Distributed Energy Resources (DER) Potential Study – September 30, 2022

Feedback Provided by:

Name: April Barrie

Title: Director, Regulatory Affairs

Organization: Hydro Ottawa Limited

Email: [redacted]

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The Independent Electricity System Operator (IESO) is seeking feedback and welcoming questions in relation to the Ontario DER Potential Study, which was published in-full on September 30, 2022.

The final study materials (the main report, the supplemental methodology/assumptions report, MS Excel Appendices, and updated results presentation), can be found on the DER Potential Study webpage.

Please provide any feedback and questions by October 28, 2022 to engagement@ieso.ca. Please use subject header: *DER Potential Study*.

To promote transparency, submitted feedback will be posted on the DER Potential Study webpage unless the sender requests otherwise.

The IESO will consider this feedback in the organization's future work, including but not limited to DER integration. The IESO will publish a document responding to feedback, and with support of the project consultants, respond to any technical questions relating to the study.

Thank you in advance for your contribution.

Topic	Feedback
Does the report highlight the most relevant results and takeaways from the study? What other results or messages from this study are of high importance?	Hydro Ottawa believes the report highlights the most relevant results and takeaways regarding DER potential as it provides a good baseline for how DERs can aid the pending capacity and energy needs. Hydro Ottawa agrees that the "primary recommendation" on page 79 and 80 of the report, "Enabling DERs - Initiatives to unlock the identified potential for DERs by expanding participation pathways", is key. Utilities are uniquely positioned to expand participation pathways, initiate new DR programs, and act as an enabler of DERs. The report also highlights participation pathways that include Conservation and Demand Management (CDM) Integration. Hydro Ottawa suggests that the IESO should leverage and coordinate with Local Distribution Companies (LDCs) in the short term through their recently announced residential demand response program to capture near term value both at the system level and distribution level as highlighted in Table 8-1. As reported on page 84 and 85 of the report the current framework for compensating DERs only reflects the value of the DER as a supply resource and does not reflect the value associated with the deferral of grid investments. Hydro Ottawa agrees Transmission and Distribution (T&D) compensation framework is needed and suggests this model or methodology should be developed collaboratively.

Topic	Feedback
	Hydro Ottawa highlights below some additional messages that it believes are of most importance: 1) DR capacity will increase despite increasing load due to electrification, and the need to commensurate with more reserve. 2) DR capability may be underestimated. If every electricity customer in Ontario reduced 40W-coincident toward the provincial peak, the peak would drop by ~170MW (see additional details in the General Comments/Feedback below). 3) As mentioned above, Hydro Ottawa agrees with the conclusions on "Coordinating on DERs". Hydro Ottawa encourages active engagement with all stakeholders, including LDCs, and in attainment of a new LDC business model. 4) Taking into consideration that customers will implement DERs regardless of cost-effectiveness, is sound. Hydro Ottawa notes that it has received more queries from Industrial Conservation Initiative (ICI) customers who are subject to Global Adjustment (GA) who are considering fossil fuel generation to offset GA costs; proposed capacity may be equivalent to their average monthly peak load.

Do the recommendations capture appropriate actions to acquire the DER potential revealed in the study? Based on the study results, are there other actions that should be considered?	Overall Hydro Ottawa finds the recommendations in the study for acquiring DER potential needs more detail than provided in the report. Other considerations should include: 1) A not insignificant barrier to DER uptake by TOU customers: Net-Metering (NM) without Time-of-Use consideration significantly increases Res & Scom prosumer electricity bills when they undertake electrification than if they were electrifying without net-metering. Without an incentive to shift their electricity peak to more grid-friendly times, their usage behaviour may be counter productive to wholesale or local grid efforts. This barrier will need to be addressed soon. Given the expected DR off-setting new growth doubling the present BAU case in the accelerated scenario, the likelihood of more prosumers in this problematic scenario (NM w/electrified flexible loads) will increase. 2) The provincial wholesale need is not coincident with every LDC asset peak. Thus, consideration should be given to the potential for detrimental effect of not coordinating DR with the LDC operations and asset loading conditions. 3) Technology Costs: considering the present economic outlook, will the assumed decline in upfront costs materialize?

Topic	Feedback
	4) Aggregator pass through: Need to address questions such as: what is the anticipated total dollar amount?; what is the value to the prosumer?; and is there any knowledge of the value of savings that may pass through to the prosumer? In addition, please see two items Hydro Ottawa believe should be clarified: 1) With reference to slide 24 of the June 22, 2022 Session 3 presentation, it would be good to clarify if the "other DERs" are only those listed in the report appendices, since they are in total equivalent to ~50% of the top six. 2) Near-term > Residential HVAC DR > has consideration been given to the effectiveness based on NRCan studies and trials, in particular New Brunswick & Quebec? Hydro Ottawa had prepared a study with the City of Ottawa for supplementing fossil fueled boilers with electric heating elements and demonstrated both reduced operating cost and carbon footprint while avoiding Global Adjustment.

Building on the work completed in this study, are there other areas of analysis that should be considered or undertaken that can provide meaningful insights for the IESO and others in the sector?	Hydro Ottawa believes that the IRRP is an appropriate forum for analysis for DER solutions; however, the current frequency and structure of the IRRP process does not align to customer timelines. An ad hoc review committee, which has access to a provincially developed framework that considers T&D benefits PLUS base capacity avoidance benefits, would be greatly beneficial in assessing DERs as a potential solution where timelines are prohibitive for traditional wired solutions to capacity constraints. This would differ from the current Cost Benefit analysis which only contemplates T&D benefits. A portion of the IESO base load capacity capital should be apportioned to Utilities who can solve location based capacity constraints (within the customers timelines) without needing to access incremental base load from the grid (even if as a stand alone it is not the lower cost option versus provincial large scale capacity procurement). Other areas of analysis to consider are: 1) Consider new Net Zero Community (NZC) builds and the capacity they will need. 2) Vehicle to Grid (V2G)/business – yet to be proven; likelihood of V2home << V2G/business 3) V2B/G, residential behind the meter storage, Front of the Meter (FTM) solar and FTM storage could emerge as significant growth opportunities. This could be addressed in the Ontario Energy Board's (OEB) DER Working Group Tranche 5.

	4) Near-term > EVs > potential with fleets should be leveraged early given that electrical service upgrade costs can be reduced if DR and other EV charging management regimes can be implemented. 5) Align Telemetry and Metering Requirements with Expected Resource Contribution: The IESO should adopt telemetry requirements that are tailored to the expected service provision, the magnitude of contributions and capabilities of different resources and aggregations of resources (slide 31 of the June 22, 2022 Session 3 presentation). This should be done with LDCs. 6) Integrating DERs: The IESO's burden in gaining visibility to DERs for their operating and planning needs by leaving the LDCs to aggregate the embedded DER data to the IESO nodal points of interest. 7) Was any consideration provided for timelines to achieve the capacity needs in the business case analysis? The opportunity cost of insufficient traditional capacity (distribution, transmission or base load) to meet customers' timelines could mean lost revenues, and should be contemplated in some form when evaluating alternatives. 8) How much of the AP can be stacked? Meaning, will it add value to both winter and summer peaks?

Topic	Feedback
	9) A standard approach to calculating the benefits attributable to improved resiliency or reliability should be developed and built into the cost benefit analysis.

General Comments/Feedback

- Short term, LDCs should be very interested in DR as a system resource, both residential and commercial. We understand the value they can bring to the bulk (provincial) system in addition to the opportunity they present to utilities to manage local system needs.
    - For the benefit of the customer (and to maximize the opportunity and value), the customer's participation experience should be a top priority when designing how these programs should work.
    - In order to deliver the most value and best customer experience, the IESO must be willing to work with utilities to enroll customers (both residential and commercial) into DR programs where the customer could be called by the province, or by their local utility to curtail load. Customers should be able to receive benefits from both entities and not have to choose to participate in competing programs.
    - It is Hydro Ottawa's opinion that in order to achieve the maximum benefit of any DR program for the province as a whole, the technology and telemetry required for the LDC to act as a system operator for local needs in concert with the IESO should be well understood prior to wide-scale deployment.
- LDCs, who own the customer relationship and are in an optimal position as a trusted energy advisor to their customers, should have a primary role in business development for DR programs or other programmatic DER opportunities in order to maximize the opportunity for both IESO and LDCs.
- As identified by the report, as well as the OEB's Framework for Energy Innovation Working Group (FEIWG), one of the barriers to enabling the adoption of behind the meter resources is that they aren't currently compensated properly by the current regulatory marketplace. Rate structures allowing customers choice to further enhance the business case to adopt these resources would reduce the financial risk to adoption.
    - Also outside of IESO's mandate, the OEB needs to address the financial disincentives identified by the FEIWG for utilities to further enable the adoption of DERs.

IESO highest peak				
summer'06	27,005	MW	5,057	W coincident per ON Elect. Cust.
winter'04	24,979	MW	4,678	W coincident per ON Elect. Cust.
Typical peak	22,000	MW	4,120	W coincident per ON Elect. Cust.

5,340,000	ON Electricity customers (2020 IESO stat)		
THUS ...			
41	W coincident curtailed/cust	1%	percent of Typical coincident pk/ON Elect. Cust. curtailed
176	**MW total curtailed**		

Questions Relating to this Study

Questions are noted above in the Feedback column.