<b>Hydro</b> Ottawa		TITLE: Simplified DER Commissioning Guide	
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## 1. Applicability

The Simplified DER Commissioning Guide is applicable to a proposed DER facility that meets the following criteria:

- a. Aggregate nameplate rating ≤ 50 kW
- b. Inverter-based
- c. No MCB required
- d. No energy storage

### 2. Definitions

**Applicant** means a person who approaches a distributor and requests information for the purpose of connecting, or requests to connect a DER to the distributor's system.

**Customer** is defined in Hydro Ottawa Limited's (HOL's) Conditions of Service.

**Commissioning Plan** means a written plan of Commissioning activities as described herein.

**Commissioning Report** means a written report that provides a summary of Commissioning activities that were undertaken and the results. For simplified DER Commissioning, the completed Commissioning Plan serves as the Commissioning Report.

Grid is defined in HOL's Conditions of Service.

## 3. Process Requirements

The Simplified Commissioning must follow these process requirements:

- a. Before installing equipment, the Applicant must:
  - i. Receive a completed Connection Impact Assessment (CIA) report from HOL.
  - ii. Receive confirmation of the assigned HOL Project Manager.
  - iii. Receive confirmation that the engineered single line diagram has been reviewed and approved by HOL.
  - iv. Complete a site visit with HOL Project Manager.
  - v. The Offer to Connect agreement has been paid for and signed by the customer.
- b. Before commencing testing of the facility, an Applicant must:
  - i. Complete a Commissioning plan as outlined in *Section 4 Commissioning Plan* of this guide.
  - ii. Submit a Commissioning plan stamped by a P.Eng. or signed by a licensed electrical contractor for HOL approval.
  - iii. Book an appointment with HOL for Commissioning.
  - iv. Obtain an ESA connection authorization.
  - v. Meet all conditions set by HOL.
  - vi. Confirm that an authorization to connect has been received from the ESA.
  - vii. Also confirm the following items, if they are required:
    - Grid expansion complete
    - The EOMA is signed by the customer and the host
    - New metering equipment is installed
- c. Commissioning Plan Review and Witnessing Requirements:

The Applicant shall submit a detailed Commissioning plan to HOL at least 4 weeks prior to the scheduled Commissioning tests to allow adequate time for review and coordination. HOL will review the submitted plan and generally respond to its acceptability within 5 business days. To ensure a timely review, the Applicant must be prepared to promptly respond to any questions or requests for clarification. HOL reserves the right to witness the Commissioning and testing of the DER connection. Commissioning activities shall not commence until HOL has reviewed and deemed the plan acceptable.

- d. The Commissioning report shall be submitted for approval before the operation of the DER facility.
- e. Summary of testing results and certificates must be kept on file by the Customer for the service life of the DER.
- f. It is the Applicant's responsibility to ensure that all requirements are met. Additional requirements may be necessary to address unique situations, and the Applicant will be advised of any additional requirements at the appropriate assessment stage.
- g. Additional visits due to non-compliance may incur a fee, as outlined on our website.
- h. If site modifications, which may result in either:
  - i. deviation from HOL standards,
  - ii. changes to the DER devices and settings, OR
  - iii. changes to protection system settings

are required after the DER is put into service, the Customer must notify HOL to discuss the next steps.

### 4. Commissioning Plan

The Applicant must submit a Commissioning Plan to HOL for approval. The Commissioning Plan must include the following:

a. The following project information:

Project and Site Details			
HOL Project Number			
Project Address			
Project Name			
Nameplate Rated Capacity (kW/kVA/PF)			
Exported Rated Capacity (kW/kVA/KVAR)			
Planned In-service Date			
Normal Connecting Station and Feeder			
Supporting Document Na	mes and Version Numbers		
Electrical Single Line Diagram			
Equipment Layout Drawing			
Protection Schema			
Inverter Model Number, Quant	ity, and Hardware Certification		
1.	5.		
2.	6.		
3.	7.		
4.	8.		
Commissioning C	ontact Information		
Design Engineer			
Name			
License Number			
Commissioning Agent*	*P.Eng. or Licensed Electrical Contractor		
License Number			
Commissioning Agent Name			
Title			
Date			
Phone			
Email			

- b. Planned Commissioning date(s)
- c. Milestone description:

Describe all Commissioning tasks the Applicant plans to execute on the Commissioning date. One of the milestones shall be the obtaining of an ESA connection authorization. If the Applicant plans to have multiple Commissioning dates with different milestones, the Applicant is to include a milestone description for each Commissioning date using the format below:

Milestone #:

Goal:

Commissioning Date:

Tasks:

Prerequisites: Required equipment: People (skill sets) required: Roles and responsibilities: Steps to accomplish task: Expected results:

- d. Deficiency and ResolutionUse table from Section 7 to fill this information
- e. Signature from the Commissioning agent to indicate approval of the plan (P.Eng. or Licensed Electrical Contractor)

Name: Date: Signature:

The Commissioning Plan must be approved by HOL's Project Manager before testing begins.

# 5. Checklist of Pre-Commissioning Tasks

The Commissioning agent (P.Eng. or Licensed Electrical Contractor) is to carry out the following checks prior to Commissioning:

	Results (Y/N)	Initials	Comments
ESA Authorization			
Correct as-built single line diagram (SLD) submitted to HOL			
All switches & devices labeled for proper identification			
Inverter meets industry standards specified by HOL (per CIA and ECG0006)			
Grid support settings as per CIA (if applicable)			
Protection settings as per CIA			

# 6. Commissioning Tasks

The following Commissioning Tasks will need to be successfully completed:

### 6.1. Interconnection

The Point of Common Coupling (PCC) and Point of DER Connection (PoC) shall be identified in the design and on the SLD. The equipment on the Customer's side of the PCC shall be approved in accordance with Rule 2-024 of the Ontario Electrical Safety Code (OESC).

### 6.2. Isolation at the Point of Common Coupling - Disconnecting Means

Test Name	Test Description	Reference	Acceptance Criteria
Disconnecting Means	Verify that the disconnecting means meets LDC requirements	ECG0006 Section 5.1 OESC Rule 84-024	<ul> <li>Can be opened, locked and tagged by the utility.</li> <li>Meets the requirements of OESC Rule 84-024.</li> <li>Shall be service entrance rated, if the DER connects to the Grid side of the Customer's main disconnect.</li> <li>Provides a visible point of disconnect either through a viewing window or by opening the front cover</li> </ul>

### 6.3. Grounding

Test Name	Test Description	Reference	Acceptance Criteria
Grounding	Verify that	ECG0006	<ul> <li>DER and their associated</li> </ul>
	interconnected systems	Section 5.2	interconnection systems must be
	are grounded	OESC	grounded according to the
			manufacturer's recommendations and
			meet requirements set out by the OESC
			<ul> <li>Interconnection of three-phase.</li> </ul>
			transformers, and transformer grounding
			systems on three-phase Grid is installed
			per design.

#### 6.4. Power Quality

DER power quality shall be demonstrated through inverter certification except for Power Factor test described herein.

#### 6.5. Power Factor

Test Name	Test Description	Reference	Acceptance Criteria
Power Factor	DER not significantly influence system voltages	ECG0006 Section 6.4	<ul> <li>The DER operates at the PF range specified by the design at the output of the Inverter/Generator</li> </ul>

### 7. Protection

A letter sealed by a Professional Engineer in good standing indicating that all protections have been applied and tested as per the protection schema shall be provided to and accepted by HOL. Anti-islanding protection shall be verified.

Test Name	Test Description	Reference	Acceptance Criteria
Anti-Islanding	DER anti-islanding	ECG0006 Section 7.4	<ul> <li>The Customer shall not island</li> </ul>
		CSA C22.3 No.9	without permission from the LDC

## 8. Deficiency and Resolution

Include the table below in the Commissioning Plan to document which of the Milestones or Tasks the facility doesn't meet per HOL requirements. Any operating or design deficiencies shall be corrected before re-Commissioning and before submitting the required Commissioning Report to HOL. The completed Commissioning Plan will serve as the Commissioning Report.

ltem	Deficiency	Resolution

# 9. Required Supplementary Document

Please provide the following document(s) for review upon the completion of the Commissioning tasks.

Document	Notes
As built drawings	
Derating of the inverter (Provide a letter from a manufacturer or a picture of nameplates with serial number) (if applicable)	
Third party Commissioning reports (if applicable)	
Completed Commissioning plan i.e., the Commissioning report	

# 10. Commissioning Report

This section outlines the required items to be included in a completed Commissioning Plan i.e., the Commissioning Report.

- a. Commissioning tables from *Section 6 Commissioning Tasks* with all information provided, including test results, dates, initials, and notes.
- b. Information from Section 7 Deficiency and Resolution
- c. The required supplementary document(s)
- d. Commissioning signatures

## 11. Commissioning Report Signatures

The Applicant and Commissioning agent shall sign and date the completed Commissioning plan to acknowledge that all required Commissioning Tasks specified in this guide have been completed.

### 12. Submission Checklist

Please ensure the following table and items are completed and included in the submission to HOL with your completed Commissioning plan. The application will not proceed to the next connection step if any of these items is omitted or incomplete.

Item	Document	Initials
1.	Completed Commissioning plan i.e., the Commissioning report.	
2.	Required supplementary document	

### 13. **References**

The requirements in this package are from HOL Standard ECG0006, HOL Standard ECG0008, HOL Standard GCS0008, CSA C22.3, CSA C235, IEEE 1547, OESC, UL 1741 SA & SB. The HOL CIA will clarify requirements of the DER facility.