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Ontario Energy Board
2300 Yonge Street, 27th floor
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Submitted via email

Re: EB-2023-0125 Benefit – Cost Analysis Framework for Addressing Electricity System Needs: Stakeholder Comment

Toronto Hydro-Electric System Limited ("Toronto Hydro") is the local electricity distribution company for the City of Toronto. It serves over 790,000 customers and delivers about 19% of the electricity used in Ontario. Toronto Hydro's customers range from single family dwellings and neighbourhood shops to multi-use skyscrapers, and some of the province's largest commercial, institutional, and industrial facilities. The utility powers non-residential customers from a variety of sectors, including dozens of hospitals and healthcare operations; hundreds of schools, colleges, and universities; data centres; and large industrial and manufacturing facilities. Each of the thousands of multi-unit residential condominium and apartment buildings served by Toronto Hydro can have dozens or hundreds of units behind-the-meter. All told, every day, more than three million people are served by Toronto Hydro's electricity distribution system.

Toronto Hydro-Electric System Limited (Toronto Hydro) appreciates the opportunity to comment on the Draft Benefit-Cost Analysis Framework for Addressing Electricity System Needs Handbook presented to the Ontario Energy Board (OEB), publicly made available for comment on December 14, 2023.

Toronto Hydro supports the further evolution of the Non-Wires Solutions (NWS) policies that enable the local electricity distribution company (LDC) adoption of these alternatives to traditional infrastructure investments. Toronto Hydro was the first LDC to receive funding through distribution rates to implement an NWS (in the Cecil TS district), and continues to actively use NWS to relieve capacity constraints in the system.[1]

[1] See Non-Wires Solution Program in 2025-2029 CIR Application EB-2023-0195, Exhibit 2B, Section E7.2 for detailed description.

However, the framework presently before the OEB for consideration requires some substantial changes to achieve success as measured by: acceptance by stakeholders, customer affordability, a facilitated energy transition, and further market development of Distributed Energy Resources (DER) and Demand Response (DR), which are key inputs for an NWS. Toronto Hydro's submission reflects the utility's practical experience planning and implementing NWS used in daily operations.

LDCs have critical roles to play in the energy transition, and advancing other key provincial policy priorities.[2] Decarbonizing the grid, building housing for a growing province, keeping Ontario moving through priority transit projects, and maintaining a safe, reliable affordable energy system all depend on high performance by LDCs. Building out traditional solutions like poles and wires, grid modernization, and leveraging complimentary solutions like non-emitting DERs as NWS, are necessary to support the anticipated wide-scale electrification of the economy.

An NWS framework that will expand the capacity and capabilities of electricity systems to meet customer and public policy objectives must have acute regard for the planning processes to enhance the grid. Indeed, the framework cannot introduce red tape or regulatory burden – if anything, it should expedite the ability of the electricity sector to meaningfully engage customers, and quickly deliver lower cost supply and delivery solutions for the benefit of Ontario and Ontarians. As sophisticated and mathematically correct as it may be, a framework that causes delays in building the capacity and capabilities necessary to build more housing, and expand mass transit infrastructure does not meet the moment. Toronto Hydro is concerned that proponents of this particular NWS framework may envision that it would be applied to many, most, or even all projects an LDC undertakes to renew or expand its grid. At a time when Ontario needs infrastructure companies to build more, faster, and at contained costs, the effect of the proposed NWA framework would produce the opposite effect. In the immediate term, capital construction would grind to a crawl. In the longer term, administrative costs would climb to new heights, running calculations on the prospect of yet-to-materialize DERs offering hypothetical NWS in lieu of proven, shovel-ready infrastructure projects. Toronto Hydro respectfully submits that the OEB must ensure that the NWS framework will not result in construction slowdowns, or cost increases driven by an unwieldly direction to implement a new framework.

[2] Electrification and Energy Transition Panel, *Ontario's Clean Energy Opportunity*, December 2023.

The NWS framework must also not hinder the energy transition. The City of Toronto has a clearly articulated net zero by 2040 policy, 75% of which relies on investments made by Toronto Hydro.[3] In 2022, Toronto Hydro Corporation received an enhanced mandate from the City of Toronto, requesting that the utility implement the Climate Action Plan that Toronto Hydro filed with the City in 2021.[4] This Plan goes beyond Toronto Hydro's corporate commitment to net zero by 2040, delineating the opportunities to expand the electricity distribution business to meet increasing local needs for grid capacity and capabilities, and to work with customers and cleantech companies to help remove their barriers to electrification and support the energy transition. As Toronto Hydro's customers make their own investments in decarbonized buildings and electric transportation, the local grid must continue to be ready with the capacity and capability to meet the need before it arises. A bad experience with electrification hurts the energy transition, and Toronto Hydro is committed to removing barriers, including through ensuring the grid is ready. While DERs and NWS do and will continue to play a role in meeting those needs, an NWS framework that delays connection timelines because a lengthy process must be undertaken to determine how that incremental demand will be served – and the uncertainty associated with if and when that solution will materialize – is clearly not acceptable and must be explicitly and unequivocally avoided.

Traditional "poles and wires" solutions will continue to play a critical role in satisfying housing growth and intensification, expanding mass transit, growing Ontario's clean energy economy, and enabling the energy transition in Toronto and beyond. Traditional solutions offer a degree of certainty of timing, cost, and performance that does not and cannot yet exist for NWS. They will continue to be the backbone of the grid as DER and DR capacity grow and are converted from raw resources and limited use resources into organized, high value NWS. Toronto Hydro is committed to helping DERs get connected, and increasingly incorporating them into playing active roles in the grid as NWS, perhaps eventually as part of a wider-scale Distribution System Operator (DSO), or even LDC Load-Serving Entity (LSE) model. Getting there actually requires a concurrent commitment to traditional solutions, without which the grid will not be sufficiently reliable or able to keep pace with the growth necessary to enable the high-electrification future in which DERs and NWS have the best business case for their owners, and offer the best value for the grid and customers-at-large.

[3] Toronto Hydro's Climate Action Plan, September 2021.
[4] Toronto Hydro's Climate Action Plan, September 2021.

For example, a household that wishes to go "all electric" will want grid access and excellent electricity reliability. This may be achieved through a highly reliable grid connection, and a battery/EV back-up. Eventually that battery/EV back-up could become part of a broader NWS for the benefit of the neighborhood, once there are enough other DERs to satisfy local capacity needs. The necessary precondition to that future NWS end-state is the accessible, reliable grid; without it (and the enabling investments that can be made today in a timely, cost-effective manner), the pathway to becoming a prosumer is not there. It is foreseeable that there could be a crossover point at which NWS are an LDCs best pathway to access and reliability, and in isolated instances that is not the prevalent reality today or in the near-term.

Toronto Hydro is, however, very supportive of targeted uses of NWS and a framework that provides the LDC with the flexibility, funding, and discretion to make that choice, where it makes sense. Notably, this is what Ontario has learned from the pilots and initial deployments of NWS in communities including Toronto, York Region, and Essex County. It would be a prudent, proven basis to build on that success in the NWA framework. Replicating and scaling successful pilots reduces risk, and improves the probability of accelerated, successful deployment. It is not clear to Toronto Hydro that the proposed NWS framework uses the same locational targeting strategy that is a core lesson learned in all the successful pilots.

As the pilots have proven, the value of NWS to LDCs and their customers is in meeting targeted needs and avoiding or deferring system upgrades in certain areas by creating a temporary means of managing capacity constraints. Further, as also demonstrated, to be efficient and avoid the deleterious effects described further above, the NWS framework must reflect the role of planning processes and technical judgment in determining where to pursue an NWS. The pilots depended upon the outputs of regional and local planning processes. These processes identify the optimal sites for NWS, factor in current and forecasted customer demand, assess the nature of the infrastructure in place, quantify current and potential for DERs, and carefully consider the timelines to add capacity and capabilities via traditional or NWS. This is the proven means of efficiently and effectively selecting locations for NWS. The NWS framework should adopt it. Prior to launching any significant modifications to that approach, those modifications should also be piloted.

To be clear, NWS will not help address other investments drivers, such as aging infrastructure, significant load growth, and infrastructure relocations. The NWS framework should explicitly exclude those from inclusion in any assessment of alternatives.

Given that NWS rely on market solutions, they need to be considered carefully to maintain system access and reliability. The DER market is continuing to grow and evolve but it is possible that even after a successful NWS test as per the BCA handbook, the hypothetical DER capacity may not materialize into actual DER capacity. In sharp contrast, the customer load demand that necessitates incremental capacity will be very real. The OEB should anticipate customer outrage if the reason why a customer cannot connect is because DERs that were counted on to become an NWS do not come to fruition. Traditional solutions will not simply be "waiting in the wings" as "understudy back-up performers". While in some circumstances there may be a traditional solution work-around that can be delivered in less than one year, if the NWS stood in place of a large feeder upgrade or a transformer station expansion or new build, additional capacity might be delayed for several years. In other cases, the window to purchase Downtown Toronto land or access the underground right-of-way during a subway expansion may have closed indefinitely. For a development that cannot be built, grow, or decarbonize, the ramifications for the business, its employees, and the local economy could be staggering. The NWS framework must preclude these risks from materializing, especially while the population of DERs and confidence in NWS grow and mature. LDCs require an NWS framework with the flexibility, funding, and discretion to deliver outcomes for customers.

Based on Toronto Hydro's experience, the recommendations and comments in the following submission will provide overall comments on relieving capacity constraints, and support for the energy transition. Toronto Hydro is offering recommendations that may alleviate these challenges and make the framework a proportionate, successful NWS tool for Ontario DER owners, customers, aggregators, and LDCs. These recommendations will make the process more efficient, maintain affordable energy, and avoid any delays in achieving the federal, provincial, and municipal goals of the energy transition. The recommendations are grounded in extensive lived experience searching for the right fit of non-emitting NWS to address the system needs, reviewing technical and economic feasibility of NWS, implementing the analysis in the planning process, executing the non-wires solutions and deriving the lessons learned.

The comments are divided among the following sections:

- Specific Comments for 'Purpose and Use' Section Handbook
- General Methodological Considerations
- DS and ES BCAs
- Benefits and Costs
- Other Considerations

Each section will include Toronto Hydro's comments as well as recommendations, as applicable.

General Comments

Toronto Hydro supports the implementation of the BCA Framework to benefit customers. The BCA Framework can support the delivery of affordable, safe, and reliable power to the customers, while aligning with key governmental policies. However, if not applied judiciously, the BCA Framework could lead to increased costs in distribution planning, reliance on potentially unreliable solutions, and risks of not meeting governmental energy transition and housing policy goals.[5]

'Level-Playing Field' in NWS may not be appropriate

One concern is the notion of a "level playing field" between NWS and traditional infrastructure solutions. The term "traditional poles-and-wires" is somewhat misleading; utility strategies extend beyond basic asset renewals when planning for "poles-and-wires" solutions. For instance, Toronto Hydro deploys distribution automation, adding remotely operable switching points, and integrates advanced grid monitoring and grid management solutions. System planners have also reviewed and planned for battery storage solutions as part of our grid modernization efforts. These solutions are included in the regular suite of "poles-and-wires" solutions. However, they include investments in remotely operable infrastructure, IT/OT software and hardware infrastructure, and advanced grid technologies, which can be considered as NWS or non-wires solutions when compared with investments in building new or upgrading existing stations and overhead and underground lines.

The BCA Framework should be more specific, detailing the type of non-wires solutions and the system needs that will be evaluated using the BCA criteria. Toronto Hydro's definition of NWS, as outlined in the

[5] Powering Ontario's Growth is Ontario's plan to provide energy for their citizens. https://www.ontario.ca/page/powering-ontarios-growth

2025 rate application, focuses on operating practices and technologies that defer the need for certain projects by reducing system constraints during peak demand.

"NWSs refer to operating practices, activities or technologies that enable the utility to defer the need for specific distribution or transmission projects, at a lower total resource cost, by reliably reducing system constraints at times of maximum demand in specific grid areas. Typically, these NWSs leverage the use of Distributed Energy Resources (DERs), often in partnership with utility customers, or with other enabling third-parties." [6]

This definition should guide LDCs in applying the BCA Framework specifically to projects addressing grid capacity constraints. Toronto Hydro is concerned that establishing a level playing field for DER/DR across all system needs with binary and cost-effectiveness criteria, may lead to inflated costs and complicated documentation processes thus, impacting customer rates and affordability.

Lack of Market Maturity

Even when focusing on relieving capacity constraints, Toronto Hydro's notable experience with the Manby-Horner project, illustrates the uncertainty in the DER or DR market. In the typical Toronto Hydro planning process, planners consider location-specific load growth and station capacity limits by projecting load growth in general, including large customer connection requests and potential for further large loads like data centers and projections for electrification factors like electric vehicle adoption. If the capacity relief need is at least three years out, and either the demand is not certain or relatively inexpensive load transfers are costly and complex at this specific station location, then NWS is considered as a potential option to defer or completely avoid the capital investment. However, the utility also considers availability of large loads that are typically able to curtail on demand. More specifically relying on experience, areas with commercial and industrial customers, particularly those larger than 1MW yield more successful procurement. The areas with a large penetration of DER connections are generally more favorable to consider flexible demand services as a tool to defer or avoid some capital investments. The Manby-Horner case touches on existing DER or DR market maturity, showing that these solutions are not certain, require a plenty of time for execution, and still may not be fully relied upon.

[6] https://www.torontohydro.com/documents/d/guest/exhibit-2b-distribution-system-plan

Manby-Horner project case:

Toronto Hydro had planned on incorporating NWS to address the capacity constraints in the Eastern part of the city. 36 stations were reviewed to assess short to medium term capacity constraints – of those 36 stations, only two were identified as appropriate for NWS solutions. These stations were selected based on specific needs; Manby TS has been reaching capacity on two busses for several years and Horner TS is forecasted to overload in the near-to-midterm. These capacity issues were identified in Toronto Hydro's 2015-19 Custom IR Application and Hydro One's 2016 Regional Infrastructure Plan for the Metro Toronto Region. Load transfers in the North are currently completed, but load transfers in the East, West, and South are not possible. While the expansion is taking place, NWS are leveraged to increase flexibility in the Manby TS and Horner TS area. The goal was to procure 10 MW, which reflects the available market capacity. However, Toronto Hydro was only able to secure 4MW in the first summer and could only procure the remaining 6MW in the second summer, which reflects the uncertainty of the market and the timeliness of procuring the services. In addition, many of the available resources were already committed to other different programs (e.g. IESO's Capacity Auction, ICI). Delays in procurements result in increased costs and planning uncertainty, making LDCs vulnerable to future uncertainty.

Generally, procurement can be challenging if a utility requires resources in a highly localized area for a short-term period. Depending upon the program maturity, it can take approximately 1-3 years to procure flexible services from the market. While considering imminent issues, NWS is not advised since there is always a risk associated with procurement such that the services required might either be unavailable or more expensive than the load transfer. This can result in market participants or aggregators undertaking significant costs to acquire capacity in that area, which can put upward pressure on the price of NWS, potentially reducing competitiveness with the wires option from a cost perspective. The cost pressures of securing the capacity may evolve quickly over time and negatively impact the economics of the NWS at time of its actual implementation. For this reason, utilities may struggle, particularly in the short term, to procure capacity at the right price, ensuring the NWSs are competitive and cost-effective.

'Purpose and Use'

Ongoing pressures such as densification, population growth, and electrification can create constraints that will need to be addressed by building additional capacity, transferring load, or reducing load on the

system via demand-side services. Currently, the NWS program at Toronto Hydro complements conventional load demand programs to address capacity constraints on the distribution system. NWS are leveraged as a key tool for meeting capacity needs and ensuring system reliability. Toronto Hydro planners use flexible demand services to identify opportunities to defer or avoid load transfers.

In Toronto Hydro's experience, NWS are most appropriate to manage capacity constraints in situations when DER or DR solutions may enable deferral or avoidance of capital investments and load transfers projects in the areas with an uncertain demand growth profile. Efficient processes and strategic planning are essential. Toronto Hydro welcomes NWS that offer distribution benefits but remains cautious about over-analysis in situations where NWS are not feasible or economical. Therefore, it is important that LDCs have the flexibility to continue using their existing planning processes and decision-making criteria when implementing NWS. The Handbook's 'Purpose and Use' sections should be modified in the following ways to address these concerns.

Pre-Assessment and Screening Criteria

When discussing the "Criteria for Use," the handbook states: "the BCA Framework establishes a new requirement that distributors shall document their consideration of NWS when making material investment decisions as part of distribution system planning." The handbook continues by stating that "this does not mean that a BCA will be required in all cases; rather a distributor should first conduct a pre-assessment to identify whether there is a reasonable expectation that an NWS may be a viable approach to meeting an identified need." This provision alters the established planning process by creating additional steps for planners who would need to identify alternative NWS or the lack of, submit a BCA report and supporting documentation, and examine alternative routes for the NWS and its cost-benefits.[7]

Based on current planning processes, Toronto Hydro believes that pre-screening criteria should be one based on inclusion criteria rather than exclusion criteria. Put another way, the binary pre-screening criteria should clearly state and define the system needs to be eligible for the BCA framework. This will improve the planning process and prevent the introduction of a burdensome documentation process.

[7] According to the BCA handbook, if an NWS is "non-discretionary," there needs to be an economic comparison to a poles-and-wires solution. As a result, this creates almost double the amount of work for an LDC because of the need to compare the cost benefit calculations between the NWS and the poles and wires solution.

Currently, NWS should only be considered for capacity constraints. The DER and DR market technologies may evolve in the future, providing the opportunity to include new system needs as part of the screening criteria. Any investment with a different primary driver will need to be addressed in a timely manner with reliable investments in the grid infrastructure. Focusing on the capacity constraint driver in the BCA Framework will make the application of the framework proportionate to existing technologies, the state of the market and the system needs. However, even testing projects focused on the capacity constraint driver, may not a lead to a result where NWS is favored.

Timing

Timing is an important consideration as planners are searching for NWS alternatives to traditional capacity related infrastructure investments. As articulated in the Manby-Horner case presented above, the time spent to evaluate an NWS option could take several months given the complexity of work. Building an entire program along with material procurement can take up to three years based on the maturity of the approach utilized. Additionally, it takes significant time to develop a market where resources and aggregators may not exist or are ready to make alterations to their current operations. Therefore, the consideration of timing should be included in the pre-screening criteria. To make the process more efficient and proportionate to its goals, Toronto Hydro proposes including a timeline of least three years. This will provide LDCs the flexibility required to make prudent decisions. It is imperative that system planners retain the ability to use their judgement and discretion to create a short list of potential NWS projects that become eligible for a full assessment.

General Methodological Considerations

Toronto Hydro does not have any comments on the principles of the evaluation, except for the alternatives and details discussed in the above sections.

The evaluation of alternatives within the current framework is structured through a comparison of cost and benefit categories rather than assessing each alternative as a comprehensive solution with Net Present Value (NPV). By looking at each alternative as a comprehensive solution, all the benefits and costs associated with each of the options can be carefully considered. For example, typical solutions to

upgrade station capacity may also include marginal administrative and general overhead costs which will be symmetrical to NWS Operations, Maintenance, and Administrative (OM&A) Costs.

The justification efforts required by the BCA Framework involve providing significant detail, which may become expensive and time consuming to produce. For instance, the demand for supporting evidence in probability estimates for expected-value calculations poses a significant challenge. Or, LDCs must solicit the DERs or NWS appliances, which require significant research investments to understand location-specific market conditions and potential investments in the procurement process to complete the business case. LDCs should have the flexibility to simplify the assumptions, which will become necessary due to limitations in running a procurement during the planning stage, inability to thoroughly research the market at a local level, the potential absence of volumes, and the current state of the market.

DS and ES BCAS

Toronto Hydro believes the DS and ES BCAs metrics are reasonable. Toronto Hydro assumes that some flexibility will be given to LDCs to use the BCA Framework as a guideline and adjust according to their local needs.

Benefits and Costs

Toronto Hydro does not have any substantive comments and agrees with the benefit cost calculations proposed in the Handbook. There are some concerns with the revenue requirements calculation through the capital recovery factor and how it incorporates pre-tax WACC and income tax adjustments. For a level playing field, Toronto Hydro acknowledges that overhead costs of the current solutions may need to be included in the BCA. Toronto Hydro assumes that there will be some flexibility given to LDCs to use the Framework as a guideline and adjust according to their purpose.

Conclusion

Toronto Hydro supports the implementation of a modified BCA Framework. Toronto Hydro values the implementation of non-emitting NWS solutions, where appropriate and feasible, to relieve capacity constraints on the distribution grid. Executed with a customer focus and LDC flexibility in mind, the BCA Framework can support the delivery of affordable, safe, and reliable power to the customers, while

aligning with key governmental policies. However, if not applied judiciously, the BCA Framework could lead to increased costs in distribution planning, reliance on potentially unreliable solutions, and risks of not meeting governmental energy transition goals. Planning stability and consistency is critical for LDCs and it is imperative that the BCA Framework does not obstruct the progress of the energy transition. A flexible framework allows for a concurrent commitment to traditional solutions and NWS and enables LDCs to contemplate their complimentary potential to best meet system needs during a time of energy transition.

Toronto Hydro appreciates the opportunity to share its experience with implementing NWS and providing comments to the NWS Stakeholder Sessions.

Sincerely,

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