Festival Hydro INC.

Distributed Energy Resource Projects (>10kW)

Form B
Connection Impact Assessment (CIA) Application
Distribution System

This Application Form is for Distributed Energy Resources "DERs" applying for Connection Impact Assessment ("CIA") and for DERs with a project size >10 kW.
This Application Form is required for:

- ***New DERs applying for Connection Impact Assessment ("CIA")***
- ***New DERs applying for revision to their original Connection Impact Assessment ("CIA")***
- ***DERs applying for Connection Impact Assessment ("CIA") after rescinding a previous CIA. Note: Please include your previous CIA Project ID # below.***
- ***Existing DERs to verify information related to current connection to the Festival Hydro system. It is part of the overall (Distribution) Connection Agreement.***

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 by Festival Hydro Inc. ("FHI").

If you have any questions please e-mail Festival Hydro at DER@festivalhydro.com or call 519-271-4700 (Ext. 241

Please return the completed form and supporting documents via the above email, and any applicable fees by mail to:

Festival Hydro Inc.
Attn: Engineering – DER
187 Erie Street
PO Box 397
Stratford, ON
N5A 6T5

NOTE 1: Applicants are cautioned NOT to incur major expenses until Festival Hydro approves to connect the proposed generation facility.

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: _____
2. **IESO Contract Number (if applicable):** _____
3. **Proposed In- Service Date**: _____(dd / mm / yyyy)
4. **Project Size:**

Number of Units	_____	
Nameplate Rating of Each Unit	_____ kW	
DER connecting on	☐ single phase	☐ three phase
Existing Total Nameplate Capacity	_____ kW	
Proposed Total Nameplate Capacity	_____ kW	

5. Project Location: Address _____
City / Town / Township _____
Lot Number(s) _____
Concession Number(s) _____

6. Project Information:
Choose a Single Point of Contact: ☐ Owner ☐ Consultant

	DER *(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 Festival Hydro: ☐ E-mail ☐ Telephone

7. Program Type:

A. Net Metering ☐

B. Energy Storage ☐

C. FIT ☐

D. Other ☐ **(Please Specify)** _____

8. Fuel/Technology 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
☐ Li-Ion Battery ☐ Flow Battery ☐ Flywheel ☐ Compressed Air
☐ Other (Please Specify) _____

9. Customer Status:

Existing Festival Hydro Customer? ☐ Yes ☐ No
If yes, Festival Hydro Account Number: _____
Customer name registered in this Account: _____
Are you a GST registrant? ☐ Yes ☐ No
If yes, provide your GST registration number: _____ - _____ RT _____

10. Connection to Festival Hydro Distribution System:

In the following items, Point of Connection means the point where the new DER's connection assets or new line expansion assets will be connected to the existing Festival Hydro distribution system.
Point of Common Coupling" or "PCC" or "Point of Supply" means the point where the DER facilities are to connect to Festival Hydro's distribution system.
The Point of Connection and the PCC may be the same, especially if the DER facilities lie along the existing Festival Hydro distribution system; or the PCC may be located somewhere between the Point of Connection and the DER facilities if new line will be owned by Festival Hydro.
For illustration of the Point of Connection and the PCC, refer to Appendix A attached.

a. Proposed or existing Connection voltage to Festival Hydro's distribution system: _____ kV
b. Station: _____
c. Feeder: _____

d. 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: _____
DER facilities: _____

e. Distance from the Point of Connection to the PCC _____ km

f. DER Collector Lines or Tap Line Facilities
If the DER's facilities include collector lines or a tap line on the DER side of the PCC, provide the following:

Distance and conductor size of tap line on the DER side of the PCC, or equivalent distance for DER collector lines (i.e., from PCC to interface transformer(s)):

_____ km;

Conductor size: _____

g. Fault contribution from DER facilities, with the fault location at the PCC:
3-phase short circuit _____ MVA;

h. Does your project require to establish joint use on Festival Hydro poles? (i.e. DER collector lines attached to Festival Hydro poles on municipal right or way? ☐ Yes ☐ No

i. If you answer "No" to "h" above is your project going to own Poles + wires on municipal right of way?

☐ Yes ☐ No

Note:
DERs requiring line construction between the DER facilities and the Point of Connection should contact Festival Hydro to discuss potential ownership options, construction and co-ordination logistics for these facilities. Also those DERs whom may require attaching collector lines to Festival Hydro poles must also contact Festival Hydro to discuss potential to engage in Joint Use of utility assets. ***Festival Hydro will consider owning and operating new lines if they are designed and constructed to Festival Hydro standard and are located on public road right-of-ways. This may change the PCC location. For details, please contact Festival Hydro at DER@festivalhydro.com or call 519-271-4700 (Ext. 241).***

11. DER Facilities and New Line Map:

On a cut-out from the Festival Hydro DOM (distribution operating map) provide location of DER facilities with proposed line routings for connection to Festival Hydro 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 DER facilities and the Point of Connection.

Drawing / Sketch No. _____, Rev. _____

12. Single Line Diagram ("SLD"):

Provide a SLD of the DER facilities including the PCC.

SLD Drawing Number: _____, Rev. _____

13. Protection Philosophy:

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

- Internal faults within the DER facility;
- External phase and ground faults (in Festival Hydro's distribution system);
- Certain abnormal system conditions such as over / under voltage, over / under frequency, open phase(s);
- Islanding

Document Number:

- 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.

14. DER Characteristics

a. Characteristics of Existing DERs

If DER facilities include existing DERs, provide details as an attached document.

b. Characteristics of New DER:

10. Number of unit(s): _____
11. Manufacturer / Type or Model No: _____ / _____
12. Rated capacity of each unit: _____ kW _____ kVA
13. If unit outputs are different, please fill in additional sheets to provide the information.
14. Rated frequency: _____ Hz
15. Rotating Machine Type: ☐ Synchronous ☐ Induction ☐ Other (Please Specify) _____
16. DER connecting on: ☐ single phase ☐ three phase
17. Limits of range of reactive power at the machine output:
18. Lagging (over-excited) _____ kVAR power factor _____
19. Leading (under-excited) _____ kVAR power factor _____
20. Limits of range of reactive power at the PCC:
21. Lagging (over-excited) _____ kVAR power factor _____
22. Leading (under-excited) _____ kVAR power factor _____
23. Starting inrush current: _____ pu (multiple of full load current)
24. DER terminal connection: ☐ delta ☐ star

Neutral grounding method of star connected DER:

☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

For Synchronous Units:

i. Nominal machine voltage: _____ kV
ii. Minimum power limit for stable operation: _____ kW
iii. 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
iv. Provide a plot of DER capability curve (MW output vs MVAR)
Document Number: _____, Rev._____

For Induction Units:

i. Nominal machine voltage: _____ kV
ii. Unsaturated reactances on: _____ kVA base _____ kV base
Direct axis subtransient reactance, Xd'' _____ pu
Direct axis transient reactance, Xd' _____ pu
iii. Total power factor correction installed: _____ kVAR
- Number of regulating steps _____
- Power factor correction switched per step _____ kVAR
- Power factor correction capacitors are automatically switched off when DER breaker opens
☐ Yes ☐ No

15. Interface Step-Up Transformer Characteristics:

a. Transformer rating: _____ kVA
b. Nominal voltage of high voltage winding: _____ kV
c. Nominal voltage of low voltage winding: _____ kV
d. Transformer type: ☐ single phase ☐ three phase
e. Impedances on: _____ kVA base _____ kV base
R _____ pu, X _____ pu

g. High voltage winding connection: ☐ delta ☐ star
Grounding method of star connected high voltage winding neutral:
☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

h. 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 connection voltage to Festival Hydro's distribution system and 'Low Voltage' refers to the DER or any other intermediate voltage.

16. Intermediate Transformer Characteristics (optional):
☐ No intermediate transformer (if chosen, parts a. to h. below are ***optional)***

a. Transformer rating: _____ kVA
b. Nominal voltage of high voltage winding: _____ kV
c. Nominal voltage of low voltage winding: _____ kV
d. Transformer type: ☐ single phase ☐ three phase
e. Impedances on: _____ kVA base _____ kV base
R _____ pu X _____ pu

g. High voltage winding connection: ☐ delta ☐ star
Grounding method of star connected high voltage winding neutral:
☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

h. 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 DER voltage.

17. Load information:

a. Maximum load of the facility: _____ kVA _____ kW
b. Maximum load current (referred to the nominal voltage at the connection point to Festival Hydro system): _____ A
c. Maximum inrush current (referred to the nominal voltage at the connection point to Festival Hydro system): _____ A

18. Supplemental information for Load Displacement Facilities

Minimum DER Output information required for Load Displacement DER Facilities

	Load of Facility (kW)	Load of Facility (kVAR, lead or lag)	DER Output (kW)	DER Output (kVAR, lead or lag)
Minimum Load				
Maximum Load				

Attached Documents:

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

Attached Drawings:

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

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 including applicable taxes (by cheque or money order payable to “Festival Hydro Inc.”). Additional charges may apply if the project location requires an assessment by Hydro One in addition to Festival Hydro.
- ☐ Single Line Diagram (SLD), must be stamped by a Professional Engineer

Appendix A: Illustrations of PCC and Point of Connection

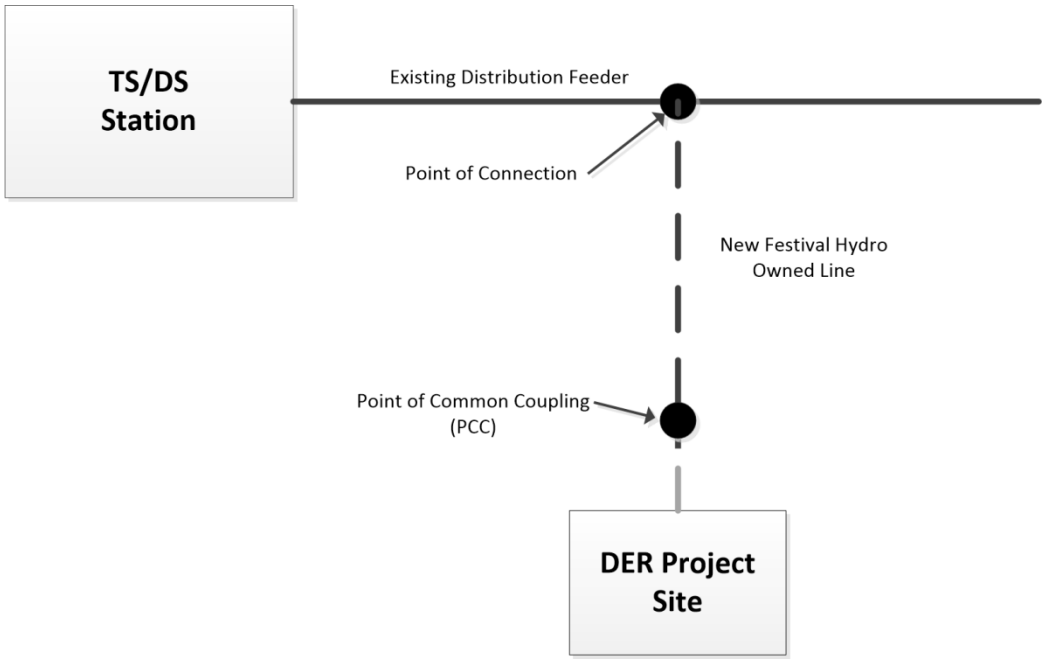

Figure A-1: Festival Hydro Owns Entire Tap Line

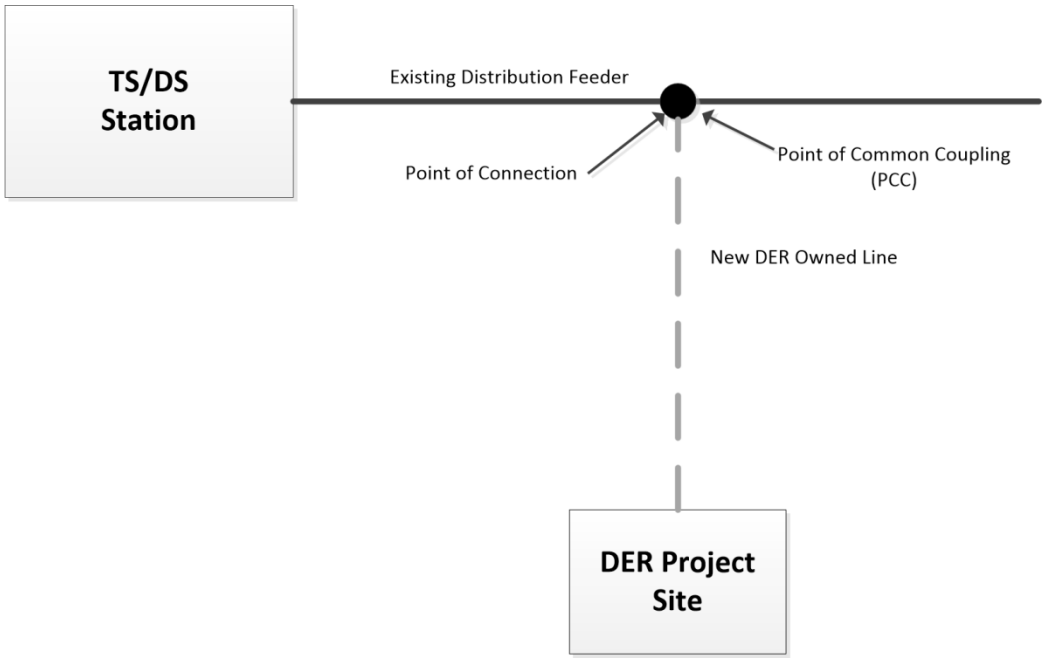

Figure A-2: DER Owns Entire Tap Line

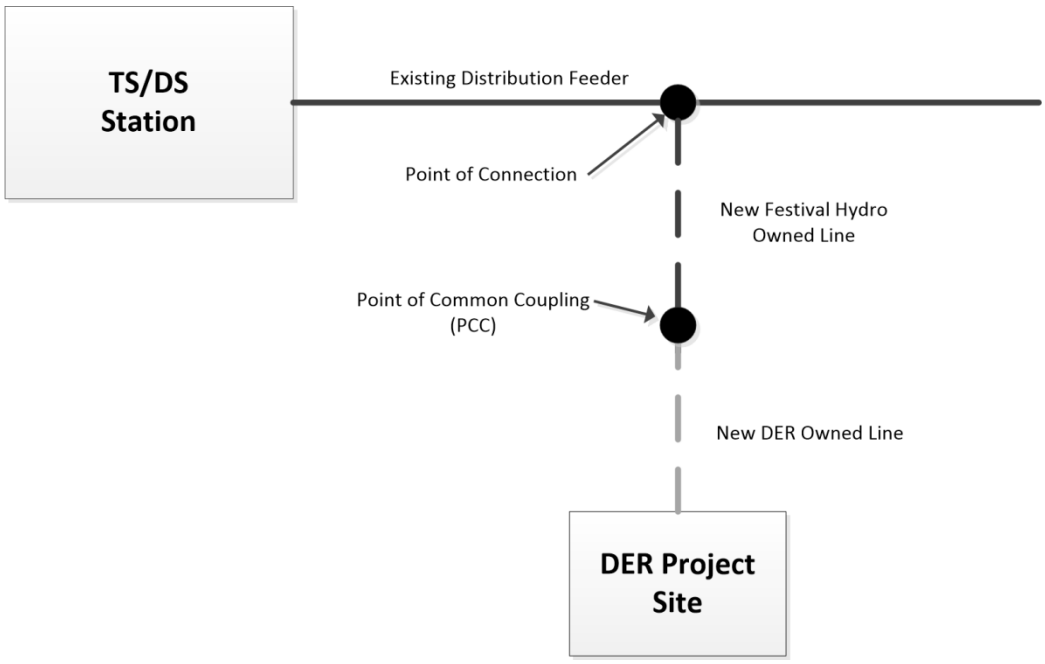

Figure A-3: Festival Hydro Owns a Portion and DER Owns a Portion of Tap Line

By submitting a Form B, the Proponent authorizes the collection by Festival Hydro Inc. ("Festival Hydro") of any agreements and any information pertaining to agreements made between the Proponent and the Independent Electricity Systems Operator (IESO) from the IESO, the information set out in the Form B and otherwise collected in accordance with the terms hereof, the terms of Festival Hydro's Conditions of Service, Festival Hydro's Privacy Policy 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 Festival Hydro's distribution system.