**Form B**

**Connection Impact Assessment (CIA) Application**

**Tillsonburg Hydro Inc. Distribution System**

**This Application Form is for Generators applying for Connection Impact Assessment (CIA) and for Generators with a project size >10 kW.**

**This Application Form is required for:**

* **New Generators applying for new CIA**
* **New Generators applying for revision to their original CIA**
* **Generators applying for CIA after rescinding a previous CIA. Note: Please include your previous CIA Project ID # below.**

**For generation size ≤ 10 kW, please fill out Form C “Micro-Generation Connection Application Form”.**

**IMPORTANT: All fields below are mandatory, except where noted. Incomplete applications may be returned.**

**Please return the completed form by email to:**

Tillsonburg Hydro Inc.  
Derek Schonewille  
Hydro Operations Technologist

10 Lisgar Ave

Tillsonburg, Ontario

N4G5A5

Email: [dschonewille@tillsonburg.ca](mailto:dschonewille@tillsonburg.ca)

**NOTE 1: Applicants are cautioned NOT to incur major expenses until all approvals and agreements to connect the proposed generation facility have been completed and signed.**

**NOTE 2: All technical submissions (Form B, single line diagrams, etc.) must be signed and sealed by a licensed Ontario Professional Engineer (P.Eng.).**

**Date:** **/  /** (dd / mm / yyyy) Application Type:  New CIA Application  CIA Revision/Rework

1. **Original CIA Project ID# (if applicable):**

**Project Name:**

1. **Ontario Power Authority (OPA) Feed-In Tariff (FIT) Contract Number (if applicable):**
2. **Proposed In- Service Date**: **/  /** (dd / mm / yyyy)
3. **Project Size:** Number of Units

Nameplate Rating of Each Unit       kW

Generator connecting on single phase  three phase

Existing Total Nameplate Capacity       kW

Proposed Total Nameplate Capacity       kW

1. **Project Location:** Address

City / Town / Township

Lot Number(s)

Concession Number(s)

1. **Project Information:**

Choose a Single Point of Contact: Owner  Consultant

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Generator** *(Mandatory)* | **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 Tillsonburg Hydro Inc.:

E-mail  Telephone  Mail  Fax

1. **Program Type:**
2. Net Metering
3. Net Metering to FIT Conversion
4. FIT
5. **Fuel Type:**

Wind Turbine  Hydraulic Turbine  Steam Turbine  Solar/ Photovoltaic

Diesel Engine  Gas Turbine  Fuel Cell  Biomass

Co-generation/CHP (Combined Heat & Power)  Bio-diesel  Anaerobic Digester

Other (Please Specify)

**9. Customer Status:**

Existing Tillsonburg Hydro Inc. Customer?   Yes  No

If yes, Tillsonburg Hydro Inc. Account Number:

Customer name registered in this Account:

Are you a HST registrant?   Yes  No

If yes, provide your HST registration number: **-** RT

**10. Connection to Tillsonburg Hydro Inc. Distribution System:**

In the following items, Point of Connection means the point where the new Generator’s connection assets or new line expansion assets will be connected to the existing Tillsonburg Hydro Inc. distribution system. Point of Common Coupling” or “PCC” or “Point of Supply” means the point where the Generator’s facilities are to connect to Tillsonburg Hydro Inc.’s distribution system. The Point of Connection and the PCC may be the same, especially if the Generator’s facilities lie along the existing Tillsonburg Hydro Inc. distribution system; or the PCC may be located somewhere between the Point of Connection and the Generator’s facilities if new line will be owned by Tillsonburg Hydro Inc.

1. Proposed or existing Connection voltage to Tillsonburg Hydro Inc.’s distribution system:       kV
2. Station:
3. Feeder:
4. GPS coordinates of the following: (Please give GPS co-ordinates in following format: Longitude, Latitude - Degree Decimal Format: \* e.g. 49.392, -75.570)

Point of Connection:

PCC:

Generator facilities:

1. Distance from the Point of Connection to the PCC       km
2. Generator’s Collector Lines or Tap Line Facilities

If the Generator’s facilities include collector lines or a tap line on the Generator’s side of the PCC, provide the following:

1. Distance and conductor size of tap line on the Generator’s side of the PCC, or equivalent distance for Generator’s collector lines (i.e., from PCC to interface transformer(s)):       km;
2. Conductor size:
3. Fault contribution from Generator’s facilities, with the fault location at the PCC:
4. Does your project require establishing joint use on Tillsonburg Hydro Inc. poles? (I.e. generator’s collector lines attached to Tillsonburg Hydro Inc. poles on municipal right of way?  Yes  No
5. If you answer “No” to “h” above is your project going to own Poles + wires on municipal right of way?

Yes  No

***NOTE:*** Generators requiring line construction between the Generator’s facilities and the Point of Connection should contact Tillsonburg Hydro Inc. to discuss potential ownership options, construction and co-ordination logistics for these facilities. Also those Generators whom may require attaching collector lines to Tillsonburg Hydro Inc. poles must also contact Hydro One to discuss potential to engage in Joint Use of utility assets*.* Tillsonburg Hydro Inc. will consider owning and operating new lines if they are designed and constructed to Tillsonburg Hydro Inc. standard and are located on public road right-of-ways. This may change the PCC location. You must contact your Utility Manager to discuss.

**11. Generator’s Facilities and New Line Map:**

Provide a drawing clearly showing the location of Generator’s facilities with proposed line routings for connection to Tillsonburg Hydro Inc. distribution system. It should identify the Point of Connection, the PCC, and the location (i.e. on private property or public road right-of-ways) of new lines between the Generator’s facilities and the Point of Connection.

Drawing / Sketch Number:      , Rev.

**12.** **Single Line Diagram (“SLD”):**

Provide a SLD of the Generator’s facilities including the PCC.

SLD Drawing Number:      , Rev.

**13. Protection Philosophy:**

1. Provide a document describing the protection philosophy for detecting and clearing:

- Internal faults within the EG facility;

- External phase and ground faults (in Tillsonburg Hydro Inc.’s distribution system);

- Certain abnormal system conditions such as over / under voltage, over / under frequency, open phase(s);

- Islanding

Document Number:      , Rev.

1. Include a tripping matrix or similar information in the document.

Note: EG shall install utility grade relays for the interface protection. The protection design shall incorporate facilities for testing and calibrating the relays by secondary injection.

1. **Generator Characteristics**

a. Characteristics of Existing Generators

If Generator’s facilities include existing generators, provide details as an attached document.

Document Number:      , Rev.

b. Characteristics of New Generators:

* 1. Number of generating unit(s):
  2. Manufacturer / Type or Model No:       /
  3. Rated capacity of each unit:       kW       kVA
  4. If unit outputs are different, please fill in additional sheets to provide the information.
  5. Rated frequency:       Hz
  6. Rated voltage:       V
  7. Machine Type:  Synchronous  Induction  Inverter  Other
  8. Generator connecting on:  single phase  three phase
  9. Limits of range of reactive power at the machine output:

Lagging (over-excited)       kVAR power factor

Leading (under-excited)       kVAR power factor

* 1. Limits of range of reactive power at the PCC:

Lagging (over-excited)       kVAR power factor

Leading (under-excited)       kVAR power factor

* 1. Starting inrush current:       pu (multiple of full load current)
  2. Generator terminal connection: delta star
  3. Neutral grounding method of star connected generator:

Solid  Ungrounded Impedance: R       ohms X       ohms

For Synchronous Units:

1. Nominal machine voltage:       kV
2. Minimum power limit for stable operation:       kW
3. Unsaturated reactances on:       kVA base       kV base

Direct axis subtransient reactance, Xd’’       pu

Direct axis transient reactance, Xd’       pu

Direct axis synchronous reactance, Xd       pu

Zero sequence reactance, X0       pu

1. Provide a plot of generator capability curve (MW output vs. MVAR)

Document Number:      , Rev.

For Induction Units:

1. Nominal machine voltage:       kV
2. Unsaturated reactances on:       kVA base       kV base

Direct axis subtransient reactance, Xd’’       pu

Direct axis transient reactance, Xd’       pu

1. Total power factor correction installed:       kVAR
   * Number of regulating steps
   * Power Factor (PF) correction switched per step       kVAR
   * PF correction capacitors are auto switched off when generator breaker opens: Yes  No

**15. Interface Step-Up Transformer Characteristics:**

1. Transformer rating:       kVA
2. Nominal voltage of high voltage winding:       kV
3. Nominal voltage of low voltage winding:       kV
4. Transformer type: single phase  three phase
5. Impedances on:       kVA base       kV base

R       pu, X       pu

1. High voltage winding connection: delta  star

Grounding method of star connected high voltage winding neutral:

Solid  Ungrounded Impedance: R       ohms X       ohms

1. Low voltage winding connection: delta  star

Grounding method of star connected low voltage winding neutral:

Solid  Ungrounded Impedance: R       ohms X       ohms

**NOTE:** The term ‘High Voltage’ refers to the intermediate voltage that is input to the interface step-up transformer and the ‘Low Voltage’ refers to the generation voltage.

**16. Intermediate Transformer Characteristics (optional):**

No intermediate transformer (if chosen, parts a. to h. below are ***optional)***

1. Transformer rating:       kVA
2. Nominal voltage of high voltage winding:       kV
3. Nominal voltage of low voltage winding:       kV
4. Transformer type: single phase  three phase
5. Impedances on:       kVA base       kV base

R       pu X       pu

1. High voltage winding connection: delta  star

Grounding method of star connected high voltage winding neutral:

Solid  Ungrounded Impedance: R       ohms X       ohms

1. Low voltage winding connection: delta  star

Grounding method of star connected low voltage winding neutral:

Solid  Ungrounded Impedance: R       ohms X       ohms

**NOTE:** The term ‘High Voltage’ refers to the intermediate voltage that is input to the interface step-up transformer and the ‘Low Voltage’ refers to the generation voltage.

**17. Load information:**

1. Maximum load of the facility:       kVA       kW
2. Maximum load current (referred to the nominal voltage at the connection point to THI system):      A
3. Maximum inrush current (referred to the nominal voltage at the connection point to THI system):      A

**18. Checklist:**

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

Completed CIA Form, must be stamped by a Professional Engineer

Payment in full for the amount indicated on the Study Agreement Form A, including applicable taxes (by cheque or money order payable to “Tillsonburg Hydro Inc.”) Please note that all projects require the completion of a Hydro One CIA coordinated by Tillsonburg Hydro Inc. This can be completed in parallel to the Tillsonburg Hydro Inc. CIA

Signed Study Agreement ‘Form A’

Single Line Diagram (SLD), must be stamped by a Professional Engineer

Generator Facilities and New Line Map

## 19. Attached Documents:

|  |  |  |  |
| --- | --- | --- | --- |
| Item No. | Description | Reference No. | No. of Pages |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

## 20. Attached Drawings:

|  |  |  |  |
| --- | --- | --- | --- |
| Item No. | Description | Reference No. | No. of Pages |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |

**21. Acknowledgement**

By submitting a Form B, the Proponent authorizes the collection by Tillsonburg Hydro Inc. (“THI” or “Tillsonburg Hydro”), of any agreements and any information pertaining to agreements made between the Proponent and the IESO from the IESO, the information set out in the Form B and otherwise collected in accordance with the terms hereof, the terms of Tillsonburg Hydro Inc’s Conditions of Service, and the requirements of the Distribution System Code and the use of such information for the purposes of the connection of the generation facility to Tillsonburg Hydro Inc’s distribution system.