P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

Connection Impact Assessment (CIA) Application

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

For generation size ≤ 10 kW, please complete "Generator Request for Initial Consultation & MicroGenerator Connection Application Form" available at
http://www.kingstonhydro.com/pdf_downloads/100317-Kingston_Hydro_Generator_Consultation_Connection_Request_Form.pdf

Refer to Apendix B to Kingston Hydro's Conditions of Service - Guide for Distributed Generators *at*
http://www.kingstonhydro.com/pdf_downloads/100317-Kingston_Hydro_CofS_v2_7_Appendix_B_Guide_for_Distributed_Generators.pdf

Utilities Kingston is authorized by the OEB as the Affiliate Service provider for KINGSTON HYDRO.

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

If you have any questions please e-mail Utilities Kingston at info@utilitieskingston.com or call 613-546-1181 (8:30 am to 4:00 pm Mon to Fri).

Please return the completed form, fees and other required documents by mail to:

Utilities Kingston.
Generation Connection Application
1211 John Counter Blvd
Kingston, Ontario K7L 4X7

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

NOTE 2: All technical submissions (CIA, single line diagrams, etc.) may require a stamp 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. **Ontario Power Authority (OPA) Feed-In Tariff (FIT) Contract Number:** _____
3. **Proposed In- Service Date**: _____(dd / mm / yyyy)

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

4. 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

5. Project Location:

Address _____
City / Town / Township _____
Lot Number(s) _____
Concession Number(s) _____

6. 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 Kingston Hydro: ☐ E-mail ☐ Telephone ☐ Mail ☐ Fax

7. Program Type:

a. **Net Metering** ☐

b. **Net Metering to FIT Conversion** ☐

c. **FIT** ☐

8. 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) _____

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

9. Customer Status:

a. Existing Kingston Hydro Customer? ☐ Yes ☐ No

b. If yes, Kingston Hydro 6-digit Account Number: _____

c. Customer name registered in this Account: _____

d. Are you a GST registrant? ☐ Yes ☐ No

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

_____

10. Connection to Kingston Hydro 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 Kingston Hydro distribution system.
"Point of Common Coupling" or "PCC" or "Point of Supply" means the point where the Generator's facilities are to connect to Kingston Hydro's distribution system.
The Point of Connection and the PCC may be the same, especially if the Generator's facilities lie along the existing Kingston Hydro 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 Kingston Hydro.
For illustration of the Point of Connection and the PCC, refer to Appendix A attached.

a. Proposed or existing Connection voltage to Kingston 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: _____
   Generator facilities: _____
e. Distance from the Point of Connection to the PCC _____ km
f. 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:
   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)):
   Distance: _____ km;
   Conductor size: _____
g. Fault contribution from Generator's facilities, with the fault location at the PCC:
   3-phase short circuit _____ MVA;

11. Generator's Facilities and New Line Map:

On a cut-out from the Kingston Hydro DOM (distribution operating map) follow link from http://www.kingstonhydro.com/Generation/Default.aspx provide location of Generator's facilities with proposed line routings for connection to Kingston Hydro distribution system. It should identify the Point of Connection,

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

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 No. _____, Rev. _____

12. Single Line Diagram ("SLD"):

Provide a SLD of the Generator's 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 generation facility;
  - External phase and ground faults (in Kingston 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: generator 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. Generator Characteristics

a. Characteristics of Existing Generators

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

b. Characteristics of New Generators:

i. Number of generating unit(s): _____
ii. Manufacturer / Type or Model No: _____ / _____
iii. Date of Manufacture: _____
iv. Serial Number: _____
v. Rated capacity of each unit: _____ kW _____ kVA
vi. If unit outputs are different, please fill in additional sheets to provide the information.
vii. Rated frequency: _____Hz
viii. RPM: _____
ix. Rotating Machine Type: ☐ Synchronous ☐ Induction ☐ Other (Please Specify) _____
x. Generator connecting on: ☐ single phase ☐ three phase
xi. Limits of range of reactive power at the machine output:
  - ☐ Lagging (over-excited) _____ kVAR power factor _____
  - ☐ Leading (under-excited) _____ kVAR power factor _____

xii. Limits of range of reactive power at the PCC:
  - ☐ Lagging (over-excited) _____ kVAR power factor _____
  - ☐ Leading (under-excited) _____ kVAR power factor _____

xiii. Starting inrush current: _____ pu (multiple of full load current)
xiv. I_2^2t or K (heating time constant): _____

Kingston Hydro

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

xv. Generator terminal connection: ☐ delta ☐ star

xvi. Neutral grounding method of star connected generator:
☐ Solid ☐ Ungrounded ☐ Impedance: R _____ ohms X _____ ohms

a) **Prime Mover**

1) Unit Number: _____
2) Type: _ _____
3) Manufacturer: _____
4) Serial Number: _____
5) Date of manufacturer: _____
6) H.P. Rated: _____
7) H.P. Max.: _____
8) Inertia Constant: _____ lb.-ft.^{2}

b) **For Synchronous Units**:

1) Nominal machine voltage: _____ kV
2) Minimum power limit for stable operation: _____ kW
3) Unsaturated reactances on: _____ kVA base _____ kV base
4) Direct axis subtransient reactance, Xd'' _____ pu
5) Direct axis transient reactance, Xd' _____ pu
6) Direct axis synchronous reactance, Xd _____ pu
7) Zero sequence reactance, X0 _____ pu
8) Negative sequence reactance, Xs _____ pu
9) I_2^2t or K (heating time constant): _____
10) Provide a plot of generator capability curve
    a. (MW output vs MVAR)
    b. Document Number: _____, Rev._____

c) **For Induction Units:**

1) Nominal machine voltage: _____ kV
2) Rotor Resistance (Rr): _____ ohms
3) Stator Resistance (Rs): _____ ohms
4) Rotor Reactance (Xr): _____ ohms
5) Stator Reactance (Xs): _____ ohms
6) Magnetizing Reactance (Xm) _____ ohms
7) Short Circuit Reactance (Xd"): _____ ohms
8) Unsaturated reactances on: _____ kVA base _____ kV base
9) Direct axis subtransient reactance, Xd'' _____ pu
10) Direct axis transient reactance, Xd' _____ pu
11) Total power factor correction installed: _____ kVAR
    a. Number of regulating steps _____
    b. Power factor correction switched per step _____ kVAR
    c. Power factor correction capacitors are automatically switched off when generator breaker opens ☐ Yes ☐ No

15. Interface Step-Up Transformer Characteristics:

a. Transformer rating: _____ kVA

Kingston Hydro

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

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

f. High voltage winding connection: ☐ delta ☐ star

Grounding method of star connected high voltage winding neutral:

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

g. 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 Kingston Hydro's distribution system and 'Low Voltage' refers to the generation or any other intermediate voltage.

16. Intermediate Transformer Characteristics (optional):

☐ No intermediate transformer (if chosen, parts a. to g. 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

f. High voltage winding connection: ☐ delta ☐ star

Grounding method of star connected high voltage winding neutral:

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

g. 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:

a. Maximum load of the facility: _____ kVA _____ kW

b. Maximum load current (referred to the nominal voltage at the connection point to Kingston Hydro system): _____ A

c. Maximum inrush current (referred to the nominal voltage at the connection point to Kingston Hydro system): _____ A

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

18. Operation Information:

a. Mode of Operation: ☐ 24 Hour or Base Load ☐ Peak Period Only ☐ Load Displacement ☐ Other (Please Specify)
b. Annual Capacity Factor: %
c. Prospective number of annual scheduled starts / stops, and timing thereof :

19. Expected Monthly Generation, Consumption and Output From the Facility:

Expected:	**Total Generation (a)**		**Total Internal Consumption (b)**		**Total Output (To Kingston Hydro's Distribution System) (a-b)***	
	kWh	**Peak kW**	**kWh**	**Peak kW**	**kWh**	**Peak kW**
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

* This value would be negative when the generators are not in operation or when the internal consumption exceeds generation.

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

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, may require a Professional Engineer's stamp
- ☐ Payment in full including applicable taxes (by check or money order payable to "Utilities Kingston .")
- ☐ Signed Study Agreement
- ☐ Single Line Diagram (SLD), may require a Professional Engineer's stamp

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

Appendix A: Illustrations of PCC and Point of Connection

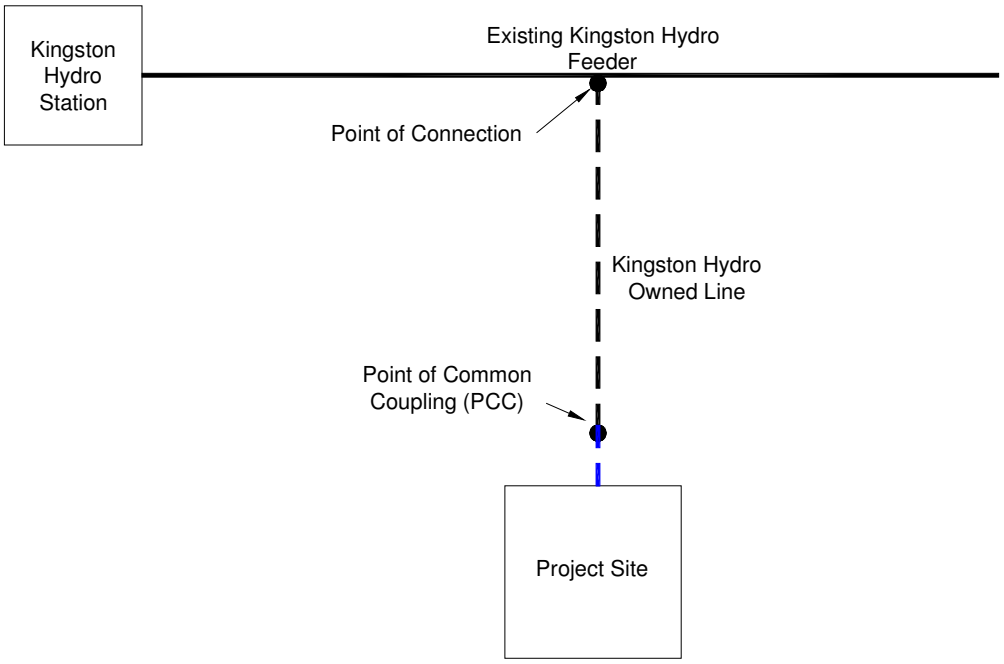

Figure A-1: Kingston Hydro Owns Entire Tap Line

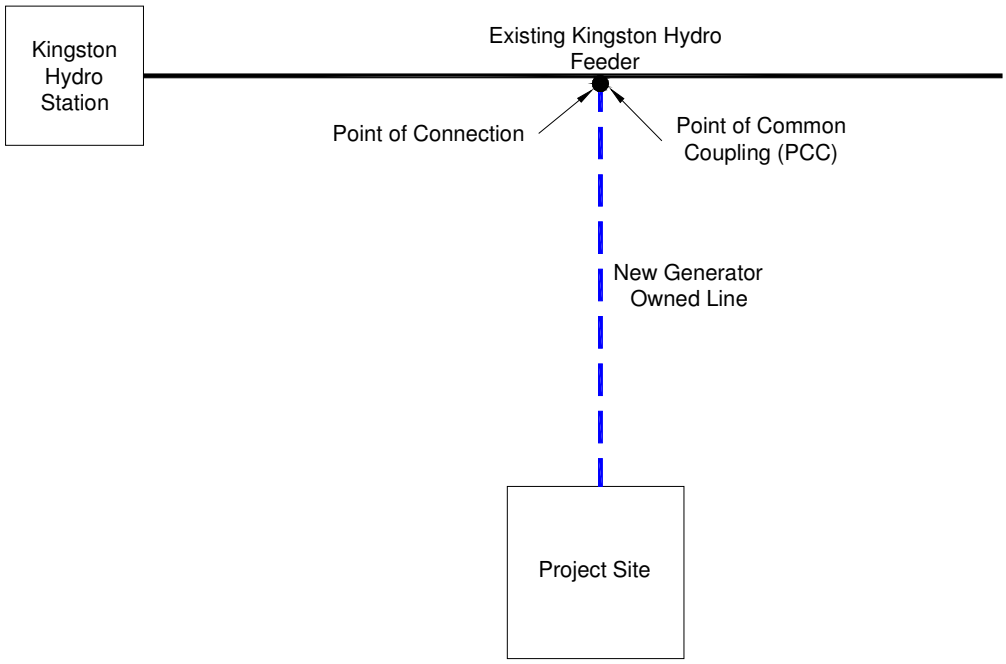

Figure A-2: Generator Owns Entire Tap Line

P.O. Box 790
Kingston, ON, Canada, K7L 4X7
Phone: 613.544.1181
Fax: 613.542.1463

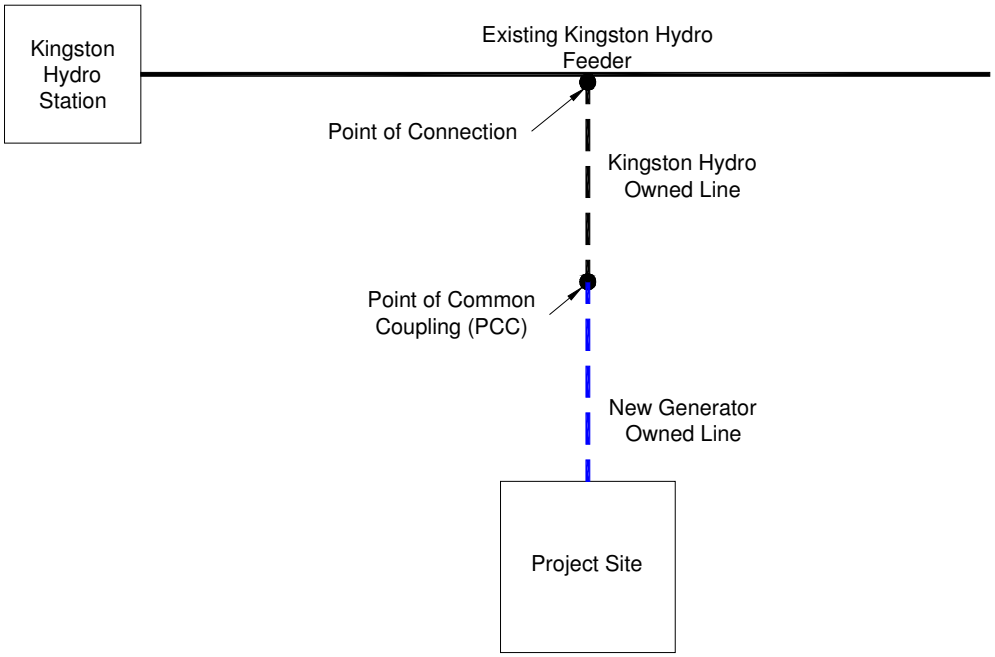

Figure A-3: Kingston Hydro Owns a Portion and Generator Owns a Portion of Tap Line

By submitting a CIA, the Proponent authorizes the collection by Utilities Kingston, of any agreements and any information pertaining to agreements made between the Proponent and the Ontario Power Authority from the Ontario Power Authority, the information set out in the CIA and otherwise collected in accordance with the terms hereof, the terms of Kingston Hydro's Conditions of Service, Kingston 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 Kingston Hydro's distribution system.