Elson Advocacy

July 22, 2025

BY RESS

Ritchie Murray
Acting Registrar
Ontario Energy Board
2300 Yonge Street, Suite 2700
Toronto, Ontario M4P 1E4

Dear Mr. Murray:

Re: EB-2025-0060: Distribution System Operator Capabilities

We are writing on behalf of Environmental Defence to provide comments regarding the OEB Staff Report on Distribution System Operator ("DSO") capabilities. Environmental Defence strongly supports the OEB's work on DSO capabilities and related initiatives.

Responses to the discussion questions posed by the OEB are set out below. Overall, Environmental Defence submits that DSO capabilities are vitally important to minimize electricity system costs in the face of electrification. The three proposals set out in the OEB Staff Report are appropriate, but only if they are implemented in such a way that they avoid locking distributors into a simplified DSO approach and allow leading distributors to develop more advanced approaches now. Progress on DSO capabilities is urgent because distributors are already facing decisions between wires and non-wires solutions today and the IESO is in the process of procuring resources without fully accounting for locational benefits, including the dual use of resources to also meet distribution system needs.

Environmental Defence also asks that the OEB prioritize and expedite its work to account for all Distributed Energy Resources ("DER") benefits in the DER benefit-cost framework and to remove the incentive for distributors to invest in traditional infrastructure over non-wires solutions. These are essential steps that need to be taken as soon as possible.

Responses to Discussion Questions

What are your views on the opportunity and policy objectives for DSO capabilities? What are your views on the use cases and value of DSO capabilities for Ontario, including the importance of DSO capabilities in capturing more of the benefits DERs can provide?

DER/As and DSO capabilities are vital for the future of Ontario's electricity system. In particular, DER aggregators (DER/As) will be essential to minimize customer costs as

Elson Advocacy Professional Corporation
Kent@ElsonAdvocacy.ca
1062 College St., Toronto, ON M6H 1A9
tel: 416 906-7305
fax: 416 763-5435

electrification proceeds. This includes all DERs, such as distributed generation, energy efficiency, and demand response, as well as DER/As.

Increases in electricity demand do not need to result in increases in electricity prices if demand is managed appropriately. It is even possible that increased demand could result in decreased prices if we are able to add generation, transmission, and distribution solutions that are cheaper than the current mix. If we can achieve that, the increased revenue from greater electricity sales will more than offset the increased electricity system costs. The only way this can be achieved is to move beyond the simplistic hub-and-spoke model, with large generation facilities supported by large transmission and distribution infrastructure, to a decentralized model reliant on DER/As.

The key advantage of DER/As over large, transmission-connected generation is that they can avoid transmission and distribution infrastructure. Although they can provide other benefits (e.g customer cost reduction, backup power, improved resiliency, improved reliance, etc.), the transmission and distribution cost savings are key. DSO capabilities are important in order to capitalize on the full range of these benefits. Most importantly, distributors must be able to rely on DER/As to meet distribution system needs, through direct control or mass-market price signals, and remunerate DER/As, through contracts or pricing.

How should the OEB's objectives (as set out in section 1 of the OEB Act) be balanced and reflected in the development of a DSO policy framework for Ontario?

All of the OEB's objectives with respect to electricity regulation are aligned with prioritizing the development of DSO capabilities. Each objective is set out below, followed by a discussion of how it can be reflected in developing a DSO policy framework.

1. **To inform consumers and protect their interests with respect to prices and the adequacy, reliability and quality of electricity service.** As noted above, the development of DSO capabilities is essential to protect the interests of customers with respect to the price of electricity service. DER/As can also improve reliability and quality, particularly with inverter-based DERs.

2. **To promote economic efficiency and cost effectiveness in the generation, transmission, distribution, sale and demand management of electricity and to facilitate the maintenance of a financially viable electricity industry.** Economic efficiency can only be achieved if DER/As are remunerated for the benefits they provide to the system and if distributors are capable of realizing the benefits of DER/As (e.g. through control and monitoring via cost-effective Distributed Energy Resources Management Systems, or DERMS).

3. **To promote electricity conservation and demand management in a manner consistent with the policies of the Government of Ontario, including having regard to the consumer's economic circumstances.** DSO capabilities are an important tool to promote energy efficiency and demand management.

4. **To facilitate innovation in the electricity sector.** DSO capabilities are inherently innovative and align perfectly with this goal.

Is an evolutionary approach to developing DSO capabilities appropriate for Ontario to pursue in order to achieve the policy objectives set out in the Staff Discussion Paper?

The answer to this question depends on what is meant by an "evolutionary approach." An evolutionary approach is good if it allows each utility to move forward in developing DSO capabilities at a pace, which they are capable of maintaining. An evolutionary approach will not be ideal for meeting the OEB's objectives if it holds LDCs back who are ready and capable of pursuing more advanced approaches to DSO.

What are your views on each of the three proposals presented in the Staff Discussion Paper?

Proposal 1: Mandatory and Standardized Assessment Methods

Environmental Defence supports this proposal to the extent that it signals an openness to prudent grid modernization investments, but only if these efforts do not have the effect of delaying work at the distributor level. Under this proposal, the OEB would establish standardized tools for distributors to assess the need for certain grid modernization investments and DSO capabilities to address system needs with the aim of supporting distributors in bringing forward proposals for grid modernization investments in their rate applications. We agree that distributors need a signal from the OEB that the long-term benefits of grid modernization will be recognized when grid modernization investments are proposed in rate applications.

However, there is a risk that this proposal could hold distributors back if the work to develop standardized assessment methods is not carried out quickly and effectively. Also, distributors are already proposing grid modernizing investments. It is important that this proposal not result in distributors being discouraged from continuing to do so while awaiting the result of the OEB's work.

Proposal 2: Simplified DSO Model Development

Environmental Defence supports this proposal but believes it is largely already in place and should not hold up more advanced DSO model development. Distributors are already required to consider non-wires solutions to distribution needs and are already capable of procuring non-wires solutions.

Environmental Defence agrees with the concerns expressed by many distributors that a simplified DSO model could become entrenched and preclude greater advancements. Although a simplified model is good for now, and is in place for now, that need not and should not prevent leading distributors from moving beyond it.

According to the Staff Discussion Paper, under a simplified model, "DER/As would be activated to provide services to the distribution system through programs, rather than markets." Any

interim approach involving a simplified DSO model should not preclude open procurement processes that could be described as markets.

Proposal 3: Advanced DSO Model Development

Environmental Defence strongly supports this proposal. There are important limitations to the simplified DSO model, including that DER/As would continue to directly participate in the wholesale market. Requiring separate participation in the wholesale market alongside contracting with distributors increases transaction costs and creates timing issues that can undermine what would otherwise be a viable project. An improved, integrated approach is needed to capture and remunerate the full range of DER/A benefits with respect to the generation, transmission, and distribution systems.

How should the OEB best balance the benefits of a standardized approach relative to the innovation and insights that could be gleaned from enabling greater flexibility and diversity through experimentation?

In most instances, it is best for the OEB to allow for flexibility and diversity through experimentation. Standardization is difficult due to the innovative nature of DSO capabilities and can add risks by reducing diversification.

However, the OEB should encourage distributors to work together to find efficiencies wherever possible, which will likely result in increased standardization. For instance, distributors may be able to save costs by jointly purchasing systems or equipment. They can also learn from each other. By encouraging these activities, the OEB can enhance standardization without the risk of being overly prescriptive.

Align Incentives via Distributor Remuneration and Appropriate DER Valuation

Environmental Defence also asks that the OEB prioritize and expedite its work to account for all DER benefits in the DER benefit-cost framework and to remove the incentive for distributors to invest in traditional infrastructure over non-wires solutions. The lack of incentive alignment and appropriate price signals is a major impediment that needs to be removed as a priority. Although we understand that both issues are being dealt with in different OEB processes, they are worth mentioning here.

It is critical that the incentive to choose traditional infrastructure solutions over non-wires solutions is eliminated. The rationale for this is obvious. Distributors will do what the OEB incentivizes them to do.

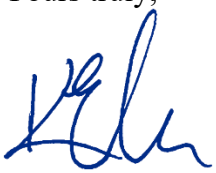
The challenge is even greater for valuations of DERs. It is critical that the OEB complete the development and roll out of the system cost test as the current distributor cost test excludes the large majority of DER benefits (i.e. avoided energy costs). For further details, see the attached submissions on the BCA framework.

Conclusion

As noted above, distributors are already facing decisions between wires and non-wires solutions and the IESO is in the process of procuring resources without fully accounting for locational benefits, including the dual use of resources to also meet distribution system needs. The OEB's work on DSO capabilities needs to proceed on an expedited basis to ensure that distribution system needs are met in the most cost-effective manner and that generation resources are sited where they can provide the greatest cost reductions. This includes work to ensure that all DER benefits are accounted for in the DER benefit-cost framework and to remove the incentive for distributors to invest in traditional infrastructure over non-wires solutions. These steps, plus more advanced DSO enabling activities, will be key to affordability and cost minimization over the coming decades.

Thank you for the opportunity to make these comments.

Yours truly,



Kent Elson

January 26, 2024

Nancy Marconi
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, Ontario M4P 1E4

RE: Draft Benefit-Cost Analysis Framework for Addressing Electricity System Needs (EB-2023-0125)

Dear Ms. Marconi:

I have been asked by Environmental Defence to provide high-level comments on the Ontario Energy Board's (OEB's) Draft Benefit-Cost Analysis (BCA) Framework for Ontario's electric utilities to apply when assessing a non-wires solution (NWS). I am providing comments as an economist with extensive expertise in cost-effectiveness analyses of electric and gas utility investments, not as an advocate for the position of any party, including Environmental Defence. What follows is a summary of my background in benefit-cost analysis, an overview of my primary concerns with the OEB's proposed BCA framework, and some commentary on the likely adverse impacts of the OEB's proposed BCA framework on Ontario's electric ratepayers.

I. My Qualifications

I have been involved in leading or critiquing benefit-cost analyses of literally hundreds, if not thousands of energy efficiency, demand response, strategic electrification and other distributed energy resource programs in dozens of U.S. states and Canadian provinces over the past thirty years. I am also one of the co-authors of the 2020 *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* (NSPM for DERs),[1] which is referenced in several places in the OEB's draft framework, as well as one of the co-authors of its 2017 predecessor, the *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources* (NSPM for EE).[2] I have presented on the principles, processes and methods recommended in those manuals to dozens of audiences across the U.S. and Canada. In fact, I am tentatively scheduled to teach a two-day training course on the NSPM and benefit-cost analysis as part of an Association of Energy Services Professionals (AESP) conference in Toronto this coming July. I am also currently part of a team hired by Maryland's energy regulators to lead a working group process to develop a common benefit-cost test to apply to all DER investment decisions, as well as part of a team leading a similar working group process in Nova Scotia.

[1] https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/
[2] https://www.nationalenergyscreeningproject.org/the-national-standard-practice-manual-for-energy-efficiency/#:~:text=The%20NSPM%20for%20EE%20provides,longer%20be%20updated%20or%20maintained.

In addition to that benefit-cost analysis expertise, I have extensive experience with consideration of non-wires solutions and gas non-pipe solutions. That includes authoring two seminal reports on the U.S. experience since the 1990s with energy efficiency as part of non-wires solutions.[3] It also includes direct, multi-year involvement in the design and development of pilot non-wires pilot projects with the two largest investor-owned utilities in Michigan (DTE and Consumers Energy). The work with DTE, which is still on-going, included development of a benefit-cost analysis framework. A copy of my CV is attached.

II. Comments on Proposed OEB BCA Framework

A. Overview

The draft BCA framework for NWSs is inconsistent with the NSPM and violates key economic principles. It is worth noting that the NSPM for DERs has a chapter on non-wires solutions and that one of the key points summarized at the beginning of that chapter is as follows:

> *"NWS initiatives may have broad impacts on the utility system – beyond avoided T&D costs. Cost-effectiveness analyses of NWS initiatives should account for all relevant impacts included in a jurisdictions' JST."*[4]

JST is short for jurisdiction specific test. As the NSPM makes clear, a JST should (1) include all utility system impacts (costs and benefits); and (2) include all additional non-utility system impacts (costs and benefits) that the jurisdiction's energy policies suggest are important goals or objectives. The core of my concern with the OEB's proposed BCA framework for assessing NWSs is that the OEB's proposed primary test of cost-effectiveness – what it calls the Distribution Service Test (DST) – does neither of those things. It excludes many potential impacts of an NWS – both utility-system and non-utility system impacts. Most of the excluded impacts are likely to be benefits for most potential scenarios in which a utility might consider investing in DER deployment as part of an NWS. This is not a minor or inconsequential concern. It is a fundamental concern with huge implications for the number of NWS projects that will appear to be cost-effective, for the range of DERs that might be deployed as part of NWSs, for impacts on the environment, and – perhaps most importantly – for costs to ratepayers.

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[3] Neme, Chris and Jim Grevatt, *Energy Efficiency as a T&D Resource: Lessons from Recent U.S. Efforts to Use Geographically Targeted Efficiency Programs to Defer T&D Investments*, published by Northeast Energy Efficiency Partnerships, January 9, 2015 (https://neep.org/sites/default/files/products/EMV-Forum-Geo-Targeting_Final_2015-01-20.pdf) and Neme, Chris and Richard Sedano, *US Experience with Efficiency as a Transmission and Distribution System Resource*, published by the Regulatory Assistance Project, February 2012 (https://www.raponline.org/wp-content/uploads/2023/09/rap-neme-efficiencyasatanddresource-2012-feb-14.pdf).

[4] NSPM for DERs, p. 12-1.

B. Failure to Include All Utility System Impacts in Primary Test

As just noted, one of the core principles of the NSPM is that all utility system impacts associated with a DER investment should be included in any benefit-cost analysis of that investment. The OEB's proposed DST includes 100% of the utility system cost of deploying DERs as an NWS. However, the only utility system benefits that it includes are reductions in costs associated with investments in the distribution system. Many other electric system impacts are excluded, most notably impacts on generating capacity, transmission capacity and electric energy costs. For most DERs, those excluded impacts are likely to be benefits. Thus, the OEB's proposed DST also violates the NSPM principle of symmetrically treating cost and benefits – i.e., it includes 100% of the utility system costs of investing in NWS resources, but only a portion (the impacts on distribution system costs) of the benefits.

The OEB offers electric utilities the option to also conduct an Energy System Test (EST) that includes those other system impacts. However, it has made clear that (1) though it is encouraged, an EST is not required; (2) the results of the DST "will be the primary consideration for assessing rate funding of an NWS";[5] and (3) EST results are likely to affect decisions on NWS investments only in cases in which "an NWS was found to be marginal non-cost-effective when applying the DST."[6] Thus, the inclusion of the EST as an optional secondary test is likely to have relatively little effect on NWS investment decisions.

The OEB's rationale for relying primarily on a DST is unclear. The Board states that the perspective of this test is to "optimize…long-term net distribution service benefits".[7] However, it does not explain why that is the right primary objective. Why would a solution that has lower costs for one part of the utility system (i.e., distribution costs), but higher costs for the utility system as a whole, be better for customers? If a $1 million energy efficiency resource investment can provide only $0.5 million in distribution system cost reductions but another $2 million in avoided generation, avoided transmission and avoided energy benefits (i.e., $2.5 million total benefits, or $1.5 million in net utility system benefits), why is that not a good investment for ratepayers? The Board's proposed reliance on the DST is analogous to saying that an individual that has deficiencies in iron, Vitamin D, Vitamin B6 and Vitamin B12 is better off spending $10 for four different bottles of supplements (one for each mineral or vitamin deficiency) rather than $20 for a bottle of multi-vitamins that would simultaneously address all of the deficiencies.

It is possible that the intent of the OEB's focus on the DST is to address only those impacts of an NWS investment that affect the costs paid by distribution utility customers, which I understand is somewhat complicated because cost reductions associated system peak demand reductions produced by a local distribution company (LDC) may not accrue entirely to just that LDC's customers, but also to other

[5] Section 2.3
[6] Section 2.3
[7] Section 4.1

Ontario LDCs' customers. For reasons stated above (and in the NSPM), that is an inappropriate focus because it conflates the question of cost-effectiveness with cost allocation issues. Moreover, the DST does not actually measure impacts on a given LDC's customers because it excludes substantial utility system benefits – beyond avoided distribution system costs – that those customers will realize in the form of avoided energy costs and the portion of avoided transmission and avoided generation capacity costs that will actually flow to them.

One irony of the OEB's proposal is that system-wide utility DER programs, through which DERs will be installed randomly across the entire distribution system, will often appear more cost-effective than initiatives to promote the very same DER measures in geographic areas that have distribution system constraints and where they therefore should provide greater value. It is hard to see why it would be appropriate to suggest it may be in ratepayers' collective interest to provide system-wide rebates for efficient central air conditioners, but that it is not in their interest to provide such rebates in a geographic area where they can provide greater value because of a distribution system constraint.

The Board's discussion in the Appendix to the draft framework of a hypothetical NWS focused on Demand Response (DR) provides another concrete example of how the proposed focus on the DST as a primary test is problematic. Part of the description of the example is that DR resources would only be deployed to address the distribution need because that distribution system need may occur at different times than the system peak generation need.[8] But what if there was a different DR program design – one that allowed dispatching a larger number of hours per year and/or for longer durations – that could simultaneously address both distribution and generation needs? Such a program may be more expensive, but what if the increase in cost was significantly outweighed by the increase in total utility system benefits? The OEB's proposed reliance on the DST as a primary BCA test provides no incentive for utilities to consider such alternatives. Indeed, it tells utilities that ratepayers are better off and that the OEB prefers the DR program design that provides less overall cost savings.

C. Failure to Include Any Non-Utility System Impacts in Primary Test

As briefly noted above, another core principle of the NSPM is that, in addition to all utility system impacts, a jurisdiction's primary benefit-cost test should include other fuel impacts, host customer impacts, greenhouse gas (GHG) emission impacts and/or other societal impacts that are identified as important to addressing the jurisdiction's energy policy goals. No such additional impacts are included in the OEB's proposed BCA framework. While I have not conducted an exhaustive assessment of Ontario energy policy goals, it seems clear from current gas efficiency policy that the OEB considers impacts on all fuels to be important.[9] Given Canadian federal policy commitments, it also seems reasonable to

[8] Appendix Section 1.1.3

[9] For example, the current TRC+ cost-effectiveness test used to assess cost-effectiveness of gas DSM programs includes the value of impacts on both gas system costs and electric system costs (as some DSM measures affect

conclude that impacts on GHG emissions should be considered important. The value of both changes in consumption of other fuels and changes in the magnitude of greenhouse gas emissions should therefore be included in a primary test of whether an NWS is cost-effective.

III. Implications of the OEB's Proposal to Use the DST as the Primary BCA Test for NWSs

As alluded to in the discussion above, the implications of a decision to rely on a DST as the primary cost-effectiveness test for DERs are large and significant. The include the following:

- **Energy efficiency and distributed generation resources would be largely precluded from being part of an NWS**. Both energy efficiency and distributed generation (DG) resources can provide numerous electric utility system benefits – including avoided generating capacity costs, avoided transmission costs, avoided distribution system costs, and avoided energy costs. They can also provide GHG emission reduction benefits[10] and sometimes provide other fuel cost savings.[11] However, under the DST, they would only be considered cost-effective as an NWS if the value of just one of those many benefits – distribution cost savings – exceeded the utility cost of acquiring them. Based on my experience with cost-effectiveness analysis such measures, that is only likely to happen in truly unusual and exceptional circumstances.
- **Very few potential NWS projects will be deemed cost-effective**. By requiring the full cost of acquiring DERs to be more than offset by just one of their potential benefits, reliance on the DST as the primary BCA test for NWSs will mean that very few NWS projects will be pursued. That is not *inherently* good or bad, but as discussed in the next bullet, it is problematic if it will lead to higher than necessary total electric system costs.
- **Higher overall costs to electric ratepayers**. By effectively precluding investment in many DER measures that could reduce overall electric utility system costs, the OEB's proposed reliance on the DST will result in higher overall costs of providing electricity services to the province's electric ratepayers.
- **Higher GHG emissions**. Many DERs that could lower total electric system costs would also reduce GHG emissions. That is particularly true of energy efficiency and distributed renewable generation. Excluding the value of reduced GHG emissions from the BCA test will result in less investment in DERs that provide such benefits. It is even possible that excluding GHG emission impacts could lead to modest increases in GHG emissions. That could be the case, for example, if a DR program targeting large businesses resulted in some of those businesses relying on their own on-site diesel generators to offset some of their lost grid power during DR events.

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both). Also, the Board recently instructed Enbridge Gas to support customer adoption of heat pumps. Support for electrification measures can only be justified as cost-effective if policy dictate that cost-effectiveness be assessed using an "all fuels" perspective.

[10] For DG resources, this would be the case only for distributed renewables.

[11] Some efficiency measures, such as attic insulation, can reduce both electric cooling energy consumption (including during peak hours) and gas heating energy consumption.

IV. Recommendation

I urge the OEB to reconsider its approach. As discussed above, it is conceptually very problematic. It is also much more limited in its consideration of the range of benefits provided by an NWS than the primary cost-effectiveness tests used by all other leading jurisdictions with which I am familiar, including the neighboring states of New York and Michigan.

Ideally, the OEB should undertake a process to identify provincial energy policy goals to inform the addition of other non-utility system impacts in its cost-effectiveness test. As discussed above, that would likely lead to including costs and/or benefits associated with changes in consumption of other fuels as well as costs or benefits associated with changes in GHG emissions. Less ideal, but still a major step in the right direction, would be making the EST the primary test. If the OEB is not prepared to do even that, I would suggest that the OEB at least (A) modify the DST to include the portion of other utility system benefits that accrue to an LDC's customers; (B) require (rather than just encourage) an EST; and (C) convey that the EST will be given equal weight with the modified DST when considering the merits of an NWS.

Thank you for the opportunity to provide these comments. I would be more than happy to discuss them further if the OEB would find that helpful.

Chris Neme, EFG Principal