

BY EMAIL AND RESS

August 29, 2025

Mr. Richie Murray

Acting Registrar
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Mr. Murray,

EB-2024-0199 – Hydro One Networks Inc. – Vulnerability Assessment and System Hardening Project

On July 31, 2025, the OEB issued a draft final version of the Vulnerability Assessment and System Hardening (“**VASH**”) Report and the VASH Toolkit as a part of the OEB’s VASH project. The OEB invited stakeholders to provide written feedback on the draft VASH Report and VASH Toolkit by August 29, 2025.

The OEB launched the VASH project in June 2024 to address the Minister’s Letter of Direction in November 2023, intended to improve distribution resiliency. The 2024 Letter of Direction by the Minister encourages the OEB to work with distributors to “incorporate best practices in system resilience, cost-effectively mitigate risks, and improve customer outcomes in 2025.” The OEB expects to finalize the VASH Report in September 2025 and issue the updated Filing Guidelines in December 2025.

Hydro One was pleased to review the draft Vulnerability Assessment (“**VA**”) Report and VA Toolkit and provide comments on January 23, 2025. Hydro One participated in three stakeholder meetings in Q1 and Q2 2025, to discuss the Value of Lost Load (“**VOLL**”) and Benefit-Cost Analysis (“**BCA**”) components of the VASH initiative. Hydro One reiterates support for the development of an enduring and pragmatic VASH framework that creates value for customers, provides regulatory certainty for resiliency-enhancing investments, and is applied consistently by distributors across Ontario.

Hydro One appreciates the opportunity to review the draft VASH Report and VASH Toolkit. Hydro One is pleased to provide the following written comments for your consideration.

GENERAL COMMENTS

Hydro One agrees with the OEB that “While distributors are on the front lines of response to get power restored as quickly and safely as possible, it is important to recognize that they very often act in tandem with other distributors, municipal services, and levels of government to get the restoration job done and keep customers informed. In other words, climate-related events are not a distributor-only problem.¹” Hydro One supports a multi-sector resiliency approach that looks at broad range of tools to help set appropriate

¹ Page 2 in OEB’s Report on [Improving Distribution Sector Resilience, Responsiveness and Cost Efficiency](#)

resiliency expectations and accountabilities. Utilities should be expected to ascertain what degree of resiliency customers expect of their utility, and what responsibilities customers may prefer to take on (such as acquiring back-up generation).

For utilities, grid resiliency is the ability to recover from and adapt to extreme weather events. Measures to improve resiliency can include investments in grid hardening, storm recovery, and customer communication improvements. This broad range of investments can reduce storm damage, improve response and recovery times, and ensure customers have the information they need in a timely fashion. Advanced grid technologies are also essential for improving efficiency and reliability of the system and contribute to system resiliency. For example, Grid Modernization and Advanced Metering Infrastructure (“**AMI**”) 2.0 – which are technological improvements that enhance visibility, controllability, automation, and enable bi-directional energy flow –also enable enhanced storm response capabilities, enhanced targeted system sustainment work, and allow for the efficient deployment of back-up generation capacity from Distributed Energy Resources (“**DERs**”). Investments and innovation in reliability and resiliency continue to be key components of a utility’s Distribution System Plans (“**DSP**”), informed by customer engagements as part of OEB’s rate-setting framework and through the lens of affordability.

With primarily overhead assets geographically dispersed throughout Ontario, Hydro One’s facilities are exposed to the effects of severe weather conditions and natural disasters. Climate change may have the effect of shifting weather patterns and increasing the severity and frequency of extreme weather events and natural disasters. Hydro One has made efforts to adapt and increase grid resilience, including sourcing alternative materials and equipment types, adjusting operational processes to incorporate climate risk, and supporting ongoing innovation through research and outreach. Hydro One continues to work with standards bodies such as the Canadian Standards Association (“**CSA**”) Group and the International Electrotechnical Commission (“**IEC**”) to revise, update and develop new standards to, among other things, mitigate the risks and impacts of climate change on our electricity system. Hydro One designs its systems and assets to comply with the CSA’s technical standards that account for climate resiliency, subject to certain exceptions. Further, Hydro One has won 14 Emergency Response Awards from the Edison Electric Institute for our storm recovery efforts in our own service territory and for mutual assistance of other impacted utilities over the years.

Hydro One supports the OEB’s efforts to build on the work done by large utilities to consider and incorporate climate change resiliency into Ontario’s distributors’ planning practices. Hydro One believes the OEB’s draft VASH framework could benefit from some targeted improvements to ensure it is fit for purpose, achieves the government’s objectives and accounts for utility planning practices. Below is a summary of Hydro One’s key recommendations.

Greater flexibility in the timing of the VASH Framework implementation:

- Acknowledging the depth required for a meaningful VA, apply the criteria and information requirements of the Custom Option for new VAs developed after the framework is finalized, exempting utilities with preexisting VAs that were developed prior to the OEB’s new framework.

- Provide a lag between the implementation of the requirement to complete a VA and the requirement to produce DSPs informed by the VASH framework to ensure utilities have sufficient time to meaningfully consider and integrate the outcomes of a VA.
- To ensure that utilities at all stages of their rate cycle can take action, establish a mechanism to record incremental investments that are identified through a VA and pass a BCA or equivalent assessment, but are not captured in a DSP.

Provide greater flexibility in the Custom Option:

- Broaden the minimum criteria of key inputs for the quantitative analysis in the Custom Option to include other equivalent analysis, to appropriately capture sophisticated investment planning practices that assess investments against a wider variety of risks, including resiliency, ensuring investment plans provide optimal value for customers.

Optimize the Generic Option and VASH Toolkit:

- Include the risks associated with chronic climate events in the Generic Option, aligning with the 2024 Ministry Report on Vulnerability Assessment for Ontario's Electricity Distribution Sector from the Ministry of Energy and Mines to ensure that the framework addresses the vital components necessary to build a more resilient grid.
- The BCA methodology in the Generic Option should allow for consideration of quantitative risks and benefits on an integrated basis when comparing investments, resulting in an optimized, and cost-effective plan aligned with customer expectations.
- Consider broadening the scope of asset performance conditions considered in the Generic Option to produce an optimal selection of climate resilient outcomes.
- Provide additional guidance, examples, and datasets for distributors using the Generic Option on other climate hazards to encourage setting consistent expectations for distributors.

Hydro One also offers more detailed commentary on the key feedback below.

DETAILED COMMENTS ON THE DRAFT VASH REPORT

Hydro One acknowledges and appreciates the flexibility preserved in the draft VASH Report by making two options available for distributors to conduct vulnerability assessments and benefit-cost analyses.

Greater flexibility in the timing of the VASH Framework implementation

As stated in our January 2025 submission, Hydro One foresees challenges with the timelines proposed by the OEB for the incorporation of the VASH framework, especially for large utilities with complex rebasing applications. For the VASH framework to be fully and meaningfully incorporated within DSPs, utilities must have sufficient notice to develop, consider and incorporate VASH into their planning cycles. If a utility were to commence a VA immediately following the conclusion of the VASH consultation, a longer runway would

be required than the OEB has contemplated to complete all of the following implementation steps: (1) initiate and complete the VA; (2) complete at least one full planning cycle prior to finalizing a DSP to fully incorporate the outcomes of the VA in the plan; (3) develop, file and adjudicate a rate application that includes the VA informed DSP; and, (4) implement the first year of the new VA-informed investment plan.

The June 2025 Ministry's Implementation Directive to OEB expects "electricity distributors to implement or continue the following in their planning frameworks and processes for relevant applications filed after April 1, 2027, and set the expectation for utilities to begin incorporating this requirement by June 30, 2026 on a best effort basis, as the OEB deems relevant: [third bullet] Consider frequent and extreme weather impacts on energy infrastructure resilience and ensure future average, minimum and maximum temperatures are incorporated into demand modelling.²" While the filing dates specified in the draft VASH Report are consistent with the Implementation Directive, the draft VASH Report also includes the effective year for distribution rates, which are not consistent for all distribution rate applications.

Large utilities that file sophisticated rebasing applications have multi-year planning processes leading up to filing an application, with the filing of the rate application done more than a year in advance of the effective date. Once the planning is complete, usually the year before filing, it is generally not possible to reconsider the planning framework to account for new regulatory instruments (e.g. VASH) without risking a significant delay in filing, and thus the effective date for rates. Hydro One encourages the OEB to provide sufficient flexibility with its expectations of incorporating the VASH framework for utilities filing their rate applications within the next couple of years to account for variation timing of applications vs effective dates.

Hydro One recommends that distributors that have completed VAs and sophisticated planning processes be "grandfathered" into the framework and thus be exempt from the specific requirements to reduce duplication of work and efficiently achieve the intended policy objectives of this consultation. Further, to encourage distributors to integrate and apply the VASH framework regardless of where they are in their rate cycle, Hydro One recommends that the OEB consider providing a mechanism for utilities to record incremental resiliency investments informed by a completed VA.

Provide greater flexibility in the Custom Option

Climate-related VAs are an emerging science, with different jurisdictions using a variety approaches and frameworks to incorporate system hardening measures in their distribution plans. Hydro One appreciates the dual-path approach (Custom and Generic Options) that the OEB has pursued for VASH to accommodate the diversity of Ontario distributors. "This includes appropriately balancing the benefits of standardization while accommodating variation among distributors", understanding that utilities interviewed have existing well-developed processes and considerations to integrate with, and this can better support growing capabilities to align to new regulatory standardization efforts, while balancing costs of implementation.

² [June 2025 Ministry's Implementation Directive to OEB](#)

The Custom Option currently requires that the quantitative analysis when implementing the VASH framework include the following key inputs, among others:

- Annual probability of failures
- Value of lost load

While structure and a standardized approach are expected and important for the Generic Option, the Custom Option should remain nimble in its criteria and requirements to accommodate unique considerations, alternative analysis, and customer engagement results of the utilities, and leverage the work already underway for first movers that was developed in advance of this OEB consultation.

As mentioned above, utilities with proactively developed VAs may not be able to meet all the criteria and information requirements in the Custom Option. In addition, as raised during the OEB stakeholder sessions, without an Ontario-specific VOLL data set provided by the OEB, VOLL would not appropriately or consistently capture the value of customer interruptions or customers' willingness to pay, especially for the more rural geographic regions of Ontario. Hydro One notes that while Hydro One's risk assessment methodology may differentiate subsets of populations with equivalent baseline risk, it may not necessarily be available for or broken down by customer classes.

Hydro One respectfully requests that the OEB's VASH framework allows for a principles-based Custom Option that is broad enough to capture distributors with robust planning processes that effectively integrate customer expectations, reliability and resiliency, and that aligns with the principles identified in the OEB's Report on "Improving Distribution Sector Resilience, Responsiveness and Cost Efficiency" to government: "proactive, data-driven, performance-based, outcome-oriented, adaptable, and agile."³

Hydro One proposes the following changes to the criteria and information requirements to provide flexibility in the Custom Option:

- Annual probability of failures, or alternative quantitative analysis
- Value of lost load, or other equivalent that considers customer impact(s)

The above recommended changes will enable distributors choosing the Custom option to appropriately customize the framework to reflect distributor-specific considerations, the value of electricity service to customers in their service area and leverage existing analysis and frameworks, while appropriately meeting the Ministry and OEB's objectives of considering resiliency in planning.

Optimize the Generic Option

The 2024 Ministry Report⁴ provided a comprehensive analysis of the impacts of climate change on the distribution sector and emphasized the risks due to chronic climate events and the challenges presented in the need for long term investments. Hydro One recommends that the OEB consider the inclusion of this work in its Generic Option. Adopting scenario-based time horizons (e.g. 2030, 2050, 2080), which are widely used in climate science and utilized throughout Canada, provide a comparable basis for assessing risks,

³ Page 5 in OEB's Report on [Improving Distribution Sector Resilience, Responsiveness and Cost Efficiency](#)

⁴ [2024 Ministry Report on Vulnerability Assessment for Ontario's Electricity Distribution Sector](#)

whereas annualized probabilities risk creating overly granular estimates. Managing risks due to chronic events is crucial in advancing a more resilient grid.

Resiliency expectations should be informed by customer engagement and investment decisions should be determined by customer preferences among competing priorities such as reliability, DER enablement, resiliency, affordability, etc. Distributors have a limited approved funding envelope, and all investments are prioritized to give customers the most value based on what they've indicated as being important to them through the distributor's robust customer engagement, aligned with the OEB's Renewed Regulatory Framework⁵.

Resiliency expectations should be layered into existing performance frameworks rather than as a standalone or separate requirement, to provide clarity on the priority and trade-offs between the various priorities (e.g. resiliency, reliability, customer choice, affordability, etc.). The BCA methodology in the Generic Option evaluates alternatives for the resiliency risk mitigated and resiliency improvement benefits realized. While this may be useful to evaluate a particular investment focused on only meeting a resiliency need, it doesn't compare alternative investments that further customer centric outcomes when assessing the cost-effectiveness of these investments. This has the potential to create misalignment and prevent the development of an optimal investment plan, as these resiliency investments would be assessed using a separate set of criteria from the rest of the traditional investments.

Ideally, the risk assessment framework for a distributor should consistently compare the outcomes of all investments within its plan, allowing for the equivalent consideration of other quantitative risks and benefits, to identify the most cost-effective approach. These would include investments intended to address climate-related vulnerabilities and/or improve resiliency for extreme weather events. The BCA methodology should allow for equivalent consideration of other quantitative risks and benefits when comparing investments, so that investments may be chosen to mitigate the most overall risk for the amount spent.

The Generic Option should encourage the consideration of compromised or reduced performance of assets (in addition to asset failure) when assessing climate-related vulnerabilities, as utilities may take measures to prevent the damage of an asset or reduce other risks. This would ensure that climate resilient investments for long-term performance are optimally selected, resulting in more cost-effective outcomes.

Considerations for the VASH Toolkit

Hydro One appreciates the examples and datasets that were provided by the OEB for wind and ice hazards for distributors conducting their VASH using the Generic Option.

While Hydro One acknowledges that the OEB would like distributors to source the projected climate data for other climate hazards, climate hazards that are typically less granular and highly uncertain, such as wildfires, may present a challenge for distributors to generate consistent 5-year annual probability estimates across all hazards. Therefore, Hydro One recommends that the OEB consider providing worked out examples and datasets for these other climate hazards, including the appropriate risk tolerances and

⁵ [Report - A Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach](#)

vulnerability thresholds for failure modes to consider. Provision of detailed climate projections and additional guidance, including on climate scenarios that may be applied (i.e. moderate or high emission scenario) and climate modelling expectations (i.e. CMIP5), would be valuable to ensure that distributors are consistently identifying climate vulnerabilities, and computing and evaluating risk across Ontario.

In addition, to align the nomenclature with Environment and Climate Change Canada and ensure that the industry uses and interprets the terms consistently, Hydro One recommends that “climate peril” and “metrics” in the draft VASH Report be replaced with “climate hazard” and “climate variables”, respectively.

Hydro One also notes that the VASH Toolkit may be onerous to use when comparing multiple alternatives at multiple locations against the baseline scenario. For example, if there are 5 locations with 3 alternatives each that are being assessed, 15 different spreadsheets would be required. Further clarity from the OEB on how the VASH Toolkit prioritizes multiple alternatives at multiple locations and how assets that were designed to different thresholds when installed (due to evolving design standards) are considered in the asset class failure modes and thresholds would be beneficial in the consistent application of the VASH framework.

CONCLUSION

Hydro One thanks the OEB for the opportunity to provide the above comments. Hydro One would welcome the opportunity to engage with OEB staff at any time to contribute to the advancement of this important initiative.

This filing has been submitted electronically using the Board’s Regulatory Electronic Submission System (RESS).

Sincerely,



Melanie Bhandari
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Hydro One Networks Inc.