



JULY 21, 2026

Enabling Resources Program (ERP)

Distributed Energy Resources (DER) Integration Project

Independent Electricity System Operator

Disclaimer

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Territory Acknowledgement

The IESO acknowledges the land we are delivering today's webinar from is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnawbe, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. We also acknowledge that Toronto is covered by Treaty 13 with the Mississaugas of the Credit First Nation.

As we have attendees from across Ontario, the IESO would also like to acknowledge all of the traditional territories across the province, which includes those of the Algonquin, Anishnawbe, Cree, Oji-Cree, Huron-Wendat, Haudenosaunee and in addition to the Métis and Inuit peoples.

Engagement Principles

This engagement is conducted in accordance with the IESO's [External Engagement Framework](#), which includes the following principles:

- **Purposeful** – Initiate meaningful conversations that move the sector forward
- **Inclusive** – Invite many voices and diverse perspectives to the table
- **Timely** – Seek input and insight when it can have the most impact
- **Accessible** – Ensure we meet people where they are on their energy journey
- **Traceable** – Allow everyone to follow the path that is being taken
- **Transparent** – Show how engagement helped shape the final outcome

Shared Commitment to Respectful Participation

To support a focused and constructive discussion:

- We will take questions one at a time; please use the raise-hand feature to enter the speaking queue
- We encourage concise and focused comments to allow time for multiple perspectives
- Participants are encouraged to raise relevant points during the discussion and provide more detailed feedback through the written submission process
- We ask that all participants maintain a respectful and professional tone throughout the session
- Facilitators will guide the discussion and manage participation to stay aligned with today's focus and agenda
- Where necessary, we may disable a participant's microphone to manage participation

Purpose and Agenda

Purpose: To provide the sector with an update on the IESO's ERP DER Integration Project, bi-directional operational visibility, and next steps

Agenda:

- ERP DER Integration Project Overview
- IESO-to-LDC Operational Visibility
- LDC-to-IESO Operational Visibility
- Next Steps

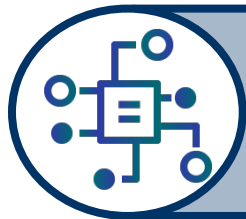


ERP DER Integration Project Overview

Drivers for ERP DER Integration Project



Support provincial resource adequacy needs, while enabling DERs for distribution-level use



Maintain reliability as expanded DER deployment creates transmission and distribution reliability impacts



Move at the pace of change with flexible, accessible solutions for all LDCs while the regulatory framework evolves

ERP DER Integration Project

What

- Implement a pathway for DER aggregations (DERA) to **access the wholesale markets**
- Advance **transmission-distribution (Tx-Dx) coordination**, to support DER participation at both Tx and Dx levels
- Enhance **DER data sharing** between the IESO, LDCs and DER operators.

Establishing a foundation for DERA participation in the IESO-Administered Markets (IAM) is a necessary first step to prepare the grid to support future DER growth

How

- Update IESO tools, systems, processes
- Update IESO Market Rules, Manuals
- Develop a DER data sharing transition plan in consultation with the OEB, LDCs, and DER providers
- Implement mechanisms to:
 - Share information with LDCs, e.g. DR program activation
 - Seek information from LDCs, where system reliability may be impacted

DER Integration Project Will **Not**

- ✗ Control distribution system assets – *the IESO will continue to dispatch wholesale market resources and activate IESO-procured (e.g. LT1, eDSM, etc.) resources*
- ✗ Control distribution system operations
- ✗ Seek LDC information that is not material to the IESO and does not impact bulk system reliability
- ✗ Seek visibility deep into the distribution system
- ✗ Procure DERs

DER Integration Project Outcomes

Wholesale Market Access for DERs

- Enables IESO procurement of DERs
- Enables wholesale revenue opportunities for dispatchable DERs
- Enables DERs to **simultaneously participate** in IESO markets & LDC programs

Market Operational Coordination (Tx-Dx)

- Strengthen how LDCs and IESO coordinate in the **operational timeframe** for dispatchable DERs that participate in the IAM
- E.g. IESO-contracted BESS facilities
- Supports bulk and local system reliability

IESO-LDC Operational Visibility

- IESO to provide visibility into bulk-system activations e.g. Peak Perks, Peak Performance, Capacity Auction
- LDCs to provide visibility into Dx-level activations
- Provides **situational awareness** for both parties

DER Integration Project Approach

ERP is taking incremental steps focused on DER market and operational enablement outcomes within a 5 - 10 year horizon.

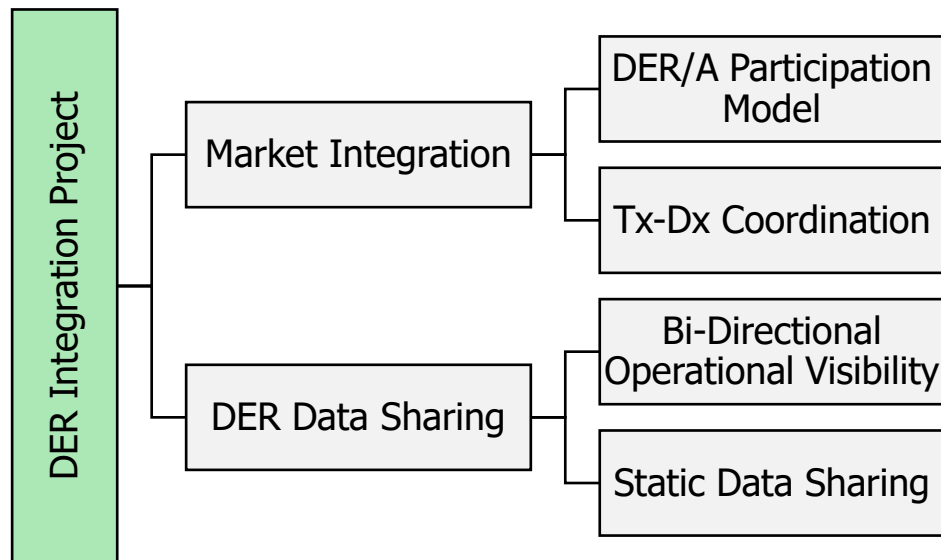
Design Stream	Outcome	Approach
Market Integration	Wholesale market access for DERs	Evolve the IESO's bulk system modeling of Dx-connected resources
		Integrate DER/As into the existing wholesale market framework
	Tx-Dx market operational coordination	Develop foundational coordination protocols with LDCs: (1) hosting DERs participating in the wholesale markets, and/or (2) with local non-wires solution (NWS) deployments
Data Sharing	IESO-LDC Operational Visibility	Implement mechanisms for the IESO and LDCs to exchange relevant static and dynamic operational information for DERs regardless wholesale market participation

Incremental steps include leveraging existing IESO solutions to exchange data to support and settle DERs providing stacked services

DER Integration Project Design Streams

ERP will maintain system reliability in the near-term and prepare for future DER integration at scale.

- 1. Market Integration:** Enable DER/As with dispatchable capabilities to participate in the wholesale electricity markets
- 2. DER Data Sharing:** Advance near-term data sharing & situational awareness of DER activity

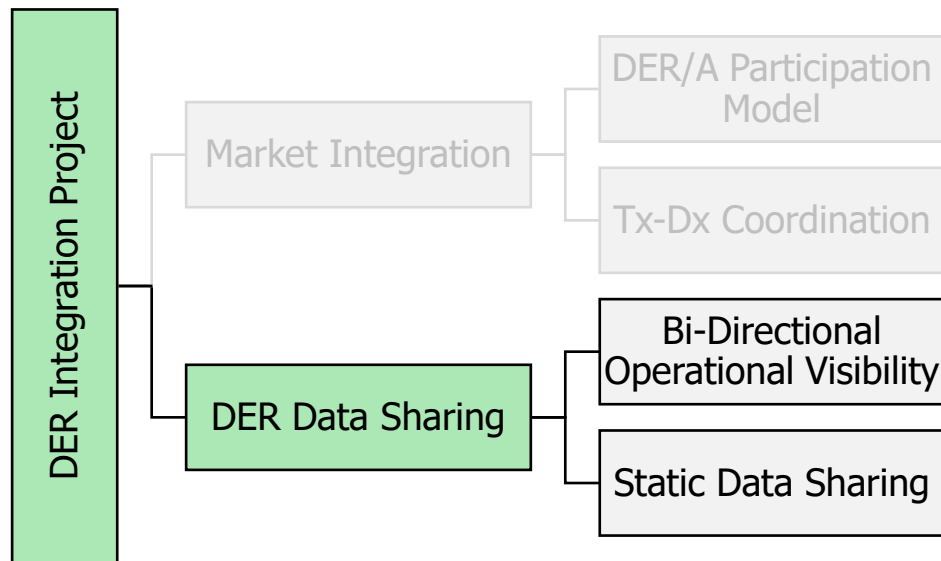


DER Data Sharing

Enhanced data sharing is needed to reflect the growing materiality of DERs.

- Dx-connected storage facilities procured by the IESO are coming online to support bulk system needs, impacting host LDCs
- While local participation is low, data sharing for new and existing DERs supports the IESO maintain market and reliability models, demand forecasts, and security monitoring capabilities
- The IESO's need for data sharing will remain limited until local NWS deployment grows

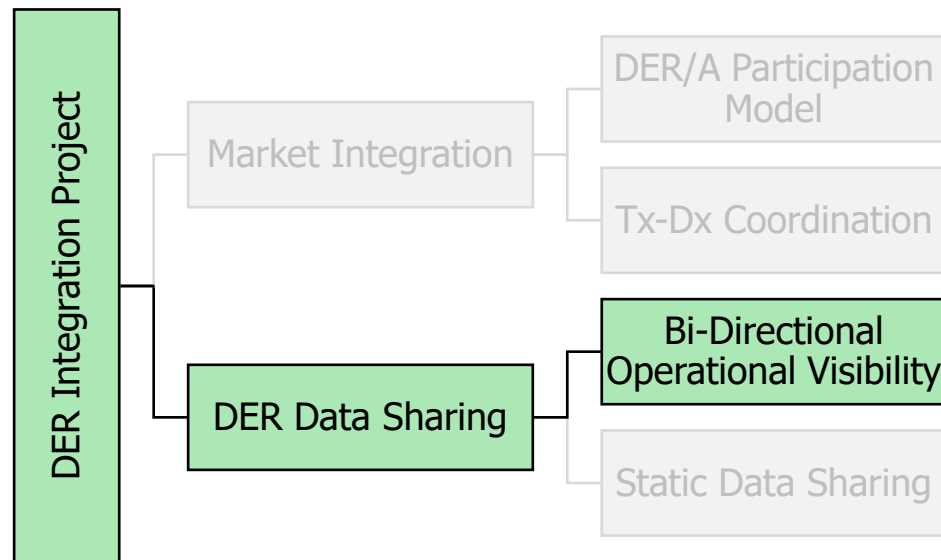
ERP will establish a data sharing framework and transition plan which scales with LDC capabilities and local DER penetration



Bi-Directional Operational Visibility

Bi-directional operational visibility is a growing near-term need across two timeframes

- Approaching real-time, advanced notice of anticipated activity supports the IESO and LDCs prepare bulk and local systems
- In real-time, the IESO is required to monitor the bulk system at Tx-Dx interfaces for local DER activity impacts. LDCs may also want to monitor impacts to their local systems.





Bi-Directional Operational Visibility (IESO-to-LDC)

IESO-to-LDC Operational Visibility

The IESO will **enhance LDCs' situational awareness** of out-of-market¹ DER activity through a new 'DER Activity' web page on IESO.ca providing:

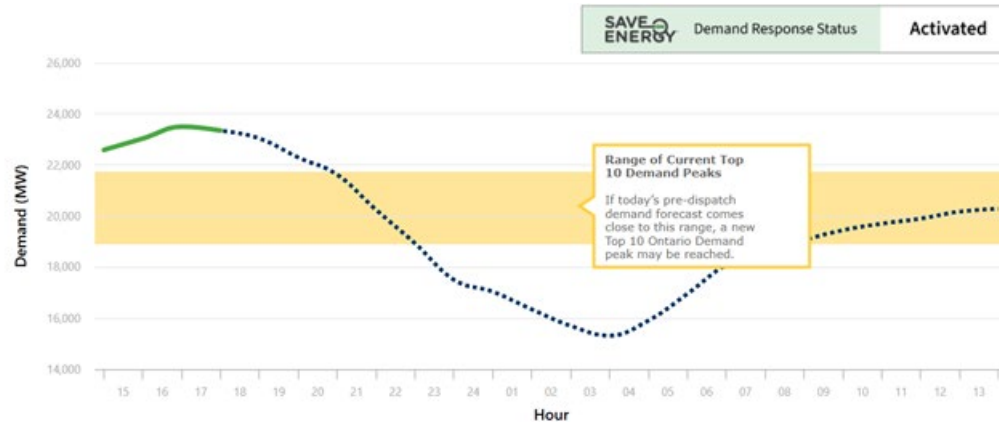
1. Centralized access to existing public DER notifications for system-wide visibility
2. Incremental access to DER activity information aggregated by LDC service territory and/or geographic area
3. Authorized access to more granular visibility of DER information for LDCs managing unique local reliability needs

This includes the IESO's (1) Capacity Auction Virtual Hourly Demand Response resources, and (2) eDSM Peak Perks and Peak Performance DR programs

¹ "Out-of-market" refers to resources not participating as 5-minute dispatchable resources in the IESO-Administered Markets

IESO-to-LDC Operational Visibility – eDSM Save on Energy

- The IESO's Save on Energy (SoE) initiative operates two DR programs: Peak Perks and Peak Performance
- Today, SoE standby and activation statuses appear as overlays on Ontario Demand graphs found on the IESO's [Peak Tracker](#) and [Market Data](#) pages



SoE program status overlay on Peak Tracker's Ontario Demand graph

IESO-to-LDC Operational Visibility – eDSM Save on Energy

The 'DER Activity' page will enhance visibility for SoE Peak Perks and Peak Performance programs by including:

- Total load displacement activated per program
- Number of participants by LDC service area
- Average load displacement per participant (kW/participant)

This provides LDCs with visibility into **when and where** Peak Perks and Peak Performance programs are being put on standby and activated by the IESO

IESO-to-LDC Operational Visibility – Virtual HDR Resources

The IESO's Capacity Auction includes Hourly Demand Response (HDR) resource types for consumers that can reduce electricity usage when called upon by the IESO.

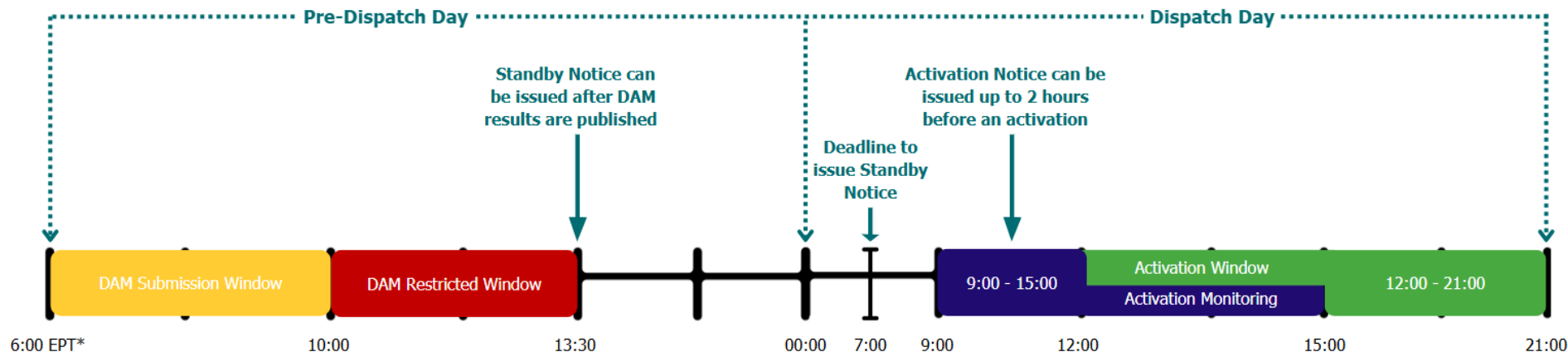
- Virtual HDR resources represent aggregations of Dx-consumers at a single station within each of Ontario's ten electrical zones
 - Dx-consumers forming a Virtual HDR resource can be sited across multiple LDC service territories within a zone; the IESO does not have visibility of their physical connectivity to the bulk system
- Virtual HDR resources receive confidential standby and activation notices within the following timeframes:
 - Standby Notices are issued between 13:30 EPT of the Pre-Dispatch day and 7:00 EPT of the Dispatch Day
 - Activation Notices can be issued any time after 9:00 EPT of the Dispatch Day, up to 2 hours before an activation

IESO-to-LDC Operational Visibility – Virtual HDR Resources

Pre-Dispatch and Dispatch Day

Standby Notices can be issued after successful completion of Day-Ahead Market (DAM)

Activation Notices can be issued during Activation Monitoring**



* EPT= Eastern Prevailing Timezone

**Activation Monitoring takes place only if a Standby Notice is issued

IESO-to-LDC Operational Visibility – Feedback

To support host LDCs maintain local reliability, ERP is seeking feedback on the following:

1. Do DER providers have concerns if required to provide consent for the IESO to share confidential reports, such as Virtual HDR standby & activation notices, with host LDCs?
2. What level of visibility at the Tx-Dx interface would LDCs need over Dx-consumers forming Virtual HDR resources; station- or bus-level?
3. Do LDCs have the capability to support the IESO map IESO-controlled DERs in their distribution systems to relevant Tx-Dx interfaces?



Bi-Directional Operational Visibility (LDC-to-IESO)

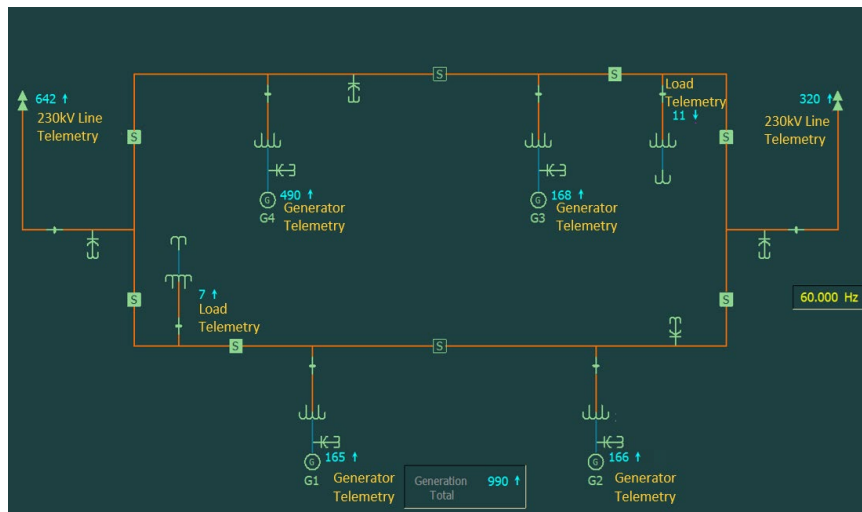
Bulk System Modeling of DERs

The IESO's need for operational visibility is fundamentally driven by DER system modeling complexities.

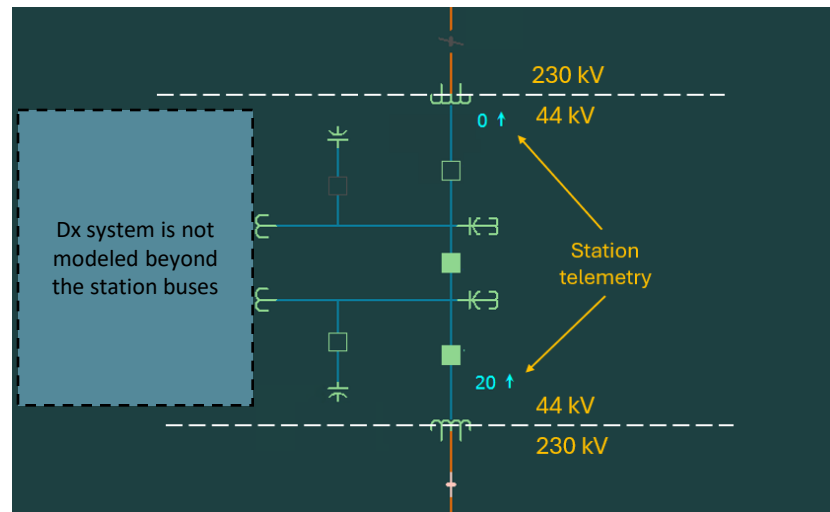
- Most DERs cannot be discretely represented on the bulk system without LDC data and support as the IESO does not model the distribution (Dx) system
- Dx-consumers providing Hourly Demand Response (HDR) are currently represented as virtual aggregations at arbitrary points of connection to the bulk system and their physical connectivity is unknown to the IESO
- DERs providing demand response (DR) are monitored on the bulk system by proxy via real-time station telemetry at Tx-Dx interfaces

LDC support is needed to overcome limitations representing DERs in the IESO's bulk system models. This will enable the IESO to (1) maintain security monitoring capabilities and (2) provide LDCs with greater visibility of DERs operating on the bulk system.

Bulk System Modeling Examples



Bulk system model of a Tx-connected generating station



Bulk system model of a Tx-Dx interface

LDC-to-IESO Operational Visibility

- As DER activity increases, enhanced visibility is needed to maintain situational awareness of potential impacts across Tx-Dx interfaces
- To maintain reliability, the IESO requires operational visibility of Dx-level DER activity at their point(s) of connection to the IESO-controlled grid, when they have material impact on:
 - System adequacy from broad utilization across Ontario, or
 - Tx-Dx interface equipment and limits from concentrated utilization

LDC-to-IESO Operational Visibility

- Today, existing distributor-led NWS deployments manage local congestion primarily by activating local DR programs aligning with the IESO's operational timeframes, such as:
 - Toronto Hydro's Local DR Program targeting 30 MW across 6 stations
 - GrandBridge Energy's GridShare program targeting 5 MW across 3 stations
- In the near-term, LDCs may also deploy DERs to meet needs identified in local and regional planning processes, e.g. dedicated battery energy storage system (BESS) or solar generation at a station

The IESO will continue to apply existing materiality thresholds for conventional bulk-system resources to LDCs with NWS deployments. The IESO will periodically re-evaluate the applicability and materiality of these thresholds as LDCs deploy new types of NWS.

LDC-to-IESO Operational Visibility – Proposed Requirements

Local DER activity materiality thresholds to notify the IESO:

- Greater of ≥ 15 MW or $\geq 10\%$ of annual peak demand at an impacted station (i.e. a Tx-Dx interface connecting to the IESO-controlled grid), or
- $\geq 10\%$ of total annual peak demand across two or more impacted stations

Notification Timing:

- Local DR Programs: LDCs provide standby & activation notice following the IESO's HDR time sequence
- Other NWS Deployments: LDCs provide advanced notice within IAM data submission windows
 - Day-Ahead Market (DAM) window: Between 6:00 EPT and 10:00 EPT the day prior to the dispatch-day
 - Real-Time Market (RTM) window: Following the publishing of DAM results at 13:30 EPT the day prior to the dispatch-day, up to 2 hours before the dispatch hour

Real-time monitoring: Station-level telemetry at Tx-Dx interfaces is already required by the IESO

LDC-to-IESO Operational Visibility – Notification Mechanisms

- ERP is proposing a basic, initial notification process as near-term NWS deployments are not expected to regularly exceed materiality thresholds, and local needs and capabilities are continuing to evolve:
 - If a material NWS activation is anticipated the next day: Email IESO operations
 - If a material NWS activation is anticipated within the same day: Call the IESO control room
- ERP is also considering an interim tool-based mechanism adapted from existing IESO solutions should LDCs expect to regularly exceed materiality thresholds, in the near-term
 - LDCs would be required to submit and actively manage hourly NWS activation data within the IESO's outage management system or as a self-scheduling resource

An enduring notification mechanism will be needed to automate workflows and integrate with new LDC data sharing solutions as NWS deployments scale.

Materiality Thresholds Example 1

The proposed materiality thresholds to notify the IESO of local DER activity anticipated in a particular hour are changes of:

- The greater of **≥15 MW** or **≥10%** of annual peak demand at a single impacted station, or
- **≥10%** of the total annual peak demand across all impacted stations

Station	Peak Demand at Station	10% of Peak Demand at Station	Materiality Threshold at Station	Materiality Threshold across all Stations
Station A	100 MW	10 MW	±15 MW	±50 MW
Station B	150 MW	15 MW	±15 MW	
Station C	250 MW	25 MW	±25 MW	

Materiality Thresholds Example 2

Station	Peak Demand at Station	10% of Peak Demand at Station	Materiality Threshold at Station	Total Materiality Threshold across all Stations
Station A	70 MW	7 MW	±15 MW	±16 MW
Station B	90 MW	9 MW	±15 MW	

Scenario	Station	Local DR Activated at Station	Meets Station Threshold	Total Local DR Activated	Meets Total Threshold	Notify the IESO
1	Station A	5 MW	No	10 MW	No	No
	Station B	5 MW	No			
2	Station A	10 MW	No	20 MW	Yes	Yes
	Station B	10 MW	No			
3	Station A	0 MW	No	15 MW	No	Yes
	Station B	15 MW	Yes			

Local DER Activity Notification Example 1

An LDC has a local DR program impacting a single station.

- If annual peak demand at the station is 150 MW, the materiality threshold for DER activity at the station is **±15 MW**
- The LDC would notify the IESO when **at least 15 MW** of local DR is placed on standby or activated

	Standby Notification			Activation Notification		
Scenario	Local DR on Standby	Meets Materiality Threshold	IESO Notified	Local DR Activated	Meets Materiality Threshold	IESO Notified
1	10 MW	No	No	10 MW	No	No
2	20 MW	Yes	Yes	13 MW	No	No
3	20 MW	Yes	Yes	15 MW	Yes	Yes

Local DER Activity Notification Example 2

An LDC has a BESS DER, a Solar DER, and a local DR program at the same station:

- If annual peak demand at the station is 150 MW, the materiality threshold for DER activity at the station is **±15 MW**
- The LDC would notify the IESO when anticipated **net DER activity at the station is ±15 MW**

Scenario	BESS DER (+ injecting/- charging)	Solar DER (+ forecasted)	Local DR Program (+ DR activated)	Net DER Activity	IESO Notified
1	+5 MW (injecting)	+10 MW (forecasted)	0 MW (DR activated)	+15 MW	Yes
2	-5 MW (charging)	+10 MW (forecasted)	+5 MW (DR activated)	+10 MW	No
3	-20 MW (charging)	0 MW (forecasted)	+5 MW (DR activated)	-15 MW	Yes
4	-20 MW (charging)	+5 MW (forecasted)	+5 MW (DR activated)	-10 MW	No

LDC-to-IESO Operational Visibility – Feedback

- Do LDCs understand the need for materiality thresholds to notify the IESO of local DER activity?
- Can LDCs with local DR programs provide standby and activation notifications following similar timelines to the IESO's HDR notifications?
- Can LDCs with other NWS deployments (e.g. an LDC-controlled BESS) provide notification of anticipated activity within the IESO-Administered Markets' data submission windows?
- In the near-term, do LDCs have a preference for either of the interim notification mechanisms under consideration?
- In the near-term, how often do LDCs with NWS deployments anticipate exceeding the proposed materiality thresholds to notify the IESO?
- In the near-term, are LDCs considering other NWS which **do not** fit within the proposed materiality thresholds, notification timelines, and interim notification mechanisms?



Next Steps

Feedback and Next Steps

To provide feedback on today's session, please use the feedback form on the [ERP DER Project engagement webpage](#) and submit to IESO Engagement at engagement@ieso.ca by **August 7, 2026**.

Next Steps:

September 16-18, 2026	Design Stream: Market Integration • DER/A Participation Model Update: design elements and considerations • Metering and Settlements: introduce design concepts
October 14-16, 2026	Design Stream: DER Data Sharing • Transmission-Distribution Data Sharing: overview of design concepts • Potential Outreach (1:1) on LDC-to-IESO Operational Visibility design considerations
December 14-16, 2026	Design Stream: Market Integration • Review of the following design modules: • Connection & Registration; Grid & Market Operations; Metering & Settlements

Thank You

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