

**Connection Impact
Assessment (CIA)
Application Instructions**

TABLE OF CONTENTS

1.	GENERAL APPLICATION INFORMATION.....	3
1.2	TECHNICAL REQUIREMENTS.....	3
1.3	SUBMISSION INSTRUCTIONS.....	3
1.4	IMPORTANT NOTES.....	3
2.	SECTION A – APPLICATION INFORMATION.....	4
3.	SECTION B – PROJECT LOCATION.....	5
4.	SECTION C – CONTACT INFORMATION.....	5
5.	SECTION D – CUSTOMER STATUS.....	6
6.	SECTION E – EXISTING DER.....	6
7.	SECTION F – PROJECT INFORMATION.....	7
8.	SECTION G – STATION SERVICE LOAD INFORMATION.....	7
9.	SECTION H – CONNECTION INFORMATION.....	7
10.	SECTION I – ENERGY STORAGE.....	9
11.	SECTION J – LOAD DISPLACEMENT INFORMATION.....	9
12.	SECTION K – DER CHARACTERISTICS (1/1).....	9
13.	SECTION L – INTERFACE TRANSFORMER.....	10
14.	SECTION M – INTERMEDIATE TRANSFORMER.....	10
15.	SECTION N – HIGH-VOLTAGE GROUNDING TRANSFORMER.....	10
16.	SECTION O – SUBMISSION CHECKLIST.....	10
17.	SECTION P – CIA APPLICATION FEE CHECKLIST.....	11
18.	SECTION Q – ATTACHMENTS.....	12
19.	SECTION R – NOTES.....	12
20.	SECTION S – [LDC NAME] SPECIFIC REQUIRED FIELDS.....	12
21.	SECTION T – [LDC NAME] SPECIFIC ADDITIONAL NOTES.....	12

1. GENERAL APPLICATION INFORMATION

1.1 ABOUT THE CIA FORM

The Connection Impact Assessment (CIA) application is to be completed by any proponent interested in connecting a Distributed Energy Resource (DER) with a project size over 10 kilowatts (kW) to [LDC NAME]. This includes DERs applying for a new CIA or for revision(s) to their original CIA. This form expresses an intent to enter into an agreement between [LDC NAME] and the customer (or host customer¹ for load displacement projects) for completion of a CIA associated with connecting a DER to the [LDC NAME] distribution grid. The CIA Application shall be part of the required servicing (electrical installation, maintenance, and operating) agreements between [LDC NAME] and the proponent. Throughout this process, [LDC NAME] will be the proponent's contact with the transmission system provider (e.g. Hydro One Networks Inc.) and, if necessary, the provincial market operator, namely, the Independent Electricity System Operator (IESO).

1.2 TECHNICAL REQUIREMENTS

For technical requirements of [LDC NAME]'s DER projects, refer to the "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below", available at: [LDC link to "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below" application]

1.3 SUBMISSION INSTRUCTIONS

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

[LDC NAME]

Attn: [LDC NAME] [Department's name that is handling the application]

Generation Connection Application [Address] [City], [Province] [Postal Code]

1.4 IMPORTANT NOTES

An engineering stamp and all red box fields (on electronic version of form) are mandatory. Incomplete applications may be returned by [LDC NAME] and will result in delays in processing your application. Click the "Validate Form" button

¹ For Load Displacement projects, the term "host customer" refers to the owner of the load facility. The term "DER owner" refers to the owner of the DER facility.

on the top right of this page to ensure all required information is filled. If any of the required fields are not applicable to your project, type “N/A” in any required text field or “0” in any required numerical field

[LDC NAME] specific requirements and notes are found in Sections S and T, respectively

Applicants are cautioned NOT to incur major expenses until [LDC NAME] approves to connect the proposed DER facility.

All technical submissions (CIA Application, Single Line Diagrams, etc.) must be signed, dated and sealed by a licensed Ontario Professional Engineer (P.Eng.).

The proponent will pay for the CIA according to the [LDC NAME] CIA Fee Schedule.

The siting restrictions in O. Reg. 274/18 which were administered by electricity distributors such as [LDC NAME] have been replaced by amendments to the Planning Act (Ontario) that puts siting and planning requirements for renewable DER facilities under municipal oversight. It is recommended that you discuss municipal permitting and approvals requirements with the planning department in the municipality where your DER project is located before you proceed.

2. SECTION A – APPLICATION INFORMATION

- **Engineering Stamp:** Must be signed and sealed by a licensed Ontario Professional Engineer (P.Eng).
- **Application Type:** CHOOSE ONE.
 - **New CIA Application:** first application for any given project
 - **CIA Revision/Rework:** changes to a previous CIA.
 - **Capacity Increase Request**
 - **Modification or Addition to Existing Project**
 - **Reconnection of Existing Generator**

Your previous CIA must still be valid with [LDC NAME] (i.e. your previous CIA cannot be withdrawn or expired).

- **Date:** Fill in the current date
- **Program Type:** CHOOSE ONE.
 - **IESO (please specify)**
 - **Load Displacement**
 - **Net Metering**
 - **Net Metering (Subdivision)**
 - **Off-Grid Islanded Generation**
 - **Other (please specify)**

- **Program Type (additional details):** Use this field to provide additional details (Applicable for IESO or Other Program Type)
 - IESO (please specify)
 - Other (please specify)
- **Project Name:** Provide the exact project name of your proposed generation facility. [LDC NAME] will use this name along with your Project Number (if one already exists) to identify your project in our system going forward.
- **IESO Contract Number and IESO Reference Number:** (Applicable for IESO Program Type selection)
- **Ontario Corporate Number OR Business Identification Number:** PROVIDE ONE.
- **Proposed In-Service Date:** ____ / ____ / ____ (dd/mm/yyyy): Provide the date your generation facility will officially be connected and producing energy on [LDC NAME]'s distribution system. If you are unsure how to determine an In-service Date, contact your Design Engineer (for new applicants) or your [LDC NAME] Account Executive Manager (for existing customers). *Important note:* the In-service Date (ISD) you provide must be as accurate as possible. The [LDC NAME] schedules station maintenance, outages and other work based on ISDs. Failure to provide an accurate ISD could cause delays to your project's connection timeline.
- **Subdivision Project Name:** If you selected "Net Metering (Subdivision)" as the Program Type, please provide the name of the subdivision project.
- **Number of Lots:** If you selected "Net Metering (Subdivision)" as the Program Type, please provide the number of lots in the development.
- **Original CIA Project ID#** (if applicable): If this is a revision to a previous CIA Application Form that you submitted to the [LDC NAME], and that Application is still valid with the [LDC NAME], provide your current CIA Project Number.
- **Revised Fields:** If you are submitting a revised CIA Application, list the fields that have changed from your previous CIA in the box provided.

3. SECTION B – PROJECT LOCATION

In the Project Location section, provide project location information and complete accordingly.

4. SECTION C – CONTACT INFORMATION

- **Who is the single point of contact for this project?** CHOOSE ONE. This will be the person within your company who receives all communications regarding the project. Normally, this would be someone in a Project Management role.

He/she will be responsible for communicating information regarding your proposed facility.

- In the Contact Information section, provide contact information for the Host Customer, the DER Owner if different than the host customer and consultant if applicable. Note that the Host Customer and DER Owner may be the same. Also note that Post Office (PO) boxes and Rural Routes will not be accepted. Only list a physical address. Aside from the Single Point of Contact, the person(s) listed may be contacted by the [LDC NAME] for other matters regarding your project when necessary. Due to Privacy Laws, the [LDC NAME] will only release information to the persons listed on the CIA Application Form.

5. SECTION D – CUSTOMER STATUS

- **Is there an existing [LDC NAME] customer account at the project location?** Choose “Yes” if there is an existing electrical connection to [LDC NAME]’s grid (i.e. load and/or generation) at the Project Location OR choose “No” if this generation facility will be the only connection to [LDC NAME]’s grid at the location.
- **If yes, what is the [LDC NAME] account number of the property:** If you answered “Yes” to the previous question, provide the existing account number (i.e. customer load account number OR generation customer account number) found in the top right corner of your bill. Also select “Yes” or “No” to “**Is the account holder aware of this application?**” and “**Does your account fall within a residential-rate classification?**”
- **Account Holder Name registered on existing Account:** Provide the name on the existing customer account you provided in the previous question. If you answered “No” in the previous question, leave this space blank.
- **Is the owner an HST registrant?** Normally, a business – sole proprietor, partnership, corporation – has a Harmonized Sales Tax (HST) Number as a requirement to conduct regular business in Ontario.
- **If yes, provide your HST registration number:** If you answered “Yes” to “Are you an HST registrant?” provide your HST number. Failure to provide an accurate number will delay your application. If you are unsure of your HST number, please [sign into your Canadian Revenue Agency business account](#) to retrieve it.

6. SECTION E – EXISTING DER

- **Is there any existing DER facility located at the point of common coupling (PCC)?** Please select “Yes” if there is an existing DER facility on you premises.
- If yes, please provide the **Existing Project Number, Existing Project Size (kW) and the Program Type** for the Existing DER

- **Select the existing DER Type:** CHOOSE ONE. Synchronous, Induction, Inverter-based or Other and provide applicable power levels, ratings and reactance values.

7. SECTION F – PROJECT INFORMATION

- **Station Name:** provide the name of the [LDC NAME] station that your facility will connect to (e.g. “CONESTOGA DS”).
- **Feeder and Feeder Voltage:** Provide the name of the feeder that your facility will connect to (e.g. “F1” or “M1”) and feeder voltage if available.
- **Project Size:** Provide the total amount of generation your facility will produce, i.e. the facility’s maximum kW output. **Important note:** The project size on this application must match the project size you provided on your IESO contract (if applicable).
- **Equipment Capacity:** Provide the total amount of capacity in (kVA) of your facility’s equipment. **Important note:** For more information on the technical requirements of distribution generation facilities, see [LDC NAME]’s Technical Interconnection Requirements (TIR). Note: Typically, the generator’s Nameplate Capacity or Gen-Set Name Plate Capacity shall be considered as project size.
- **Fuel / Energy Type:** CHOOSE ONE. Provide the type of energy your generation facility will produce. If it is “Other”, ensure to provide the type of generation you are proposing.
- **Type of connection:** CHOOSE ONE. Single phase **OR** Three phase.
 - If this is a solar project, please select the Mounting Type.
 - If this is a water project, please answer the indicated questions.

8. SECTION G – STATION SERVICE LOAD INFORMATION

- In the Load Information section, if required, provide *Maximum Demand of Station Service Load of the DER in KW and the Average Monthly Consumption in kWh*

9. SECTION H – CONNECTION INFORMATION

- DOM means “Distribution Operating Map”. From the original DOM that the [LDC NAME] provided to you during your preliminary consultation meeting or in the preliminary consultation report, outline where your generation facility site will be located in reference to the existing feeder. Indicate the POE-PCC distances.² Please be sure to include the project location’s GPS co-ordinates. If you require a DOM, you can request one through our website.

² Refer to CIA Application Form Appendix A for the definition of POE and PCC.

- **Single Line Diagram (“SLD”):** Provide an SLD of the DER’s facilities including the PCC, transformer and connecting station, feeder and supply voltage. **SLD Drawing No. and Rev:** *Important note:* An SLD is a very important piece of your application and must accurately reflect the project information provided on the CIA Application. Submitting an accurate SLD that meets [LDC NAME]’s standards ensures your application is not delayed. Failure to submit an acceptable SLD will result in your application being deemed incomplete. Please refer to [LDC NAME]’s Technical Interconnection Requirements for more information on SLDs and other technical requirements for your generation facility. Please ensure that the SLD is no larger than 11x17 inches.
- **The “Point of Expansion” (POE)** indicates the origin of the new line expansion.
- **The “Point of DER Connection” or “PODC”** means the point where the DER connects with the DER’s connection assets as outlined in Appendix A of the CIA form.
- **GPS coordinates of the following:** All three GPS coordinates must be provided: POE, PCC and generation facility. GPS Format: Latitude, Longitude - Degree Decimal (e.g. 49.392, -75.570).
- **Length of line distance from the POE to the PCC:** Provide the exact distance in kilometers of the line from the POE to the PCC.
- **Length of line distance from the PCC to the DER Facility** (refer to Appendix A of CIA Application Form): Provide the exact distance in kilometers of the line from the PCC to your proposed generation facility. See Appendix A at the end of the application document for a diagram.
- **Conductor type/size:** Provide what type of conductor you will be using, including the size. E.g. ACSR/ CU/ AL and size in kcmil or AWG
- **Fault contribution from the DER’s Facilities, with the fault location at the PCC:**
 - *Three-phase generators: 3-phase short circuit*
 - *Single-phase generators: 1-phase short circuit*
- **Connection Figure:** See Appendix A at the end of the application document and choose ONE appropriate figure that is most applicable to how your proposed generator will connect.

Important Notes:

If this project requires line expansion work between the **POE** and **PCC**, [LDC NAME] will provide a cost estimate to construct any line located on public road right-of-way. The cost estimate will include a breakdown of **Uncontestable** work (i.e. overbuild to existing line) that can only be performed by the [LDC NAME], as well as **Contestable** work (i.e. new construction/green-field) that can be performed by the Generator/their contractor or the [LDC NAME]. (Both Uncontestable work and Contestable work requires design to [LDC NAME] specifications). [LDC NAME] will become the owner of the line expansion.

For a Generator-owned line, the Generator may choose to apply for installation of the line on existing the [LDC NAME] -owned poles. This is known as an application for Joint Use (JU) of poles. If the application is accepted, the [LDC NAME] will provide the Generator with information on initial connection costs, annual pole-space rental and emergency service (ES) fees and required JU & ES Agreements.

10. SECTION I – ENERGY STORAGE

In the Energy Storage section, provide Number of Units, Inverter Size (enter zero if inverter is shared with generation unit(s)), Energy Storage Unit Size (kWh) and Total Energy Storage Size (kWh).

Select the Energy Storage Facility Control Strategy to be used and include with this application a detailed description of the control strategy according to the templates in Appendix B. [LDC NAME] reserves the right to modify the control strategy as part of its Connection Impact Assessment.

11. SECTION J – LOAD DISPLACEMENT INFORMATION

In the Load Displacement Information section, provide the Operating Mode, Transition Type, and Time that Generator Remains Parallel to the Grid (closed transition only).

For non-parallel load displacement, SCADA monitoring and Gross Load Billing (GLB) may apply. For load displacement generation facilities, please attach a schedule of the forecasted maximum generation output (as a function of loading of the facility). At a minimum, include the forecasted generation output information (i.e. Watts and VARs) during the minimum and maximum of the load facility to which the load displacement generator is connecting (see Appendix C for template)

12. SECTION K –DER CHARACTERISTICS (1/1)

In the DER Characteristics section, complete all fields accordingly.

For facilities with multiple DERs: If your generators have different characteristics, please use the “Add Page” button and provide the characteristics for each generator on the additional pages.

Important note:

The [LDC NAME] requires that all CIA Applicants have a P.Eng. review this section. Failure to complete this section correctly will result in delays to your application.

13. SECTION L – INTERFACE TRANSFORMER

14. SECTION M – INTERMEDIATE TRANSFORMER

15. SECTION N – HIGH-VOLTAGE GROUNDING TRANSFORMER

In the Interface Transformer section, complete all fields accordingly.

At the Generator's expense, and if requested, the [LDC NAME] may provide transformation up to a maximum of 500KVA three-phase, as described in the [LDC NAME] Conditions of Service [DOCUMENT REFERENCE NAME].

The term "High Voltage" refers to the connection voltage to [LDC NAME]'s distribution system and "Low Voltage" refers to the generation or any other intermediate voltage.

Providing a photo of transformer equipment along with this application may help expedite your application.

16. SECTION O – SUBMISSION CHECKLIST

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

Payment

Payment in full including applicable taxes (by cheque payable to "[LDC NAME]")
Completed Form B stamped by a Professional Engineer

Signed Study Agreement

Attach a Signed Study Agreement

Single Line Diagram (SLD)

Attach a SLD of the Generator's facilities, must be stamped by a Professional Engineer

Protection Philosophy

Attach Protection Philosophy documents

Distribution Operating Map

Distribution Operating Map (DOM) and/or Site Plan (not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point)

Load Schedules

Load Displacement Generation Facility's load and generation schedules (if applicable)

Load Displacement Generation Facility's mode of operation (if applicable)

Operating Strategy

Energy Storage Facility operating strategy description and parameters (if applicable)

Emergency Backup Generation Facility's mode of operation (if applicable)

17. SECTION P – CIA APPLICATION FEE CHECKLIST

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

Applicable CIA Fee

See the Connection Impact Assessment Fee Schedule on our website for costs. Please enter the amount from the fee schedule. Note HST will be applicable.

Transmission Customer Impact Assessment (TxCIA) Fee (if applicable)

A Tx CIA is also required if the total nameplate generation of the project is greater than 10MW. Note HST will be applicable.

IESO System Impact Assessment (SIA) Fee (if applicable)

An SIA deposit is required if the total nameplate generation of the project is greater than 10MW. The total cost of the SIA will be Trued Up/Down upon the receipt of the SIA from the IESO. See the IESO's SIA Application for costs.

18. SECTION Q – ATTACHMENTS

Please provide a description, document number and number of pages for each supporting document/drawing attachment.

19. SECTION R – NOTES

Please include any additional details that you think [LDC NAME] should be aware of in support of this application.

20. SECTION S – [LDC NAME] SPECIFIC REQUIRED FIELDS

This section contains specific information that is required by [LDC NAME]. Please read Section T notes regarding this section if you need further details.

21. SECTION T – [LDC NAME] SPECIFIC ADDITIONAL NOTES

DISCLAIMER

By submitting a CIA Application, the Proponent authorizes the collection by [LDC NAME] Inc. (“[LDC NAME]”), of any agreements and any information pertaining to agreements made between the Proponent and the Independent Electricity System Operator from the Independent Electricity System Operator, the information set out in the CIA Application and otherwise collected in accordance with the terms hereof, the terms of [LDC NAME]’s Conditions of Service, [LDC NAME]’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 [LDC NAME]’s distribution system.



Preliminary Consultation Information Request Distributed Energy Resource (DER) Connections

This form is for customers applying for a Preliminary Assessment for connecting a Distributed Energy Resource (DER). All fields are required. Email the completed form to DER@LDC.ca. If you have any questions, you may send them to the email or phone 555-999-9999.

1. General Information:

Project Name:
Application Submission Date:
Primary Contact: <i>(company name)</i>
Contact Name:
Telephone No.:
E-mail Address:
Address:
City/Town:
Postal Code:

2. Project Information:

Project Intent:	<input type="checkbox"/> Inject energy to the grid <input type="checkbox"/> Do not inject energy to the grid for: <input type="checkbox"/> Load Displacement <input type="checkbox"/> Emergency Backup only when the grid is not available <input type="checkbox"/> Other (please specify):	
Size:	Proposed Installed Capacity	kW
	Connecting on	<input type="checkbox"/> Single phase <input type="checkbox"/> 3 phase
Project Type:	DER Type	<input type="checkbox"/> Synchronous <input type="checkbox"/> Other <i>(please specify)</i> : <input type="checkbox"/> Induction <input type="checkbox"/> Inverter based
	DER Fuel/Energy Type	

Contact Information for responsible department



LDC Name/Logo

Site Information	Municipal Address	Address: City/Town/Township: Postal Code: Existing Account number (if applicable):
-------------------------	-------------------	--

<u>FOR OFFICE USE ONLY:</u>	
<input type="checkbox"/> Received	Date:
<input type="checkbox"/> Incomplete returned	Date:
<input type="checkbox"/> Complete	Date:
<input type="checkbox"/> Preliminary Consultation Report sent	Date:
<input type="checkbox"/> Application ID assigned	ID:

Preliminary Consultation Information Request

Distributed Energy Resource (DER) Connections

This form is for customers applying for a Preliminary Assessment for connecting a Distributed Energy Resource (DER). All fields are required. Email the completed form to DER@LDC.ca If you have any questions, you may send them to the email or phone 555-999-9999.

1. General Information:

Project Name:	BEHIND THE METER EXAMPLE
Application Submission Date:	2021-08-04 (YYYY/MM/DD)
Primary Contact: Consultants Inc. <i>(company name)</i>	
Contact Name:	Consultant Name
Telephone No.:	905-123-4002
E-mail Address:	Consultant@example.com
Address: 123 Street	City/Town: City
Postal Code:	1B3-7B1

2. Project Information:

Project Intent:	<input type="checkbox"/> Inject energy to the grid under the program: <input checked="" type="checkbox"/> Do not inject energy to the grid for: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Load Displacement <input type="checkbox"/> Emergency Backup only when the grid is not available <input type="checkbox"/> Other (please specify): Click or tap here to enter text.	
Size:	Proposed Installed Capacity	Click or tap here to enter text.kW
	Connecting on	<input type="checkbox"/> Single phase <input checked="" type="checkbox"/> 3 phase
Project Type:	DER Type	<input type="checkbox"/> Synchronous <input type="checkbox"/> Other (please specify): <input type="checkbox"/> Induction Click or tap here to enter text. <input type="checkbox"/> Inverter based

Contact Information for responsible department

LDC Name/Logo

	DER Fuel/Energy Type	Battery Storage System
Site Information	Municipal Address	<p>Address 123 Street</p> <p>City/Town/Township City</p> <p>Postal Code 1B3-7B1</p> <p>Existing Account number (if applicable) 12345-12345</p>

FOR OFFICE USE ONLY:

- Received Date: 2021-08-04 (YYY/MM/DD)
- Incomplete returned Date: Click or tap to enter a date.(YYY/MM/DD)
- Complete Date: 2021-08-06 (YYY/MM/DD)
- Form A Report sent Date: 2021-08-06(YYY/MM/DD)
- Application ID assigned ID: 12344564

DISTRIBUTED ENERGY RESOURCE (DER) CONNECTION

Date of Report:

Project ID	
Requested Project Capacity	
Fuel/Energy Type	
Site Location GPS or Address	

Disclaimer

[LDC Name] provides this information in response to your Preliminary Consultation Information Request. This information will assist you in completing your Connection Impact Assessment application (CIA), should you decide to proceed. Please note that the information provided is based on information and records available to us at the time that this report was issued and is subject to change and verification. Capacity is not being reserved for your project at this time. Capacity is only reserved upon completion of a successful CIA.

<input type="checkbox"/>	A.	The requested connection capacity is not available at that location at this time due to restrictions within the distribution system.
<input type="checkbox"/>	B.	The requested connection capacity is not available at that location at this time due to restrictions within the transmission system.
<input type="checkbox"/>	C.	Conditional pass – There may be connection capacity at that location at this time. We recommend that you check transmission capacity based on the information below. Link: Hydro One Station Capacity Calculator

Connection Information

Connection Station <i>(Municipal/ Distribution Station)</i>	Connection Station Name	
	Connecting Feeder Name	
	Utility Transformer Size	kVA
	Connection Voltage	
Host Distributor <i>(if applicable)</i>	Connection Station Name	
	Connecting Feeder Name	
	Utility Transformer Size	kVA
	Connection Voltage	
Upstream Station <i>(Transmission Station)</i>	Upstream Station Name	
	Upstream Feeder name	

DISTRIBUTED ENERGY RESOURCE (DER) CONNECTION

Notes: *Information including any conditions on capacity or configuration, and likely requirements for transfer trip.*

Process and Requirements for Connection Impact Assessment (CIA)

If you proceed to apply for a CIA study, the following characteristics will likely apply. This information is provided for your guidance only and does not assume the outcome of the CIA.

	Impact Assessment Studies Required	Payments owing for Impact Assessments on submission of CIA Form
<input type="checkbox"/>	No CIA	<i>No study payments required</i>
<input type="checkbox"/>	LDC CIA	<i>Please see our website for the costs of CIAs and SIAs and the payee for cheques.</i>
<input type="checkbox"/>	Host LDC CIA	
<input type="checkbox"/>	Transmitter CIA	
<input type="checkbox"/>	IESO System Impact Assessment (SIA)	

PRELIMINARY CONSULTATION REPORT DISTRIBUTED ENERGY RESOURCE (DER) CONNECTION

Date of Report: 2021-08-04

Requested Project Capacity	3000 kW
Fuel/Energy Type	Battery Storage System
Site Location GPS or Address	Site Address

Disclaimer

[LDC Name] provides this information in response to your Preliminary Consultation Information Request. This information will assist you in completing your Connection Impact Assessment Application (CIA), should you decide to proceed. Please note that the information provided is based on information and records available to us at the time that this report was issued and is subject to change and verification. Capacity is not being reserved for your project at this time. Capacity is only reserved upon completion of a successful CIA.

<input type="checkbox"/> A.	The requested connection capacity is not available at that location at this time due to restrictions within the distribution system.
<input checked="" type="checkbox"/> B.	The requested connection capacity is not available at that location at this time due to restrictions within the transmission system.
<input type="checkbox"/> C.	Conditional pass – There may be connection capacity at that location at this time. We recommend that you check transmission capacity based on the information below. Link: Hydro One Station Capacity Calculator

Connection Information

Connection Station <i>(Municipal/ Distribution Station)</i>	Connection Station Name	Example MS
	Connecting Feeder Name	M1
	Utility Transformer Size	3000 kVA
	Connection Voltage	44000
Host Distributor <i>(if applicable)</i>	Connection Station Name	Click or tap here to enter text.
	Connecting Feeder Name	Click or tap here to enter text.
	Utility Transformer Size	Click or tap here to enter text. kVA
	Connection Voltage	Click or tap here to enter text.

PRELIMINARY CONSULTATION REPORT DISTRIBUTED ENERGY RESOURCE (DER) CONNECTION

Upstream Station <i>(Transmission Station)</i>	Upstream Station Name	Click or tap here to enter text.
	Upstream Feeder name	Click or tap here to enter text.
<p>Notes: <i>Information including any conditions on capacity or configuration, and likely requirements for transfer trip.</i></p> <p>Click or tap here to enter text.</p>		

Process and Requirements for Connection Impact Assessment (CIA)

If you proceed to apply for a CIA study, the following characteristics will likely apply. This information is provided for your guidance only and does not assume the outcome of the CIA.

	Impact Assessment Studies Required	Payments owing for Impact Assessments on submission of CIA Form
<input type="checkbox"/>	No CIA	<i>No study payments required</i>
<input checked="" type="checkbox"/>	LDC CIA	<i>Please see our website for the costs of CIAs and SIAs and the payee for cheques.</i>
<input type="checkbox"/>	Host LDC CIA	
<input type="checkbox"/>	Transmitter CIA	
<input type="checkbox"/>	IESO System Impact Assessment (SIA)	



Connection Impact Assessment (CIA) Application

[LDC department's name that is handling the application] | [LDC department's email] | [LDC department's phone Number]

[Insert LDC
LOGO]

▶ ABOUT THIS FORM

This Connection Impact Assessment (CIA) application is to be completed by any proponent interested in connecting a Distributed Energy Resources (DER) with a project size over 10 kilowatts (kW) to [LDC name]. This includes DER applying for a new CIA or for revision(s) to their original CIA. This form expresses an intent to enter into an agreement between [LDC name] and the customer (or host customer* for load displacement projects) for completion of a CIA associated with connecting a DER to the [LDC name] distribution grid. The CIA Application shall be part of the required servicing (electrical installation, maintenance, and operating) agreements between [LDC name] and the proponent. Through this process, [LDC name] will be the proponent's contact with the transmission system provider (e.g. Hydro One Networks Inc.) and, if necessary, the provincial market operator, namely, the Independent Electricity System Operator (IESO).

*For Load Displacement projects, the term "host customer" refers to the owner of the load facility. The term "DER owner" refers to the owner of the DER facility.

Emergency Backup Generators should use the Emergency Backup Generation Application Form available at: [LDC link to application]

▶ TECHNICAL REQUIREMENTS

For technical requirements of [insert LDC]'s DER projects, refer to the "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below", available at:

[LDC link to "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below" application]

▶ SUBMISSION INSTRUCTIONS

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

[LDC name]

Attn: [LDC department's name that is handling the application]

Generation Connection Application

[Address]

[City], [Province] [Postal Code]

▶ IMPORTANT NOTES

- An engineering stamp and all red box fields (on electronic version of form) are mandatory. Incomplete applications may be returned by [LDC name] and will result in delays in processing your application. Click the "Validate Form" button on the top right of this page to ensure all required information is filled. If any of the required fields are not applicable to your project, type "N/A" in any required text field or "0" in any required numerical field
- [LDC name] specific requirements and notes are found in Sections S and T, respectively
- Applicants are cautioned NOT to incur major expenses until [LDC name] approves to connect the proposed DER facility.
- All technical submissions (CIA Application, Single Line Diagrams, etc.) must be signed, dated and sealed by a licensed Ontario Professional Engineer (P.Eng.).
- The proponent will pay for the CIA according to the [LDC name] CIA Fee Schedule.





- For Load Displacement or Energy Storage facility connections, the assessment performed by [LDC name] is a referred to as a Detailed Technical Connection Assessment (DTCA). For such facilities, the term "CIA" as it appears throughout this Connection Impact Assessment (CIA) Application shall be interpreted to mean "DTCA".
- The siting restrictions in O. Reg. 274/18 which were administered by electricity distributors such as [LDC name] have been replaced by amendments to the Planning Act (Ontario) that puts siting and planning requirements for renewable DER facilities under municipal oversight. It is recommended that you discuss municipal permitting and approvals requirements with the planning department in the municipality where your DER project is located before you proceed.
- For micro-embedded projects (10 kW or less), please fill out [LDC name]'s "Micro-Generation Connection Application (Form C)" available at: [\[LDC link to Form C\]](#)

▶ SECTION A: APPLICATION INFORMATION

Engineering Stamp	Application Type <i>choose one</i>	Date <i>mm/dd/yyyy</i>
<input type="text"/>	<input type="text" value="New CIA Application"/>	<input type="text"/>
	Program Type/Purpose <i>choose one</i>	Program Type (additional details)
	<input type="text"/>	<input type="text"/>
	Project Name	<input type="text"/>
	IESO Contract Number <i>F-XXXXXX-XXX-XXX-XXX</i>	IESO Reference Number <i>FIT-XXXXXXX</i>
<input type="text"/>	<input type="text"/>	
Ontario Corporate Number or Business Identification Number	Proposed In Service Date <i>mm/dd/yyyy</i>	
<input type="text"/>	<input type="text"/>	
<i>If this project is a subdivision project, please complete the following fields:</i>		
Subdivision Project Name	Number of Lots	
<input type="text"/>	<input type="text"/>	
<i>For certain application type selections, please complete the required fields:</i>		
Original CIA Project ID # <i>XX,XXX</i>	<input type="text"/>	
<input type="text"/>		
Revised Fields <i>list the fields that have changed from your previous application</i>	<input type="text"/>	
<input type="text"/>		

▶ SECTION B: PROJECT LOCATION

Address	
<input type="text"/>	
City / Town / Township	Postal Code
<input type="text"/>	<input type="text"/>
Lot Number(s)	Concession Number(s)
<input type="text"/>	<input type="text"/>





▶ SECTION C: CONTACT INFORMATION

CIA will be issued in the name of the host customer (load facility owner). All agreements (including CCA and DCA) are only made between [LDC name] and the host customer. This section is strictly to gather contact information of some of the key contacts that are involved with the project.

Who is the single point of contact for this project?

- Host Customer
- DER Owner (if different from host customer)
- Consultant

Please enter the following information about the **host customer** (load facility owner)

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address

Please enter the following information about the **DER owner** (if different from host customer)

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address

Please enter the following information about the **consultant**

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address





▶ SECTION D: CUSTOMER STATUS

Is there an existing [LDC name] account at the project location?

- Yes No

Is the account holder aware of this application?

- Yes No

Does your account fall within a residential-rate classification?

- Yes No Do not Know

Existing Account Number

Account Holder Name

Does the account holder have an HST registration number?

- Yes No

HST Number

▶ SECTION E: EXISTING DER

Are there existing DER at the point of common coupling (PCC)?

- Yes No

Existing Project Number

Existing Project Size (kW)

Program Type For Existing DER *choose one*

DER type: Synchronous Induction Inverter based Other

For synchronous units	For induction units	For inverter based units
Min. power limit for stable operation <i>kW</i> <input type="text"/>	Direct axis sub-transient reactance, X''_d <i>pu</i> <input type="text"/>	Inverter rating <i>kVA</i> <input type="text"/>
Direct axis sub-transient reactance, X''_d <i>pu</i> <input type="text"/>	Direct axis transient reactance, X'_d <i>pu</i> <input type="text"/>	Maximum continuous power output <i>kW</i> <input type="text"/>
Direct axis transient reactance, X'_d <i>pu</i> <input type="text"/>	Total PF correction installed <i>kVAR</i> <input type="text"/>	
Direct axis synchronous reactance, X_d <i>pu</i> <input type="text"/>		
Zero sequence reactance, X_0 <i>pu</i> <input type="text"/>		





▶ SECTION F: PROJECT INFORMATION

Station Name *(optional to leave blank for behind the meter projects)*

Feeder *(optional to leave blank for behind the meter projects)*

Feeder Voltage (kV) *(optional to leave blank for behind the meter projects)*

Project Size (kW) *total maximum output capacity*

Equipment Capacity (kVA) *total equipment nameplate rating*

Fuel/Energy Type *select all that apply*

- Solar (PV)
- Wind
- Water
- Natural Gas
- Biogas
- Biomass
- Diesel
- Battery Energy Storage System
- UPS
- CHP/Co-gen
- Other (specify below)

Type of Connection

- Single Phase Three Phase

If this is a solar project, please answer the following questions:

Mounting Type *select one*

If this is a water project, please answer the following questions:

Is your generation facility located on provincial Crown or federally-regulated lands?

- Yes No

Is water your primary energy source?

- Yes No

▶ SECTION G: STATION SERVICE LOAD INFORMATION

The host customer's station service load details

If there is an existing account at the project location, populating the fields in Section G is [optional or required] for [LDC name]. Ensure selection below matches with this note.

- Required Optional

Maximum Demand of Station Service Load of DER *kW*

Average Monthly Consumption *kWh*





▶ SECTION H: CONNECTION INFORMATION

On a cut-out from the [LDC name] DOM (Distribution Operating Map) provide the location of the generation facility with proposed line routings for connection to [LDC name]'s distribution system. It should identify the Point of Expansion (POE), the Point of Common Coupling (PCC), the location of the generation facility, and (if applicable) the route of the new line between the generation facility and the POE (ie. on private property or public road/right-of-way). This is not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point. Please see "Appendix A" for a visual representation of POE and PCC.

DOM Drawing/Sketch Number

DOM Revision Number

Please provide an SLD of the Generator's facilities, including the PCC, transformer and connecting station, feeder, and supply voltage.

SLD Drawing/Sketch Number

SLD Revision Number

POE Latitude *degree decimal format*

POE Longitude *degree decimal format*

PCC Latitude *degree decimal format*

PCC Longitude *degree decimal format*

Generation Facility Latitude *degree decimal format*

Generation Facility Longitude *degree decimal format*

Length of Line from POE to PCC *km*

Length of Line from PCC to Generation Facility *km*

Important: The line between the PCC and the Generation Facility must NOT be shared with any other DER owner (refer to Appendix A).

Conductor Type/Size *for the line between the PCC and the Generation Facility*

Generator Fault Contribution *with fault location at the PCC*

IMPORTANT NOTES:

If this project requires line expansion work between the POE and PCC, [LDC name] will provide a cost estimate to construct any line located on public road right-of-way. The cost estimate will include a breakdown of uncontestable work (i.e. overbuild to existing line) that can only be performed by [LDC name], as well as contestable work (i.e. new construction/green-field) that may be performed by the Generator, their contractor or [LDC name]. The design of uncontestable and contestable work shall conform to [LDC name] specifications).

For Generator-owned line, the Generator may apply to construct the line on existing [LDC name]-owned poles. This is known as an application for Joint Use (JU) of poles. If the application is accepted, [LDC name] will provide the Generator with information on initial connection costs, annual pole-space rental and emergency service (ES) fees, and required JU & ES Agreements.





▶ SECTION I: ENERGY STORAGE OR UPS

Please complete the following section if your project includes energy storage.

Number of Units

Inverter Unit Size enter zero if inverter is shared with generation unit(s)

Energy Storage Unit Size kWh

Total Energy Storage Size kWh

Energy Storage Facility Control Strategy

- Peak Shaving
- Dynamic VAR Support
- Frequency Support
- Other

Please submit a detailed description of the control strategy according to the templates in Appendix B. [LDC name] reserves the right to modify the control strategy as part of its Detailed Technical Connection Assessment.

▶ SECTION J: LOAD DISPLACEMENT/PEAK SHAVING

Please complete the following section if this is a load displacement or peak shaving project

Operating Mode

- Parallel
- Non-Parallel

Transition Type

- Closed "make before break"
- Open "break before make"

Time that generator remains parallel to grid closed transition only, ms

For non-parallel load displacement, SCADA monitoring and Gross Load Billing (GLB) may apply. For load displacement generation facilities, please attach a schedule of the forecasted maximum generation output (as a function of loading of the facility). At a minimum, include the forecasted generation output information (i.e. Watts and VARs) during the minimum and maximum of the load facility to which the load displacement generator is connecting (see Appendix C for template)





SECTION K: DER CHARACTERISTICS (21/55)

For facilities with multiple generators: If your generators have different characteristics, please use the "Add Page" button and provide the characteristics for each generator on the additional pages.

DER type: Synchronous Induction Inverter based Other

Number of Generating Units Rated Capacity of Each Unit kW kVA DER Output Voltage *in kV*

Manufacturer Type or Model Number

If Power Conversion Type is "Other", please provide values equivalent to a Synchronous or Induction type generator.

Maximum Starting In-rush Current *multiple of full load current, pu*

Generator Winding Connection
 Delta Star

Neutral Grounding Method *for star winding connection only*
 Solid Ungrounded Impedance

Impedance R *in ohms* Impedance X *in ohms*

Limits of range of reactive power at the machine output:

Lagging *over-excited, kVAR* Lagging Power Factor Leading *under-excited, kVAR* Leading Power Factor

Limits of range of reactive power at the PCC:

Lagging *over-excited, kVAR* Lagging Power Factor Leading *under-excited, kVAR* Leading Power Factor

For synchronous units	For induction units
Nominal Machine Voltage <i>kV (LL)</i> <input type="text"/>	Nominal Machine Voltage <i>kV (LL)</i> <input type="text"/>
Unsaturated Reactance <i>kVA Base</i> <input type="text"/>	Unsaturated Reactance <i>kVA Base</i> <input type="text"/>
Unsaturated Reactance <i>kV Base</i> <input type="text"/>	Unsaturated Reactance <i>kV Base</i> <input type="text"/>
Direct Axis Subtransient Reactance, Xd'' <i>pu</i> <input type="text"/>	Direct Axis Subtransient Reactance, Xd'' <i>pu</i> <input type="text"/>
Direct Axis Transient Reactance, Xd' <i>pu</i> <input type="text"/>	
Direct Axis Synchronous Reactance, Xd <i>pu</i> <input type="text"/>	
Subtransient Time, Td'' <i>ms</i> <input type="text"/>	
Zero Sequence Reactance, X0 <i>pu</i> <input type="text"/>	





SECTION L: INTERFACE TRANSFORMER

The transformer connecting to the [LDC name] distribution system

Transformer Ownership

- Customer [LDC name]

Transformer Rating *KVA*

Transformer Type

- Single Phase Three Phase

Nominal Voltage of High Voltage Winding *kV*

Nominal Voltage of Low Voltage Winding *kV*

Impedance Base (if different than ratings above)

kVA Base kV Base

Impedance (R) *pu* Impedance (X) *pu* Impedance (Z%) %

OR

High Voltage Winding Connection

- Delta Star

High Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Low Voltage Winding Connection

- Delta Star

Low Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

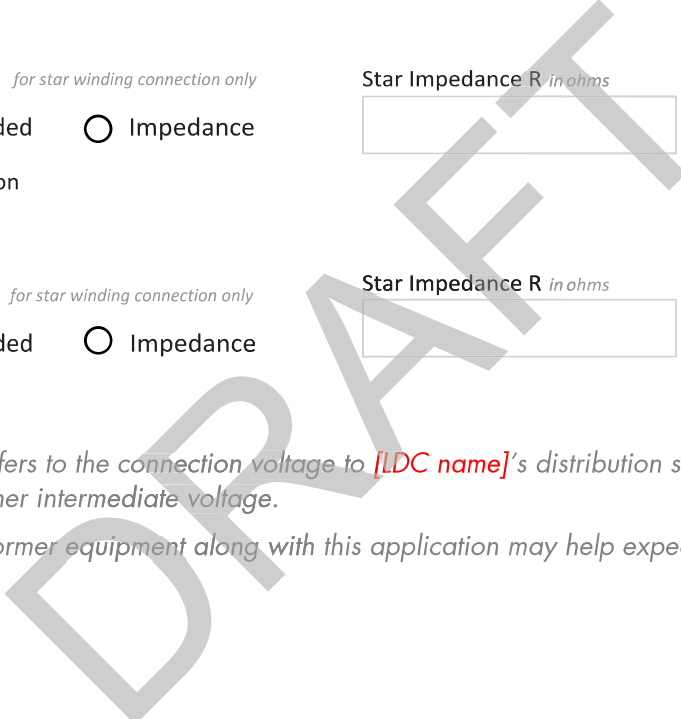
Star Impedance R *in ohms*

Star Impedance X *in ohms*

Notes

The term "High Voltage" refers to the connection voltage to [LDC name]'s distribution system and "Low Voltage" refers to the generation or any other intermediate voltage.

Providing a photo of transformer equipment along with this application may help expedite your application.





SECTION M: INTERMEDIATE TRANSFORMER

Transformer between the interface transformer and DER

Please complete the following section if your project includes an intermediate transformer.

Do you intend to install an intermediate transformer?

- Yes No

Transformer Rating *kVA*

Transformer Type

- Single Phase Three Phase

Nominal Voltage of High Voltage Winding *kV*

Nominal Voltage of Low Voltage Winding *kV*

Impedance

kVA Base

kV Base

Impedance R *pu*

Impedance X *pu*

High Voltage Winding Connection

- Delta Star

High Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Low Voltage Winding Connection

- Delta Star

Low Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Notes:

The term "High Voltage" refers to the connection voltage to [LDC name]'s distribution system and "Low Voltage" refers to the generation or any other intermediate voltage.

SECTION N: HIGH-VOLTAGE GROUNDING TRANSFORMER

Please complete the following section if your project includes a high-voltage grounding transformer.

Do you have a high-voltage grounding transformer?

- Yes No

Transformer Type *select one*

- Zig-Zag Star-Delta

Zero Sequence Impedance (Z0) R *ohms*

Zero Sequence Impedance (Z0) X *ohms*





▶ SECTION O: SUBMISSION CHECKLIST

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

- Payment in full including applicable taxes (by cheque payable to “[LDC name]”)
- Completed Form B stamped by a Professional Engineer
- Signed Study Agreement (original signature is required)
- Single Line Diagram (SLD) of the Generator’s facilities, must be stamped by a Professional Engineer
- Protection Philosophy
- Distribution Operating Map (DOM) and/or Site Plan *(not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point)*
- Load Displacement Generation Facility’s load and generation schedules (if applicable)
- Load Displacement Generation Facility’s mode of operation (if applicable)
- Energy Storage Facility operating strategy description an parameters (if applicable)
- Emergency Backup Generation Facility’s mode of operation (if applicable)

▶ SECTION P: CIA APPLICATION FEE CHECKLIST

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

- Applicable CIA Fee**
See the [Connection Impact Assessment Fee Schedule](#) on our website for costs. Please enter the amount from the fee schedule. \$ +HST
- Transmission Customer Impact Assessment (TxCIA) Fee (if applicable)**
A TxCIA is also required if the total nameplate generation of the project is greater than 10MW. \$ +HST
- IESO System Impact Assessment (SIA) Fee (if applicable)**
An SIA deposit is required if the total nameplate generation of the project is greater than 10MW. The total cost of the SIA will be Trued Up/Down upon the receipt of the SIA from the IESO. See the [IESO’s SIA Application](#) for costs. \$





▶ SECTION Q: ATTACHMENTS

Attached Documents / Drawings

Item #	Description	Document #	# of Pages
1			
2			
3			
4			
5			
6			

▶ SECTION R: NOTES

DRAFT





▶ **SECTION S: [LDC Name] Specific Required Fields**

This section contains specific information that is required by [LDC name]. Please read Section T notes regarding this section if you need further details.

What is the barcode of the nearest pole serving the project location?

[LDC name] Account Number *if transformer is owned by [LDC name]*

▶ **SECTION T: [LDC Name] Specific Additional Notes**

Section A: no additional notes

Section B: no additional notes

Section C: no additional notes

Section D: no additional notes

Section E: no additional notes

Section F: no additional notes

Section G: no additional notes

Section H: no additional notes

Section I: no additional notes

Section J: no additional notes

Section K: no additional notes

Section L: At the Generator's expense, and if requested, [LDC name] may provide transformation up to a maximum of 500 kVA three-phase, as described in the [LDC name] Conditions of Service (Section 3.5 item C.4).

Section M: no additional notes

Section N: no additional notes

Section O: for new DER site, Distribution Operating Map (DOM) is required by [LDC name] in addition to Site Plan

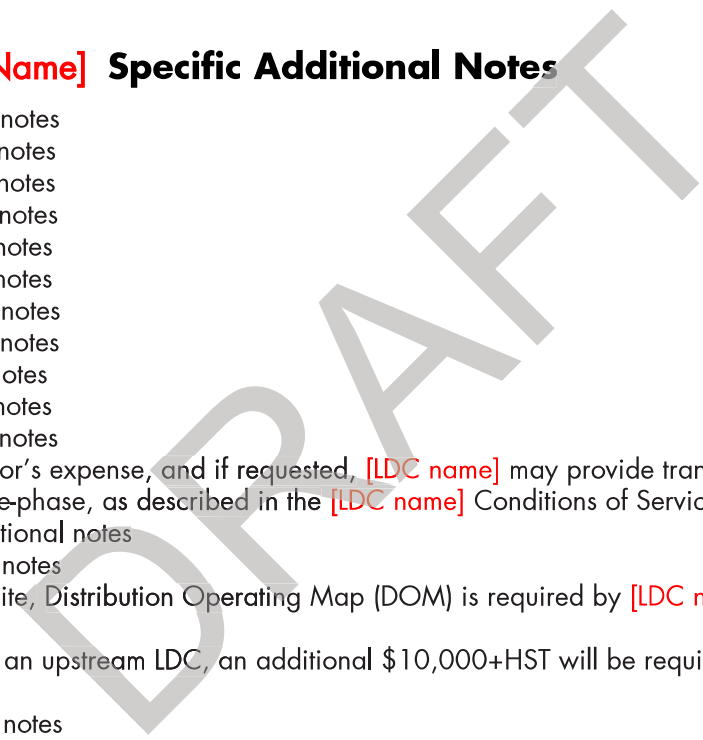
Section P: When there is an upstream LDC, an additional \$10,000+HST will be required for costs associated with this LDC's CIA.

Section Q: no additional notes

Section R: no additional notes

Section S: - For question: "What is the barcode of the nearest pole serving the project location?", this is only applicable if you choose "No" to question: "Is there an existing [LDC name] account at the project location?" in Section D

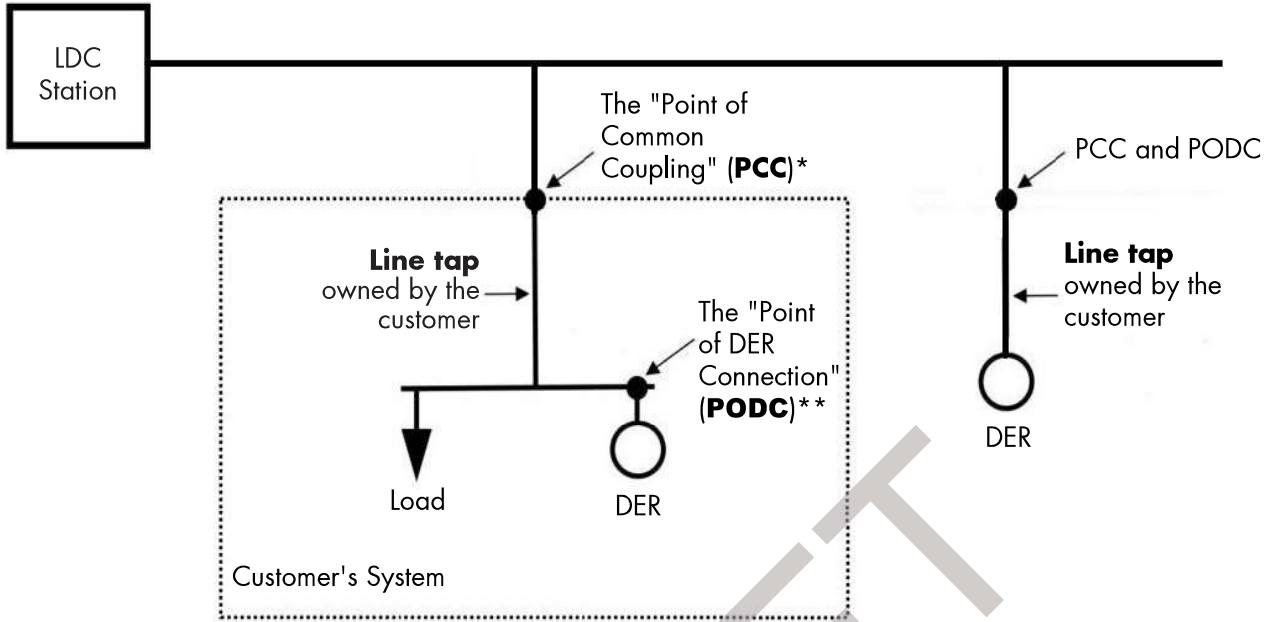
- For question: "[LDC name] Account Number (if transformer is owned by [LDC name])", this is only applicable if you answer "[LDC name]" to question: "Transformer Ownership" in Section L.





▶ APPENDIX A - FIGURES & DIAGRAMS

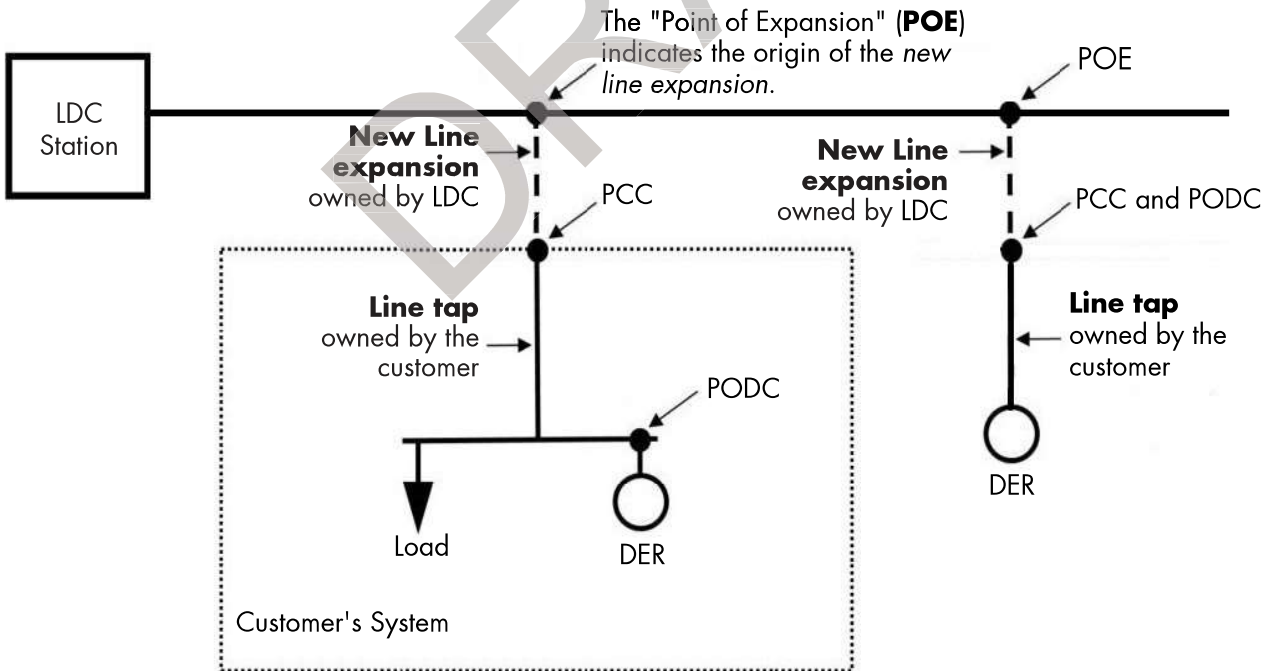
Figure A1: Where There is No New [LDC name] Owned Line Expansion



*PCC: the point where the customer facility connects to the LDC owned system

**PODC: the point where the DER unit(s)'s interconnection system connects the DER unit(s) to the DER facility.

Figure A2: Where There is a New [LDC name] Owned Line Expansion





► APPENDIX B - MINIMUM CONTROL STRATEGY INFORMATION FOR ENERGY STORAGE FACILITIES OR OTHER TECHNOLOGIES

Figure B1: Peak Shaving

Peak Shaving			
Description of Control Strategy			
When Operating as a Load			
Switch In Time	Switch Out Time	Load kW (peak)	Load kVAR (peak, leading/lagging)
When Operating as a Generator			
Switch In Time	Switch Out Time	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B2: Dynamic VAR Support

Dynamic VAR Support			
Description of Control Strategy			
Switch In Condition	Switch Out Condition	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B3: Frequency Support

Frequency Support			
Description of Control Strategy			
Switch In Condition	Switch Out Condition	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B4: Other Control Strategies

Other	
Description of Control Strategy and Relevant Operating Parameters	





▶ APPENDIX C - LOAD DISPLACEMENT FIGURES

Figure C1: Example Schedule With Minimum Information Required for Load Displacement Projects

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

DRAFT



**Connection Impact
Assessment (CIA)
Application Instructions**

TABLE OF CONTENTS

1.	GENERAL APPLICATION INFORMATION	3
1.2	TECHNICAL REQUIREMENTS.....	3
1.3	SUBMISSION INSTRUCTIONS	3
1.4	IMPORTANT NOTES	4
2.	SECTION A – APPLICATION INFORMATION	4
3.	SECTION B – PROJECT LOCATION	5
4.	SECTION C – CONTACT INFORMATION.....	6
5.	SECTION D – CUSTOMER STATUS.....	6
6.	SECTION E – EXISTING DER	7
7.	SECTION F – PROJECT INFORMATION	7
8.	SECTION G – STATION SERVICE LOAD INFORMATION	7
9.	SECTION H – CONNECTION INFORMATION.....	8
10.	SECTION I – ENERGY STORAGE.....	9
11.	SECTION J – LOAD DISPLACEMENT INFORMATION	9
12.	SECTION K –DER CHARACTERISTICS (1/1)	10
13.	SECTION L – INTERFACE TRANSFORMER.....	10
14.	SECTION M – INTERMEDIATE TRANSFORMER	10
15.	SECTION N – HIGH-VOLTAGE GROUNDING TRANSFORMER	10
16.	SECTION O – SUBMISSION CHECKLIST.....	11
17.	SECTION P – CIA APPLICATION FEE CHECKLIST	11
18.	SECTION Q – ATTACHMENTS	12
19.	SECTION R – NOTES.....	12
20.	SECTION S – [LDC NAME] SPECIFIC REQUIRED FIELDS	12
21.	SECTION T – [LDC NAME] SPECIFIC ADDITIONAL NOTES.....	13

1. GENERAL APPLICATION INFORMATION

1.1 ABOUT THE CIA FORM

The Connection Impact Assessment (CIA) application is to be completed by any proponent interested in connecting a Distributed Energy Resource (DER) with a project size over 10 kilowatts (kW) to [LDC NAME]. This includes DERs applying for a new CIA or for revision(s) to their original CIA. This form expresses an intent to enter into an agreement between [LDC NAME] and the customer (or host customer¹ for load displacement projects) for completion of a CIA associated with connecting a DER to the [LDC NAME] distribution grid. The CIA Application shall be part of the required servicing (electrical installation, maintenance, and operating) agreements between [LDC NAME] and the proponent. Throughout this process, [LDC NAME] will be the proponent's contact with the transmission system provider (e.g. Hydro One Networks Inc.) and, if necessary, the provincial market operator, namely, the Independent Electricity System Operator (IESO).

1.2 TECHNICAL REQUIREMENTS

For technical requirements of [LDC NAME]'s DER projects, refer to the "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below", available at: [LDC link to "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below" application]

1.3 SUBMISSION INSTRUCTIONS

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

[LDC NAME]

Attn: [LDC NAME] [Department's name that is handling the application]

Generation Connection Application [Address] [City], [Province] [Postal Code]

¹ For Load Displacement projects, the term "host customer" refers to the owner of the load facility. The term "DER owner" refers to the owner of the DER facility.

1.4 IMPORTANT NOTES

An engineering stamp and all red box fields (on electronic version of form) are mandatory. Incomplete applications may be returned by [LDC NAME] and will result in delays in processing your application. Click the "Validate Form" button on the top right of this page to ensure all required information is filled. If any of the required fields are not applicable to your project, type "N/A" in any required text field or "0" in any required numerical field

[LDC NAME] specific requirements and notes are found in Sections S and T, respectively

Applicants are cautioned NOT to incur major expenses until [LDC NAME] approves to connect the proposed DER facility.

All technical submissions (CIA Application, Single Line Diagrams, etc.) must be signed, dated and sealed by a licensed Ontario Professional Engineer (P.Eng.).

The proponent will pay for the CIA according to the [LDC NAME] CIA Fee Schedule.

The siting restrictions in O. Reg. 274/18 which were administered by electricity distributors such as [LDC NAME] have been replaced by amendments to the Planning Act (Ontario) that puts siting and planning requirements for renewable DER facilities under municipal oversight. It is recommended that you discuss municipal permitting and approvals requirements with the planning department in the municipality where your DER project is located before you proceed.

2. SECTION A – APPLICATION INFORMATION

- **Engineering Stamp:** Must be signed and sealed by a licensed Ontario Professional Engineer (P.Eng).
- **Application Type:** CHOOSE ONE.
 - **New CIA Application:** first application for any given project
 - **CIA Revision/Rework:** changes to a previous CIA.
 - **Capacity Increase Request**
 - **Modification or Addition to Existing Project**
 - **Reconnection of Existing Generator**

Your previous CIA must still be valid with [LDC NAME] (i.e. your previous CIA cannot be withdrawn or expired).

- **Date:** Fill in the current date
- **Program Type:** CHOOSE ONE.
 - **IESO (please specify)**

- **Load Displacement**
- **Net Metering**
- **Net Metering (Subdivision)**
- **Off-Grid Islanded Generation**
- **Other (please specify)**
- **Program Type (additional details):** Use this field to provide additional details (Applicable for IESO or Other Program Type)
 - **IESO (please specify)**
 - **Other (please specify)**
- **Project Name:** Provide the exact project name of your proposed generation facility. [LDC NAME] will use this name along with your Project Number (if one already exists) to identify your project in our system going forward.
- **IESO Contract Number and IESO Reference Number:** (Applicable for IESO Program Type selection)
- **Ontario Corporate Number OR Business Identification Number:** PROVIDE ONE.
- **Proposed In-Service Date:** ____ / ____ / ____ (dd/mm/yyyy): Provide the date your generation facility will officially be connected and producing energy on [LDC NAME]'s distribution system. If you are unsure how to determine an In-service Date, contact your Design Engineer (for new applicants) or your [LDC NAME] Account Executive Manager (for existing customers). *Important note:* the In-service Date (ISD) you provide must be as accurate as possible. The [LDC NAME] schedules station maintenance, outages and other work based on ISDs. Failure to provide an accurate ISD could cause delays to your project's connection timeline.
- **Subdivision Project Name:** If you selected "Net Metering (Subdivision)" as the Program Type, please provide the name of the subdivision project.
- **Number of Lots:** If you selected "Net Metering (Subdivision)" as the Program Type, please provide the number of lots in the development.
- **Original CIA Project ID#** (if applicable): If this is a revision to a previous CIA Application Form that you submitted to the [LDC NAME], and that Application is still valid with the [LDC NAME], provide your current CIA Project Number.
- **Revised Fields:** If you are submitting a revised CIA Application, list the fields that have changed from your previous CIA in the box provided.

3. SECTION B – PROJECT LOCATION

In the Project Location section, provide project location information and complete accordingly.

4. SECTION C – CONTACT INFORMATION

- **Who is the single point of contact for this project?** CHOOSE ONE. This will be the person within your company who receives all communications regarding the project. Normally, this would be someone in a Project Management role. He/she will be responsible for communicating information regarding your proposed facility.
- In the Contact Information section, provide contact information for the Host Customer, the DER Owner if different than the host customer and consultant if applicable. Note that the Host Customer and DER Owner may be the same. Also note that Post Office (PO) boxes and Rural Routes will not be accepted. Only list a physical address. Aside from the Single Point of Contact, the person(s) listed may be contacted by the [LDC NAME] for other matters regarding your project when necessary. Due to Privacy Laws, the [LDC NAME] will only release information to the persons listed on the CIA Application Form.

5. SECTION D – CUSTOMER STATUS

- **Is there an existing [LDC NAME] customer account at the project location?** Choose “Yes” if there is an existing electrical connection to [LDC NAME]’s grid (i.e. load and/or generation) at the Project Location OR choose “No” if this generation facility will be the only connection to [LDC NAME]’s grid at the location.
- **If yes, what is the [LDC NAME] account number of the property:** If you answered “Yes” to the previous question, provide the existing account number (i.e. customer load account number OR generation customer account number) found in the top right corner of your bill. Also select “Yes” or “No” to “**Is the account holder aware of this application?**” and “**Does your account fall within a residential-rate classification?**”
- **Account Holder Name registered on existing Account:** Provide the name on the existing customer account you provided in the previous question. If you answered “No” in the previous question, leave this space blank.
- **Is the owner an HST registrant?** Normally, a business – sole proprietor, partnership, corporation – has a Harmonized Sales Tax (HST) Number as a requirement to conduct regular business in Ontario.
- **If yes, provide your HST registration number:** If you answered “Yes” to “Are you an HST registrant?” provide your HST number. Failure to provide an accurate number will delay your application. If you are unsure of your HST number, please [sign into your Canadian Revenue Agency business account](#) to retrieve it.

6. SECTION E – EXISTING DER

- **Is there any existing DER facility located at the point of common coupling (PCC)?** Please select “Yes” if there is an existing DER facility on you premises.
- If yes, please provide the **Existing Project Number, Existing Project Size (kW) and the Program Type** for the Existing DER
- **Select the existing DER Type:** CHOOSE ONE. Synchronous, Induction, Inverter-based or Other and provide applicable power levels, ratings and reactance values.

7. SECTION F – PROJECT INFORMATION

- **Station Name:** provide the name of the [LDC NAME] station that your facility will connect to (e.g. “CONESTOGA DS”).
- **Feeder and Feeder Voltage:** Provide the name of the feeder that your facility will connect to (e.g. “F1” or “M1”) and feeder voltage if available.
- **Project Size:** Provide the total amount of generation your facility will produce, i.e. the facility’s maximum kW output. **Important note:** The project size on this application must match the project size you provided on your IESO contract (if applicable).
- **Equipment Capacity:** Provide the total amount of capacity in (kVA) of your facility’s equipment. **Important note:** For more information on the technical requirements of distribution generation facilities, see [LDC NAME]’s Technical Interconnection Requirements (TIR). Note: Typically, the generator’s Nameplate Capacity or Gen-Set Name Plate Capacity shall be considered as project size.
- **Fuel / Energy Type:** CHOOSE ONE. Provide the type of energy your generation facility will produce. If it is “Other”, ensure to provide the type of generation you are proposing.
- **Type of connection:** CHOOSE ONE. Single phase **OR** Three phase.
 - If this is a solar project, please select the Mounting Type.
 - If this is a water project, please answer the indicated questions.

8. SECTION G – STATION SERVICE LOAD INFORMATION

- In the Load Information section, if required, provide *Maximum Demand of Station Service Load of the DER in KW and the Average Monthly Consumption in kWh*

9. SECTION H – CONNECTION INFORMATION

- DOM means “Distribution Operating Map”. From the original DOM that the [LDC NAME] provided to you during your preliminary consultation meeting or in the preliminary consultation report, outline where your generation facility site will be located in reference to the existing feeder. Indicate the POE-PCC distances.² Please be sure to include the project location’s GPS co-ordinates. If you require a DOM, you can request one through our website.
- **Single Line Diagram (“SLD”)**: Provide an SLD of the DER’s facilities including the PCC, transformer and connecting station, feeder and supply voltage. **SLD Drawing No. and Rev:** *Important note:* An SLD is a very important piece of your application and must accurately reflect the project information provided on the CIA Application. Submitting an accurate SLD that meets [LDC NAME]’s standards ensures your application is not delayed. Failure to submit an acceptable SLD will result in your application being deemed incomplete. Please refer to [LDC NAME]’s Technical Interconnection Requirements for more information on SLDs and other technical requirements for your generation facility. Please ensure that the SLD is no larger than 11x17 inches.
- **The “Point of Expansion” (POE)** indicates the origin of the new line expansion.
- **The “Point of DER Connection” or “PODC”** means the point where the DER connects with the DER’s connection assets as outlined in Appendix A of the CIA form.
- **GPS coordinates of the following:** All three GPS coordinates must be provided: POE, PCC and generation facility. GPS Format: Latitude, Longitude - Degree Decimal (e.g. 49.392, -75.570).
- **Length of line distance from the POE to the PCC:** Provide the exact distance in kilometers of the line from the POE to the PCC.
- **Length of line distance from the PCC to the DER Facility** (refer to Appendix A of CIA Application Form): Provide the exact distance in kilometers of the line from the PCC to your proposed generation facility. See Appendix A at the end of the application document for a diagram.
- **Conductor type/size:** Provide what type of conductor you will be using, including the size. E.g. ACSR/ CU/ AL and size in kcmil or AWG
- **Fault contribution from the DER’s Facilities, with the fault location at the PCC:**
 - **Three-phase generators:** 3-phase short circuit
 - **Single-phase generators:** 1-phase short circuit

² Refer to CIA Application Form Appendix A for the definition of POE and PCC.

- **Connection Figure:** See Appendix A at the end of the application document and choose ONE appropriate figure that is most applicable to how your proposed generator will connect.

Important Notes:

If this project requires line expansion work between the **POE** and **PCC**, [LDC NAME] will provide a cost estimate to construct any line located on public road right-of-way. The cost estimate will include a breakdown of **Uncontestable** work (i.e. overbuild to existing line) that can only be performed by the [LDC NAME], as well as **Contestable** work (i.e. new construction/green-field) that can be performed by the Generator/their contractor or the [LDC NAME]. (Both Uncontestable work and Contestable work requires design to [LDC NAME] specifications). [LDC NAME] will become the owner of the line expansion.

For a Generator-owned line, the Generator may choose to apply for installation of the line on existing the [LDC NAME] -owned poles. This is known as an application for Joint Use (JU) of poles. If the application is accepted, the [LDC NAME] will provide the Generator with information on initial connection costs, annual pole-space rental and emergency service (ES) fees and required JU & ES Agreements.

10. SECTION I – ENERGY STORAGE

In the Energy Storage section, provide Number of Units, Inverter Size (enter zero if inverter is shared with generation unit(s)), Energy Storage Unit Size (kWh) and Total Energy Storage Size (kWh).

Select the Energy Storage Facility Control Strategy to be used and include with this application a detailed description of the control strategy according to the templates in Appendix B. [LDC NAME] reserves the right to modify the control strategy as part of its Connection Impact Assessment.

11. SECTION J – LOAD DISPLACEMENT INFORMATION

In the Load Displacement Information section, provide the Operating Mode, Transition Type, and Time that Generator Remains Parallel to the Grid (closed transition only).

For non-parallel load displacement, SCADA monitoring and Gross Load Billing (GLB) may apply. For load displacement generation facilities, please attach a schedule of the forecasted maximum generation output (as a function of loading of the facility). At a minimum, include the forecasted generation output information (i.e. Watts and VARs) during the minimum and maximum of the load facility to which the load displacement generator is connecting (see Appendix C for template)

12. SECTION K –DER CHARACTERISTICS (1/1)

In the DER Characteristics section, complete all fields accordingly.

For facilities with multiple DERs: If your generators have different characteristics, please use the “Add Page” button and provide the characteristics for each generator on the additional pages.

Important note:

The [LDC NAME] requires that all CIA Applicants have a P.Eng. review this section. Failure to complete this section correctly will result in delays to your application.

13. SECTION L – INTERFACE TRANSFORMER

14. SECTION M – INTERMEDIATE TRANSFORMER

15. SECTION N – HIGH-VOLTAGE GROUNDING TRANSFORMER

In the Interface Transformer section, complete all fields accordingly.

At the Generator’s expense, and if requested, the [LDC NAME] may provide transformation up to a maximum of 500KVA three-phase, as described in the [LDC NAME] Conditions of Service [DOCUMENT REFERENCE NAME].

The term “High Voltage” refers to the connection voltage to [LDC NAME]’s distribution system and “Low Voltage” refers to the generation or any other intermediate voltage.

Providing a photo of transformer equipment along with this application may help expedite your application.

16. SECTION O – SUBMISSION CHECKLIST

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

Payment

Payment in full including applicable taxes (by cheque payable to “[LDC NAME]”)
Completed Form B stamped by a Professional Engineer

Signed Study Agreement

Attach a Signed Study Agreement

Single Line Diagram (SLD)

Attach a SLD of the Generator’s facilities, must be stamped by a Professional Engineer

Protection Philosophy

Attach Protection Philosophy documents

Distribution Operating Map

Distribution Operating Map (DOM) and/or Site Plan (not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point)

Load Schedules

Load Displacement Generation Facility’s load and generation schedules (if applicable)

Load Displacement Generation Facility’s mode of operation (if applicable)

Operating Strategy

Energy Storage Facility operating strategy description and parameters (if applicable)

Emergency Backup Generation Facility’s mode of operation (if applicable)

17. SECTION P – CIA APPLICATION FEE CHECKLIST

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

Applicable CIA Fee

See the Connection Impact Assessment Fee Schedule on our website for costs. Please enter the amount from the fee schedule. Note HST will be applicable.

Transmission Customer Impact Assessment (TxCIA) Fee (if applicable)

A Tx CIA is also required if the total nameplate generation of the project is greater than 10MW. Note HST will be applicable.

IESO System Impact Assessment (SIA) Fee (if applicable)

An SIA deposit is required if the total nameplate generation of the project is greater than 10MW. The total cost of the SIA will be Trued Up/Down upon the receipt of the SIA from the IESO. See the IESO's SIA Application for costs.

18. SECTION Q – ATTACHMENTS

Please provide a description, document number and number of pages for each supporting document/drawing attachment.

19. SECTION R – NOTES

Please include any additional details that you think [LDC NAME] should be aware of in support of this application.

20. SECTION S – [LDC NAME] SPECIFIC REQUIRED FIELDS

This section contains specific information that is required by [LDC NAME]. Please read Section T notes regarding this section if you need further details.

21. SECTION T – [LDC NAME] SPECIFIC ADDITIONAL NOTES

DISCLAIMER

By submitting a CIA Application, the Proponent authorizes the collection by [LDC NAME] Inc. (“[LDC NAME]”), of any agreements and any information pertaining to agreements made between the Proponent and the Independent Electricity System Operator from the Independent Electricity System Operator, the information set out in the CIA Application and otherwise collected in accordance with the terms hereof, the terms of [LDC NAME]’s Conditions of Service, [LDC NAME]’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 [LDC NAME]’s distribution system.



Connection Impact Assessment (CIA) Application

[LDC department's name that is handling the application] | [LDC department's email] | [LDC department's phone Number]

[Insert LDC
LOGO]

▶ ABOUT THIS FORM

This Connection Impact Assessment (CIA) application is to be completed by any proponent interested in connecting a Distributed Energy Resources (DER) with a project size over 10 kilowatts (kW) to [LDC name]. This includes DER applying for a new CIA or for revision(s) to their original CIA. This form expresses an intent to enter into an agreement between [LDC name] and the customer (or host customer* for load displacement projects) for completion of a CIA associated with connecting a DER to the [LDC name] distribution grid. The CIA Application shall be part of the required servicing (electrical installation, maintenance, and operating) agreements between [LDC name] and the proponent. Through this process, [LDC name] will be the proponent's contact with the transmission system provider (e.g. Hydro One Networks Inc.) and, if necessary, the provincial market operator, namely, the Independent Electricity System Operator (IESO).

*For Load Displacement projects, the term "host customer" refers to the owner of the load facility. The term "DER owner" refers to the owner of the DER facility.

Emergency Backup Generators should use the Emergency Backup Generation Application Form available at: [\[LDC link to application\]](#)

▶ TECHNICAL REQUIREMENTS

For technical requirements of [insert LDC]'s DER projects, refer to the "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below", available at:

[\[LDC link to "DER Technical Interconnection Requirements Interconnections at Voltages 50kV and Below" application\]](#)

▶ SUBMISSION INSTRUCTIONS

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

[LDC name]

Attn: [LDC department's name that is handling the application]

Generation Connection Application

[Address]

[City], [Province] [Postal Code]

▶ IMPORTANT NOTES

- An engineering stamp and all red box fields (on electronic version of form) are mandatory. Incomplete applications may be returned by [LDC name] and will result in delays in processing your application. Click the "Validate Form" button on the top right of this page to ensure all required information is filled. If any of the required fields are not applicable to your project, type "N/A" in any required text field or "0" in any required numerical field
- [LDC name] specific requirements and notes are found in Sections S and T, respectively
- Applicants are cautioned NOT to incur major expenses until [LDC name] approves to connect the proposed DER facility.
- All technical submissions (CIA Application, Single Line Diagrams, etc.) must be signed, dated and sealed by a licensed Ontario Professional Engineer (P.Eng.).
- The proponent will pay for the CIA according to the [LDC name] CIA Fee Schedule.





- For Load Displacement or Energy Storage facility connections, the assessment performed by [LDC name] is a referred to as a Detailed Technical Connection Assessment (DTCA). For such facilities, the term "CIA" as it appears throughout this Connection Impact Assessment (CIA) Application shall be interpreted to mean "DTCA".
- The siting restrictions in O. Reg. 274/18 which were administered by electricity distributors such as [LDC name] have been replaced by amendments to the Planning Act (Ontario) that puts siting and planning requirements for renewable DER facilities under municipal oversight. It is recommended that you discuss municipal permitting and approvals requirements with the planning department in the municipality where your DER project is located before you proceed.
- For micro-embedded projects (10 kW or less), please fill out [LDC name]'s "Micro-Generation Connection Application (Form C)" available at: [\[LDC link to Form C\]](#)

▶ SECTION A: APPLICATION INFORMATION

Engineering Stamp	Application Type <small>choose one</small>	Date <small>mm/dd/yyyy</small>
<input type="text"/>	<input type="text" value="newCIA"/>	<input type="text"/>
	Program Type/Purpose <small>choose one</small>	Program Type (additional details)
	<input type="text"/>	<input type="text"/>
	Project Name	<input type="text"/>
	IESO Contract Number <small>F-XXXXXX-XXX-XXX-XXX</small>	IESO Reference Number <small>FIT-XXXXXXX</small>
<input type="text"/>	<input type="text"/>	
Ontario Corporate Number or Business Identification Number	Proposed In Service Date <small>mm/dd/yyyy</small>	
<input type="text"/>	<input type="text"/>	
<i>If this project is a subdivision project, please complete the following fields:</i>		
Subdivision Project Name	Number of Lots	
<input type="text"/>	<input type="text"/>	
<i>For certain application type selections, please complete the required fields:</i>		
Original CIA Project ID # <small>XX,XXX</small>	<input type="text"/>	
<input type="text"/>		
Revised Fields <small>list the fields that have changed from your previous application</small>	<input type="text"/>	
<input type="text"/>		

▶ SECTION B: PROJECT LOCATION

Address	
<input type="text"/>	
City / Town / Township	Postal Code
<input type="text"/>	<input type="text"/>
Lot Number(s)	Concession Number(s)
<input type="text"/>	<input type="text"/>





▶ SECTION C: CONTACT INFORMATION

CIA will be issued in the name of the host customer (load facility owner). All agreements (including CCA and DCA) are only made between **[LDC name]** and the host customer. This section is strictly to gather contact information of some of the key contacts that are involved with the project.

Who is the single point of contact for this project?

- Host Customer
- DER Owner (if different from host customer)
- Consultant

Please enter the following information about the **host customer** (load facility owner)

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address

Please enter the following information about the **DER owner** (if different from host customer)

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address

Please enter the following information about the **consultant**

Contact Person

Company's Legal Name

Mailing Address including postal code, P.O. Boxes and Rural Routes will not be accepted

Work Telephone

Cell Phone

Fax Number

Email Address





▶ SECTION D: CUSTOMER STATUS

Is there an existing [LDC name] account at the project location?

- Yes No

Is the account holder aware of this application?

- Yes No

Does your account fall within a residential-rate classification?

- Yes No Do not Know

Existing Account Number

Account Holder Name

Does the account holder have an HST registration number?

- Yes No

HST Number

▶ SECTION E: EXISTING DER

Are there existing DER at the point of common coupling (PCC)?

- Yes No

Existing Project Number

Existing Project Size (kW)

Program Type For Existing DER *choose one*

DER type: Synchronous Induction Inverter based Other

For synchronous units	For induction units	For inverter based units
Min. power limit for stable operation <i>kW</i> <input type="text"/>	Direct axis sub-transient reactance, X''_d <i>pu</i> <input type="text"/>	Inverter rating <i>kVA</i> <input type="text"/>
Direct axis sub-transient reactance, X''_d <i>pu</i> <input type="text"/>	Direct axis transient reactance, X'_d <i>pu</i> <input type="text"/>	Maximum continuous power output <i>kW</i> <input type="text"/>
Direct axis transient reactance, X'_d <i>pu</i> <input type="text"/>	Total PF correction installed <i>kVAR</i> <input type="text"/>	
Direct axis synchronous reactance, X_d <i>pu</i> <input type="text"/>		
Zero sequence reactance, X_0 <i>pu</i> <input type="text"/>		





▶ SECTION F: PROJECT INFORMATION

Station Name *(optional to leave blank for behind the meter projects)*

NONE

Feeder *(optional to leave blank for behind the meter projects)*

Feeder Voltage (kV) *(optional to leave blank for behind the meter projects)*

Project Size (kW) *total maximum output capacity*

Equipment Capacity (kVA) *total equipment nameplate rating*

Fuel/Energy Type *select all that apply*

- Solar (PV)
- Wind
- Water
- Natural Gas
- Biogas
- Biomass
- Diesel
- Battery Energy Storage System
- UPS
- CHP/Co-gen
- Other (specify below)

Type of Connection

- Single Phase Three Phase

If this is a solar project, please answer the following questions:

Mounting Type *select one*

If this is a water project, please answer the following questions:

Is your generation facility located on provincial Crown or federally-regulated lands?

- Yes No

Is water your primary energy source?

- Yes No

▶ SECTION G: STATION SERVICE LOAD INFORMATION

The host customer's station service load details

If there is an existing account at the project location, populating the fields in Section G is [optional or required] for [LDC name]. Ensure selection below matches with this note.

- Required Optional

Maximum Demand of Station Service Load of DER kW

Average Monthly Consumption kWh



▶ SECTION H: CONNECTION INFORMATION

On a cut-out from the [LDC name] DOM (Distribution Operating Map) provide the location of the generation facility with proposed line routings for connection to [LDC name]'s distribution system. It should identify the Point of Expansion (POE), the Point of Common Coupling (PCC), the location of the generation facility, and (if applicable) the route of the new line between the generation facility and the POE (ie. on private property or public road/right-of-way). This is not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point. Please see "Appendix A" for a visual representation of POE and PCC.

DOM Drawing/Sketch Number

DOM Revision Number

Please provide an SLD of the Generator's facilities, including the PCC, transformer and connecting station, feeder, and supply voltage.

SLD Drawing/Sketch Number

SLD Revision Number

POE Latitude *degree decimal format*

POE Longitude *degree decimal format*

PCC Latitude *degree decimal format*

PCC Longitude *degree decimal format*

Generation Facility Latitude *degree decimal format*

Generation Facility Longitude *degree decimal format*

Length of Line from POE to PCC *km*

Length of Line from PCC to Generation Facility *km*

Important: The line between the PCC and the Generation Facility must NOT be shared with any other DER owner (refer to Appendix A).

Conductor Type/Size *for the line between the PCC and the Generation Facility*

Generator Fault Contribution *with fault location at the PCC*

IMPORTANT NOTES:

If this project requires line expansion work between the POE and PCC, [LDC name] will provide a cost estimate to construct any line located on public road right-of-way. The cost estimate will include a breakdown of uncontestable work (i.e. overbuild to existing line) that can only be performed by [LDC name], as well as contestable work (i.e. new construction/green-field) that may be performed by the Generator, their contractor or [LDC name]. The design of uncontestable and contestable work shall conform to [LDC name] specifications).

For Generator-owned line, the Generator may apply to construct the line on existing [LDC name]-owned poles. This is known as an application for Joint Use (JU) of poles. If the application is accepted, [LDC name] will provide the Generator with information on initial connection costs, annual pole-space rental and emergency service (ES) fees, and required JU & ES Agreements.





▶ SECTION I: ENERGY STORAGE OR UPS

Please complete the following section if your project includes energy storage.

Number of Units

Inverter Unit Size enter zero if inverter is shared with generation unit(s)

Energy Storage Unit Size kWh

Total Energy Storage Size kWh

Energy Storage Facility Control Strategy

- Peak Shaving
- Dynamic VAR Support
- Frequency Support
- Other

Please submit a detailed description of the control strategy according to the templates in Appendix B. [LDC name] reserves the right to modify the control strategy as part of its Detailed Technical Connection Assessment.

▶ SECTION J: LOAD DISPLACEMENT/PEAK SHAVING

Please complete the following section if this is a load displacement or peak shaving project

Operating Mode

- Parallel
- Non-Parallel

Transition Type

- Closed "make before break"
- Open "break before make"

Time that generator remains parallel to grid closed transition only, ms

For non-parallel load displacement, SCADA monitoring and Gross Load Billing (GLB) may apply. For load displacement generation facilities, please attach a schedule of the forecasted maximum generation output (as a function of loading of the facility). At a minimum, include the forecasted generation output information (i.e. Watts and VARs) during the minimum and maximum of the load facility to which the load displacement generator is connecting (see Appendix C for template)





SECTION K: DER CHARACTERISTICS (21/55)

For facilities with multiple generators: If your generators have different characteristics, please use the "Add Page" button and provide the characteristics for each generator on the additional pages.

DER type: Synchronous Induction Inverter based Other

Number of Generating Units Rated Capacity of Each Unit kW kVA DER Output Voltage in kV

Manufacturer Type or Model Number

If Power Conversion Type is "Other", please provide values equivalent to a Synchronous or Induction type generator.

Maximum Starting In-rush Current *multiple of full load current, pu*

Generator Winding Connection

Delta Star

Neutral Grounding Method *for star winding connection only*

Solid Ungrounded Impedance

Impedance R *in ohms*

Impedance X *in ohms*

Limits of range of reactive power at the machine output:

Lagging *over-excited, kVAR*

Lagging Power Factor

Leading *under-excited, kVAR*

Leading Power Factor

Limits of range of reactive power at the PCC:

Lagging *over-excited, kVAR*

Lagging Power Factor

Leading *under-excited, kVAR*

Leading Power Factor

For synchronous units

Nominal Machine Voltage *kV (LL)*

Unsaturated Reactance *kVA Base*

Unsaturated Reactance *kV Base*

Direct Axis Subtransient Reactance, Xd'' *pu*

Direct Axis Transient Reactance, Xd' *pu*

Direct Axis Synchronous Reactance, Xd *pu*

Subtransient Time, Td'' *ms*

Zero Sequence Reactance, X0 *pu*

For induction units

Nominal Machine Voltage *kV (LL)*

Unsaturated Reactance *kVA Base*

Unsaturated Reactance *kV Base*

Direct Axis Subtransient Reactance, Xd'' *pu*





SECTION L: INTERFACE TRANSFORMER

The transformer connecting to the [LDC name] distribution system

Transformer Ownership

- Customer [LDC name]

Transformer Rating *KVA*

Transformer Type

- Single Phase Three Phase

Nominal Voltage of High Voltage Winding *kV*

Nominal Voltage of Low Voltage Winding *kV*

Impedance Base (if different than ratings above)

kVA Base kV Base

Impedance (R) *pu* Impedance (X) *pu* Impedance (Z%) %

OR

High Voltage Winding Connection

- Delta Star

High Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Low Voltage Winding Connection

- Delta Star

Low Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Notes

The term "High Voltage" refers to the connection voltage to [LDC name]'s distribution system and "Low Voltage" refers to the generation or any other intermediate voltage.

Providing a photo of transformer equipment along with this application may help expedite your application.





SECTION M: INTERMEDIATE TRANSFORMER

Transformer between the interface transformer and DER

Please complete the following section if your project includes an intermediate transformer.

Do you intend to install an intermediate transformer?

- Yes No

Transformer Rating *kVA*

Transformer Type

- Single Phase Three Phase

Nominal Voltage of High Voltage Winding *kV*

Nominal Voltage of Low Voltage Winding *kV*

Impedance

kVA Base

kV Base

Impedance R *pu*

Impedance X *pu*

High Voltage Winding Connection

- Delta Star

High Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Low Voltage Winding Connection

- Delta Star

Low Voltage Grounding Method *for star winding connection only*

- Solid Ungrounded Impedance

Star Impedance R *in ohms*

Star Impedance X *in ohms*

Notes:

The term "High Voltage" refers to the connection voltage to [LDC name]'s distribution system and "Low Voltage" refers to the generation or any other intermediate voltage.

SECTION N: HIGH-VOLTAGE GROUNDING TRANSFORMER

Please complete the following section if your project includes a high-voltage grounding transformer.

Do you have a high-voltage grounding transformer?

- Yes No

Transformer Type *select one*

- Zig-Zag Star-Delta

Zero Sequence Impedance (Z0) R *ohms*

Zero Sequence Impedance (Z0) X *ohms*





▶ SECTION O: SUBMISSION CHECKLIST

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

- Payment in full including applicable taxes (by cheque payable to "[LDC name]")
- Completed Form B stamped by a Professional Engineer
- Signed Study Agreement (original signature is required)
- Single Line Diagram (SLD) of the Generator's facilities, must be stamped by a Professional Engineer
- Protection Philosophy
- Distribution Operating Map (DOM) and/or Site Plan *(not required for existing load customers that are connecting a load displacement generation, net metering generation or energy storage system behind their existing metered connection point)*
- Load Displacement Generation Facility's load and generation schedules (if applicable)
- Load Displacement Generation Facility's mode of operation (if applicable)
- Energy Storage Facility operating strategy description an parameters (if applicable)
- Emergency Backup Generation Facility's mode of operation (if applicable)

▶ SECTION P: CIA APPLICATION FEE CHECKLIST

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

- Applicable CIA Fee**
See the [Connection Impact Assessment Fee Schedule](#) on our website for costs. Please enter the amount from the fee schedule. \$ +HST
- Transmission Customer Impact Assessment (TxCIA) Fee (if applicable)**
A TxCIA is also required if the total nameplate generation of the project is greater than 10MW. \$ +HST
- IESO System Impact Assessment (SIA) Fee (if applicable)**
An SIA deposit is required if the total nameplate generation of the project is greater than 10MW. The total cost of the SIA will be Trued Up/Down upon the receipt of the SIA from the IESO. See the [IESO's SIA Application](#) for costs. \$





▶ SECTION Q: ATTACHMENTS

Attached Documents / Drawings

Item #	Description	Document #	# of Pages
1			
2			
3			
4			
5			
6			

▶ SECTION R: NOTES

DRAFT



▶ **SECTION S: [LDC name] Specific Required Fields**

This section contains specific information that is required by [LDC name]. Please read Section T notes regarding this section if you need further details.

What is the barcode of the nearest pole serving the project location?

[LDC name] Account Number *if transformer is owned by [LDC name]*

▶ **SECTION T: [LDC name] Specific Additional Notes**

Section A: no additional notes

Section B: no additional notes

Section C: no additional notes

Section D: no additional notes

Section E: no additional notes

Section F: no additional notes

Section G: no additional notes

Section H: no additional notes

Section I: no additional notes

Section J: no additional notes

Section K: no additional notes

Section L: At the Generator's expense, and if requested, [LDC name] may provide transformation up to a maximum of 500 kVA three-phase, as described in the [LDC name] Conditions of Service (Section 3.5 item C.4).

Section M: no additional notes

Section N: no additional notes

Section O: for new DER site, Distribution Operating Map (DOM) is required by [LDC name] in addition to Site Plan

Section P: When there is an upstream LDC, an additional \$10,000+HST will be required for costs associated with this LDC's CIA.

Section Q: no additional notes

Section R: no additional notes

Section S: - For question: "What is the barcode of the nearest pole serving the project location?", this is only applicable if you choose "No" to question: "Is there an existing [LDC name] account at the project location?" in Section D

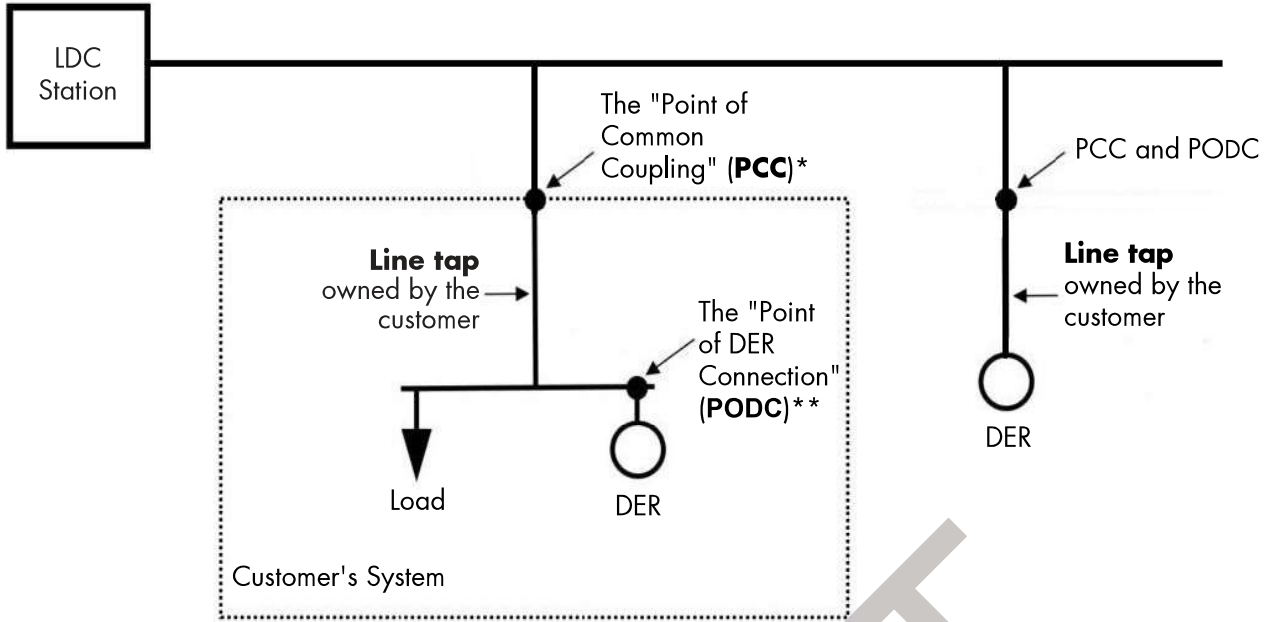
- For question: "[LDC name] Account Number (if transformer is owned by [LDC name])", this is only applicable if you answer "[LDC name]" to question: "Transformer Ownership" in Section L.





▶ APPENDIX A - FIGURES & DIAGRAMS

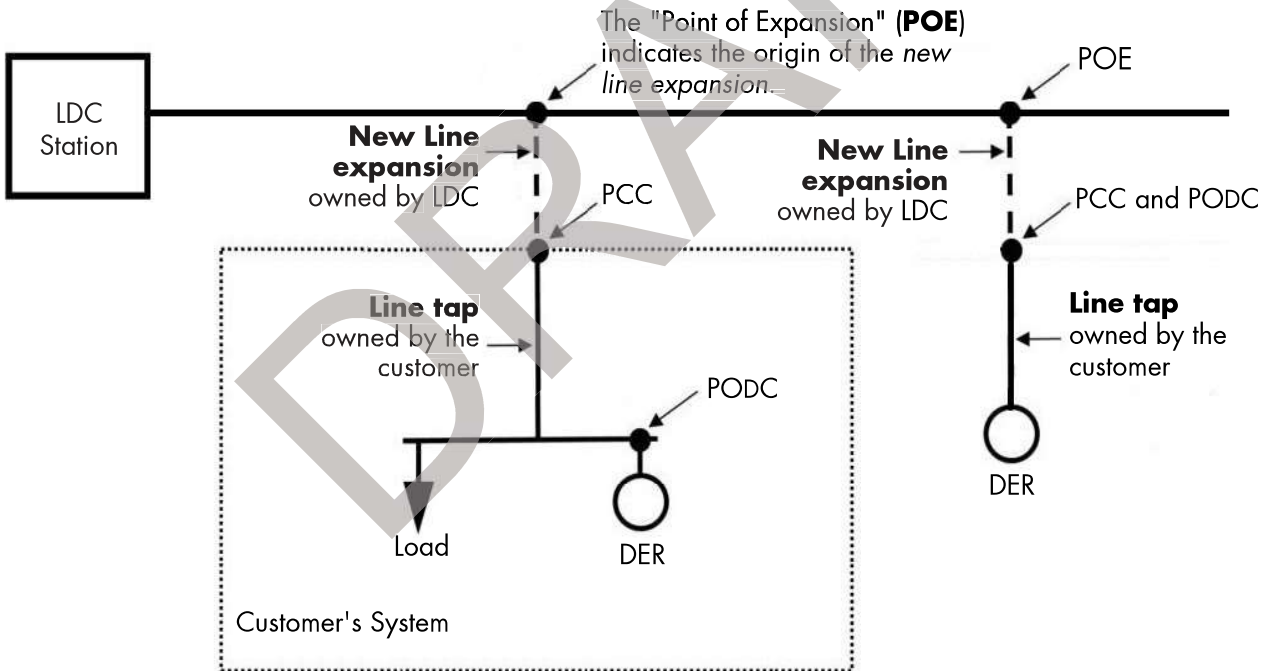
Figure A1: Where There is No New [LDC name] Owned Line Expansion



*PCC: the point where the customer facility connects to the LDC owned system

**PODC: the point where the DER unit(s)'s interconnection system connects the DER unit(s) to the DER facility.

Figure A2: Where There is a New [LDC name] Owned Line Expansion





► APPENDIX B - MINIMUM CONTROL STRATEGY INFORMATION FOR ENERGY STORAGE FACILITIES OR OTHER TECHNOLOGIES

Figure B1: Peak Shaving

Peak Shaving			
Description of Control Strategy			
When Operating as a Load			
Switch In Time	Switch Out Time	Load kW (peak)	Load kVAR (peak, leading/lagging)
When Operating as a Generator			
Switch In Time	Switch Out Time	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B2: Dynamic VAR Support

Dynamic VAR Support			
Description of Control Strategy			
Switch In Condition	Switch Out Condition	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B3: Frequency Support

Frequency Support			
Description of Control Strategy			
Switch In Condition	Switch Out Condition	Generation kW (peak)	Generation kVAR (peak, leading/lagging)

Figure B4: Other Control Strategies

Other	
Description of Control Strategy and Relevant Operating Parameters	





▶ APPENDIX C - LOAD DISPLACEMENT FIGURES

Figure C1: Example Schedule With Minimum Information Required for Load Displacement Projects

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

DRAFT



NOTES:

1. Colour code of the revenue metering instrument transformers secondary wiring shall match the overhead phase conductors
2. 100:5A, Measurement of Canada approved current transformer AE 1653, 0.1580.9 CGRF-1.5
3. 4000:115V Measurement of Canada approved voltage transformer AE 2160r3, 0.3WXY, 200KV BIL
4. Compliant with Settlements & Revenue Metering SLD Requirements Revision 1.5.1
5. Transformer owned by ABC Inc

DISCLAIMER: This sample SLD shall only be used to highlight some of the main information that must be shown on the SLD submitted to [LDC]. All design decisions must be made by the proponent and meet the minimum requirement set forth in the TIR. Due to limited space, only some of the required items are shown. The rest of the information is indicated in the notes related to each number.

NO	REVISION/ISSUE	DATE
01	Revised as per [LDC] comments	18/11/2020
00	Initial SLD for [LDC] review	13/07/2020

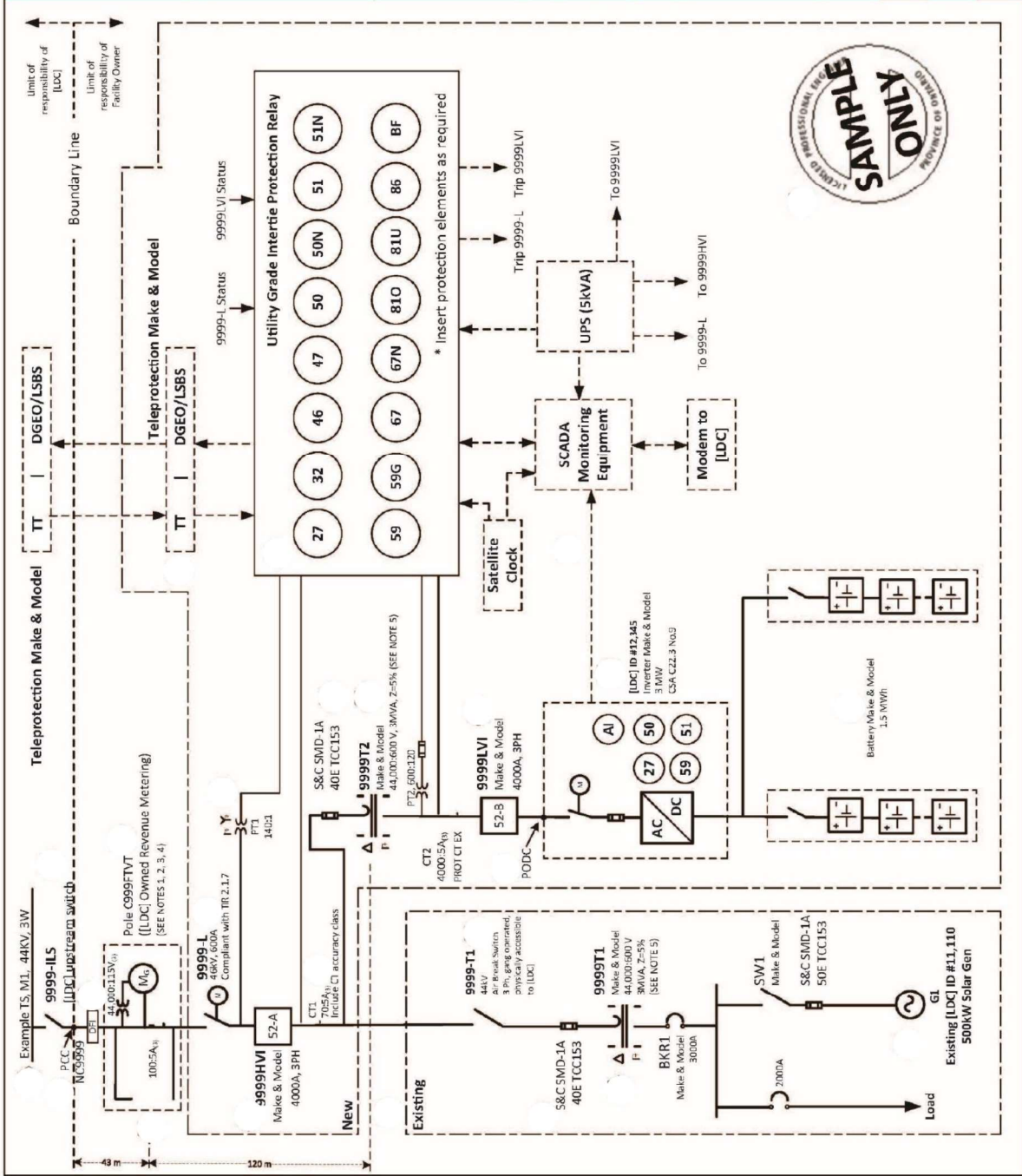
PROJECT:
 Customer Name
 Customer Address Line 1
 Customer Address Line 2
 Project Purpose
 [LDC] Project ID: #12,345
 Other Info

ABC Inc. LOGO

DWG NAME: BEHIND THE METER EXAMPLE SLD

DATE: DD/MM/YYYY
 18/11/2020
DRAWN: S. M.
CHECKED: S. H.

DWG NO: 18/11/2020
SHEET NO: 1 of 1
REV NO: 01



Sample Protection Philosophy for Distributed Energy Resource Proponents Applying for Connection

This document is a summary of a sample protection philosophy for non-exporting, inverter-based (NE/I) connections including storage, solar, and wind. The OEB intends it as a guide for applicants regarding the kinds of protections, and particularly the categories of protections, that distributors will require for connection.

This is one example of a protection philosophy that would meet the requirements for a complete protection philosophy for the purpose of a CIA application¹. Other philosophies may also meet the standards. It provides guidance to a distributed energy resource (DER) proponent on good utility practice as it relates to protection requirements of non-exporting, inverter-based (NE/I) DERs. To form a protection scheme, all the elements for each category within any given protection philosophy are requirements.

This document is not an approval for connection. This information should help applicants file better and more complete applications for connection. An applicant will need to submit detailed protection settings after the utility has completed the impact assessment of the submitted connection application.

The standards and certification testing referenced in this document should be read as referring to the current versions of these standards at time of reading.

Sample Protection Philosophy for Non-exporting Inverter-based Sources

Project Name: BEHIND THE METER EXAMPLE

Project ID#: 12,345.

Project Type: Load Displacement

Capacity: 3,000 kW/3,000 kVA

Connection feeder (optional): M1 at Example TS

In compliance with the technical interconnection requirements of the local distribution company for which this project will interconnect, the protection system of the connection will be designed to:

- Detect internal faults with the generator facility, downstream of the Point of Common Coupling (PCC), and automatically disconnect the NE/I source
- Detect external faults on the utility feeder and automatically disconnect the NE/I source
- Detect islanding conditions and disconnect the NE/I source
- Detect export of power from the NE/I source to the utility feeder and automatically disconnect the NE/I source

¹The contents of this document, although intended as guidance, conform to the interconnection and approval requirements prevalent at the time of its issuance. At all times, the current versions of relevant codes and standards govern.

Internal Faults Within the Generator Facility

The following protections are in place to protect against internal faults resulting from the NE/I source:

- **Multi-Function Relay**-At the PCC, a multi-function relay will be installed to monitor internal faults resulting from the NE/I source. The 52 Trip Breaker will trip if it detects the following:
 - 25 - Synchronization Check
 - 27 - Undervoltage
 - 59 - Overvoltage
 - 81O/U - Under and Over Frequency
 - ID -Active Anti-Islanding
- **Inverter Breakers** - Each inverter is equipped with an AC breaker at the output of the inverter providing additional overcurrent protection
- **Facility Overcurrent Protection** -All circuits within the facility are protected from both phase-to-phase and phase-to-ground faults by appropriate overcurrent protection devices. Fuses are sized to clear under fault conditions within the generator facility

External Phase and Ground Faults in the Distribution System

The following protections are in place to protect against external faults resulting from the utility feeder:

- **Multi-Function Relay** - At the main utility service, prior to the first facility load, a multi-function relay will be installed to monitor faults from the utility feeder. The 52 Trip Breaker at the NE/I source PCC will trip under the following faults:
 - 27 - Undervoltage
 - 32R- Reverse Power
 - 50/51- Overcurrent
 - 59 - Overvoltage
 - 81O/U - Under and Over Frequency
 - 67 - Directional
- **Inverter Protection:** The inverters proposed for this project are certified to UL 1741, IEEE 1547, CSA C22.2 107.1-01 standards² and will behave accordingly.

Anti-Islanding

- The Energy Resource Facility will operate in a grid following mode and will not operate islanded.
- **Anti-Islanding Inverters** -The NE/I source inverters contain both passive and

² All references to standards or testing certifications should be read as the most current version.

active anti- islanding protection as required by IEEE 1547 and UL1741 SA. If the utility normal power supply is interrupted, the inverters detect the loss of power and disconnect.

Reverse Power

- **Reverse Power Protection** - In addition to the multi-function relay at the utility supply monitoring reverse power (32R), the load is continually monitored to ensure the NE/I source discharge is below the consumption of the facility. This additionally protects against power injection to the utility grid.

Directional Overcurrent

- **Directional overcurrent protection** - Directional overcurrent relays are normally used on incoming line circuit breakers on buses which have two or more sources. They are connected to trip an incoming line breaker for fault current flow back into the source, so that a fault on one source is not fed by the other sources.

Special Comment Regarding Inverter Based Generation

The inverters specified for this project have a limited fault current contribution.

- Because inverters are current-limited devices, unlike rotating generators, the fault current is very close to the maximum output current, limiting the fault current in the system to 120% -140% of FLA.

Breaker Failure Scheme (Facilities with an aggregate output > 500kW)

In the event that 52-A fails to open when intertie protection relay calls for a trip, 52-B will instantaneously trip and lock out.

Reconnection

Manual reconnection: There is no automatic reconnection scheme at this facility. A manual reconnection will only be executed when given permission by the respective controlling authority.

Open Phase Protection

Open phase protection will be provided by 46 and/or 47 element(s) in the intertie protection relay to ensure the BESS maintains a balanced 3-phase output and detects loss of voltage in one or more phases and will trip the entire generating facility upon detection of such.

Communications and Transfer Trip/DGEO

Summarize communication systems and transfer trip/DGEO timing.

Table 1: Protection Summary Matrix

Description	IEEE Device	Internal Faults	External Faults	Anti-Islanding	Reverse Power	Trips 52-A	Trips 52-B	Disables Inverters
Over-Voltage	59	X	X	X		X		X
Under-Voltage	27	X	X	X		X		X
Over-Frequency	81O	X	X	X		X		X
Under-Frequency	81U	X	X	X		X		X
Instantaneous Over-Current Phase	50	X	X			X		X
Timed Over-Current Phase	51	X	X			X		X
Reverse Power	32R			X	X	X		
Breaker Fail	50BF						X	
Active Anti-Islanding	IEEE 1547			X				X

Table 2: Protection Elements

Protection Element Function	Device#	Feeder Protection Relay/Shunt Trip	IEEE 1741 SA Inverter
Over-Voltage	59	X	Y
Under-Voltage	27	X	Y
Over-Frequency	81O	X	Y
Under-Frequency	81U	X	Y
Synchronization Check	25	X	Y
Reverse Power	32R	X	
Overcurrent	50/51	X	Y
Directional	67	X	
Active Anti-islanding	ID		X

X = Primary Y = Secondary