

Distributed Energy Resources (DER) Connections Review

Working Group – Meeting #2

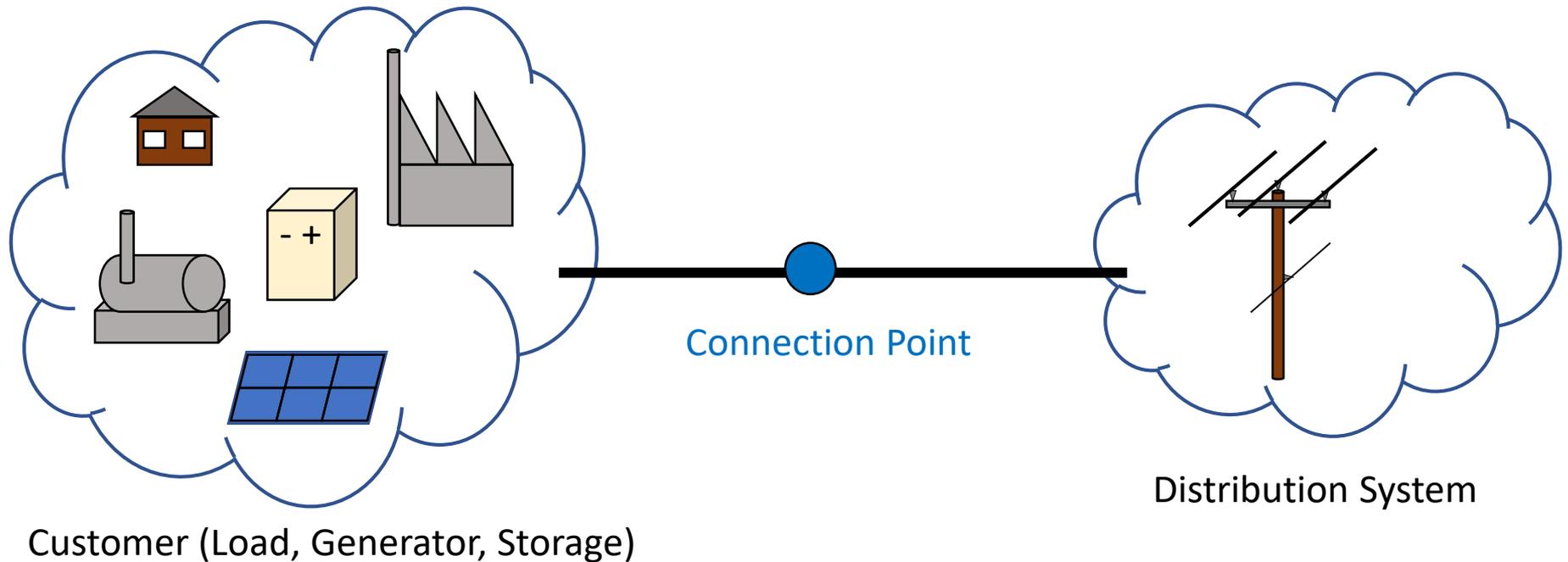
EB-2019-0207

December 16, 2019

Meeting Purpose

- Recap DER Connections Review Scope and Priorities
- Working Group - Review and agree on definitions
- Subgroups
- Next Steps

Scope (Review):



- Working group to focus on the connection point of a generation or energy storage DER to a distribution system.

Scope (Cont'd)

Scope:

- Consider issues identified by stakeholders;
 - Clarify Definitions
 - Connection Process, Timing and related Cost Issues
 - Technical Requirements and related Cost Issues

Outputs:

- Recommend solutions for streamlining process, enhancing consistency of process application amongst distributors and improving clarity around process timelines, technical requirements and cost

Out of Scope:

- Possible new services for DERs and Value of DERs. These will be addressed in the OEB's Responding to DER's (i.e value, benefits), Utility Remuneration Initiatives

Note: *Issues within the customer's premises which are downstream of the meter or demarcation point and those which are upstream in the distributor's system will not be considered unless it affects the connection point.*

Definitions

Discussion

DER Connection Review Definitions

Based on the discussions at the first Working Group meeting, the following DER definition is proposed:

- Distributed Energy Resource

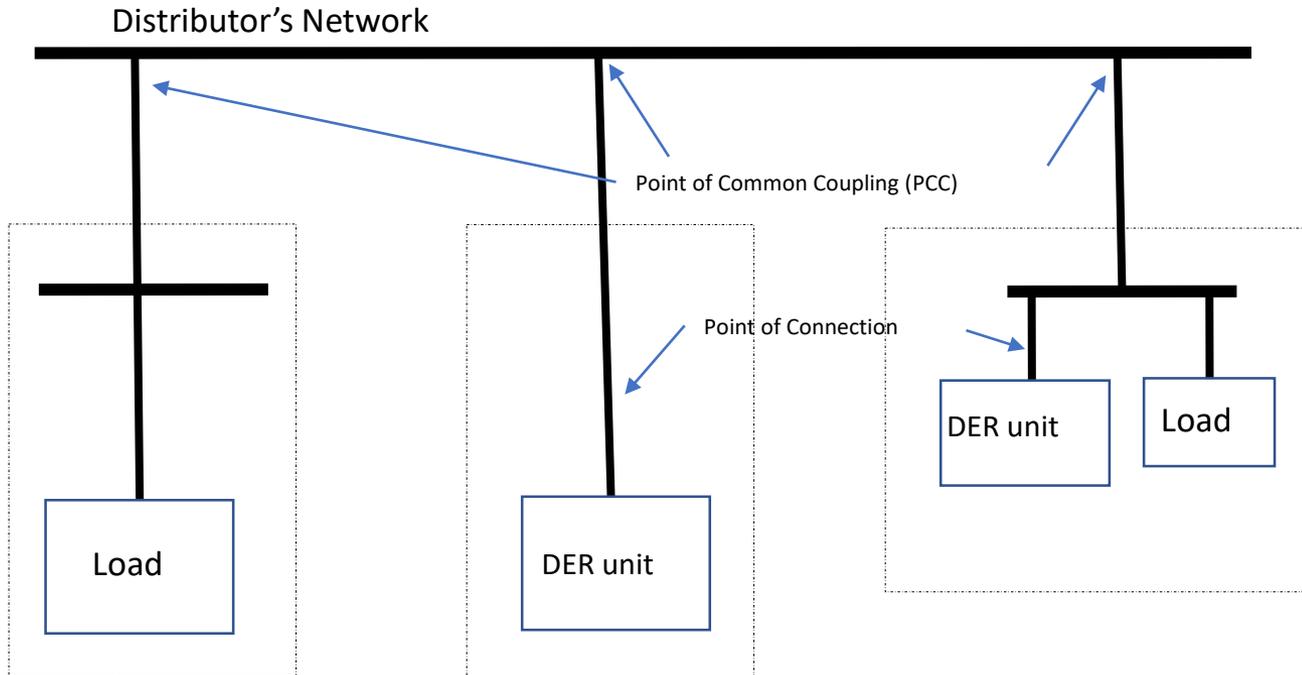
For the purpose of the connections review consultation, a Distributed Energy Resource (DER) is an electricity source or sink that is connected to a local distribution system or connected to a host facility within the local distribution system.

- Includes generators.
- Includes energy storage technologies.
- Does not include controllable loads used for demand response.

Additional Definitions

- **Point of Connection:**
The point where the DER Facility is connected to the distribution system
- **Point of Common Coupling (PCC):**
The point where the new DER Facility's connection assets or new line expansion assets will be connected to the main distribution system
- **Point of Supply (DSC equivalent to PCC):**
With respect to an embedded generation facility, means the connection point where electricity produced by the generation facility is injected into the main distribution system

PCC vs Point of Connection



Note: Dashed lines are host facility boundaries

<http://site.ieee.org/gms-pes/files/2017/02/IEEE-1547-Vermont-Chapter.pdf>

Additional Definitions (as per DSC)

- **Connection:**

The process of installing and activating connection assets in order to distribute electricity
- **Connection Assets:**

Current: That portion of the distribution system used to connect a customer to the existing main distribution system, and consists of the assets between the point of connection on a distributor's main distribution system and the ownership demarcation point with that customer

Suggestion: That portion of the distribution system used to connect a customer to the existing main distribution system, and consists of the assets between the point of common coupling and the point of connection
- **Ownership demarcation point:**

The physical location at which a distributor's ownership of distribution equipment including connection assets ends at the customer

Additional Definitions (as per DSC)

- Embedded Generation Facility

A generation facility which is not directly connected to the IESO-controlled grid but instead is connected to a distribution system, and has the extended meaning given to it in section 1.9;

DSC s1.9 Extended Meaning of Embedded Generation Facility

A distributor shall, for all purposes under this Code, treat a generation facility that is connected on the customer side of a connection point to the distribution system as an embedded generation facility. To that end:

(a) the terms “connect”, “connected” and “connection” when used in relation to such a generation facility shall be interpreted accordingly; and

(b) the distributor shall treat the owner or operator of the generation facility as a generator in relation to the connection and operation of that generation facility.

Additional Definitions (as per DSC)

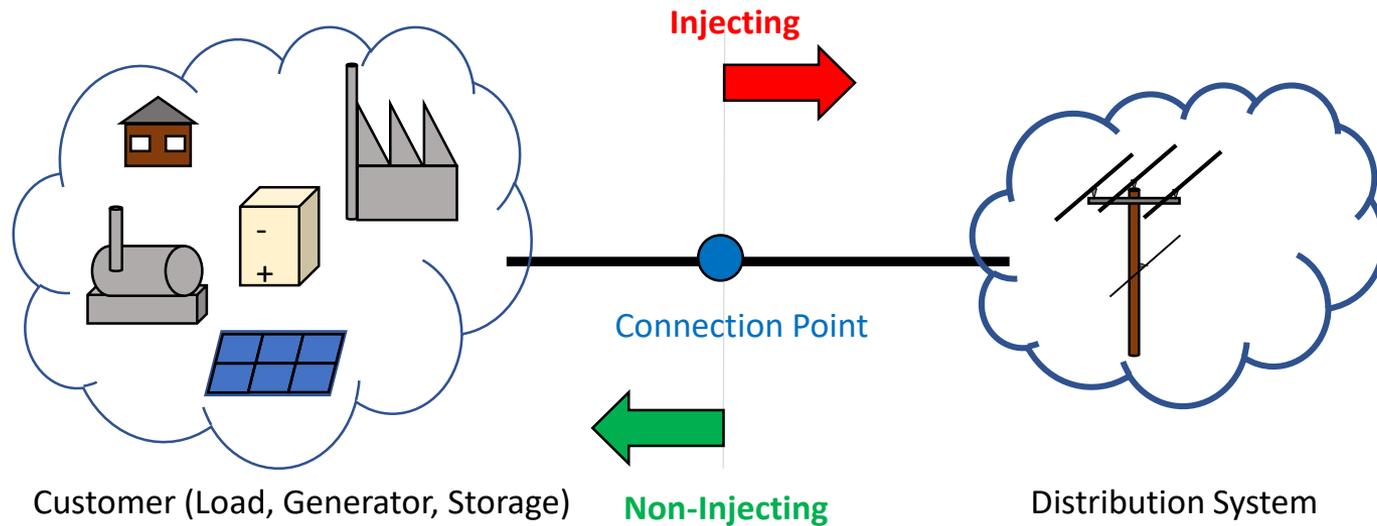
- **Generation facility:**

A facility for generating electricity or providing ancillary services, other than ancillary services provided by a transmitter or distributor through the operation of a transmission or distribution system, and includes any structures, equipment or other things used for that purpose
- **Load displacement:**

In relation to a generation facility that is connected on the customer side of a connection point, that the output of the generation facility is used or intended to be used exclusively for the customer's own consumption

BREAK

A New Connection Paradigm



A New Connection Paradigm

Injecting		Non-Injecting	
Power flow through the connection is from the customer's premises to the distributors system (i.e. to the grid) where the injection to the system is typically intentional (e.g. connection is considered to support a generator).		Power flow through the connection is strictly from the distributors system (i.e. from the grid) to the customer's premises (e.g.. connection is considered to supply a load).	
Series	Parallel	Series	Parallel ? Not Applicable

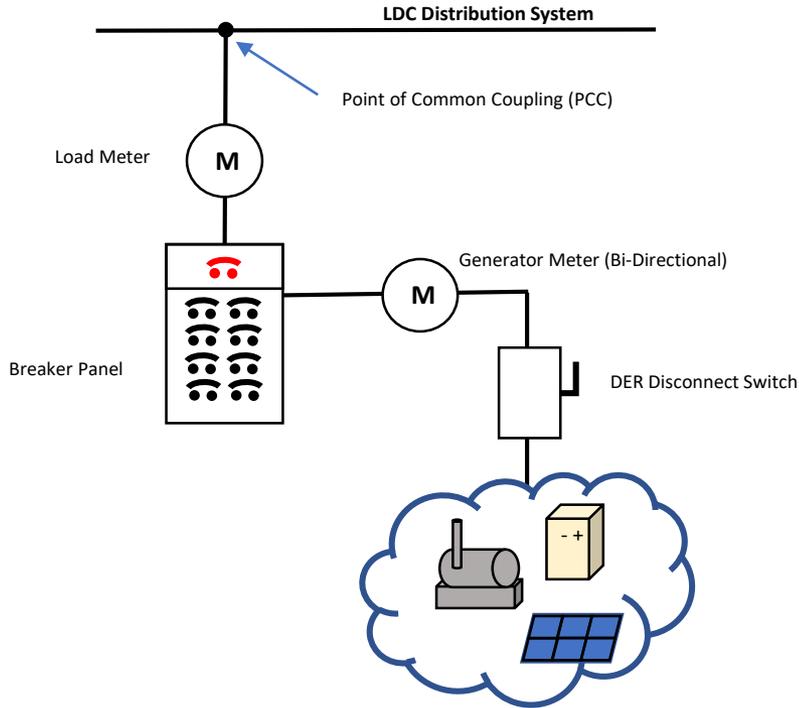
	Injecting	Non-Injecting
Series	IS	NS
Parallel	IP	

2x2 Matrix for New Connection Paradigm

IS	NS
IP	X

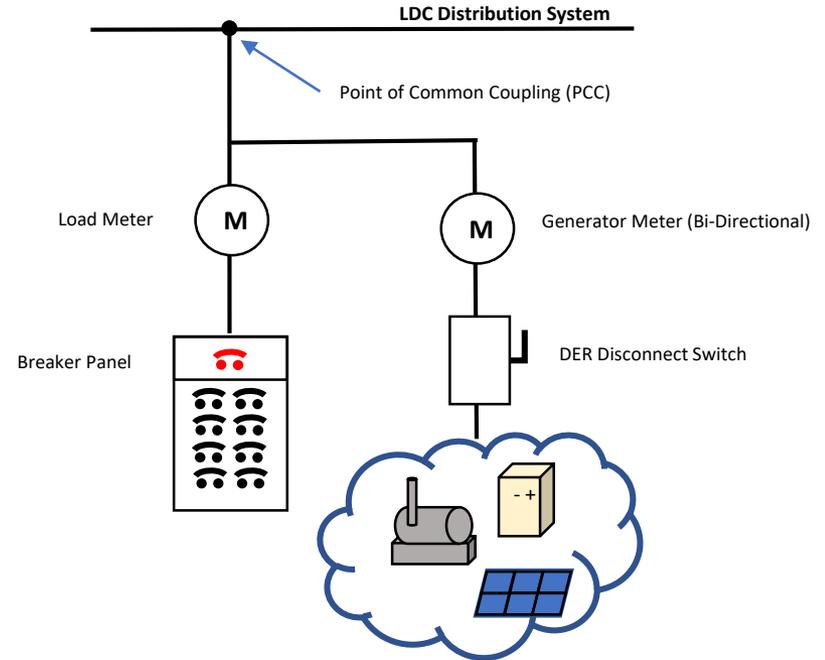
Simplified 2x2 Matrix

Injecting



Injecting (Series)
Example – Net Metering

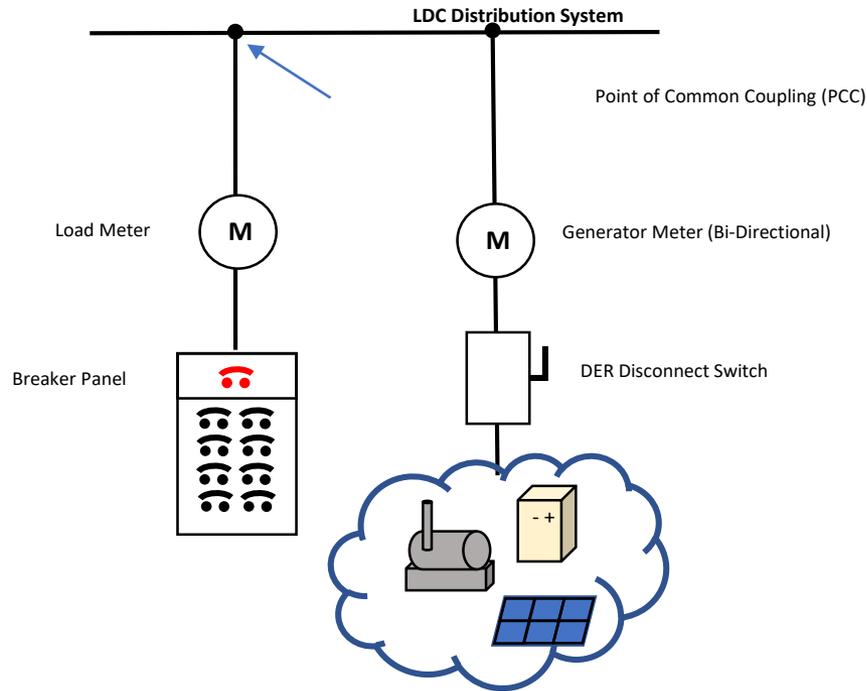
IS	NS
IP	X



Injecting (Parallel)
Example – FIT & MicroFIT, Retail Generators

IS	NS
IP	X

Injecting

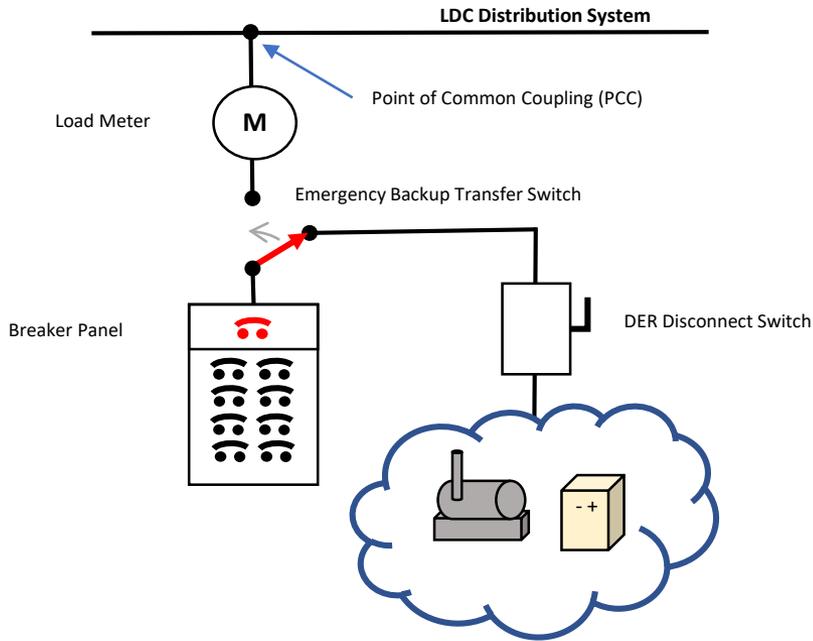


Injecting (Series)

Example – Directly connected Generator

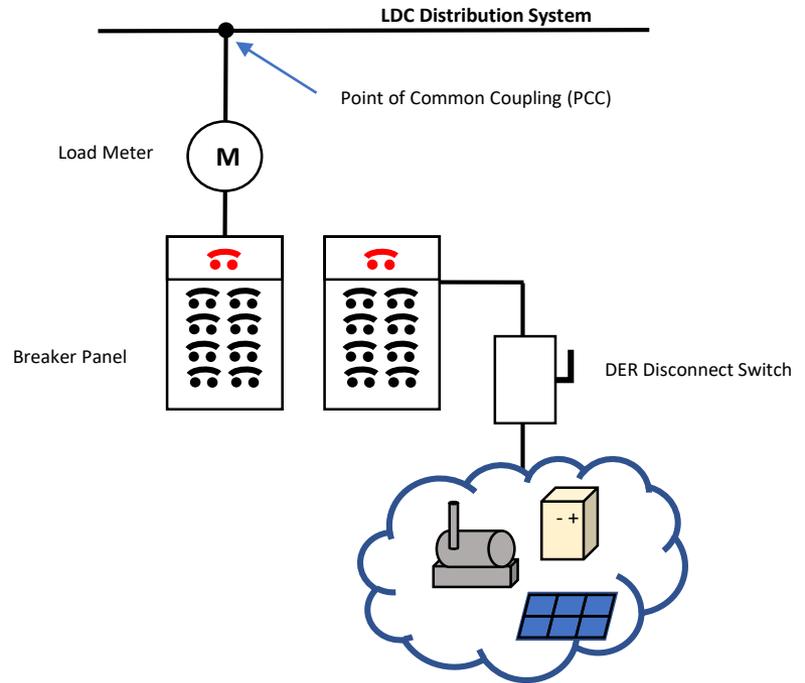
IS	NS
IP	X

Non-Injecting



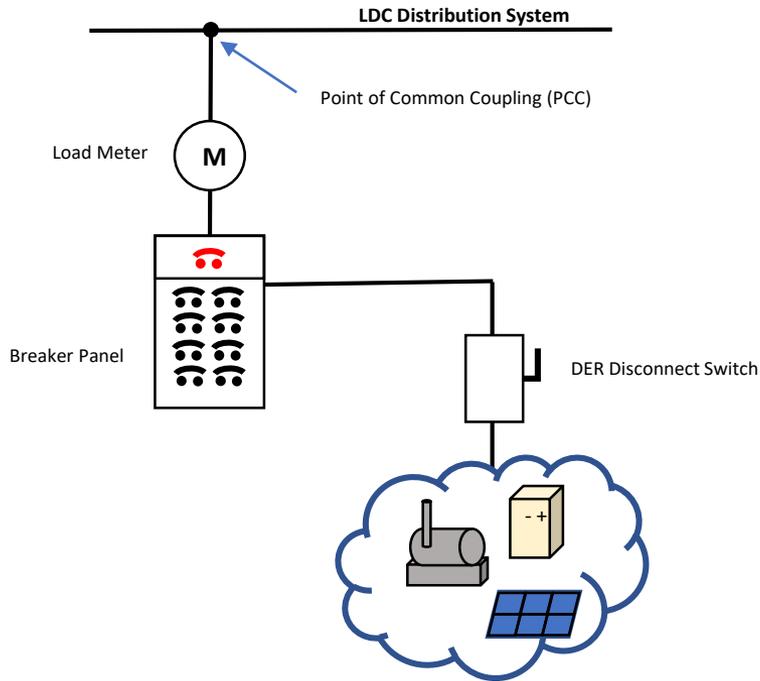
Non-Injecting (Series)
Example – Emergency Backup generator

IS	NS
IP	X



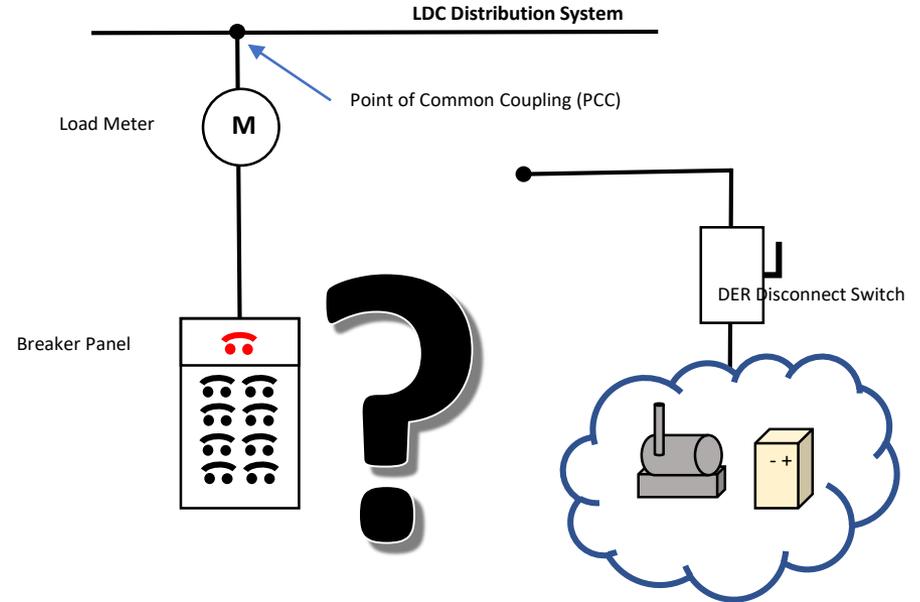
Non Injecting (Stand alone/Islanded)
NOT IN SCOPE

Non-Injecting



Non Injecting (Series)
Example – Load displacement

IS	NS
IP	X



Non-Injecting (Parallel)
Example – What is non-injecting parallel?

IS	NS
IP	X

LUNCH BREAK

Subgroups

Discussion

DER Connections Review - WG

Focus, Purpose & Scope	Organization	Deliverables
<p>Focus Area</p> <p>Review DSC Connection requirements for DERs</p> <p>Purpose of the WG</p> <p>Provide recommendations to the OEB that will result in clearer and more consistent rules with respect to process, timeframes, costs and technical requirements for connecting DERS where appropriate, and improve the overall connection process.</p> <p>WG Scope</p> <p>The working group will focus on the connection point between the customer and the distributor's system.</p> <p>This will include the metering point, whether before or after the interface.</p> <p>Note: Issues within the customer's premises or downstream in the distributor's system will not be considered.</p> <p>Policy Issue</p> <p>DER connection process, cost, technical requirements, and connection timeframes vary greatly across the Distributors. The lack of a regulatory definition for DERs and lack of clarity where and how the regulatory framework applies to address some DER connections is causing lack of standardization and misinterpretations.</p>	<p>Membership</p> <p>Consumer Groups, Utilities, Industry Associations, Other Service Providers, Public Interest Groups</p> <p>Governance</p> <ul style="list-style-type: none"> • OEB staff will facilitate meeting preparation and post materials to website • Working Group will review subgroups proposed solutions and develop recommendations for staff consideration • Subgroups: <ul style="list-style-type: none"> A. Review of Connection Process, Timing and related Cost Issues <ul style="list-style-type: none"> • <i>Review current processes and timeframes to identify and make recommendations where clarity in definitions or responsibilities could reduce timing.</i> • <i>This will include making recommendations for new or different process based on size or technology.</i> • <i>The cost issues relate to various actions within the process (i.e. who does what, who pays for what)</i> • <i>Make any other recommendations to improve the process</i> B. Review of Technical Requirements and related Cost Issues <ul style="list-style-type: none"> • <i>Make recommendations for standardization of technical requirements for connections through reference to outside standards or developing requirements.</i> • <i>The cost issues relate to various actions within the process (i.e. who does what, who pays for what)</i> 	<p>1. Working Group</p> <ul style="list-style-type: none"> • Meeting Notes • Definitions • Feedback on proposed solutions and recommendations to staff based on groups experience and expertise and the input from the subgroups <p>2. Subgroups</p> <p>Information and views based on expertise and experience</p> <ul style="list-style-type: none"> • <i>Paper</i> • <i>Technical specification</i> • <i>Presentation (ppt) deck with recommendations</i>

Subgroups (Members)

- TBD

Connection Process Subgroup

What needs to be done? Who has to do it? Who pays for it?

Review of Connection Process

- Review current processes and timeframes to identify and make recommendations to improve the connection process.
- This will include making recommendations for new or different processes possibly based on size or technology.
- Consider the cost of the connection process and options for reducing costs
- Consider and reflect on industry groups input (i.e. EDA, OEA, HONI TIR)

Sample List of priorities for Process Subgroup

Optimize the connection process and timelines in the following areas:

- Standardization and automation of the application*
 - Segments of application by categories
- Any concurrent process steps
 - e.g. Conducting HONI CIA concurrently with the host LDC conducting its own CIA, rather than a sequential
- Connection Impact Assessment (CIA) timeframe reduction
 - Defining the information requirements
 - Improving application quality (e.g. higher quality SLD scans)
- Connection Cost Agreement (CCA)
- Identifying scenarios that would enable an LDC to fast-track a connection application (*Small applications could follow a prescriptive approach for review and approval, while larger solutions would be more complex and time consuming*)
- Responsibilities and cost
 - Expanding 3rd party opportunities
- Other

**LDC Working Groups (OEA & HONI)*

Technical Requirements Subgroup

What needs to be done? Who has to do it? Who pays for it?

Review of Technical Requirements and related Cost Issues

- Make recommendations for standardization of technical requirements for connections possibly through reference to outside standards or developing requirements.

Sample List of priorities for Technical Subgroup B

- Regulatory and technical requirements should be a function of the type of connection being sought.
- Specifications and standardization for:
 - size of DER (each unit and total at connection point)
 - type of generation facility (NI, IS, IP...)
 - type and details of technology
 - fuel type
 - single line diagram
 - interface protection
- Other

DSC DER Size Classification (Appendix F)

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

Next Steps

Timeline of Working Group Meetings:

- Proposed Working Group Meeting Dates:
 - i. Third Meeting: End of January
 - ii. Fourth Meeting: End of February
 - iii. Meeting as Required (TBD)
 - iv. Subgroup meeting dates

Next Meeting:

- Member takeaways for next meeting:
 - Provide thoughts on a prioritized list of issues for subgroup to consider
 - Identify any additional considerations
 - Agenda for next meeting;
 - Report updates from subgroups
 - Identify subgroup issues and plan

Thank You