



Distributed Energy Resource (DER) Non-Micro Generator Information Package (>10 kW)

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1. Abbreviations:

- **DER - Distributed Energy Resources**

Electricity generation systems like solar panels, wind turbines, battery storage, combined heat and power systems, and other energy technologies that can operate either connected to the power grid or independently (off-grid).

- **LDC - Local Distribution Company**

The company responsible for delivering electricity from the main power grid to homes and businesses in a specific area. Elexicon is the electricity distributor for the service areas shown in “Elexicon Service Area”.

- **PCIR - Preliminary Consultation Information Request**

A request submitted to the local distribution company (LDC) to gather initial technical and procedural information before proceeding with a distributed energy resource (DER) connection application.

- **PCR - Preliminary Consultation Response**

The response provided by the LDC following a PCIR, outlining key connection requirements, feasibility, and any potential technical constraints or upgrades necessary for the DER project.

- **CIA - Connection Impact Assessment**

A detailed engineering study conducted by the LDC to evaluate the impact of connecting a DER to the distribution system. It identifies potential issues such as voltage fluctuations, system stability, and protection coordination.

- **SCADA - Supervisory Control and Data Acquisition**

A system used by utilities to monitor and control DERs and other equipment remotely. SCADA facilitates real-time data acquisition, operational control, and system performance monitoring.

2. Introduction:

This guideline serves as a reference to help Elexicon customers understand the overall information, process, requirements, and available options for connecting small, mid-sized, & large generation (>10 kW) facilities to Elexicon’s distribution system. It is intended as a general guide; final design approvals for all generators will be determined by the Standards and System Studies - DER Team.

2.1 Responsibilities of Elexicon:

Elexicon is responsible for maintaining the safety, reliability, and efficiency of its



distribution system while ensuring that new generation connections do not negatively impact the system or existing customers. Additionally, Elexicon acts as the liaison between the Generator and Hydro One Networks Inc.

2.2 Responsibilities of the Customer:

- The generator/customer shall safely design, construct, operate, and maintain their generation facility. This includes the installation of all necessary metering, protection, and control devices to ensure safe and reliable operation.
- The Customer may consider engaging a consultant to assist with the connection requirements, process, and approvals. They must also obtain all necessary approvals from applicable agencies before a connection is permitted.
- The Customer must fulfill all submission requirements, finalize the necessary agreements, and ensure that all required payments to Elexicon are made.

3. Elexicon Service Area:

Ajax, Beaverton, Belleville, Bowmanville, Cannington, Gravenhurst, Newcastle, Orono, Pickering, Port Hope, Port Perry, Sunderland, Uxbridge, and Whitby.

3.1 Elexicon Contact Information:

Address: 55 Taunton Road East, Ajax, Ontario, L1T 3V3

Email: DxGenerationPlanning@elexiconenergy.com

Phone: [1-888-420-0070](tel:1-888-420-0070)

For all email inquiries, **customers and generators must include the generator site address and municipality in the email subject line** to ensure efficient processing.

4. Generator Classification

Elexicon Energy supports the incorporation of these generation facilities within the electrical distribution system in its service territory. The process is guided by the latest revision of the Distribution System Code (DSC) issued by the [Ontario Energy Board](#). The Code sets out the minimum obligations that a licensed electricity distributor (such as an LDC) must meet in carrying out its obligations. The latest revision of the Code can be found on the official website of the OEB under [Industry Relations/Rules, Codes, Guidelines and Codes](#).



Table 1. Generation Facilities Classification

Generator Classification	Rating
Micro	≤ 10 kW
Small	a) ≤ 500 kW but > 10 kW, connected on distribution system voltage < 15 kV
	b) ≤ 1 MW but > 10 kW, connected on distribution system voltage ≥ 15 kV
Mid-Sized	a) > 500 kW but ≤ 10 MW, connected on distribution system voltage < 15 kV
	b) > 1 MW but ≤ 10 MW, connected on distribution system voltage ≥ 15 kV
Large	> 10 MW

Elexicon will apply its [Conditions of Service](#) for any generation interconnection costs and/or any metering changes that Elexicon deems necessary to allow for settlement purposes under a specific program.

5. Small, Mid-Sized, & Large Generation Connection Process

Proponents applying for the connection of distributed energy resources (DER) to the Elexicon's distribution system must complete the following process:

1. Preliminary Consultation Information Request

Complete the [Preliminary Consultation Information Request \(PCIR\) form](#) and send an e-mail it to DxGenerationPlanning@elexiconenergy.com to check whether there is capacity to accommodate a DER at your location (some areas of our system may have restricted capacity and may not be able to connect DERs to the system at your location).

2. Preliminary Consultation Report

Elexicon will respond to a completed PCIR within 15 days with a Preliminary Consultation



Report (PCR). This report will let you know whether capacity is likely available at the location, whether any changes to infrastructure (e.g. new line expansion, transformer upgrade) are required.

3. Connection Impact Assessment Package

Complete the CIA Application Package and e-mail it to DxGenerationPlanning@elexiconenergy.com. As these projects are in excess of 10 kW, all technical documents, including the CIA form, must be signed and sealed by a licensed Ontario Professional Engineer. The CIA Application Package includes:

- a. [The CIA Application Form](#)
- b. [Emergency Backup Generator Declaration](#) (If the DER is used as a backup generator)
- c. [CIA Study Agreement](#)
- d. [Single Line Diagram](#)
- e. [DER Protection Philosophy Checklist](#)
- f. GIS map (not required for existing customers where connecting behind their existing metering connection point)
- g. Construction Schedule
- h. Site Plan
- i. Sequence of Operations

4. Elexicon CIA Screening Process

Once Elexicon receives the CIA application package, Elexicon will review within 14 days to ensure it is complete and, if complete, confirm whether the capacity that was available at the PCR stage is still available (note: capacity is not reserved until the CIA is completed).

Note: Once Elexicon receives the CIA application package, Elexicon will review within 14 days to ensure it is complete and, if complete, confirm whether the capacity that was available at the PCR stage is still available (note: capacity is not reserved until the CIA is completed). This also starts the timeframe for our completion of the CIA within:



Table 2. CIA Screening Process & Timeline

Elexicon CIA Screening Process	
Tasks	Timeline
Elexicon reviews the application for completeness and notifies the applicant if any application deficiency exists.	14 Days
Applicant to review, revise, and resubmit the CIA application package to Elexicon within the timeline. If the timeline is exceeded, it will be treated as a new application.	14 Days
Elexicon reviews the revised application for completeness and notifies the applicant of any additional information that may be needed. If application is substantially complete, Elexicon will check if capacity is still available at the location. If capacity is unavailable, the distributor will notify the applicant and may offer a flexible hosting capacity arrangement if possible.	7 Days
Elexicon notifies the applicant of within 5 calendar days of when the application is deemed substantially complete. If Capacity is available.	5 Days

5. Hydro One Networks Inc CIA & IESO System Impact Assessment

For DER projects greater than 500 kW, the transmitter (Hydro One) will be required to perform its own CIA, at an additional cost to the customer. Elexicon will apply for a CIA on the customer's behalf. Additionally, for generation projects greater than 10 MW, a System Impact Assessment (SIA) will need to be completed by IESO (Independent Electricity System Operator). Additional requirements may be requested by IESO, further information can be found on [Overview of the Connection Process](#). Elexicon shall apply for a SIA to IESO on behalf of the customer. The Customer is allocated capacity upon completion of the CIA by Elexicon and Hydro One (if applicable)

6. Connection Cost Agreement & Connection Agreement

After capacity has been confirmed and the CIA process is complete, the process then moves to the connection agreement phase. The agreements required include:

- a. [Connection Cost Agreement](#)



b. [Small-Mid Embedded Generation Agreement-Connection Agreement](#)

If the Customer decides to proceed with the project, Customer signs the CCA and makes the required payments

7. SCADA Monitoring

If applicable, Elexicon issues the Remote Monitoring Control Form to the customer. The customer completes the necessary fields and returns the document to Elexicon Energy.

8. Design and Build

Elexicon performs the work required to make the connection. The customer completes the construction of the generation facility and applies to the Electrical Safety Authority (ESA) for an electrical inspection. The customer submits final detailed design documents to Elexicon for review.

9. Commissioning

Customer confirms that communication is established with Elexicon for generation metering and SCADA monitoring, as required. Customer completes and submits [Generator Commissioning Report](#) or [COVER-Letter of Equivalency for Generator](#) where applicable.

Elexicon may request to witness all testing and commissioning.

10. Connection Agreement

Elexicon will require the following documentation for the [Connection Agreement](#):

- a. Single Line Diagram (as built)
- b. Contact Information (Owner, Contractual, and Operational contacts)
- c. Certificate of Insurance
- d. Commissioning Report
- e. Elexicon's confirmation of metering requirements, if applicable
- f. Elexicon's confirmation of remote monitoring, if applicable

Elexicon issues the Connection Agreement to be executed with the load customer. Customer completes and submits the Connection Agreement prior to energization.



11. Connect, Operate and Maintain

When the Commissioning Verification Form is approved, the final ESA Connection Authorization is received, and the Connection Agreement (and the Operating Agreement, if applicable) is signed, Elexicon will authorize connection of the generation facility to its distribution system.

Note: The ESA “Connection Authorization” is sent to Elexicon directly from the Electrical Safety Authority. Elexicon will work with the customer to set up the appropriate settlement arrangement based on the project type.

Note: The ESA “Connection Authorization” is sent to Elexicon directly from the Electrical Safety Authority. Elexicon will work with the customer to set up the appropriate settlement arrangement based on the project type.

6. Fees Schedule

Please note as Elexicon is going under consolidation, the applicable fees may change at any point.

The table shown below describes the Connection Impact Assessment (CIA) charges associated with Distributed Energy Resource (DER) connections operating in parallel with the Elexicon system, based on the system size.

Table 3. Connection Impact Assessment Fees for Parallel Generation

Service Type	Connection Impact Assessment Charge (CIA)
≤ 10kW - Parallel operation with Elexicon system	Not required
>10kW but < 1 MW- Parallel operation with Elexicon system	\$5,000

Please note that further fees may be stated in the [Connection Cost Agreement](#).



7. Technical Requirements

7.1 Single Phase Design Requirements – Single Line Diagram:

Generators/Customers are required to design and submit a Single Line Diagram (SLD) for the proposed project. The customer may consider a contractor to assist with the design.

Sample SLD for common project types within Elexicon's service area is shown here [Single Line Diagram Example](#).

The sample SLD pertains to parallel secondary connection, but Elexicon may impose additional or alternative requirements depending on the specific details of the project.

Please note that the samples are references outlining the minimum requirements only, the customer must design and submit an original SLD according to their project.

7.2 Label Requirements:

All labels must be lamacoid engraved.

1. Labels placed on the main service disconnect switch shall have the following label content:
 - a. Text identifying the switch as the main service disconnect, such as "MAIN SERVICE DISCONNECT".
 - b. Text identifying the switch as a distributed generation disconnect (if applicable), such as "GENERATION DISCONNECT".
 - c. Warning text indicating the presence of two power sources in the system, such as "WARNING – TWO POWER SOURCES PARALLEL SYSTEM".
 - d. Single Line Diagram (SLD) note stating that the label must accurately reflect the physical and schematic installation.
2. Labels placed on the main service metering cabinet shall have the following label content:
 - a. Warning text indicating the presence of two power sources in the system, such as "WARNING – TWO POWER SOURCES PARALLEL SYSTEM".

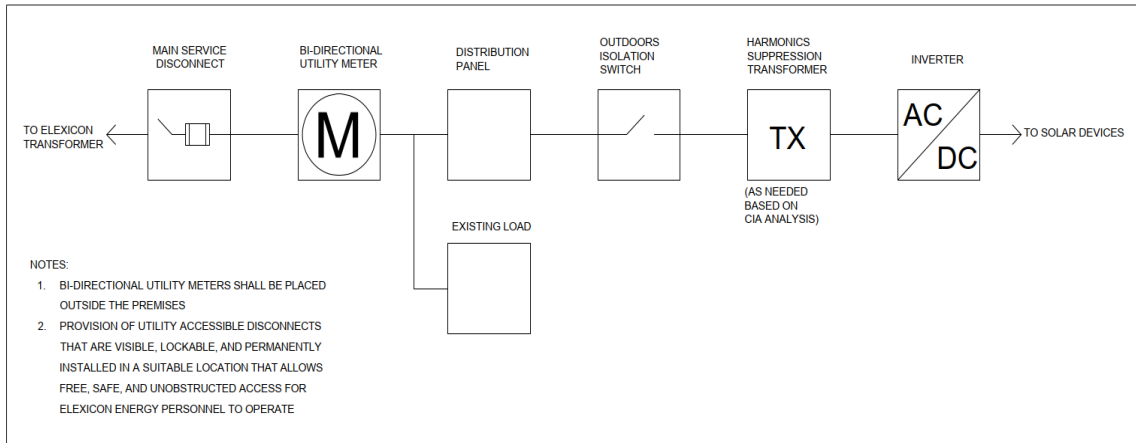


- b. Warning text specifying lockout requirements before accessing the cabinet, such as "WARNING – METERING CABINET IS CONNECTED TO THE ELEXICON POWER GRID AND GENERATOR. MAIN SERVICE AND GENERATION DISCONNECTS MUST BE OPENED AND LOCKED OUT BEFORE ACCESSING METERING CABINET".
 - c. Single Line Diagram (SLD) note stating that the label must accurately reflect the physical and schematic installation
3. Labels placed on generation disconnect shall have the following label content:
- a. Text identifying the switch as a generation disconnect, such as "GENERATION DISCONNECT".
 - b. Warning text indicating the presence of two power sources in the system, such as "WARNING – TWO POWER SOURCES PARALLEL SYSTEM".
 - c. Single Line Diagram (SLD) note stating that the label must accurately reflect the physical and schematic installation.

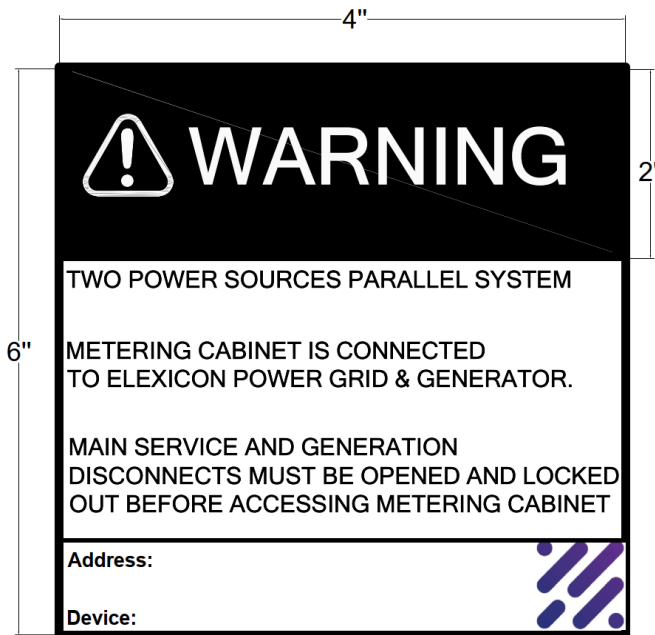


7.2.1 Lamacoid SLD Sample:

Three Phase DER Project – Lamacoid SLD Sample:



7.2.2 Main Service Metering Cabinet Label Template:

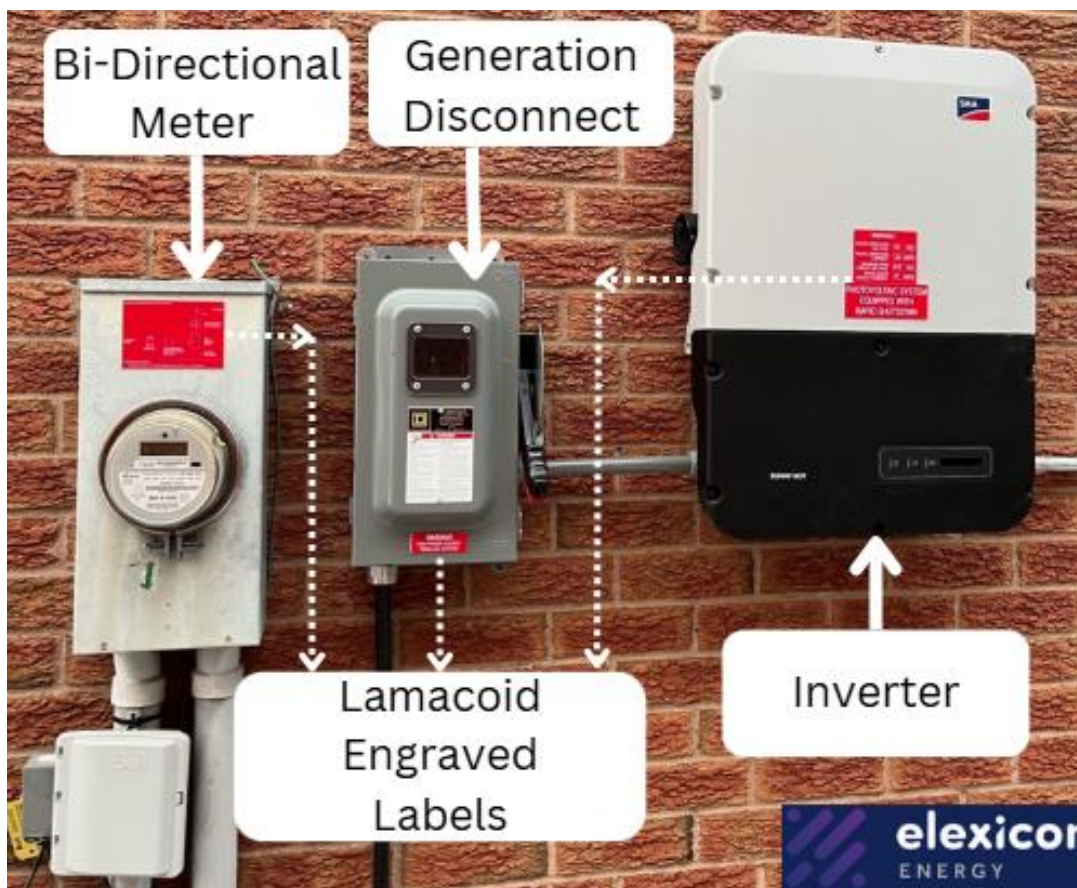


NOTES:

1. ALL TEXT ON THE LABEL MUST BE CLEARLY LEGIBLE, WITH PRIMARY HEADINGS (SUCH AS 'ALERT TYPE') USING A MINIMUM FONT HEIGHT OF 0.7 INCHES, AND GENERAL LABEL CONTENT MAINTAINING A MINIMUM HEIGHT OF 0.5 INCHES
2. NUMERALS/LETTERS AND THE BACKGROUND MUST BE IN CONTRASTING COLORS
3. METER EQUIPMENT LABELS MUST CORRESPOND TO PERMANENT UNIT/SUITE NUMBERS ATTACHED TO OR NEXT TO CORRESPONDING UNIT DOORS/SUITE ENTRANCES



7.3 Sample Installation with Lamacoid Plates



7.4 Small, Mid-Sized or Large DER Three Phase Design Requirements:

As per the [Single Line Diagram Example](#), the Single Line Diagram (SLD) must include the following elements:

- A. The disconnect switch.
- B. The step-up transformer (if applicable).
- C. The meter location.
- D. The connection point to the existing service.



7.5 Three Phase Metering Requirements:

7.5.1 Customer to:

- A. The customer must supply and install the meter base and generation disconnect switch. Refer to the “Approved List of Meter Bases” below. For more information, please contact DxGenerationPlanning@elexiconenergy.com

Table 4. List of Approved Meter Bases

Approved List of Meter Bases	
Manufacturer	Model
Microelectric	BDA2
Hydel	HC22R
Eaton	2K2

- B. All installations must comply with Elexicon Metering Standards.
- C. Metering must have operational control of the low voltage (LV) disconnect switches to allow for proper isolation of metering points.
- D. All metering and generation disconnect switches must be mounted inside the main electrical room.
- E. Ensure the installed meter socket's location complies with building and fire codes to maintain safe and accessible placement
- F. A neutral connection is required for Generation Metering (Gross Load Billing – GLB metering). The customer must install neutral wiring to the GLB metering cabinet
- G. The metering setup must be three (3) phase, four (4) wire.
- H. An isolation device must be installed within line of sight, before and after the generation metering cabinet/base, on the load side, connected in parallel with the distribution panel.
- I. A Single Line Diagram (SLD) and a plan view must be supplied and mounted next to the main meter.
- J. Metering communication and equipment will be determined based on project specifics.



- K. For sites with switchgear and a meter cabinet:
 - a. The cabinet must be CSA-approved and listed as a metering cabinet.
 - b. The customer must provide the installation date for the metering cabinet and its associated equipment

7.5.2 Ellexicon to:

Provide and install generation meter(s) as required by the Connection Impact Assessment (CIA).

7.6 Three Phase DER Project Requirements:

1. The customer must design and submit a Single Line Diagram (SLD) of the proposed project. The original SLD must be provided and include:
 - a. All primary and secondary voltage facilities connected to the generator(s).
 - b. Locking scheme.
 - c. Ratings of protective devices or fuses.
 - d. Primary and secondary switchgear.
 - e. Metering facilities.
2. For projects exceeding 10 kW, a Connection Impact Assessment (CIA) is required. The customer must submit a completed, sealed, and signed SLD by a Professional Engineer and provide payment for the CIA, based on project size. The connection cost will be detailed in the Connection Cost Agreement (CCA).
3. The voltage rating and phase configuration of the proposed generation connection must match the existing load connection.
4. The customer must supply and install the Distributed Generation (DG) disconnect switch(es), which must:
 - a. Be CSA-approved (or an equivalent approved under the Ontario Electrical Safety Code - OESC) and rated for the application.



- b. Have a visible break isolation
 - c. Be accessible, weatherproof, and pad-lockable from outdoors.
5. If applicable, the main service disconnect switch may serve as the generation disconnect switches, subject to inspection and approval by Elexicon staff.
6. The customer must supply and install all required labels at designated locations, in accordance with the “Label Requirements”.
7. The customer must provide the following information for review and approval by the Elexicon DER team, as requested:
 - a. Trip settings and delays at interface devices.
 - b. A coordination study of all protective devices, with time-current characteristics plotted on a log-log graph.
8. The project may be subject to an Elexicon site inspection, if required.
9. Elexicon will connect the project to its distribution system after the following conditions are met:
 - a. ESA provides Authorization to Connect directly to Elexicon.
 - b. Elexicon inspector and staff approve the connection.
 - c. All applicable service conditions and necessary approvals have been satisfied.

The customer has entered into a Connection Agreement with Elexicon.



8. Reference Links

1. Elexicon Energy Distributed Generation Main Home Page:
[Elexicon Energy Distributed Energy Resources](#)
2. Elexicon Energy Distributed Generation for Small, Mid-Sized, & Large Projects:
[Embedded Generation Greater than 10 kW - Elexicon Energy](#)
3. PCIR- Preliminary Consultation Information Request:
[Preliminary Consultation Information Request \(PCIR\) form](#)
4. Connection Impact Assessment (CIA) Application:
[The CIA Application Form](#)
5. Elexicon's Study Agreement:
[CIA Study Agreement](#)
6. Sample Protection Philosophy:
[DER Protection Philosophy Checklist](#)
7. Restricted Feeder List:
[List of Restricted Feeders](#)
8. Elexicon Energy Commissioning Verification Form:
[Generator Commissioning Report](#)
9. Elexicon Energy Confirmation of Verification Evidence Report (COVER):
[COVER-Letter of Equivalency for Generator](#)
10. Connection Cost Agreement:
[Connection Cost Agreement](#)
11. The Connection Agreement:
[Small-Mid Embedded Generation Agreement-Connection Agreement](#)
12. Elexicon Energy SCADA DER Guideline:
[DER SCADA Guideline](#)