Feedback Form

Distributed Energy Resource (DER) Scenarios and Modelling Study for the IESO's York Region Non-Wires Alternatives (NWAs) Demonstration Project – July 27, 2023

Feedback Provided by:

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Email: Click or tap here to enter text.

Date: August 17, 2023

Following the July 27th DER Scenarios and Modelling Study engagement webinar, the IESO is seeking feedback on a number of questions related to the Study.

Please provide feedback by August 17, 2023 to engagement@ieso.ca. Please use subject header: *DER Scenarios & Modelling Study*. To promote transparency, this feedback will be posted on the IESO York Region Non Wires Alternatives Demonstration Project webpage unless otherwise requested by the sender.

The IESO will work to consider and incorporate comments as appropriate in the final DER Scenarios and Modelling Study report. Thank you for your contribution.

Specific Questions for Comment/Feedback

Topic	Feedback
What do you see as the benefits and challenges associated with DERs "stacking" distribution and wholesale services?	Hydro One recognizes the opportunities and benefits that the "stacking" of distribution and wholesale services can provide. Additional opportunities to provide value-added services can help to offset the customer cost of ownership and operation of DERs and support a more equitable energy transition. Hydro One's vast and rural service territory presents unique challenges for the optimization of stacking given the location of the DERs will determine the stacking opportunities. Maintaining a safe and reliable grid while unlocking consumer participation through DERs is enabled through grid modernization. Utility investment in grid mod will address some of the challenges posed as it allows DERs to more fully participate in wholesale opportunities to compete with other future procurement processes. Grid modernization provides greater choice and flexibility to customers to connect to the grid and contributes localized value-added services back to the distribution system and greater society benefits.
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?	From a distribution perspective, Non-Wires Alternatives have the potential to defer certain capital investments, such as investments required to address capacity issues, but this will depend on a few considerations noted below: 1. Explicit contracts that enforce DERs to be available for Reserves. 2. DER Management Software (allowing for the scheduling of DERs, if capacity constraint is longer than anticipated) 3. Concentration of DERs in an area (i.e., Localized pricing incentives etc.) 4. Effectiveness of DERs in deferring investments over a longer period.

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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?	While the study report is undoubtedly valuable, further study is required to understand the participation protocols for a Host Distributor. For example, the study assumes that the ISO and the DSO have coordination processes to mutually inform each other of possible abnormalities. However, there could also be grid abnormal operating conditions on the Host Distributor's system that the DSO and the ISO would not see. This can present a technical constraint that could adversely impact the DSO's system, and in an extreme case, impact the ISO's system. In the context of this project, it should be noted that some of Alectra's (DSO) feeders are fed from Hydro One (Host Distributor). If abnormalities are only being exchanged by the DSO and ISO, then the markets could see distorted pricing signals that do not include constraints within the Host Distributor's system.

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?	This study uses parameters specific to Alectra's service territory. The applicability of the study's findings to other utilities, such as Hydro One which has more rural feeders, needs to be evaluated. For example: 1. The study models "robust feeder design", which Hydro One interprets to mean that the feeders are short in length, heavily loaded, and have very good end of line voltages. A typical Hydro One feeder would not fit this model as Hydro One transports power to rural communities across Ontario and has feeders that are much longer in length. 2. The Key Findings section of the study report states that "Review of losses impacts from the feeders in this project shows that DERs providing bulk system services would have a minor impact on distribution losses, and in turn a minor impact on dispatch and market solutions; several DER locations were considered across the feeders modeled as part of this analysis." (Page viii of the EPRI Draft Report). Distribution system losses greatly depend on several factors, such as the relative size of the DER compared to the load, and the distances over which the bulk of the power is being transported. As the feeder length and the size of the DERs increase, the feeder would experience higher distribution losses, which would impact dispatch and market solutions. Also, this report and its findings can only be applied to electrical systems where there is no Host Distributor. Given there are approximately 55 LDCs in Ontario, about 90% of LDCs have feeders with Host Distributors. Feeders that contain Host Distributors are typically in "rural" areas. Recalling the Feed-in-Tariff (FIT) program, many of the DERs connections were in rural areas, and not large cities. DER penetration in the future could follow a similar pattern, and DERs will connect to many feeders that contain a Host Distributor. In addition, the DER-provided Operating Reserve (Scenarios 4a and 4b) may not be feasible in the near-term for long rural feeders, as most often feeder constraints will be exceeded before the full capacity of

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	the DER can be utilized. This scenario would become feasible only when there are many Dispatchable DERs in strategic locations (which is currently out of the utilities' control).

General Comments/Feedback

The EPRI Report has confirmed that the Total DSO model is feasible to be applied in the province under the IESO DER Market Vision and Design Project. Hydro One believes that additional refinements of EPRI's proof of concept study, such as evaluating the impact of DERs connected to rural feeders, and the participation of a Host Distributor, are still required for full model implementation.

Hydro One requests the IESO to clarify how the work of the TDWG and its focus on the Total DSO protocols will be adopted or addressed within the DER Market Vision and Design Project. Hydro One would encourage the IESO to convene the relevant stakeholders to discuss how these two streams of work intersect.