Ottawa Area Sub-Region Electricity Planning Process Public Webinar #2 – December 12, 2024

Stakeholder Feedback and IESO Responses

The IESO hosted a public webinar on December 12th, 2024 for the Greater Ottawa Region, with a specific focus on the Ottawa Area Sub-Region, as part of its engagement to inform the development of a long-term electricity plan – Integrated Regional Resource Plan (IRRP). During the webinar, the IESO provided a status update on the regional electricity planning process, shared the electricity needs and potential wire options and provided an update on a Local Achievable Potential Study. The presentation materials and recorded webinar are available on the engagement webpage.

The IESO appreciates the input received, which will be considered by the Technical Working Group[1] to develop the IRRP. Feedback was received from the following parties and the full submission can be viewed on the engagement webpage:

- Aaron Kelly
- BluWave-ai
- Boltzmann Institute
- Enbridge Gas Inc.
- Martin Adelaar
- Ottawa Renewable Energy Co-operative

The section below summarizes feedback received related to key developments, projects, and initiatives, as well as local issues and concerns that should be considered in the electricity planning for the Ottawa Region.

[1] The Technical Working Group consists of IESO as the lead, the local transmitter (Hydro One Networks Inc.), and the LDC (Hydro One Networks Inc., Hydro Ottawa Limited).

Regional Planning Considerations

Several feedback received stressed the importance of ensuring recommendations considers the overall impact and benefit of the community by broadening non-wire alternatives considered in the study, including additional variables to be considered when evaluating options and enhancing coordination to meet needs. Additional information on the wire and non-wire options analysis was also requested.

Feedback	IESO Response
Additional non-wire alternatives should be evaluated to meet the needs, specifically: • Aaron Kelly and Ottawa Renewable Energy Co-operative suggested that community-scale renewable generation and storage connected to the distribution system in front-of-the-meter should be considered. • Aaron Kelly and Martin Adelaar recommended considering community owned and financed energy solutions that can generate community wealth. • Boltzmann Institute recommended considering thermal networks and storage. • Enbridge Gas Inc. recommended hybrid heating to be considered in subsystems or downstream of transformer stations that have forecast a large portion of demand coming from residential electrification, and that renewable natural gas, hydrogen, and natural gas combined with carbon capture, utilization, and storage should be considered to meet long-term needs. • Martin Adelaar recommended considering the 2022 report by Dunsky that zero carbon DERs could cost effectively meet all new electricity demand in Ontario. • Martin Adelaar requested the policy, regulatory and legal conditions in which zero carbon DERs, that can support Ottawa's electricity needs, are created. • Ottawa Renewable Energy Co-operative recommended considering community-scale	Thank you for your feedback. An evaluation of wire and non-wire options to meet Ottawa's electricity needs is a key step. The Technical Working Group, comprised of the IESO, the local distribution companies (LDCs) and transmitter, is conducting a detailed analysis of all feasible wire and non-wire options including wind, solar and Battery Energy Storage Systems (BESS). The results will be shared in an upcoming public engagement webinar. Feedback including community preferences, reports and insights for all options, including carbon capture, utilization and storage, are welcome. The IESO oversees the regional planning process, which focuses on delivering electricity within a region via the high-voltage transmission system. Front-of-the-meter wind and solar generation, and storage will be evaluated as part of the regional planning process as they are directly connected to the high-voltage transmission system, enabling them to be grid-level solutions that can defer infrastructure upgrades. Behind-the-meter options, including DERs and thermal storage, are being explored through the Local Achievable Potential Study. Results of this study will be shared in Q2 2025 and will be considered as part of the regional planning process. Recommendations with respect to removing regulatory barriers for Distributed Energy Resources (DER) connection are best directed to the Ontario Energy Board (OEB), which has initiated a review focused on addressing any barriers to the connection of DERs.

Feedback	IESO Response
DERs that are not allowed under current regulations, such as locally financed renewable generation and battery storage capacity that provides power or ancillary services to the LDC under a PPA.	
Participants recommended additional variables should be considered when evaluating non-wire alternatives, such as: • Aaron Kelly suggested a comprehensive evaluation of non-wire options factoring in community benefits, such as local economic impact, public health, and resilience. • BluWave-ai recommended considering the ability of Battery Energy Storage Systems (BESS) to promote job growth, economic activity, as well as its impact on rates. • Boltzmann Institute shared they are completing a pathways study for ECCC to compare thermal network and thermal storage using waste or rejected heat and renewable energy with electrification using air source heat pumps (ASHPs) in March 2025. They can pull reports to support thermal network and storage if needed.	The IESO acknowledges the importance of community preferences during the options development and appreciates these insights. This feedback will be considered as the detailed options analysis is being completed. The options analysis of all feasible wire and non-wire options is currently underway. Results will be shared in an upcoming public engagement webinar. To ensure that the IRRP reflects the needs of the municipalities, Indigenous communities, community members and interested stakeholders, all interested parties will have an opportunity to provide feedback on these findings prior to completion of the IRRP. The IESO welcomes feedback on community preferences, reports and insights for all options.
Participants sought clarification on discussion points shared during the webinar, specifically: • Aaron Kelly inquired why the IESO considers energy storage/generation a load. • BluWave-ai would like clarification on why the Fitzroy BESS would only provide an extra 50 MW of capacity to the region when the facility has more capacity. • Ottawa Renewable Energy Co-operative shared that BESS would not increase demand and overheat the transmission system. They would like clarification on why BESS is not a	Thank you for this feedback. To ensure that Ontario's electricity system remains reliable, affordable and sustainable, an evaluation of wire and non-wire options to meet the needs is a key step. Wires and non-wires such as additional electricity Demand Side Management (eDSM) and resources including Battery Energy Storage Systems (BESS), solar or wind generation, or any combination, are being explored as options to address near, medium and long-term electricity needs identified in all zones of the Ottawa area. During the webinar, it was shared that storage facilities may act as a load when drawing electricity from the grid to charge. Additionally,

Feedback	IESO Response
feasible option for all zones in the Ottawa area.	an illustrative example was shared during the webinar to explain how a BESS facility might deliver less than its installed capacity due to external factors such as operational constraints on the electricity grid. The Technical Working Group recognizes the benefits that BESS from the LT1 RFP will have on the reliability and voltage stability of Ottawa's electricity system and this information will be included in the final report. However, the detailed assessment of facilities procured outside of the IRRP is not included in this analysis. As a next step, a detailed options analysis of all feasible wire and non-wire options, including BESS, is currently underway. Once completed, this information will be shared in an upcoming public engagement webinar. All interested parties will have an opportunity to provide feedback on these findings prior to completion of the IRRP.
Participants sought clarification on the evaluation of non-wire alternatives, specifically: • Aaron Kelly would like to understand if storage/generation has been evaluated as a distribution or transmission-connected facility. • BluWave-ai wanted to better understand what aspects of non-wire solutions were evaluated. • BluWave-ai would like to understand if the "rules" of capacity calculations are appropriate for BESS storage control techniques.	Thank you for this feedback. The IRRP's recommendations are informed by an evaluation of wire and non-wire options to meet the needs and consider reliability, cost, technical feasibility, maximizing the use of the existing electricity system (where economic), and feedback from communities and other interested parties. For more details regarding the analysis of alternatives, the IESO has developed a guide to the current general approach for evaluating non-wires alternatives (NWAs) during IRRPs. Wires and non-wires such as additional electricity Demand Side Management (eDSM) and resources including Battery Energy Storage Systems (BESS) and/or generation at the transmission and distribution level are being explored to address the region's identified near, medium and long-term electricity needs. As a next step, a detailed options analysis of all feasible wire and non-wire options, including BESS, is currently underway. This analysis will include planning-level estimates, capacity and magnitude of the asset. Once completed, this information will be shared in an upcoming public

Feedback	IESO Response
	engagement webinar. All interested parties will have an opportunity to provide feedback on these findings prior to completion of the IRRP.
BluWave-ai shared support for perspective that wire options should be secondary to either load sharing between transmission stations, or innovative demand management to buy time until demand materializes.	Thank you for this feedback.
Participants encouraged a coordinated approach to meeting Ottawa's electricity needs to ensure an adaptable, resilient and affordable energy system, specifically: • Enbridge Gas Inc. encouraged a coordinated and diversified approach to energy system planning that includes both gas and electricity planning. • Bluwave-ai suggested coordinated solutions such as using waste heat from datacenters in buildings or gas for peak heating loads and electricity for 90% of the rest of heating loads. • Boltzmann Institute encouraged the integration of thermal and electricity networks.	Thank you for providing this feedback. The Technical Working Group acknowledges the potential benefits of coordination between electricity planning processes and welcomes input and data on the amount of demand that could be supplied from low-carbon fuels, waste heat and thermal networks to reduce demand. The Ministry of Energy and Electrification recently released the Minister's vision for Ontario's Affordable Energy Future. The vision paper reaffirmed the important role of integrated energy resource planning. The IESO looks forward to working with the Ministry of Energy and Electrification, Ontario Energy Board, local distribution companies, municipalities, and gas utilities to inform a provincial integrated energy plan.
Generally, when evaluating wire and non-wire options more information should be provided regarding: • Aaron Kelly recommends considering the implementation of wire and non-wires together instead of as alternatives to one another. • Aaron Kelly stressed the importance of ensuring potential wire options are resilient to extreme weather conditions by utilizing new approaches such as storm hardening, underwater cables, sensors, self-healing/micro-grid technology. • BluWave-ai shared it would be helpful to understand the impact solutions could have on	As a first step, the Technical Working Group has developed electricity demand forecast scenarios based on known drivers, including local economic development, growth plans and community energy and electrification plans. These known drivers have been identified through discussions with City staff, Invest Ottawa, and examination of applicable local plans such as Secondary Plans and Climate Change Action Plans. The forecasts have been shared with the city as well as publicly to solicit feedback and consider input for the development of the plan. These scenarios form the basis of the regional electricity planning process in identifying how much power is needed in the region over the next 20 years based on

Feedback	IESO Response
local economic development such as the ability to place a data centre in Kanata. • BluWave-ai would like to understand the costs of different solutions, who pays for them and how that can impact rates.	the inputs provided on current, planned and potential growth. To ensure that Ontario's electricity system remains reliable, affordable and sustainable, an evaluation of wire and non-wire options to meet the needs is a key step. Wires and non-wires such as additional electricity Demand Side Management (eDSM), transmission- or distribution-connected resources including Battery Energy Storage Systems (BESS), solar or wind generation, or any combination of both wire and non-wires together, are being explored as applicable to address the region's identified near, medium and long-term electricity needs. The Technical Working Group acknowledges the importance of resiliency in options development and appreciates this insight. This feedback will be considered as the detailed options analysis is being completed. The Technical Working Group is conducting a further analysis of all options over the life of the asset, including planning-level estimates of expected costs and next steps. Once completed, the analysis will be shared in a public engagement webinar.
Participants requested additional information on the forecasted demand was requested, specifically: • Boltzmann Institute suggested the peak load from air source heat pumps are underestimated in the forecast. • Enbridge Gas Inc. requested the IESO provide information and updates on how forecasted demand versus actuals will be measured and compared.	The IESO appreciates this feedback. The Technical Working Group developed several forecasts, unique to Ottawa, influenced by local economic development plans, energy goals, assumptions for heat pump and electrification technologies, and electricity Demand Side Management (eDSM) initiatives. To develop Ottawa's demand forecast, the City of Ottawa, the local distribution companies and the IESO participated in focused discussions through a "Decarbonization Focus Group" to ensure the forecast captures the effects of economic development, electrification and decarbonization in the city. Through this collaborative effort, the Technical Working Group determined the need to develop two forecast scenarios – the reference and high scenario. The reference scenario assumes the

Feedback	IESO Response
	most likely electrification adoption rates based on current policies and the high scenario assumes the highest electrification adoption rates. While plan recommendations will be primarily driven by the reference scenario, the high scenario will be considered to test the robustness of the plan, identify signpost to monitor forecast changes and contemplate additional actions required if higher demand growth materializes. Additional outreach meetings with the "Decarbonization Focus Group", in which Enbridge participates, will continue to take place during the IRRP development. Metrics for tracking demand growth, electrification and decarbonization initiatives will continue to be discussed in this forum. A summary of this engagement will be provided in the final IRRP report.

Local Achievable Potential Study Considerations

Several feedback received shared suggestions and resources to enhance the scope and findings of the Local Achievable Potential Study.

Feedback	IESO Response
Consider broadening the scope of the Local Achievable Potential Study by: • Aaron Kelly suggests reconsidering the decision to not study V2G as the technology is being implemented in other places.	Thank you for this feedback. The Local Achievable Potential Study will identify and quantify electricity energy savings potential, electricity demand savings potential and associated costs attainable through energy efficiency and behind-the-meter DERs over a 20-year period of 2025 to 2045. The IESO is aware of, and actively supporting through the Grid Innovation Fund, demonstrations of vehicle-to-everything (V2X) technology. After careful consideration, the IESO will not include vehicle-to-grid (V2G) technology as a measure in the Local Achievable Potential Study. There is high uncertainty around many input assumptions, including customer acceptance and resource availability during periods of grid stress.

Feedback	IESO Response
	At present, the IESO does not have confidence that a large-scale V2X program could be implemented successfully due to major barriers to implementation, such as high-costs, limited availability of V2G capable vehicles and charging equipment, and challenges with equipment and control system interoperability.
Confirm if the Local Achievable Potential Study includes: • Boltzmann Institute suggests considering thermal systems and thermal energy storage and can provide additional information. • Ottawa Renewable Energy Co-operative encourages allowing continued improvement in the efficiency of batteries, heat pumps and generation output per square meter of solar. • Ottawa Renewable Energy Co-operative recommends allowing continued lowering of the price of behind-the-meter DERs over study period, especially solar and battery. • Ottawa Renewable Energy Co-operative shared the customer cost benefit determines economic potential, not avoided cost. • Ottawa Renewable Energy Co-operative shared that a key driver of achievable potential is government policy and cost. Reliance on past and current adoption rates will greatly underestimate future uptake.	The IESO appreciates this feedback and can confirm that storage, including thermal storage, will be considered in the Local Achievable Potential Study. The Local Achievable Potential Study includes improvement in the efficiency of certain technologies, as well as decreasing costs over time. Customer business case will be considered as part of the adoption rate modelling to determine achievable potential; however, the economic analysis will focus on technically feasible measures that provide a positive cost-benefit ratio from a local/system perspective in alignment with past IESO potential studies including the 2022 provincial DER Potential Study commissioned from Dunsky Energy + Climate Advisors. Technology adoption is based on both past performance as well as future expectations. Our consultant uses Bass diffusion curves that inherently account for future adoption rates when calibrated to the past adoption (again in alignment with Dunsky's DER Potential study).
Enbridge Gas Inc. would like to further discuss how they can support and enhance coordination for the Local Achievable Potential Study for Ottawa and Toronto regions.	The Technical Working Group recognizes the potential benefits of coordination between electricity planning and gas planning processes. The IESO welcomes input from Enbridge on the options available. As planning work advances, the IESO welcomes Enbridge's views and preferences, which will be considered in the development of the plan.

Feedback	IESO Response
Ottawa Renewable Energy Co-operative recommended using the 2022 report by Dunsky Energy + Climate as a baseline source to calibrate the study methodology.	Thank you for the feedback. The methodology for the Local Achievable Potential Study is informed by experience with the 2022 provincial DER Potential Study produced by Dunsky Energy + Climate Advisors.

General Feedback

Several feedback received suggested approaches to enhance the scope of the IRRP such as considering interconnections with Hydro Quebec, broadening the technical working group and re-evaluating the cost-estimate process.

Feedback	IESO Response
Aaron Kelly suggested additional interconnections with Hydro Quebec could help meet system needs and strengthen the system.	Given the growing electricity demand, the IESO acknowledges the importance of taking an "all of the above" approach to meeting electricity needs, including through interconnections with Hydro Quebec. In 2023, the IESO secured a Memorandum of Understanding with Hydro-Québec for to optimize the use of existing electricity generation capacity. In 2024, the IESO launched the Eastern Ontario Bulk Study which will assess whether the bulk transmission system is sufficient to reliably supply the demand growth expected in Eastern Ontario. Part of this study includes assessing opportunities for expanding interties with neighbouring Quebec and New York. Interested parties are encouraged to participate in the bulk planning engagement and share feedback. The IESO will continue to ensure that coordination exists between the bulk system planning, regional planning and the various initiatives underway to meeting Ottawa and Ontario's electricity needs.
Enbridge Gas Inc., expressed an interest to be included in the Technical Working Group.	The Technical Working Group recognizes the potential benefits of coordination between electricity planning, gas planning processes. The IESO welcomes input from Enbridge on the amount of demand that could be supplied from low-carbon fuels, and the opportunity to work with Enbridge on options to address the needs identified in this plan and as part of the public

Feedback	IESO Response
	engagement process. As the work progresses, the IESO will continue to host opportunities to share more details, and opportunities for feedback. The IESO looking forward to working with the Ministry of Energy and Electrification, Ontario Energy Board, local distribution companies, municipalities, and gas utilities to inform a provincial integrated energy plan
Ottawa Renewable Energy Cooperative recommended re-considering the existing cost estimates when evaluating wire and non-wire options, specifically: • Ottawa Renewable Energy Co-operative recommends considering economies of scale – particularly for solar – as the capital cost of community solar will be considerably less than customer generation. • Ottawa Renewable Energy Co-operative encourages the IESO to use unbiased, evidence-based estimates of the cost and performance of new nuclear reactors, such as Georgia Power's Vogtle plant or assumptions from Tennessee Valley Authority draft 2025 Integrated Resource Plan and increase the levelized cost of nuclear used to evaluate the cost-effectiveness of DERs.	The IESO appreciates this feedback. The IESO used the National Renewable Energy Laboratories (NREL) Annual Technology Baseline (ATB) Workbook as its benchmark for nuclear, wind, solar, and battery costs in the 2024 APO. The APO was published in March 2024, with the report development conducted primarily throughout 2023. The IESO is aware that NREL's nuclear costs differ from those used by the Tennessee Valley Authority (TVA) in its draft 2025 Integrated Resource Plan (published September 2024) and the costs for Georgia Power's Vogtle plant, which reached commercial operation in April 2024. The IESO strives to stay updated on new costs and cost projections for all potential electricity resource technologies, incorporating the most up-to-date and reasonable cost projections into its planning models and economic assessments. Going forward, this will certainly include TVA's nuclear cost assumptions as well as costs from recently completed projects like Georgia Power's Vogtle plant.