

# Transmission-Distribution Coordination Working Group (TDWG)

## Meeting Notes

Meeting date: December 14, 2023

Meeting time: 9:30 – 12:00 PM

Meeting location: Hybrid - virtual and in-person (IESO's 120 Adelaide St W office)

### **Agenda Item 1:** Introduction materials [IESO]

- Ali Golriz (IESO) opened TDWG meeting #9 by presenting recap slides on TDWG objectives, T-D protocols, and past meetings.
- Certain feedback provided by TDWG members following meeting #8 was reviewed. These feedback items were in addition to other feedback from meeting #8 discussed at meeting #9.

### **OEB DSO-Related Update** (addition to agenda) [OEB]

- Ceiran Bishop (OEB) provided an update that the OEB has engaged a consultant to advise on regulatory considerations pertaining to DSOs. The objective is to review regulatory performance of various DSO models and the work will leverage outcomes from the TDWG, where appropriate.
  - A working group member asked about stakeholder engagement.
  - A working group member noted that the active participation of the OEB's consultant in the TDWG work would be beneficial.
- OEB will have more to share with the TDWG as this work evolves.

### **Agenda Item 2:** Deliverable A – Presentation on IESO T-D related reliability [IESO]

- As part of Deliverable A – Coordination Protocols, Nima Omran (IESO) presented on the integration of DERs into the Bulk Power System (BPS), outlining the requirements needed to address the challenges for effective T-D coordination. The need for visibility, adherence to standards, and managing the impacts of DER integration for maintaining BPS reliability and operational effectiveness were highlighted.
- A working group member asked to what extent the IESO could delegate DSOs in the future to take on roles NERC defined functional roles assigned to the IESO. IESO staff notes that the purpose of the functional roles and entities is to have clarity with respect to who plays what role in meeting standards. As noted in the presentation deck, NERC identifies what aspects of the standards apply to what functional entities.

- There was a brief discussion on the impact of DER on the transmission system and the need to monitor individual DER in real time.
  - It was noted that telemetry from market-participating DER/A feed into the IESO's state estimation tool and then upstream processes.
  - Control Room operators should be able to confirm that market-participating DER/A meet dispatch instructions. This is more critical for DER/A participating in operating reserve services.
  - The telemetry monitored may involve large or impactful DERs, aggregated DERs, or, in the future, potentially even visualizations that capture multiple aggregations.
- A working group member asked if DER are considered in system restoration plans. IESO staff committed to follow up briefly on the topic of system restoration.
- It was mentioned that DERs' electricity production can mask the gross load, if they are not appropriately monitored and estimated to avoid variability and uncertainty in system operations. There was a question about the meaning of the gross load. It was clarified that gross load means the total amount of electricity consumption. While market-participating DERs are monitored using telemetry, information about non-participating DERs is also needed to have an accurate estimation.
- The IESO was asked if the contingency analysis it conducts would capture every DER going offline and capture DER being limited in output (but not shut down). IESO staff discussed that:
  - The major concern in contingency analysis is DERs tripping "en masse", for instance due to tripping/ride-through settings of inverters.
  - Analysis focuses on large contingencies, such as N-1 and N-2 type of events.
  - IESO conducted an operability assessment in 2019, which found that by 2025 the loss of DERs would become the IESO's Most Severe Single Contingency (MSSC) due to loss of generation, exceeding typical MSSCs.
- A working group member noted that DER operating simultaneously supports both distribution and transmission systems and asked in what way there would be double counting. IESO staff highlighted a scenario where there is lack of coordination and the IESO is unaware of DSO actions/instructions to DER. If the DSO has already activated the DER, and the IESO then instructs the same operation, the expected incremental impact at the transmission level would not be seen. Coordination protocols aim to prevent such scenarios by ensuring visibility of the DSO's instructions and avoiding these types of "double counting". A working group member also pointed out that distributors need to know the IESO's instructions to DER for similar reasons, which IESO staff agreed with, noting that the issue is captured in the conceptual T-D protocols developed as part of TDWG.
- A question was posed about the consequences of distributors not complying with IESO requirements. IESO staff noted that:
  - Non-compliance with reliability-related requirements is reported to NERC.
  - IESO's Market Assessment and Compliance Division conducts monitoring, investigation and enforcement of the market rules.

- The nature of non-compliance also depends on distributors' functional role in the wholesale market, which depends on the T-D coordination model adopted.

**Agenda Item 3:** Deliverable B1 - Architecture and DSO processes / systems [Toronto Hydro and Alectra]

- The Deliverable team for Deliverable B1 Functional Assessment, Rei Marzoughi (Toronto Hydro), Geri Yin (Alectra), and Hisham Omara (Alectra) presented a high-level overview of the key functions and enhancements required to enable a DSO, as well as the connection between these functions/enhancements and existing distributor and external systems.
- IESO staff noted that the shared platform concept is being overly featured in the architecture mapping presented.
  - It was noted that the shared platform concept still needs to be explored in detail with the TDWG and that there may be additional functions required among "DSO functions" not captured in the deck.
  - The Deliverable team agreed that they will provide a more generic breakdown of the architecture with respect to market functions.
  - It was also clarified that additional detail about differences due to different coordination models will be investigated as part of user journey related work of the Deliverable.
- IESO staff asked if the Deliverable team considers the planning and identification of non-wires alternatives / distribution services to be a DSO activity. The Deliverable team responded that they consider the activity to be part of the traditional distributor functions, consistent with today's regulatory environment.
- A working group member asked if distributors would have additional functions due to IESO requirements, such as the ones discussed in agenda item 2. Another working group member more specifically asked when the differences in how information is collected and shared with the IESO across different coordination models will be investigated. The Deliverable team clarified that additional detail about requirements on the distributor/DSO and differences depending on coordination models will be investigated as part of user journey related work package of the deliverable.
- A working group member asked about whether T-D coordination can take place in the near term with simpler DSO functionalities, and how the Deliverable team envisions scaling and evolving with more advanced functionality over time. The Deliverable team acknowledged the points made and indicated that scaling considerations and a roadmap for evolving functionalities over time are part of forthcoming work packaged under Deliverable B1.
- A working group member requested clarification on "user journey" mapping. The Deliverable team explained that user journeys involve outlining specific experiences or steps for each coordinating party in a use case, like registering a DER for wholesale market participation. It encompasses mapping out all parties' interactions, necessary data, and communication processes. User journeys are structured over a timeline to better understand interactions and requirements.

- IESO staff asked if the Deliverable team knew of any distributors globally performing granular (e.g., 5-10 minutes) three-phase unbalanced security constrained power flow or optimization.
  - IESO staff also asked whether there are intermediary steps between where distributors are today and that level of sophistication.
  - The Deliverable team responded that distributors in the UK assess basic distribution system issues.
  - However, the sophistication/robustness of these practices in the UK today is unclear.
  - The deliverable team emphasized that this level of analysis is required for distributors to manage the distribution system, especially under unplanned outage scenarios
  - It was noted that many Advanced Distribution Management Systems (ADMS) have these capabilities.
  - These topics will be investigated as part of the roadmap work package for this deliverable.

## Action Log Summary

IESO staff will maintain an ongoing action log to track actions raised in the TDWG meetings and their resolution. The log will be reviewed at the start of each TDWG meeting.

| Date         | Action  | Resolution        |
|--------------|---|-------------------|
| Dec 8, 2023  | IESO to circulate meeting notes among TDWG members by Dec 15, 2023  | Sent Dec 15, 2023 |
| Dec 8, 2023  | TDWG members to provide comments and send to <a href="mailto:engagement@ieso.ca">engagement@ieso.ca</a> by Jan 5, 2024  |                   |
| Dec 8, 2023  | IESO to post all meeting materials to the TDWG webpage by Jan 12, 2024  |                   |
| Dec 8, 2023  | Deliverable B2 - Hydro One to follow up on use of Internet Protocol (IP) as method of communication.                    |                   |
| Dec 8, 2023  | Deliverable B4 - IESO/Alectra to follow up on the concept of NMF as part of working definitions in.                     |                   |
| Dec 14, 2023 | IESO to circulate meeting notes among TDWG members by Dec 21, 2024  | Sent Dec 21, 2023 |
| Dec 14, 2023 | TDWG members to provide comments and send to <a href="mailto:engagement@ieso.ca">engagement@ieso.ca</a> by Jan 11, 2024 |                   |
| Dec 14, 2023 | IESO to post all meeting materials to the TDWG webpage by Jan 18, 2024  |                   |
| Dec 14, 2023 | IESO to briefly follow up on DER/A and system restoration as part of Deliverable A                                      |                   |