IESO Resource Adequacy Update – May 16, 2023

Overview

To meet the significant electricity system needs expected over the next decade, the IESO is moving forward with the largest procurement of energy storage in Canada – with 739 MW of new capacity slated to connect to the grid by 2026. These storage projects will be accompanied by 586 MW of expansions and upgrades at existing natural gas facilities – providing a cost-effective and timely solution to secure operational flexibility.

Together these procurements have been designed to strike a balance between ensuring system reliability as nuclear refurbishments take place and setting the stage for a robust storage fleet that will underpin the ongoing energy transformation.

The results of these competitive procurements have secured the first 1,325 MW of long-term capacity out of the 4,000 MW indicated as being needed in the 2022 Annual Acquisition Report. Coupled with the IESO's other resource acquisition initiatives, they demonstrate the important progress being made to meet Ontario's reliability requirements.

As outlined in the most recent Annual Planning Outlook, this capacity is needed to help meet shortfalls mid-decade that will arise as a result of nuclear retirements and refurbishments. It will also help address longer-term needs driven by electrification and economic growth, largely as a result of increasing electric vehicle adoption and investments in battery and automobile manufacturing facilities as well as mining operations.

The IESO's recent resource acquisition activities put Ontario on track to meet needs through 2028, including:

- The first 739 MW of new battery storage from seven facilities - ranging from 5 to 300 MW in size and representing significant economic interest from Indigenous communities. This procurement is still active with the potential for more projects to be announced later this summer;
- A 250 MW agreement for Oneida Energy Storage, slated to come into service in 2025;
- The acquisition of 295 MW through expansions at existing natural gas facilities, with contracts designed to align with proposed federal emissions regulations;
- Up to 291 MW in efficiency upgrades at existing natural gas facilities coupled with contract extensions to provide cost-effective reliability up to spring 2035;

- The highest capacity to date (roughly 1,400 MW) through the annual capacity auction, including a significant contribution from demand response, to meet system needs over the next year; and
- A new agreement for Brighton Beach Generating Station to continue operations and provide incremental capacity through an efficiency upgrade, addressing urgent regional reliability needs in the fast-growing Windsor area.

By taking a competitive and flexible approach, the current procurement has attracted considerable interest from storage developers, securing supply at cost-effective rates. Future competitive procurements will be informed by evolving market conditions, demand forecasts and how these projects progress.

To ensure that supply is available where it is needed most, the IESO is working with communities to understand and develop plans to meet local energy needs. The Province is also currently consulting with Ontarians on the IESO's Pathways to Decarbonization report, released last December, which explored options to develop a moratorium on new gas generation and move towards a decarbonized electricity system by 2050.

Securing new supply

With electricity demand forecast to grow at an average rate of two per cent a year for the next 20 years, the IESO is securing new capacity to meet those needs, taking into account the operating characteristics of each form of supply. Energy storage, for example, can react quickly to sudden changes in the system, providing some flexibility while reducing the need for emitting generation when demand is high.

- **Expedited Process**: Successful proponents to date are expected to provide 739 MW of non-emitting capacity from seven electricity storage facilities varying from 5 to 300 MW in size and to be in service no later than 2026. There are remaining storage proposals in the Expedited Process, which have the potential to receive financing from the Canada Infrastructure Bank. Any remaining successful projects will be announced early this summer. More than 25 communities have provided their support for storage proposals that have been submitted, and five of the successful proponents have 50 per cent or more economic interest from Indigenous communities.
- **Oneida Energy Storage facility**: The IESO has finalized a 20-year agreement for the 250 MW Oneida facility after direction from the Minister of Energy. The project also received support from the federal government and the facility is scheduled to be in service in 2025.
- **Long-Term RFP**: The engagement for the Long-Term RFP has begun and the procurement is expected to launch this fall, providing development time to build new resources or undertake expansions that can be in service no later than 2027.
- **Additional Future Needs**: Needs for capacity, energy and the characteristics that allow for the reliable operation of the system are expected to grow. Additional long-term procurements will address needs emerging in the early 2030s. The upcoming Annual Acquisition Report will outline the IESO's plans for the ongoing acquisition of supply for Ontario.

Leveraging Existing Assets

Leveraging existing facilities by providing new or extended contracts, as well as upgrading and expanding capacity, will be critical for reliability over the medium term. For example, natural gas generation will be essential to meeting summer peaks over this period, as emerging technologies mature to offset the role played by gas. Looking forward, it is expected that reliance on natural gas facilities will decrease over time and that they would eventually act as back-up supply.

Existing infrastructure will be used to help meet near and medium-term needs in the following ways:

- **Natural Gas Facility Upgrades**: Ontario is securing up to 291 MW of natural gas capacity from efficiency upgrades at existing facilities through the Same Technology Upgrades procurement. These facilities will upgrade existing equipment to provide additional capacity more efficiently to meet growing demand. Contracts with expiry dates prior to 2032 have been extended to 2035 to provide continued flexibility to the broader system and to meet local needs. Upgrades are a cost-effective, efficient and reliable way to prepare for coming needs, as they use a known technology with a long-established track record and provide significant ratepayer value.
- **Expedited Process**: 295 MW of natural gas capacity has also been acquired in the non-storage category of the Expedited Process through the addition of on-site expansions at the East Windsor and Greenfield South generation facilities. Municipal support has been provided for these projects. The expansion facilities will be eligible for contracts up to 2040 and will align with proposed federal regulations that allow for natural gas to operate as back up generation.
- **Brighton Beach Contract**: The IESO has also finalized a 10-year agreement for the continued operation of the Brighton Beach Generation Station, including a 42.5 MW efficiency upgrade for the facility, which will provide about 580 MW of urgently needed capacity in the Windsor area. The IESO expects that going forward, capacity for the region will be procured competitively.
- **Annual Capacity Auction**: The December 2022 auction secured 1,430 MW of supply for summer 2023 and 1,160 MW for winter 2023-2024. While the majority of the supply secured was from demand response from businesses, this year's auction secured capacity from a greater number of organizations and resources than in previous years, including imports from Quebec. Enrolments equalled more than double the megawatts needed, demonstrating the flexibility of the auction and the diversity of options available to meet short-term electricity system needs.
- **Small Hydro**: A new program to secure the capacity of existing small hydroelectric facilities is expected to launch this fall. The program is focused on ensuring these existing facilities can continue to operate, and provide value to the electricity system.
- **Biomass Facilities**: To address the needs of the forestry sector in northern Ontario and support a longer-term transition to alternative uses for waste biomass, a contract has been signed with Chapleau Cogeneration Facility until December 2027. The IESO is exploring possible options for signing new contracts for the Thunder Bay Resolute, Hornepayne, and Atikokan biomass plants.

Complementary Supply Options

Many of the IESO's ongoing activities focus on reliably advancing the transformation of the electricity grid. Significant investments in expanded conservation programs, hydrogen projects and other emerging technologies are complementing the IESO's ongoing work to pilot and enable new solutions for generation, demand response and energy management.

- **Energy Efficiency**: Ontarians continued to reduce their energy use in 2022 by over 850 GWh by implementing energy-efficient improvements through Save on Energy programs. As conservation will continue to play an important role in managing demand, the Ontario government announced last year a $342 million increase in funding. Four new and expanded SOE programs will deliver additional peak electricity demand savings of 285 MW by 2025 – including new and expanded incentives – many of which are targeted to consumers in areas where the system is constrained.
- **Hydrogen Innovation Fund**: Hydrogen resources have the potential to support Ontario's growing reliability needs in several ways, including with capacity and energy. Earlier this year, the Minister of Energy directed IESO to establish a $15 million Hydrogen Innovation Fund to support new and existing hydrogen projects as well as research studies that advance decarbonization and help drive broad emissions reductions. Through the fund, the IESO will be able to investigate, evaluate and demonstrate how these technologies can be integrated into Ontario's electricity grid for the purposes of balancing and strengthening the system.