Stakeholder Feedback and IESO Response

2025 Annual Planning Outlook – May 21, 2025

Following the May 21 Annual Planning Outlook engagement webinar, the IESO invited stakeholders to provide comments and feedback on the materials presented by June 4, 2025.

The presentation materials and stakeholder feedback submissions have been posted on the IESO stakeholder engagement webpage for this engagement. Please reference the material for specific feedback as the below information provides excerpts and/or a summary only.

General Comments

Feedback

Stakeholders expressed appreciation for the transparency, depth, and public accessibility of the 2025 Annual Planning Outlook, noting its value in supporting coordinated planning and informed investment decisions across the energy sector. They highlighted the inclusion of illustrative scenarios and emissions outlooks as a positive step toward understanding the types and scale of resources needed to meet growing demand, emphasizing the importance of maintaining a diverse and balanced supply mix.

Suggestions were made to enhance future APOs by explicitly incorporating the diminishing marginal capacity value of technologies as system penetration increases, and to further explore the use of stochastic modeling to reflect long-term uncertainties. Stakeholders encouraged continued progress in accounting for climate variability in renewable generation forecasting and expressed willingness to collaborate on advancing this work.

There were also calls for clearer integration of regional planning data into the APO and greater transparency around how policy and regulatory changes—such as new clean electricity regulations—are factored into long-term demand forecasts and resource adequacy. Some feedback emphasized the need for extended forecasting horizons and more detail on how the system will replace the role of gas-fired generation under evolving regulations.

One submission raised significant concerns about the continued reliance on hydropower, citing its climate vulnerability, environmental risks, and socio-economic consequences. The feedback questioned the sustainability of procuring new hydroelectric projects given projected drought conditions, methane emissions from reservoirs, mercury contamination in aquatic ecosystems, and reliability concerns under extreme weather patterns. Recommendations included prioritizing conservation, wind, solar, geothermal, and transmission investments, while increasing support for decommissioning aging and vulnerable hydro infrastructure.

IESO Response

The upcoming technical paper on the Effective Load Carrying Capacity of Energy Storage studies the value of energy storage resources in Ontario based on various factors including penetration, duration, supply mix, and the demand forecast. The IESO continues to explore areas of supply and demand uncertainty, and as this work evolves, findings may be incorporated into future planning studies where appropriate. Other upcoming technical papers explore specific areas of long-term demand uncertainty in greater detail, with the intent of enhancing sector understanding of critical areas of uncertainty inherent in the demand forecast. These areas include electric vehicles, heating electrification and large step loads such as data centres and new electric vehicle and supply chain manufacturing facilities.

The IESO follows the Northeast Power Coordinating Council (NPCC) resource adequacy criterion, as outlined in the NPCC "Directory #1": Design and Operation of the Bulk Power System,[1] which requires a probabilistic evaluation of resource adequacy to demonstrate that the loss of load expectation (LOLE) is, on average, no more than 0.1 days per year. While this forms the basis of the

[1] For more information, refer to the NPCC Regional Reliability Reference Directory #1

IESO's resource adequacy assessments, this single-metric criterion is limiting in that it only captures the frequency of outages; as such, the IESO is staying abreast of industry advancements and the shift towards using multi-metric adequacy criteria.

The APO assessment is performed using General Electric's Multi-Area Reliability Simulation (MARS) model, with the demand forecast and supply outlook as a starting point. Uncertainty in forecast load and generating unit availability due to forced outages is introduced to determine the loss of load expectation. While the IESO continues to explore improvements to its resource adequacy models, some long-term uncertainties are more difficult to model (e.g., current model capability may be limited, potential resources are in preliminary development stages and limited information is known, etc). To the extent possible, uncertainties will be incorporated into assessments going forward, as the IESO strives for continuous improvements in APO development (e.g., the introduction of the three planning scenarios that will be presented in the 2026 APO).

Information collected in the regional planning process, such as potential large loads, and general drivers of growth are considered in the development of the APO demand forecast. However, the APO is a bulk planning process, and uses a different set of demand drivers and input data sources than the regional planning process, aligned with the objectives of the study.

The IESO recognizes that changes in the climate create risk to the reliability of the electricity system, and intends to consider extreme weather impacts on grid resiliency in future assessments, where data and models are available to do so. The IESO is an active participant of the Electric Power Research Institute's Climate Resilience and Adaptation Initiative to create a common framework for resilience adaptation in the power system, from planning through operations; the IESO continues to explore how climate risk can be incorporated into APO assessments. Ontario's diverse resource mix, which includes nuclear, hydroelectric, natural gas, solar, wind, storage and bioenergy resources, helps mitigate some of the risks that a changing climate presents by ensuring that resources are available to meet system needs during periods of climate risk or weather-related events.

The IESO also recognizes that a reliable, affordable and sustainable electricity system provides a foundation for future economic development and economy-wide emissions reductions. To help meet Ontario's electricity needs emerging in 2029 and growing through the 2030s, the Minister of Energy and Mines directed the IESO to report back on a separate procurement for resources with long lead times and long lifespans, such as long-duration storage resources and hydroelectric generation. A competitive procurement is anticipated to be launched for these resources by the end of 2025.

Ontario's future energy needs are expected to be met through a combination of biomass, natural gas, hydroelectric, nuclear, wind and solar resources to mitigate the risks associated with any particular technology or fuel type, and energy efficiency and demand-side management as a reliable and low-cost resource.