Stakeholder Feedback Summary

York Region Non-Wires Alternatives (YRNWA) Demonstration Project – August 17, 2023

Following the July 27th Distributed Energy Resources (DER) Scenarios and Modelling Study engagement webinar, the IESO invited stakeholders to provide comments and feedback on the materials presented by August 17, 2023.

The IESO received written feedback submissions from:

- Hydro One
- Net Zero Reliability Initiative
- Power Workers Union

The presentation materials and stakeholder feedback submissions have been posted on the IESO stakeholder engagement webpage for this engagement. Please reference the material for specific feedback as the below information provides excerpts and/or a summary only.

The IESO thanks stakeholders for their input and appreciates the thoughtfulness of the feedback. A summary is provided below, which outlines specific feedback or questions and a response.

1. What do you see as the benefits and challenges associated with DERs "stacking" distribution and wholesale services?

Feedback	IESO Response
The primary benefit is more complete and accurate recognition of the benefits at both levels. A challenge is defining the conditions under which a DER should be remunerated for services provided simultaneously at the distribution and transmission level. Opportunities to provide stacked services can help to offset the ownership and operational costs for DERs owners, supporting the energy transition.	Thank you for this feedback. The Procuring Services From DER – DER Scenarios and Modelling study (the 'Study') offered an investigation into value stacking strategies. The YRNWA Demonstration (the 'Demonstration') evaluation report on the engagement webpage provides some additional insights. It is important to continue research and sector discussions on this topic. Offering stacked services indeed allows DER participants to provide grid services at a reduced cost. By spreading the cost of the DER across multiple revenue opportunities, DER participants can improve the economic viability of the DERs' contributions to support the electricity system.
Rural distribution systems present unique challenges to realizing the stacked value of DERs, which is dependent on geographical location.	Thank you for highlighting that there are unique aspects to DER integration in rural distribution systems. While there are specific complexities, these environments can also offer valuable opportunities for value stacking. The Study included modelling for the IEEE 34-bus feeder, which has a longer feeder with smaller-gauge wires. The feeder only serves a small 2 MW load and has high losses. Please see modeling results in the Study report.
Distributor investments in grid modernization has several benefits, including helping facilitate DER providing services.	IESO staff recognizes and supports the role that grid modernization efforts play in integrating DERs. Advanced DER integration capabilities enabled by grid modernization can help Local Distribution Companies (LDCs) facilitate the provision of grid services by DERs.

Stacked distribution and wholesale services provide marginal value to the electricity system. Meaningful opportunities for DERs as Non-Wires Alternatives (NWAs) have yet to be identified. Most system value can be delivered by a large installation within an LDC service area.	The Demonstration's evaluation report provides an illustrative cost-benefit analysis, offering insights into potential distribution and transmission (or wholesale) level value of DERs. It is important to continue to explore this topic area. The Demonstration and the Study were conducted as part of IESO innovation efforts in anticipation of a future where DERs are increasingly cost-effective. Planning studies and grid service procurement strategies generally prioritize the most cost-effective solutions, whether they involve larger resources or smaller, more distributed options. As noted in the feedback received, the anticipated increase in electric vehicle and heat pump adoption presents new, potentially cost-effective opportunities for solutions.

2. In your assessment, how significant is the opportunity to use DER as NWA (i.e., providing distribution services to defer traditional distribution investments)? What do you expect the scale and pace to be?

Feedback	**IESO Response**
The potential is enormous as rapid growth in demand is expected while construction of new grid infrastructure, both supply and wires, may often be constrained.	Thank you for this insight.
The scale and pace of DER growth for NWA purposes depends on commercial terms for DER participants as well resolving regulatory and permitting issues.	We highlight that as part of the Demonstration, rules and contract documents were developed and posted on the public engagement webpage for the project. These documents were successfully used to procure services from DERs in the demonstration and offer a potential template for similar projects to build upon. In fact, there are already examples of pilot projects taking this approach.
The potential depends on: establishing for DER availability, the use of DER Management Systems (DERMS), availability of DERs in target area, and the long-term effectiveness of DERs in deferring capital investments.	Consistent with this feedback, the Demonstration evaluation report notes that the availability of DERs for large-scale NWA projects can be assessed through local DER potential studies. The report also provides insights on the effectives of DERs acting as alternatives to traditional infrastructure, including analysis of their performance in the Demonstration and an illustrative cost-benefit analysis. IESO staff recognizes and supports the role that grid modernization efforts play in integrating DERs, including the potential benefit of DERMS.

3. Do the protocols outlined in the Study provide sufficient detail and clarity in order to further evaluate the coordination models? What additional details and/or protocols (if any) would be beneficial?

Feedback	**IESO Response**
Further study is needed on Transmission-Distribution (T-D) coordination protocols that contemplate a 'host distributor' and an 'embedded distributor'.	Thank you for highlighting the need for further examination on T-D coordination protocols for the cases with 'host distributors' and 'embedded distributors', which is common in Ontario. This topic is currently under investigation by the IESO-hosted Transmission-Distribution Coordination Working Group (TDWG).
The protocols do not provide sufficient detail and clarity. For example, there is no clear process outlined for notifying the DSO/LDC about the typical operating behaviors of installed DERs.	The Study specifically focused on T-D coordination protocols that facilitate the stacking of grid services. There are additional components of T-D coordination, such as telemetry requirements from DERs, that were beyond the scope of this Study. IESO staff will continue to work with communities and stakeholders towards comprehensive T-D coordination across DER integration efforts.

4. Does the Study's modelling component provide sufficient assurance of the feasibility of using DER for distribution and wholesale services? What additional modelling (if any) would be beneficial?

Feedback	**IESO Response**
The local operating reserve concept in the Study may not be feasible in the near-term for long rural feeders.	In line with this feedback, the Demonstration evaluation report acknowledged that the Local Reserve Auction concept was too experimental to include in the detailed analysis. Nevertheless, both the Demonstration and the Study are part of IESO's forward-looking innovation efforts. They focus on preparing for one potential future where DERs are used extensively for grid services.
The Study models "robust feeder design", suggesting feeders are short in length, heavily loaded, and have very good end-of-line voltages. However, rural feeders do not fit this model.	The Study also included modelling for the IEEE 34-bus feeder, which has a longer feeder with smaller-gauge wires. The feeder only serves a small 2 MW load and has high losses. Please see the modeling results in the Study report for additional information. That said, IESO staff agree that further examination of this topic area would be beneficial.
The Study indicates that the impact of DERs providing bulk system services on distribution losses is minor, affecting market solutions and dispatch only slightly. However, distribution losses vary depending on a number of variables, including the distance over which electricity is transported.	IESO staff agree with the comment. In the Study report, it is noted that the IEEE 34-bus feeder only serves 2 MW of demand, but the losses reach up to 0.28 MW, which is about 13.6% compared to peak load on the feeder.
The Study does not provide sufficient assurance. The opportunity to use DER as NWA is not sufficiently significant to warrant a DSO model. The Study showed that DER provided little additional value beyond capacity. There was no identified need to dispatch them at other times.	The Demonstration and the Study are part of IESO's forward-looking innovation efforts and an exploration of local market-based approaches for securing and operating DERs. These initiatives seek to prepare for one potential future where DERs are used extensively for grid services. IESO staff believes it is important to continue research and sector discussions on this topic.

General Comments: The feedback submissions included general comments and feedback, captured in the below table.

Feedback	IESO Response
The Study focused on distribution losses while DER can decrease losses at the transmission level as well.	The Study focused on distribution system losses to better understand the net impact at the transmission-distribution interface when DERs are dispatched by the IESO.
It would be useful to assess the ancillary services available from DERs.	Thank you for this suggestion. IESO staff have taken note of it.
Would the Dual Participation approach involve different requirements compared to the well-defined existing rules for participants in the wholesale IESO market?	The Dual Participation model involves DERs directly participating in the IESO's transmission-level services and DERs directly participating in a DSO's distribution-level services. This approach is generally consistent with today's roles and responsibilities for DER or DER Aggregator (DER/A) participants, distributors, and the IESO. To enable this approach, coordination protocols are required to detail the necessary operational actions and information exchanges among the relevant parties to ensure the power system operates reliably and effectively.
The IESO should assess how various programs and incentives could speed up the adoption of technologies like electric vehicles, heat pumps, and hydrogen. Programs and incentives represent an approach that could diminish the need or value of implementing DSO models.	Thank you for this feedback. The use of programs and incentives is outside the scope of this study but is certainly of interest to the IESO. The IESO has used programs extensively historically and continues to use this tool today (information is available at SaveOnEnergy) and into the future.