IESO Resource Adequacy Update May 9, 2024

The IESO's *2024 Annual Planning Outlook* forecasts that Ontario's total electricity demand will increase by 60 per cent over the next 25 years. Continuing work to build a reliable, affordable and sustainable electricity system is critical to ensuring communities will flourish, businesses and industry have the confidence to invest, and the economy can decarbonize.

The IESO is taking a multi-pronged approach to meeting Ontario's growing electricity needs and implementing the government's *Powering Ontario's Growth* plan. This includes competitively procuring new and existing resources; planning for future transmission infrastructure; delivering demand-side management programs; supporting innovation; and exploring other local solutions.

The IESO's most recent Long-Term 1 Request for Proposals (LT1 RFP) – conducted along with other actions under the Resource Adequacy Framework – has successfully acquired the additional resources needed to meet Ontario's electricity needs this decade.

The success of LT1 RFP is evidenced by the competitive price of new resources, strong community support, and significant Indigenous participation and equity ownership in projects. The results further augment the suite of resources previously acquired under the Expedited Long-Term 1 Request for Proposals (E-LT1 RFP) and Same Technology Upgrades Solicitation executed in 2023.

Resource Acquisitions

Long-Term 1 Request for Proposals (LT1 RFP)

The IESO targeted year-round capacity to come into service between 2026-2028 to meet system needs. This includes storage facilities available to deliver a continuous amount of electricity for a minimum of four consecutive hours; and non-storage, which includes natural gas, that can support longer periods of high demand by being available for eight consecutive hours or more.

Strengthening an Affordable Storage Fleet

Storage facilities can charge during off-peak hours, take advantage of Ontario's clean energy supply mix, and inject energy back into the grid when it is needed most. These characteristics provide the IESO with flexibility to leverage non-emitting supply to displace the use of natural gas during peak demand periods.

The IESO is offering contracts to 10 battery storage facilities – varying in size between nine megawatts (MW) and 390 MW – for a total of 1,784 MW. Nine of 10 projects received a Municipal Support Resolution from the willing host municipality at the time of proposal submission.

The remaining project will be required to obtain a support resolution as part of the contract requirements. Nine proposals have 50 per cent or more Indigenous ownership. These results demonstrate the value and importance of effective collaboration amongst the IESO, municipalities, Indigenous communities, and project proponents.

By 2028, Ontario's entire battery storage fleet is expected to consist of 26 facilities with total capacity of 2,916 MW. This includes the 390 MW Skyview 2 Battery Energy Storage System, which is expected to be the single largest storage facility procured in Canadian history.

Ontario ratepayers also benefit from improvements in the energy storage supply chain, maturing technologies, and the IESO's competitive process and price transparency. The weighted average price[1] for storage in the LT1 RFP is $672.32/MW-business day, with contracts ending in 2048. This represents a 24 per cent decrease from the $881.09/MW-business day for storage acquired in E-LT1 RFP in May 2023, and indicates the effectiveness of a predictable cadence of competitive procurements.

Maintaining Reliability with Natural Gas and Biogas

Natural gas is an important, transitional resource that plays a pivotal role in supporting grid reliability. It has a proven ability to respond quickly to changing system needs; is available during hot summer days to meet demand peaks; and plays a valuable role as a back-up resource when other supply types are not capable of producing.

The IESO is securing 411 MW of gas and on-farm biogas generation from three facilities in three communities. All projects are supported by Municipal Support Resolutions.

The weighted average price for the non-storage stream in LT1 RFP is $1,681.14/MW-business day, a 54 per cent increase from the $1,093.22/MW-business day for non-storage acquired in E-LT1 RFP, with current pricing largely driven by shorter contract lengths relative to storage, that end in 2040.

Long-Term 2 Request for Proposals (LT2 RFP)

With the first phase of the Resource Adequacy Framework addressing needs this decade complete, LT2 RFP will look to address needs emerging in 2029 and through the early-2030s in three streams using non-emitting resources:

- Energy Stream: Approximately 2,000 MW of new supply to meet a five terawatt-hour energy need to be in service by 2030. This could include solar, wind, hydroelectric expansions, and biofuels.
- Capacity Stream: 500-1,000 MW in service by 2031. This could include storage, hydrogen and biofuels.
- Long Lead-Time Assets: 500-1,000 MW in service by 2034. This could include new hydroelectric assets, and long lead-time long-duration storage.

[1] The weighted average price only includes Selected Proponents. Proposals that were unsuccessful in LT1 RFP are not included in the weighted average price.

LT2 RFP engagement is ongoing with proposal submissions expected to be due in 2025. The IESO's preliminary assessment has identified connection availability for resources to be located all across Ontario, including potential for siting in northern Ontario.

New Capacity on the System

The IESO has now concluded several initiatives to increase Ontario's electricity capacity. The IESO's *2022 Annual Acquisition Report* identified a need to add 2,500 MW of new capacity onto the system. Across three initiatives, the IESO has added 3,658 MW of new capacity, which puts Ontario's electricity system in a strong reliability position throughout the decade.

Timing	Activity	Result (MW)
May 2023	E-LT1 RFP	1,177 882 storage 295 non-storage
May 2023	Same Technology Upgrades Solicitation	286
May 2024	LT1 RFP	2,195 1,784 storage 411 non-storage
	Total	**3,658**

Concurrent Resource Activities

Several other initiatives are planned or underway to meet upcoming electricity needs:

- Small hydro-electric facilities can apply to the Small Hydro Program, which was launched to re-contract facilities with capacities up to 10 MW; contracts under the program will run through to 2043.
- The IESO will continue to run a series of cadenced medium-term RFPs every two to three years, with flexible five-year commitment periods in order to secure resources with expiring contracts. Engagements on the Medium-Term 2 Request for Proposals have begun for resources with contracts that expire between 2026-2029.
- The annual Capacity Auction – next scheduled for Q4 2024 – will target increasing amounts of capacity to meet reliability needs: 1,600 MW for the summer 2025 (up from 1,400 MW in 2024) and 1,000 MW for winter 2025/2026 (up from 850 MW in 2024/25).
- As one of the lowest-cost resources, demand-side management is an essential component of meeting Ontario's growing electricity needs. To enhance energy-efficiency opportunities and savings, and at the request of the Minister of Energy, the IESO is proposing a new enduring and long-term framework starting in 2025 to optimize the value of demand-side management programs to the system and deliver savings to ratepayers.

- A 600 MW trade agreement with Hydro-Québec that will optimize the use of existing electricity generation capacity. Ontario and Quebec have excess capacity during the other province's electricity peak period that can be exchanged to reduce the need for new generation capacity.

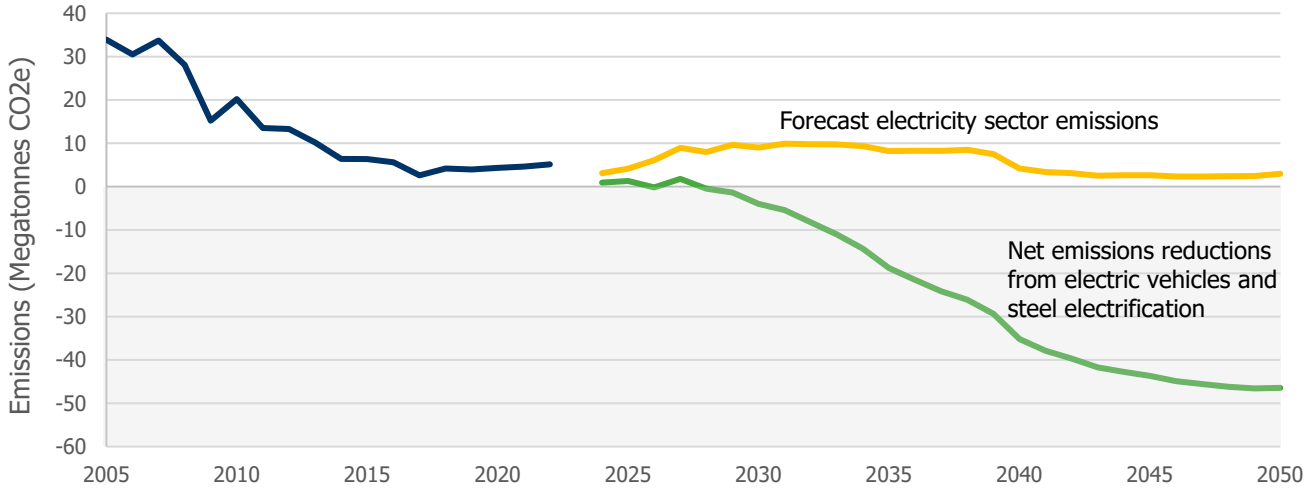
Innovation and Community Partnership

- The IESO and Government of Ontario have launched a new round of funding for the Grid Innovation Fund to support projects that will make the province's electricity system more efficient, with $9.5 million to be invested in projects that focus on sectors that are driving significant electricity demand increases, like electric vehicles as well as space and water heating.
- As part of the Indigenous Energy Support Program, the IESO is providing funding for Indigenous energy planning, infrastructure development, and education to support Indigenous leadership and participation in the energy sector. The Government of Ontario increased funding for the program by $5 million in November 2023, bringing the total annual investment to $15 million.
- The IESO is investing $48 million to take advantage of the rapid growth of energy storage, hybrid facilities, and small-scale electricity resources through the Enabling Resources Program. These efforts – bolstered by up to $16.7 million in funding from Natural Resources Canada – will enable new and emerging technologies to play a role in meeting Ontario's energy needs.

Emissions Reductions

With the conclusion of LT1 RFP, the province continues on a pathway to decarbonization. By the end of this decade, the IESO forecasts that emissions from Ontario's electricity system could start to level out and then decline to near zero in the 2040s.

Ontario Electricity Sector Emissions



While gas generation will be required into the late 2030s and beyond to safeguard reliability, the electricity system is set to enable substantial emissions reductions in other sectors, including transportation, manufacturing and agriculture. By 2035, Ontario's electricity system is forecast to reduce overall economy-wide emissions by more than three times the amount produced by the grid.