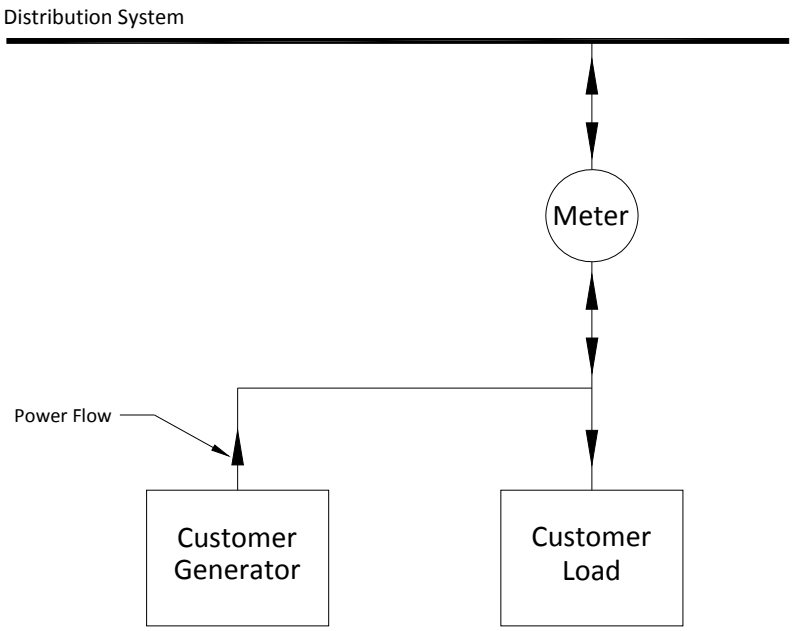

Figure 4 - Net-Metered

Appendix B: Micro-Embedded Generation Facility Connection Agreement

In consideration of the Local Distribution Company 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. 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 upon request.

2. 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 customer 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. 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 of 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. Compensation and Billing

4.1. If you are not an embedded retail generator, you agree that, subject to any applicable law:

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

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

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

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

5. 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. 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: _____

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** ☐ **Battery Storage** ☐ **Other:** _____

Inverter Utilized: ☐ **Yes** ☐ **No**

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

For office use: ***Date Connected_____*** ***Account Number_____***

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	Cycle
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.