

TDWG - Deliverable B2: 'Communication Assessment'

Statement of Work (DRAFT)

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This document outlines the statement of work (SOW) for Deliverable 2B – 'Communication Assessment', including descriptions of the deliverable, work packages, timelines, dependencies, and resources for executing the deliverable. This SOW will inform the Transmission-Distribution Working Group (TDWG) work plan to end of 2024 and will build on related work conducted as part of the TDWG since the beginning of 2022.

1. Description of Deliverable

This deliverable will detail transmission-distribution (T-D) communication methods to support both the Total Distribution System Operator (T-DSO) and Dual Participation (DP-DER) coordination models. The "Communication Assessment" will identify communication differences and commonalities for both coordination models. To support both transmission and distribution level reliability, communication methods are needed to cascade status / monitoring points between distributed energy resources and aggregators (DER(A)), Local Distribution Companies (LDC's) and the IESO. The IESO, host and embedded distributors (I.e. LDCs), and DER(A) participants will need to follow a standardized method of exchanging data to allow coordinated operational and market/service actions to ensure there is sufficient situational awareness (e.g., with respect to outages, thermal/voltage grid constraints, limits on DER(A), dispatch of DER(A), etc.) among the parties. This deliverable will also attempt to identify which essential status and control points are required to be sent to respective parties for each coordination model.

The 'Communication Assessment' will need to detail the data interfaces, data being exchanged, and communication methods to support operational and market actions to be taken and information to be shared by the parties. This ensures the effective and reliable operation of transmission and distribution systems and the DER(A) as they participate in the wholesale market and as they may provide services to the distribution system as non-wires alternative (NWA) solutions. The 'Communication Assessment' will consider existing communication paths between respective parties and establish a standardized framework for each party to exchange information amongst the parties, in a cost effective manner. The 'Communication Assessment' will identify areas of improvement regarding the communication of data amongst the parties, and provide a simplified IT Infrastructure map identifying key areas of the network that require telemetry, and identify the communication methods to support the exchange of data.

The 'Communication Assessment' is expected to be implementation-ready in the sense that it will outline sufficient details for the IESO, LDCs, and DER(A) to understand the impact to their operations and changes to tools/processes that will be needed for the IESO to develop market rules/manuals.

To be comprehensive, the 'Communication Assessment' deliverable will provide the following, for both the TDSO and Dual Participation Models:

1. Identify key data interfaces among IESO, LDCs, and DER(A) for with respect to outages, thermal/voltage grid constraints, limits on DER(A), and dispatch of DER(A).
2. Identify key data exchange nodes (DEN's) of the network where telemetry is required, considering market locational price and utility demarcations. For each DEN and data interface, identify which party requires what data to be exchanged.
3. Identify the available communication medium (s) that will be used to exchange the data in (near) real time.
4. Provide a high level IT Infrastructure map needed for the data exchanges and communication, including infrastructure mapping that that will dovetail into the 'Shared Platform Concept' deliverable.
5. Provide projected cost heat map (e.g., high, medium, low cost) for different IT infrastructure model.
6. Consider implementation of the required data exchanges using open source frameworks cyber security protocols will also apply to all scenarios outlined in this deliverable.

The final deliverable will be submitted by Hydro One Networks Inc. (HONI) to the TDWG as a report that details proposed data interfaces, data exchanged across the interfaces, communication methods among IESO, LDCs, and DER(A), and next steps for implementing the protocols.

There are a few constraints and/or limitations for this deliverable:

- Detailed cost estimation will be out of scope for this deliverable, however referential costs will be considered when identifying DEN's and communication medium methods.

The development of the deliverable will build on past and current work including:

- DER Market Vision Project (MVP): MVP seeks to introduce new participation models for DER(A) in IESO's wholesale market by 2026/2027, including enabling new approaches to aggregation.
- 'Distributed Generation Technical Interconnection Requirements Interconnections at Voltages 50kV and Below'
- This deliverable will comply with utility standard communication protocols such as ICCP, DNP3, IEEE 1547 Modbus, and IEEE 2030.5.
- EPRI's Protocol Reference Guide: 'Assessment of Information and Protocols Std for DER, EV and Demand Response Technologies'.
- New York Independent System Operator (NYISO) Enabling Technologies for DER Study Report

2. Deliverable Lead & Sub-Groups

HONI serves as the lead for the deliverable. In this capacity, HONI holds the primary responsibility for ensuring the quality and timely completion of all associated deliverables.

A sub-group has been established to provide support and expertise for this deliverable. The sub-group consisting of representatives from:

- Essex Powerlines
- Alectra Utilities

Hydro One expects to share initial outlines and early drafts of individual work packages, provide periodic updates on work package progress, and offer early review and feedback opportunities to the sub-group. Members of the sub-group are also expected to allocate some time for periodic consultations, allowing Hydro One staff to seek insights and feedback, particularly on issues related to distribution system operations.

3. Work Packages

The deliverable will be broken down into work packages with distinct activities and sub-deliverables as outlined in Table 1 below. The description of the work packages should provide details of purpose, activities, approaches, and the expected outputs. The table also identifies the responsibilities and roles (including specialized subject matter expertise) of the deliverable lead or any sub-group members for executing the work packages.

Table 1: Work packages descriptions and roles/responsibilities

No	Name	Detailed Description	Roles & Responsibilities	Output
1	'Communication Assessment' SOW	Provide Statement of Work to TDWG members for the 'Communication Assessment' deliverable.	Outline content within deliverable, and timelines.	SOW document
2	Current state of Communication / Data Exchange.	Outline the current communication methods and practices that are used among LDCs, DER(A) and IESO.	Hydro One to provide a PowerPoint to TDWG to create a baseline understanding of current communication methods.	Presentation deck
3	IESO's DER Market Vision Project proposed telemetry requirements	IESO to outline the telemetry requirements for DER(A) proposed as part of the DER Market Vision Project.	IESO to develop the presentation with input from Hydro One and sub-group representatives	Presentation deck
4	Future state of Communication / Data Exchange	Outline the potential future data interfaces, data being exchanged, and communication methods and practices that could be used between utilities and IESO.	Hydro One to provide a PowerPoint to TDWG to create a baseline understanding of future communication methods.	Presentation deck

5	'Communication Assessment' for DER Market (Draft)	1 st draft version of the report that will outline proposed communication methods, practices and protocols used by IESO, LDCs, and DER(A) as part of T-D coordination.	Hydro One to provide 1 st draft version of 'Communication Assessment' Deliverable. Sub-Lead will review and provide comments. There maybe instances where the sub-lead is tasked with providing details on a particular section of the report.	Report
6	'Communication Assessment' for DER Market (Final)	Final version of the report that will outline the communication methods, practices and protocols used in the future DER Market.	Hydro One to provide final version of 'Communication Assessment' Deliverable.	Report

4. Timelines, Dependencies, Resources and Other Specifics

Table 2 outlines the expected timeframe for each of the work packages described above. It also details dependencies for each work package on other work packages, deliverables in the TDWG work plan or external factors that may impact timelines, including any mitigation strategies.

Table 2: Work package expected timeline and dependencies

No	Name	Expected Timeline	Dependencies	Resources	Other Specifics
1	'Communication Assessment' SOW	Q4 2023	N/A	1 HONI FTE 0.1 sub-group FTE	N/A
2	Current state of Communication / Data Exchange	Q4 2023	N/A	1 HONI FTE 0.1 sub-group FTE	N/A
3	IESO proposed DER-related telemetry requirements	Q1 2024	N/A	0.25 IESO FTE for 3 months 0.1 HONI FTE 0.1 sub-group FTE	N/A
4	Future state of Communication / Data Exchange	Q1 2024	N/A	1 HONI FTE 0.1 sub-group FTE	N/A
5	'Communication Assessment' for DER Market (Draft)	Q2 2024	N/A	1 HONI FTE 0.1 sub-group FTE	N/A
6	'Communication Assessment' for DER Market (Final)	Q4 2024	'Shared Platform Concept' deliverable.	1 HONI FTE 0.1 sub-group FTE	N/A