



Annual Planning Outlook

Ontario's electricity system needs: 2027–2050
March 2026

Disclaimer

This outlook is provided for informational purposes only and was prepared based on information available to the IESO at time of development, and on reasonable assumptions associated therewith, including related to electricity supply and demand and the future availability of electricity supply and demand growth. The information, statements and conclusions in this report are subject to risks, uncertainties and other factors that could cause actual results or circumstances to differ materially from the report's findings. The IESO provides no guarantee, representation or warranty, express or implied, with respect to any statement or information in this report and disclaims any liability in connection with it. Readers are cautioned not to place undue reliance on forward-looking information contained in this report as actual results could differ materially from the plans, expectations, estimates, intentions and statements expressed herein. The IESO undertakes no obligation to revise or update any information contained in this report as a result of new information, future events or otherwise. In the event there is any conflict or inconsistency between this document and the IESO market rules, any IESO contract, any legislation or regulation, or any request for proposals or other procurement document, the terms in the market rules, or the subject contract, legislation, regulation or procurement document, as applicable, govern.

Executive Summary

With artificial intelligence, digital technologies, and electrification advancing quickly, Ontario's electricity system must keep pace to support economic development and advance the province's competitive edge. As economic and energy policy converge, the Independent Electricity System Operator (IESO) is well-positioned to support economic growth and secure Ontario's electricity future.

Significant uncertainties continue to influence long-term planning and analysis — whether it be supply chain disruptions, geopolitical factors, or fluctuating tariffs straining the economy. For the 2026 *Annual Planning Outlook* (APO), the IESO has evolved its demand forecast by developing high- and low-demand scenarios, in addition to the reference demand forecast, to better illustrate and prepare for potential future system conditions. The IESO has also introduced a growth margin that groups together the areas of demand growth that are particularly variable, separating them from more stable factors influencing demand growth. This will allow for improved tracking and monitoring of the key drivers that could impact year-over-year planning. The growth margin may also enable the IESO to incorporate policy-driven general economic development targets into long-term planning.

The reference scenario — which underpins planning and procurement activities while considering insights from additional scenarios — continues to reflect strong long-term demand growth in line with previous forecasts. In the 2026 APO, the IESO's demand forecast reflects 65 per cent growth by 2050 — lower than the 75 per cent in the 2025 APO and higher than the 60 per cent in the 2024 APO — due to economic impacts, a lower electric vehicle forecast, and the success of enhanced energy efficiency measures.

The high-demand scenario reflects stronger economic acceleration and electrification trends, with demand growing by as much as 92 per cent through 2050, driven by office, retail, and warehouse expansion and data centres, as well as accelerated electric vehicle adoption. The low-demand scenario shows demand growing by roughly 38 per cent through 2050, factoring in less aggressive economic, population, and electrification assumptions with lower electric vehicle adoption.

Despite short-term uncertainty, all scenarios indicate rising demand through the 2030s and beyond, requiring continued investment to replace aging assets and build new infrastructure. With long-term growth expected, it is imperative that Ontario continues to evolve its supply mix through sustained resource procurements and infrastructure development to ensure a reliable, affordable, and sustainable grid that can support economic development opportunities in communities across the province.

Over the 2026 APO horizon from 2027–2050, system needs are marginally lower in the near term compared to the 2025 APO due to resources recontracted through the IESO's second Medium-Term Request for Proposals (RFP) and slightly lower demand in the reference scenario. Incremental energy needs of 8.5 terawatt hours (TWh) are expected to emerge by 2032, while incremental capacity needs begin at less than 100 megawatts (MW) in 2034 and rise to 950 MW in 2035 driven by increasing demand and resources reaching end of contract. In 2040, incremental energy needs reach 37 TWh and incremental capacity needs reach 3,800 MW. In addition to meeting energy and capacity

needs, Ontario's resource mix must be able to provide the essential reliability services needed to support dependable grid operations.

To that end, the IESO will leverage existing and new build assets through future procurements to meet the forecasted needs — and continue to administer competitive mechanisms set out in the Resource Adequacy Framework that provides flexibility and ratepayer value, including:

- Continued growth of electricity demand-side management and energy efficiency programs: the first three-year term 2025–2027 electricity Demand-Side Management Framework targets 900 MW of peak demand savings and 4.6 TWh of energy savings, with growing targets in future program plans to maximize potential for programs to cost-effectively meet system needs.
- Windows 2–4 of the second Long-Term RFP with up to 1,000 MW as the target for capacity and up to 11 TWh as the target for energy anticipated to be online between 2032–2034.
- Long Lead-Time RFP with an 800 MW target for capacity and 1 TWh for energy expected to reach commercial operation by 2035.
- Third Medium-Term RFP to recommit facilities with contracts expiring between 2030–2032.
- Local Generation Program to secure approximately 2,000 MW of existing resources with expiring contracts over the next 10 years.
- Northern Hydro Program to resecure existing facilities that have installed capacity above 10 MW.
- Capacity Auction targets to meet growing capacity needs in the mid-2030s.

These initiatives, along with the ability to continue leveraging Ontario's existing gas fleet for peak demand and reliability, will allow the province to meet energy and capacity needs in the near to medium term, with future needs dependent on evolving system conditions and policy goals. The IESO will also continue to incorporate government policy; enable new resource development and transmission expansions set out in *Energy for Generations: Ontario's Integrated Energy Plan to Power the Strongest Economy in the G7*; support ongoing achievements of growing energy efficiency targets; and pursue other opportunities that may materialize.

Leveraging existing assets will be especially critical to keeping the system reliable and affordable over the long term. The IESO's analysis of draft versions of the Canada's Clean Electricity Regulations identified that it could adversely impact reliability and costs in Ontario, by limiting production from most of Ontario's gas fleet starting in 2035. This APO does not model the requirements in the Clean Electricity Regulations and instead reflects a scenario where gas production is limited within the electricity system emissions levels forecast in the previous APO. This approach leads to the same desired outcome of near-zero emissions by 2050 and helps mitigate the reliability and cost risk that may be introduced by the Clean Electricity Regulations. This results in the gas fleet being modelled to operate materially below total capability; however, meeting energy needs in the near to medium term could result in higher actual gas fleet production depending on the availability of new and existing supply resources and the level of demand that materializes.

Throughout the entire outlook period, to allow generation and storage projects to transmit electricity where and when it is needed, the IESO also continues to recommend expansions to the bulk

transmission system. Over the planning horizon, multiple projects recommended by the IESO are scheduled to be in-service that will connect mining projects in the north; agriculture and industrial projects in the south; and enable new and refurbished nuclear to serve Ontario. Transmission planning continues to be essential in unlocking future growth across the province.

The APO remains a cornerstone of provincial electricity planning that provides clarity on capacity, energy, transmission, and operability needs. Recurrent analysis is crucial to electricity planning, with the IESO regularly evaluating needs and adjusting actions, which includes future procurement targets and other mechanisms. Previous iterations of the IESO's annual assessments identified significant needs emerging in the mid-2020s; guided by timely investments and system actions, the IESO has successfully secured sufficient resources to address gaps and ensure Ontario's resource adequacy needs are met into the early-2030s.

Moving forward, with the scale of growth expected in the long term, Ontario must continue to make investments in new infrastructure to ensure the system stays ahead of demand and is ready to power the province's economy.

Table of Contents

Executive Summary	2
List of Figures	9
List of Tables	11
1. Introduction	12
1.1 Purpose	12
1.2 Changes and Updates Since the 2025 APO	13
2. Demand Forecast	14
2.1 Demand Drivers	14
2.2 Multiple Demand Scenarios	15
2.2.1 Introduction to the Three Scenarios	15
2.2.2 Reference Year Annual Energy Demand	15
2.3 Demand Forecasts for the Three Scenarios	16
2.3.1 Reference Scenario	17
2.3.2 High-Demand Scenario	17
2.3.3 Low-Demand Scenario	18
2.3.4 Forecast Drivers Across Scenarios	18
2.4 Historical Energy Demand	21
2.5 Demand Forecast: Growth Components	22
3. Supply and Transmission Outlook	26
3.1 Supply Outlook	26
3.1.1 Installed Capacity	28
3.1.2 New and Refurbished Nuclear Resources	29
3.1.3 Contracts and Commitments Ending	30
3.2 Transmission System Outlook	32
3.2.1 Existing Bulk Transmission System	32
3.2.2 Planned Transmission System Expansion Projects	34

4. Resource Adequacy	45
4.1 Reserve Margin	45
4.2 Provincial Capacity Adequacy Outlook	46
4.3 Provincial Energy Adequacy Outlook	48
4.4 Export Opportunities	51
5. Transmission System	53
5.1 Drivers of Transmission System Needs	53
5.2 Transmission Needs in Southern Ontario	54
5.2.1 South and Central Ontario Bulk Transmission Needs	54
5.2.2 Bulk Transmission Supply to Toronto	55
5.2.3 Niagara Area Transmission	55
5.3 Transmission Needs in Eastern Ontario	56
5.3.1 Eastern Ontario Bulk Transmission Needs	56
5.4 Transmission Needs in Northern Ontario	57
5.4.1 Northeast and Northwest Ontario	57
5.5 Interties with Ontario’s Neighbouring Jurisdictions	58
6. Operability	59
6.1 Inertial Response and Primary Frequency Response	59
6.1.1 Inertial Response Assessment	59
6.1.2 Primary Frequency Response Assessment	59
6.2 Load Following	61
6.2.1 Load-Following Assessment	61
6.3 Operating Reserve	63
6.3.1 Operating Reserve Assessment	63
6.4 Regulation	64
6.4.1 Regulation Needs Assessment	64
6.5 Voltage Control Service	65
7. Uncertainties	67
7.1 Demand Uncertainties	67
7.1.1 Space and Domestic Hot Water Heating	67

7.1.2	Electric Vehicles	67
7.1.3	Large Step Loads	67
7.1.4	Economy	68
7.1.5	Demographics	68
7.1.6	Fuel Costs	68
7.1.7	Technological Capabilities	68
7.1.8	Energy Transition Policy Uncertainties Impacting Demand	68
7.1.9	Weather-Related Uncertainties Impacting Demand	69
7.2	Supply Uncertainties	69
7.2.1	Existing Resources	69
7.2.1.1	Aging Assets and Decreased Performance	69
7.2.1.2	Nuclear Refurbishments	70
7.2.1.3	Resources Reaching Contract End	70
7.2.1.4	Weather-Related Uncertainties Impacting Resource Performance	71
7.2.1.5	Availability of Non-Firm Imports	71
7.2.2	New Resources	71
7.2.2.1	Procurement Targets Not Met	72
7.2.2.2	Commercial Operation Not Achieved	72
7.2.2.3	Project In-Service Delays	73
7.2.2.4	Reliable Operation of Resources	73
7.2.2.5	New-Build Resources	73
7.2.3	Energy Security	73
7.2.4	Policy and Regulatory Supply Uncertainties	74
7.3	Transmission Uncertainties	75
8.	Integrated Reliability Needs	76
8.1	In-Flight Actions to Meet Reliability Needs	76
8.2	Remaining Capacity Needs After Considering In-Flight Actions	77
8.3	Remaining Energy Needs After Considering In-Flight Actions	78
9.	Planned Actions	80
9.1	Annual Capacity Auction	81

9.1.1	Preliminary Target Capacity for the 2026 Capacity Auction	82
9.1.2	Minimum Target Threshold and Forward Guidance for Future Capacity Auctions	83
9.1.3	Enhancements to the Annual Capacity Auction	83
9.2	Medium-Term Procurements	83
9.2.1	Third Medium-Term RFP	84
9.2.2	Subsequent Medium-Term Procurements	84
9.3	Fulfilling Resource Adequacy Needs	84
9.3.1	Second Long-Term Request for Proposals: Subsequent Windows	86
9.3.2	Long Lead-Time Request for Proposals	87
9.3.3	Local Generation Program	88
9.3.4	Northern Hydro Program	88
9.3.5	Electricity Demand-Side Management	88
9.4	Transmission Schedule of Planning Activities	89

List of Figures

Figure 1 Net Annual Energy Demand	16
Figure 2 Net Annual Seasonal Peak Demand	17
Figure 3 Historical Energy Demand	22
Figure 4 Demand Forecast by Scenario and Component	23
Figure 5 Installed Capacity	27
Figure 6 Summer Effective Capacity	27
Figure 7 Winter Effective Capacity	28
Figure 8 Installed Capacity in 2026 by Fuel Type	29
Figure 9 Nuclear Refurbishment Schedule	30
Figure 10 Summer Refurbishment Outages	30
Figure 11 Existing Resources Post-Contract Expiry, by Fuel Type	31
Figure 12 Summer Effective Capacity Post-Contract Expiry, by Fuel Type	31
Figure 13 Winter Effective Capacity Post-Contract Expiry, by Fuel Type	32
Figure 14 Northern Ontario’s Major Transmission Interfaces, Electrical Zones, and Interties	33
Figure 15 Southern Ontario’s Major Transmission Interfaces, Electrical Zones, and Interties	34
Figure 16 Planned Transmission Projects — North	35
Figure 17 Planned Transmission Projects — South	36
Figure 18 Reserve Margin Requirement, 2027–2050	45
Figure 19 Summer Capacity Surplus/Deficit	47
Figure 20 Winter Capacity Surplus/Deficit	48

Figure 21 Energy Adequacy — Reference Scenario	49
Figure 22 Energy Adequacy — High-Demand Scenario	50
Figure 23 Energy Adequacy — Low-Demand Scenario	50
Figure 24 Potential Unserved Energy	51
Figure 25 Primary Frequency Response Requirement Range and Capabilities	60
Figure 26 Load-Following Requirement and Ramp-Up Capability	62
Figure 27 Operating Reserve Capability from Flexible Resources	63
Figure 28 Forecasted Incremental Regulation Needs	65
Figure 29 Remaining Capacity Needs After Considering In-Flight Actions.....	78
Figure 30 Remaining Energy Needs After Considering In-Flight Actions	79
Figure 31 Meeting Ontario’s Resource Adequacy Needs	80
Figure 32 Capacity Auction Forward Guidance	83
Figure 33 Incremental Actions Required to Meet Capacity Needs.....	85
Figure 34 Incremental Actions Required to Meet Energy Needs	86



List of Tables

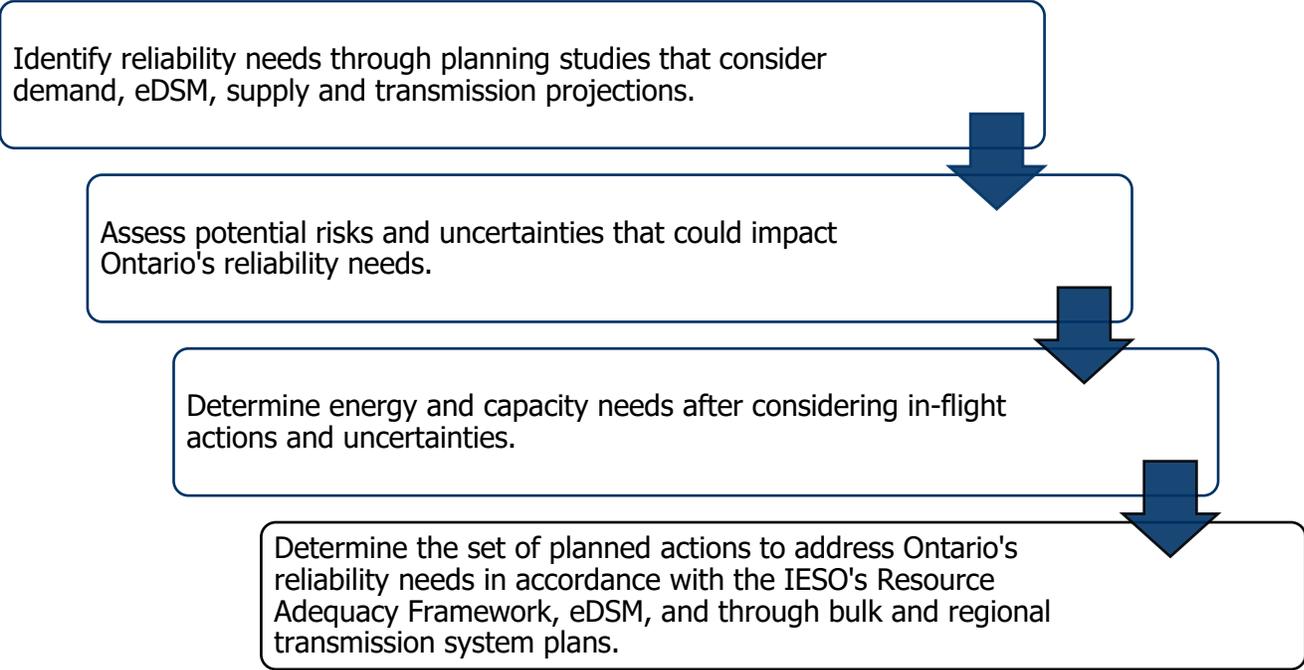
Table 1 Forecast Driver Scenario Summary	18
Table 2 Forecast Summary	24
Table 3 Description and Status of Recently Completed Bulk Transmission Projects	34
Table 4 Description and Status of Planned Bulk Transmission Projects	36
Table 5 Preliminary LT2 RFP Capacity and Energy Targets	87
Table 6 Schedule of Planning Activities	89

1. Introduction

1.1 Purpose

The IESO's 2026 *Annual Planning Outlook* (APO) uses market intelligence, forecast data, models and analysis to identify electricity system needs over the 2027–2050 outlook period. The APO also describes factors that influence these needs; and planned actions required to prepare for a reliable, affordable, and sustainable electricity future in Ontario that includes upcoming procurements within the IESO's Resource Adequacy Framework, bulk transmission plans, and electricity demand-side management (eDSM).

The IESO's Process to Determine Planned Actions to Address Reliability Needs



The APO provides electricity sector stakeholders, governments at all levels, Indigenous communities, and electricity consumers, amongst others, with data and analyses to help make more informed decisions with the information available; and communicates valuable information about the developments shaping Ontario's electricity system.

The assumptions underpinning the APO are based on current system conditions and the best available information about demand, supply, transmission infrastructure, and other factors that may influence these studies. The IESO acknowledges that there may be uncertainties that impact the outlook. To help express these uncertainties, as further described below, the APO is primarily based on a "reference scenario" and informed by high- and low-growth scenarios that reflect reasonable incremental increases and decreases, respectively, in the demand trends underlying the reference scenario. While the analysis focuses on the reference scenario, the outlook incorporates preliminary high- and low-demand scenario perspectives throughout that will be examined further in the 2026 Capacity Expansion Scenario and Outcomes Module to help identify potential actions and inform

future procurements and policy decisions; relevant findings may also be captured through the IESO's iterative planning process and reflected in future APOs.

The reference scenario is analogous to the Forecast in the 2025 APO: it only includes changes to Ontario's demand forecast and resources if they are expected to result from the latest available economic data projections; committed government policy; or announced actions by the IESO, government, or sector participants. Significant changes to the factors underpinning the APO are expected during the outlook period. The outlooks presented should, therefore, be interpreted with this expectation and the other limitations referenced in this document in mind. By updating and publishing the APO, and performing other studies on a regular basis, the IESO captures the evolving nature of Ontario's electricity system.

1.2 Changes and Updates Since the 2025 APO

This outlook supersedes the outlook published in April 2025.

Three electricity planning scenarios are presented, with associated considerations and variables, to reflect current uncertainties, potential economic impacts, trade policy, and electrification trends.

Analogous to previous APOs, the reference scenario represents high-confidence policy, government announcements and continuing trends. For this APO, the reference scenario definition has been updated to reflect a greater emphasis on current trends and conditions, compared to previous outlooks that reflected all existing and confirmed policies at the time of forecast development. This incremental update will ensure that the reference scenario continues to serve its purpose for downstream planning and procurement activities in an increasingly complex socioeconomic and policy environment, while considering insights where appropriate from the additional scenarios that indicate faster or slower demand growth. The resource adequacy assessments in Section 4 are, therefore, shown for the three scenarios; the operability assessments in Section 6, integrated reliability needs in Section 8 and planned actions in Section 9 are informed by the reference scenario.

The demand forecast for the three scenarios in this APO is further distilled into three main aggregated growth components — reference year demand, baseline growth, and growth margin. This aggregated view will help the sector to better understand the impact of inherent demand uncertainty on overall electricity system needs by separating more variable drivers from more stable areas of demand growth.

2. Demand Forecast

Ensuring Ontario has a reliable and affordable electricity system is central to the IESO's mandate. The long-term demand forecast sets the context for the APO's assessments of resource adequacy, transmission security, operability and planned actions, and the bulk power system planning process at large. The 2026 APO Forecast covers a period of 25 whole years — from 2026–2050 — where year 2026 represents the reference year, or year zero, of the outlook period.

2.1 Demand Drivers

The IESO's long-term demand forecast focuses on understanding the drivers of future changes in electricity demand by examining economic, demographic, sector and end-use level trends. Factors that are considered in the forecast include:

- all known economic and demographic data projections;
- expected changes in each market sector in Ontario;
- economic announcements and trends;
- fuel cost forecasts;
- current statuses and projections of large commercial and industrial sector projects with significant electricity demand (i.e., large step loads);
- grid-connection request queues; and
- government policy.

Forecasted changes in demand reflect many dependencies and uncertainties that increase with time over the course of the outlook period. These inherent uncertainties in demand drivers, which influence the demand forecast and are discussed in Section 7.1, include the state of the economy, population, demographics, technology, energy prices, input fuel choices, customer preferences, equipment-purchasing decisions, consumer behaviour, policy, conservation and other considerations.

This year's APO continues to reflect demand from significant new industrial projects that have a reasonable probability of being completed; estimates of such demand are adjusted for the assumed level of uncertainty in each scenario¹. With the economy constantly evolving due to factors — such as electrification, economic development and government policy — there is a need to produce multiple demand scenarios to better reflect the range of uncertainties and its impact on forecasts of electricity demand.

¹ Inputs to the forecast were finalized in September 2025.

2.2 Multiple Demand Scenarios

2.2.1 Introduction to the Three Scenarios

This APO includes the following three demand scenarios, for the foregoing reasons and per a June 2025 Directive issued by the Minister of Energy and Mines, which requires the IESO to include qualitative and quantitative risk and uncertainty assessments, as appropriate, for each scenario, with appropriate and substantiated assumptions associated with them:

1. **Reference Scenario** that reflects current trends and policies in electrification, transportation, space heating, industry and other areas that impact electricity demand.
2. **High-Demand Scenario** that reflects a reasonable incremental increase in foregoing trends.
3. **Low-Demand Scenario** that reflects a reasonable incremental decrease in foregoing trends.

The distinct assumptions assessed for each scenario consider future projections, investor confidence, trade environment, population levels, economic trends, climate, greenhouse gas emission pricing, fuel rates, building electrification policies, transportation electrification, hydrogen economy, conservation, the agriculture sector, and commercial data centre and industrial mineral extraction and processing sub-sectors, as well as other factors.

The three scenarios are further described and considered in Section 2.3.

2.2.2 Reference Year Annual Energy Demand

The calendar start of each demand scenario is the 2026 APO outlook period reference year of 2026. Energy demand for the reference year varies slightly between the three scenarios, as a result of the differences in assumptions underlying the scenarios.

The reference year for the reference scenario has a forecasted grid-level² annual energy demand of 146 terawatt hours (TWh) and a net-level annual energy demand of 152 TWh, slightly higher than the 2025 APO reference year forecast of 151 TWh in the year 2025. This increase is attributable to the inclusion of year 2024–2025 actual observed demand levels; an additional year of population, economic, and electricity demand growth; and further inclusion of additional large step loads. Sector-level forecasts have been calibrated with the latest available data from sources including the IESO's Smart Meter Data Repository, the Ontario Energy Board's Yearbook of Electricity Distributors, as well as the IESO's own sector-level wholesale demand data sources.

The reference year for the high- and low-growth scenarios have forecasted net-level annual energy demand of 154 TWh and 150 TWh respectively, as compared to the 152 TWh for the reference scenario, as further explored below.

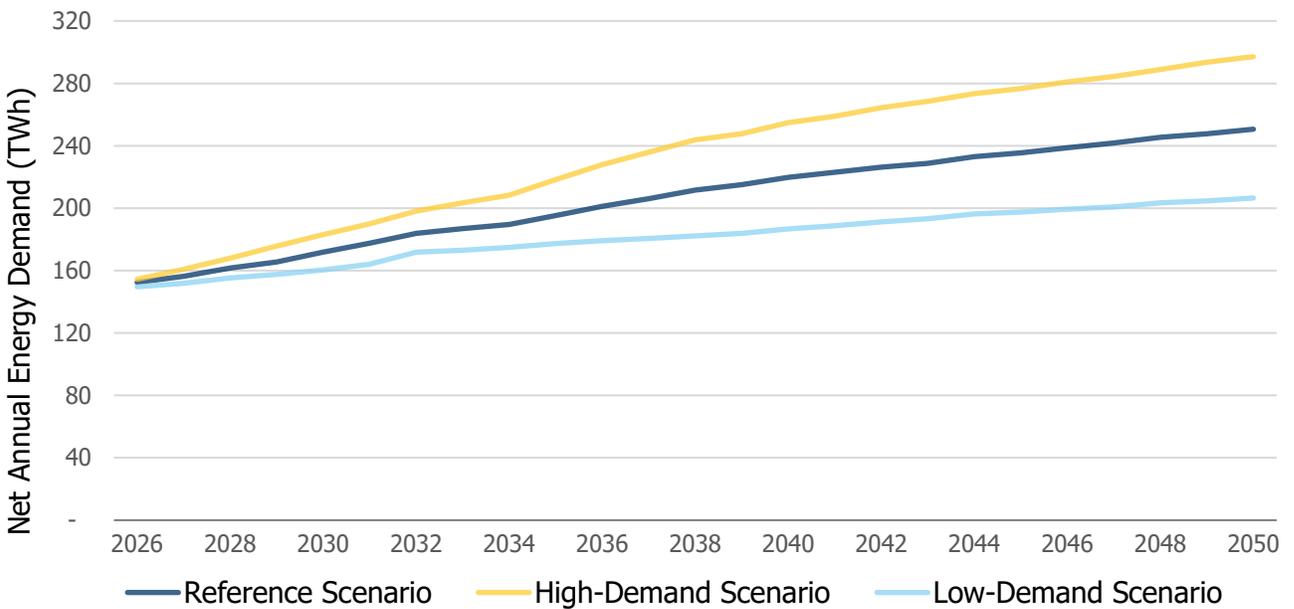
For further explanation of how reference year demand is assessed refer to Section 2.5.

² Gross-level demand is total demand for electricity services in Ontario prior to the impact of demand-side management (including programs and regulations) and includes the effects of naturally occurring conservation (i.e., energy savings that occur without the influence of incentives, or education programs and regulations). Net-level demand is gross-level demand minus the impact of conservation. Grid-level demand is net-level demand minus the demand met by embedded resources and is equal to the energy supplied by the bulk power system to wholesale customers and local distribution companies.

2.3 Demand Forecasts for the Three Scenarios

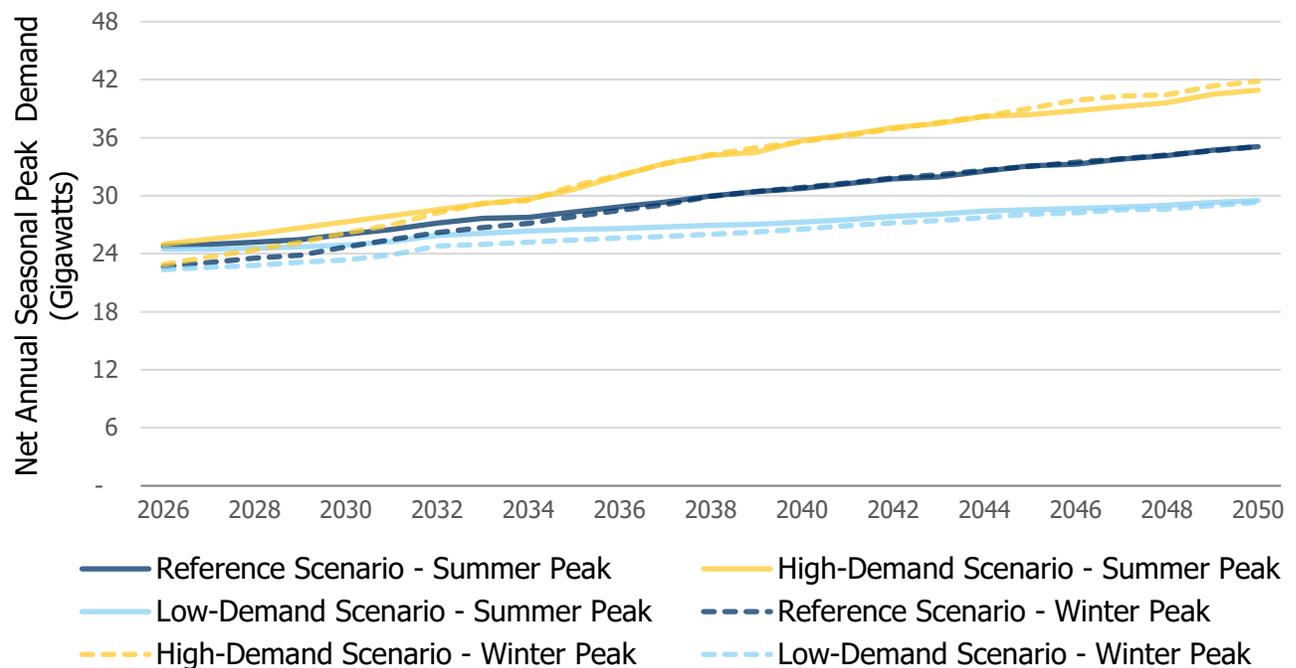
Figure 1 indicates forecasted growth beginning in the reference year (2026) across all three demand scenarios, albeit at different rates, driven primarily by industrial automobile production, which includes emerging electric vehicle (EV) production and supply chain projects and project pipelines; strong interest from new commercial artificial intelligence service-providing data centres; incremental decarbonization/electrification projects across the economy; and higher population growth and household formation.

Figure 1 | Net Annual Energy Demand



Consistent with previous APOs, Ontario is forecast to become dual peaking with summer and winter peaks reaching similar magnitude. The timing of occurrence depends on the scenario: early-2030s in the high-demand scenario; late-2030s in the reference scenario; and beyond 2050 in the low-demand scenario. This may be helpful to shape the design of future programs and procurements. Figure 2 indicates this timing, and the net seasonal peak demand, for the three demand forecast scenarios.

Figure 2 | Net Annual Seasonal Peak Demand



2.3.1 Reference Scenario

The reference scenario provides the IESO's view of the most likely trajectory of electricity demand to develop over the planning horizon, given current energy market trends, the assumed macroeconomic outlook, assumed energy prices, and the existing suite of government programs and policies. Several forecasted demand trends and influences identified in the 2025 APO are consistent or similar in the reference scenario of this APO.

The reference scenario indicates that net annual energy demand grows from 152 TWh in 2026 to 250 TWh in 2050, or a 2.1 per cent compound annual growth rate from 2026—2050. This represents approximately 65 per cent growth from 2026—2050, compared to 75 per cent growth in the 2025 APO. This comparative moderation in demand growth is mainly attributable to geopolitical uncertainties that impact the Ontario economy; a lower EV adoption forecast; and the enhanced eDSM framework.

2.3.2 High-Demand Scenario

The high electricity demand scenario represents a future in which electricity consumption grows significantly due to a combination of accelerated economic activity, resolution of trade disruptions, removal of Canadian internal trade barriers and diversification of external trading partners, and rapid electrification across sectors. This scenario assumes that both public and private sectors actively pursue some decarbonization, supported by favourable market conditions and technological advancements. The forecast for the high-demand scenario was adjusted to reflect stronger assessed projections in economic growth and increased large step load materialization relative to the reference year.

Net annual energy demand of 154 TWh in 2026 is forecasted to grow to 297 TWh in 2050, or a 2.8 per cent compound annual growth rate from 2026—2050. This represents 92 per cent growth from 2026—2050, driven by strong interest from new commercial artificial intelligence service-providing data centres; industrial EV production and supply chain projects and industrial sector companies’ prospective project pipelines; and incremental decarbonization and electrification projects across the economy.

2.3.3 Low-Demand Scenario

The low electricity demand scenario represents a future where electricity consumption grows at a more gradual pace due to slower economic activity, stronger trade disruption, and generally weaker investor confidence and demand for Ontario’s goods and services. Market conditions and technological adoption are less favourable, resulting in more modest increases in electricity demand. The scenario reflects a more conservative outlook, emphasizing system efficiency and reliability under lower growth conditions; and may present export opportunities, as discussed further in Section 4.4. The forecast of the low-demand scenario was adjusted to reflect weaker assessed projections in economic growth and decreased large step load materialization relative to the reference year.

Net annual energy demand of 150 TWh in 2026 is forecasted to grow to 207 TWh in 2050, or a 2.1 per cent compound annual growth rate from 2026—2050, representing 38 per cent growth over this period.

For the purpose of this outlook and to enhance clarity and conciseness of the outlook, the demand forecast will be discussed in terms of the three scenarios.

2.3.4 Forecast Drivers Across Scenarios

Table 1 provides a high-level comparison of primary forecast drivers across each scenario. Further detail on data and assumptions is provided in the [Demand Forecast Module](#).

Table 1 | Forecast Driver Scenario Summary

Forecast Driver	Reference Scenario	High-Demand Scenario	Low-Demand Scenario
Building electrification policy	No municipal standards. Continued IESO / Enbridge / Natural Resources Canada programs incenting heating electrification over the entire forecast period.	Green Standard-like building code adopted broadly by major Ontario municipalities resulting in all new building space heating, water heating post 2040 being heat pumps, and all cooking and clothes drying being electric.	No municipal standards. IESO / Enbridge / Natural Resources Canada programs incenting heating electrification conclude after current frameworks / budget allocation (prior to completion of the forecast period).

Forecast Driver	Reference Scenario	High-Demand Scenario	Low-Demand Scenario
		<p>Continued IESO / Enbridge / Natural Resources Canada programs incenting heating electrification over the entire forecast period.</p> <p>Assumes building performance standards being considered by major municipalities.</p> <p>40 per cent emissions reduction by 2030 and >80 per cent reduction by 2050.</p> <p>Applies to all existing buildings >25,000 square feet.</p>	
Nation-building and priority projects	Priority mining projects known at the time of forecast development were modelled	Critical minerals driving higher mining. High-speed rail connecting Toronto–Quebec City. More housing.	Not Applicable
Commercial data centre development	Growth based on known projects.	Growth based on known projects with different likelihood factors and confidence levels.	Growth based on known projects with different likelihood factors and confidence levels.

Forecast Driver	Reference Scenario	High-Demand Scenario	Low-Demand Scenario
Industrial mineral extraction and processing sub-sector	Growth based on known projects with moderate adjustment for project uncertainty, some mining electrification, and continued mining growth.	Growth based on known projects, some mining electrification with minor adjustment for uncertainty, and continued mining growth with higher growth rate and accelerated development timelines due to potential impacts of renewed focus on critical minerals.	Lower growth based on known and unknown projects with significant adjustment for uncertainty, lower overall growth rates, and lower mining electrification.
Industrial primary metals and automobile / transportation machinery production sub-sectors	Continued growth of sectors, including announced and confirmed large step load projects.	Continued growth of sectors, including higher percentage of potential large step load projects.	Slowdowns in sector growth.
Transportation electrification	Continued considerable growth in EV adoption below the (pre-February 2026) federal light-duty sales targets ³ . Rail projects planned or under development across Ontario.	Strong growth in EV adoption consistent with federal (pre-February 2026) light-duty sales targets. Rail projects same as reference.	Moderate to low growth in electric vehicle adoption significantly below federal (pre-February 2026) light-duty sales targets. Rail projects same as reference.

³ In February 2026, the federal government announced the repeal of the Electric Vehicle Availability Standard and its annual sales targets, and policy shift to vehicle emissions standards. The government has stated that it expects the emissions standards to result in EVs representing 75% of new sales in 2035 and 90% in 2040 (from 100% in 2035). These changes will be fully reflected in the 2027 APO.

Forecast Driver	Reference Scenario	High-Demand Scenario	Low-Demand Scenario
EDSM programs	Initially aligned with 2025–2027 eDSM program plan then higher long-term savings levels, reflecting planned continued growth of eDSM targets and budgets and load growth. New savings each year represent 1 per cent of the gross demand forecasted for the year.	Initially aligned with 2025–2027 eDSM program plan then higher long-term savings levels, reflecting planned continued growth of eDSM targets and budget and higher load growth. New savings each year represent 1 per cent of the gross demand forecasted for the year.	Initially aligned with 2025–2027 eDSM program plan, then long-term savings levels consistent with current program plan levels adjusted for load growth. New savings each year represent 0.9 per cent of the gross demand forecasted for the year.

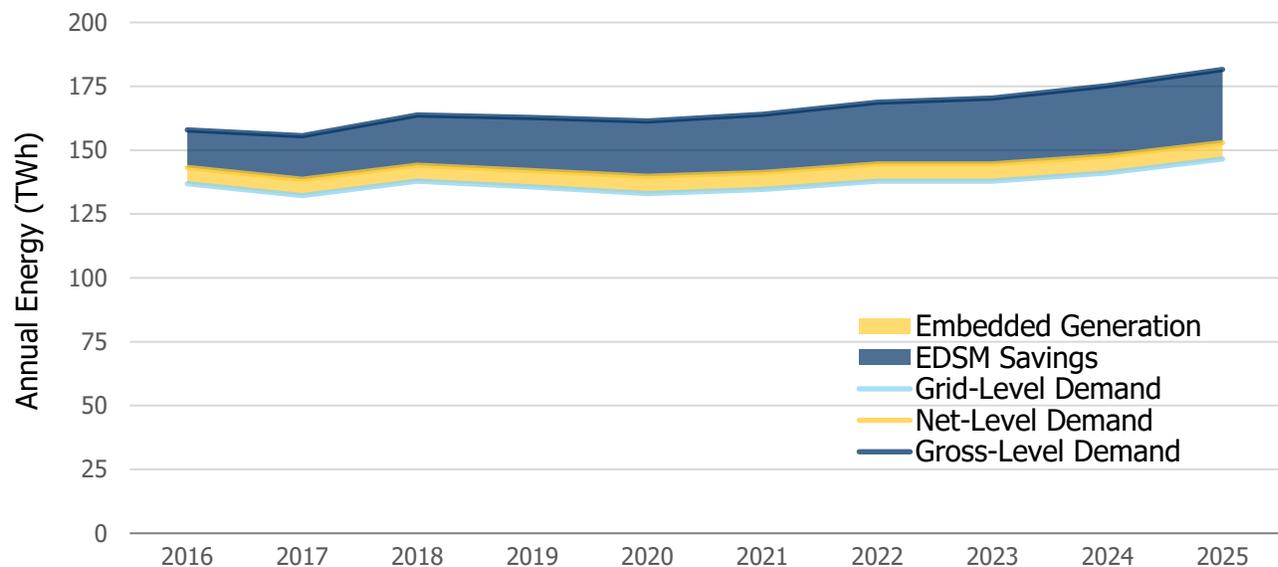
2.4 Historical Energy Demand

After an extended period of flat growth, grid-level demand has been gradually rising, ranging between 132 TWh and 146 TWh since 2016, as shown in Figure 3⁴. Although eDSM savings from programs and regulations and production from embedded generation⁵ have reduced the need for grid-supplied energy, the increase is primarily the result of changes in Ontario’s demographic and economic composition. Over the last five years population, electrified space heating, industrial and agricultural production, and transportation electrification growth have steadily increased demand. Annual savings from eDSM programs and regulations increased from approximately 15 TWh in 2016 to 29 TWh in 2025, while production from embedded generation has supplied approximately 6–8 TWh of energy each year.

⁴ Historical energy demand presented is actual observed demand based on actual weather and has not been weather normalized.

⁵ Embedded generation describes generators that are not registered participants in the IESO-administered wholesale electricity market, are typically distribution-connected, and reduce demand through the bulk electricity system. Embedded generation does not include behind-the-meter generation (i.e., load displacing generation).

Figure 3 | Historical Energy Demand



Historical energy demand is presented on an actual, realized-weather basis and shown at the grid, net and gross levels, while the demand forecasts presented in this APO are on a normal weather scenario basis and are at the net level. Some end-use-specific energy demand and fuel-specific generation is weather sensitive (e.g., building space heating, building space cooling, lighting, solar resources, and wind resources). Normal weather refers to expected average weather conditions for the related geographic region while historical actual weather energy demand and embedded generation are observed values that are impacted by actual realized weather conditions. For example, the lower demand in 2017 is attributed in part to extremely mild weather in that year.

Demand forecasts are produced under normal weather scenarios where energy and peak demand and embedded generation production reflect median-expected levels resulting from weather simulations under historical weather data⁶. Actual resulting weather in the year can be random and may vary in temperature, precipitation, sun exposure, wind and/or humidity — each potentially impacting energy demand and/or embedded generation production.

2.5 Demand Forecast: Growth Components

The three demand forecast scenarios in this and subsequent APOs will be reported in terms of the following growth-related components. This aggregated view will help the sector better understand the impact of inherent demand uncertainty on overall electricity system needs by separating more variable drivers from more stable areas of demand growth. Going forward, this approach should allow for improved tracking and monitoring of the key drivers, as well as year-over-year analysis of the resulting net forecast. Figure 4 shows the 2026 APO demand forecast by scenario and component.

⁶ Normal weather accounts for weather based on historical climate only. For more information on weather normalization, see the [2026 APO Demand Forecast Methodology](#).

1. **Reference year demand** is the forecasted annual energy demand for the year 2026 (representing year zero of the outlook period) and the basis of demand forecast assumption projections and future levels of electricity demand reported over the 2027–2050 period. Reference year demand is informed by the medium-term demand forecast in the IESO’s Reliability Outlook⁷; for the 2026 APO, the [June 2025](#) Reliability Outlook was available during the demand forecast development period.
2. **Baseline growth** represents forecasted future changes in electricity demand modelled in the residential, commercial, industrial, agricultural and other sectors independently that have underpinned past demand forecasts. This demand forecast growth component is based on more stable and readily available assumptions and projections, which remain relatively steady throughout the forecast period. This includes population, household, commercial floorspace, economic output, income and employment, fuel-rate levels and other demand forecast influencers such as trends in consumer preferences, sector structures, economic and policy and trends, and the IESO’s regional planning process.
3. **Growth margin** represents forecasted future changes in electricity demand based on volatile assumptions and projections in terms of trends and planned projects, and is categorized as:
 - Economic development, which includes:
 - commercial data centres;
 - industrial mineral extraction and processing;
 - industrial automobile and transportation machinery manufacturing;
 - industrial chemical production; and
 - other industrial manufacturing.
 - Societal electrification, which includes:
 - building decarbonization, including in the residential and commercial sectors;
 - industrial decarbonization, including the mineral extraction and processing, primary metals manufacturing and other manufacturing sub-sectors; and
 - transportation sector decarbonization.

Figure 4 | Demand Forecast by Scenario and Component

⁷ The Reliability Outlook demand forecast is developed through the assessment of economic and demographic projections, conservation impacts, the effect of non-market participant behind-the-meter generation resource production and business intelligence surrounding large step loads. These factors inform the development of the reference year demand forecast. Additional impacts such as the Industrial Conservation Initiative, time-of-use rates and demand response are also accounted for. While the APO’s long-term demand forecast and Reliability Outlook medium-term demand forecast methodologies and processes are unique, they align in terms of information and data inputs.

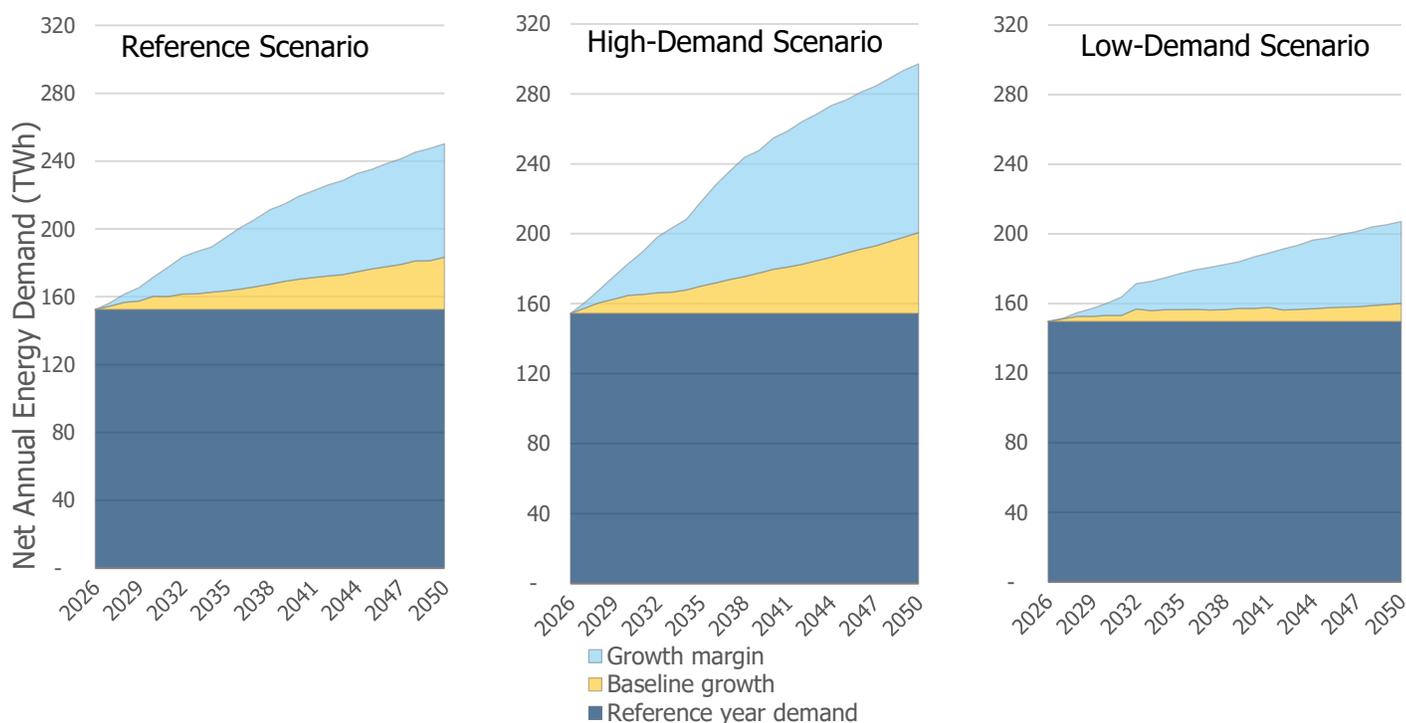


Table 2 | Forecast Summary

Metric	Unit of Measure	Reference Scenario	High-Demand Scenario	Low-Demand Scenario
Reference Year Demand	TWh	152	154	150
Total Demand in 2050	TWh	250	297	207
Total Growth by 2050	% of Reference Year Demand	65	92	38
Total Annual Growth Rate (2026–2050)	CAGR ⁸	2.1	2.8	1.4
Near-Term Annual Growth Rate (2026–2030)	CAGR	3.0	4.3	1.8
Medium-Term Annual Growth Rate (2030–2035)	CAGR	2.6	3.6	2.0

⁸ Compound Annual Growth Rate

Long-Term Annual
Growth Rate
(2035–2050)

CAGR

1.7

2.1

1.0

3. Supply and Transmission Outlook

Ontario's resource mix will undergo significant change over the next two and a half decades as available capacity from the nuclear fleet continues to be impacted by refurbishments; other resources reach end of life; and available generation and storage increase due to actions taken by the IESO and resulting from government policy. To support the growing resource fleet, significant expansion of transmission infrastructure across the province will also be required to ensure deliverability of new resources. The expansion of transmission infrastructure is also needed to meet economic development goals set out in the Government of Ontario's *[Energy for Generations: Ontario's Integrated Plan to Power the Strongest Economy in the G7](#)*.

This section describes the availability of the province's existing resources over the outlook period, the ability of the bulk transmission system to continue to supply electricity where it is needed, and the various major transmission projects that are underway to maintain system reliability and enable growth.

3.1 Supply Outlook

This section provides an outlook on the installed and effective capacity available to contribute to meeting system needs; and informs the resource adequacy assessments presented in Section 4. Installed capacity refers to a resource's maximum potential output; while effective capacity accounts for real-world factors such as fuel availability, ambient conditions, and outages. As a result, effective capacity offers a more accurate measure of a resource's ability to support reliability across different seasons.

The 2026 APO presents a single supply outlook that informs the analysis presented in this outlook and forthcoming 2026 Capacity Expansion Scenario and Outcomes Module. The supply outlook builds on the 2025 APO supply outlook and consists of existing and committed resources — including resources committed through actions undertaken by the IESO and/or informed by government policy — until their contract or commitment period ends. Updates to the nuclear refurbishment and new nuclear development schedules are included; and an increase in wind, bioenergy and natural gas generation due to recommitment of resources through the second Medium-Term (MT2) Request for Proposals (RFP) that awarded five-year contracts to 27 facilities totalling 3,002 megawatts (MW) of maximum contract capacity. Although not shown in the figures, firm exports to Québec under the Hydro-Québec Capacity Sharing Agreements are included in the resource adequacy assessment in Section 4.

Consistent with the 2025 APO, the supply outlook excludes capacity from resources expected to be committed in upcoming Capacity Auctions to better identify system needs and establish targets in response to those needs. Other resources that are expected to contribute to meeting needs as a result of in-flight procurements (e.g., new-build resources from the second Long-Term (LT2) RFP)

are also excluded from the supply outlook. These resources are considered as in-flight actions in the integrated reliability needs assessment in Section 8.

Figure 5 shows the total installed capacity by fuel type for the outlook period, which assumes resources are available until end of contract or commitment period⁹. Installed capacity remains relatively stable around 40 gigawatts (GW) until 2033, then declines in the 2030s due to contract expirations, levelling off around 25 GW in the 2040s.

Figure 5 | Installed Capacity

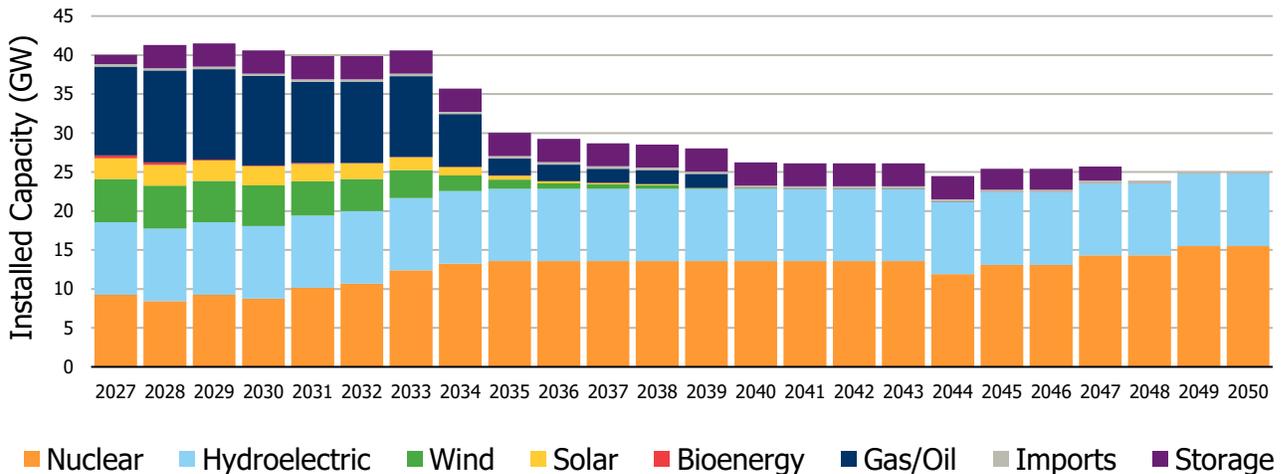
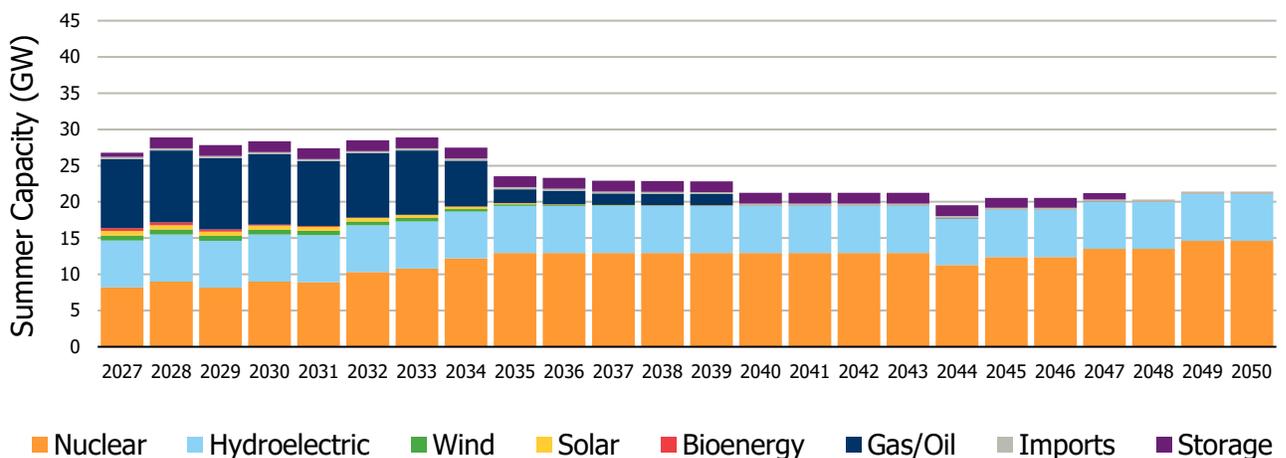


Figure 6 shows summer effective capacities by fuel type for the outlook period. Summer effective capacity varies between 26 GW and 29 GW during the 2020s, declines to around 23 GW in 2035 and levels off around 21 GW in the 2040s.

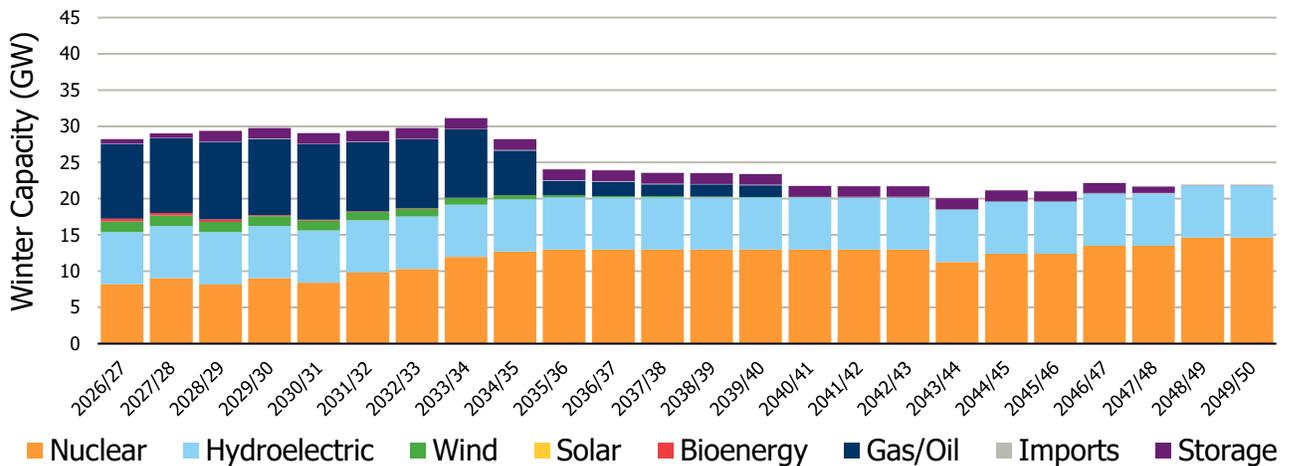
Figure 6 | Summer Effective Capacity



⁹ The exception is hydroelectric resources, which are assumed to be available throughout the outlook period regardless of ownership, age of facility, etc.

Figure 7 shows winter effective capacities by fuel type for the outlook period. Winter effective capacity ranges between 28 GW and 31 GW until the mid-2030s, after which it declines and levels off between 21 GW and 23 GW.

Figure 7 | Winter Effective Capacity



3.1.1 Installed Capacity

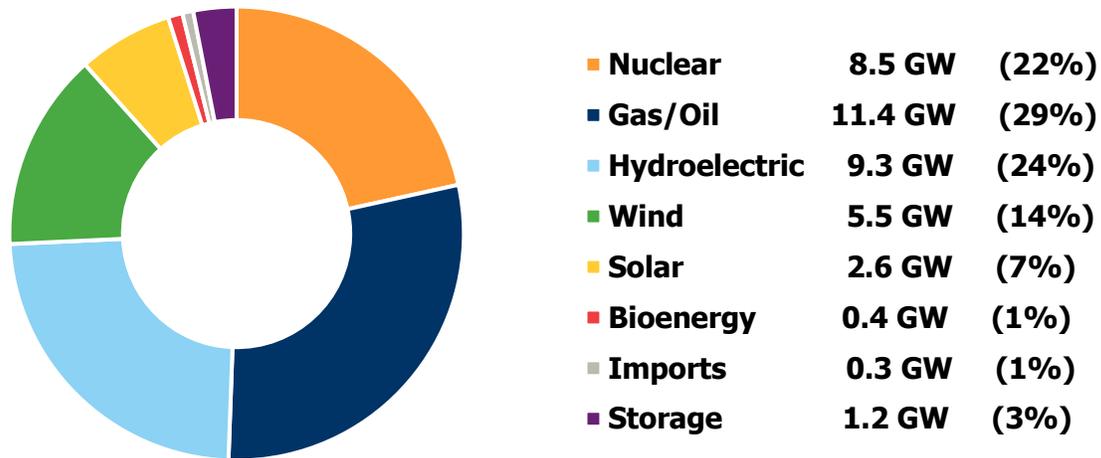
A total installed capacity of 39 GW is anticipated in Ontario by the end of 2026, consisting of a diverse mix of resources as shown in Figure 8¹⁰. The majority of Ontario’s installed capacity comes from nuclear¹¹, gas, and hydroelectric resources. The remainder is made up of wind, solar, storage and bioenergy resources; contribution of imports is also considered¹². The contribution of energy storage to Ontario’s installed capacity is expected to increase as new storage resources come online over the next few years.

¹⁰ Includes both transmission and distribution-connected resources visible to the IESO.

¹¹ Nuclear-installed capacity does not include nuclear units on refurbishment.

¹² Non-firm imports are included in the resource adequacy assessments in this APO, consistent with the approach outlined in the [2026 APO Resource Adequacy and Energy Assessments Methodology](#).

Figure 8 | Installed Capacity in 2026 by Fuel Type



3.1.2 New and Refurbished Nuclear Resources

Throughout the 2020s and 2030s, Ontario’s electricity system will see a significant change in the available capacity of its nuclear fleet. The Pickering A Nuclear Generating Station (NGS) retired at the end of 2024, and refurbishments requiring long-term outages at Pickering B NGS, Darlington NGS and Bruce NGS will increase resource needs. Figure 9 illustrates known retirements and planned refurbishments¹³ over the next decade. As the nuclear refurbishment schedule evolves, updates will be incorporated into future APOs.

Although not shown in the figure, the supply outlook also includes contribution from four small modular reactors at Darlington and new large-scale nuclear development in the 2040s. Uncertainties in the development of new large-scale nuclear resources are discussed in Section 7.2.

¹³ The completion timeline of mid-2026 for the Darlington G4 refurbishment was based on best-available information at the time of analysis; however, the unit returned to service ahead of schedule, as [announced](#) on Feb. 2, 2026.

Figure 9 | Nuclear Refurbishment Schedule

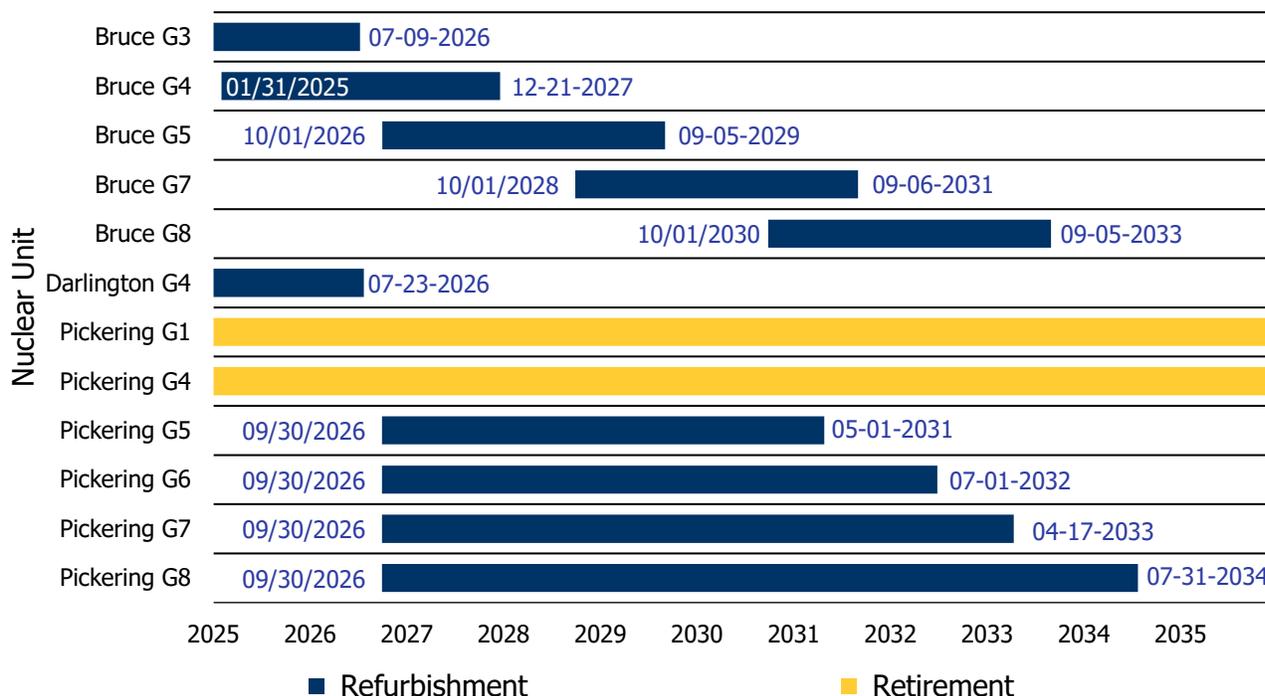
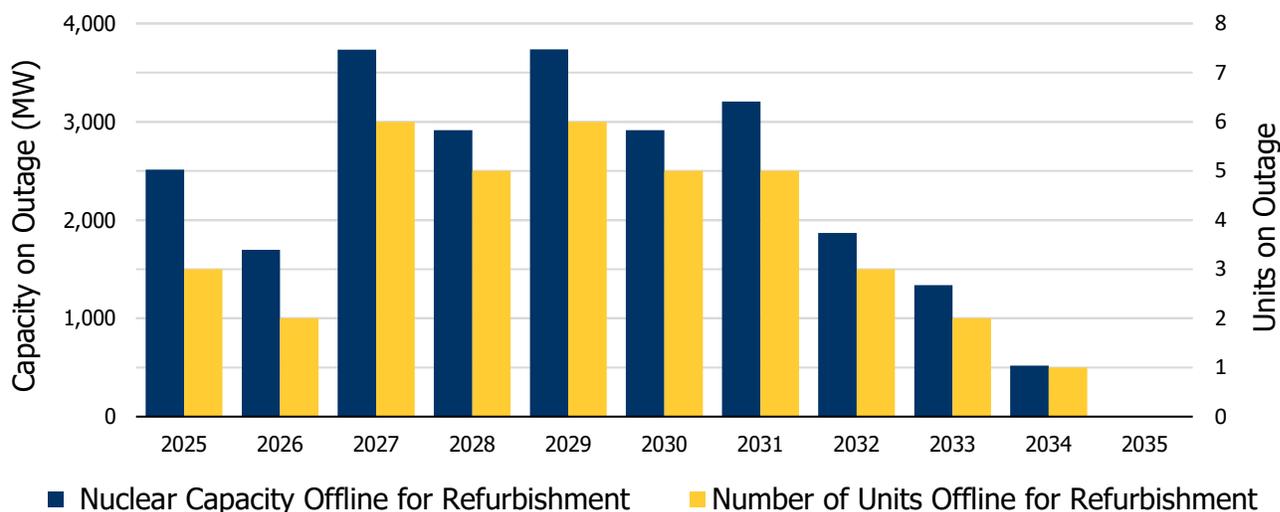


Figure 10 indicates that refurbishment activity will vary, with between 500 MW to 3,700 MW on refurbishment each summer until 2034. The Darlington NGS, Bruce NGS and Pickering NGS refurbishments are expected to be complete in 2026, 2033, and 2034, respectively. By the end of 2034, a total of 10.6 GW of nuclear capacity will have undergone refurbishment. In 2043, Bruce A units 1 and 2 are expected to reach the end of their expected operating lives, with potential for a life extension of the units, as indicated in *Energy for Generations*.

Figure 10 | Summer Refurbishment Outages



3.1.3 Contracts and Commitments Ending

Over the course of the outlook, many generation contracts/commitments held by the IESO or the Ontario Electricity Financial Corporation will expire. As shown in Figure 11, expirations increase significantly in the middle of the next decade as the majority of gas resources reach contract end in 2034–2035. In addition to the procurement of new resources, growing demand is expected to be met by recontracting of existing resources in a competitive manner utilizing medium-term procurements, repowering of existing resources reaching end of useful life and the annual Capacity Auction (described further in Section 9).

Figure 11 | Existing Resources Post-Contract Expiry, by Fuel Type

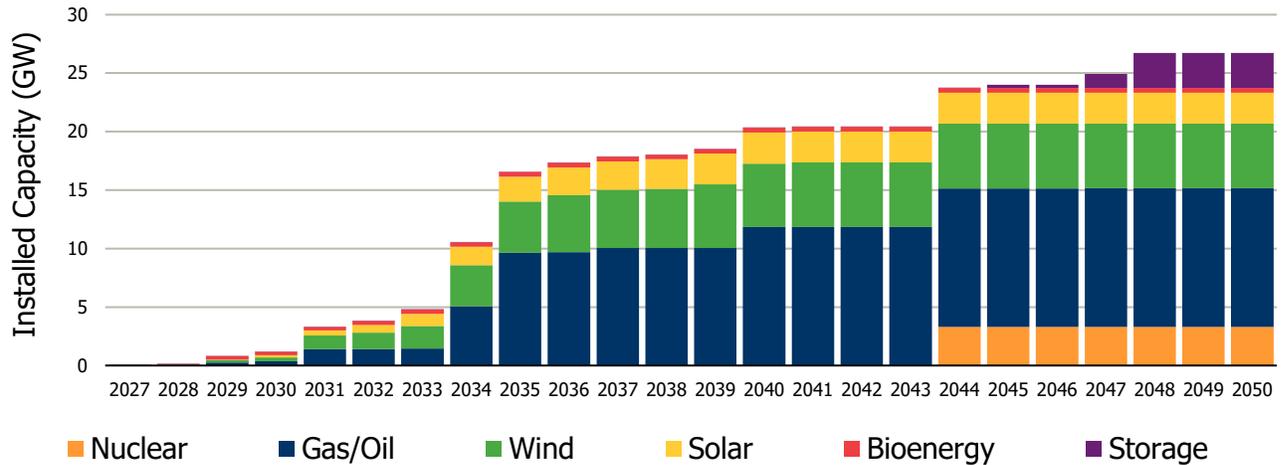


Figure 12 shows the summer effective capacity, by fuel type, that will reach end of contract over the course of the outlook period.

Figure 12 | Summer Effective Capacity Post-Contract Expiry, by Fuel Type

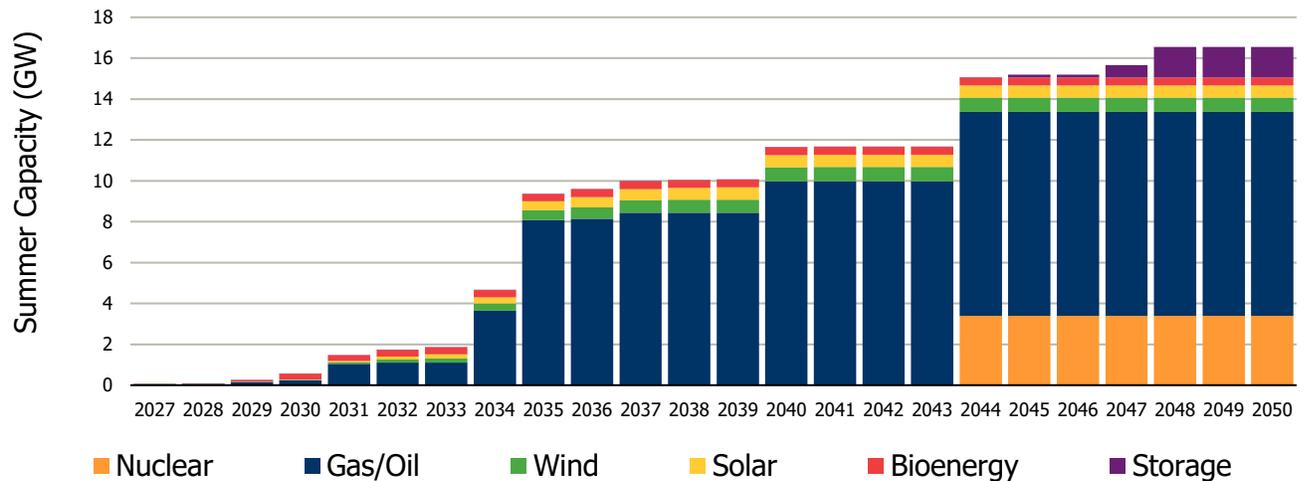
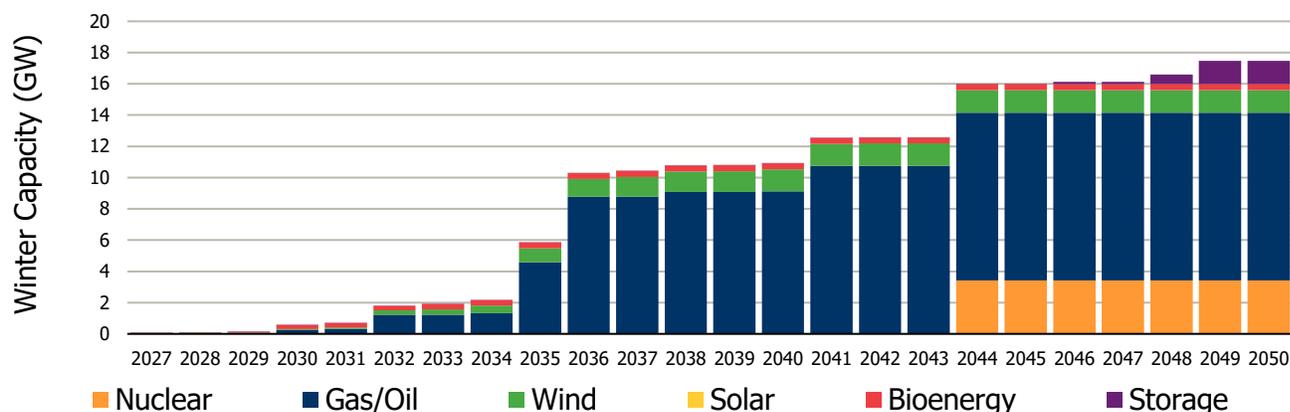


Figure 13 shows the winter effective capacity, by fuel type, that will reach end of contract over the course of the outlook period.

Figure 13 | Winter Effective Capacity Post-Contract Expiry, by Fuel Type



3.2 Transmission System Outlook

This section describes the capability of the transmission system to transport electricity from supply resources to consumers across the province under forecast demand growth. There are constraints inherent in the existing transmission system that can limit the amount of power transported at different times and under different circumstances. This includes the ability for power to be imported and exported into and out of the province over interties with Québec, Manitoba, New York, Michigan, and Minnesota. As transmission assets age or retire, and as new facilities come online as a result of the IESO’s transmission planning, or other policy-driven transmission recommendations, the capability of the transmission system changes. New transmission facilities that will be incorporated into transmission assessments are also summarized in this section.

3.2.1 Existing Bulk Transmission System

The bulk transmission system refers to the network of high-voltage transmission lines and transformer stations (TS) that transport power in high volumes over long distances. This network is critical for ensuring power generated by supply resources can always be transferred to consumers under normal operating conditions, and during and after disturbances. Within Ontario, transmission interfaces that form the boundaries between the 10 IESO electrical zones are used to describe the capabilities of the bulk transmission system. The ability of power to flow across these transmission system interfaces is a key input to resource adequacy assessments because it can limit the delivery of power from one part of the province to another and contribute to demand and supply imbalances at a zonal level. Over time, as the transmission system changes through reinforcements and/or retirements, the nature of power flows can change and create the need to define new interfaces.

Power is transferred between Ontario and neighbouring jurisdictions via bulk transmission interties — the facilities at Ontario’s borders where transmission lines and related equipment interconnect with neighbouring jurisdictions. These interties provide several system benefits that include market-driven trading opportunities, and the potential for contractually secured imports and exports to support resource adequacy needs in Ontario and neighbouring jurisdictions. Other benefits of participating in an interconnected system include stability, frequency regulation and post-event system restoration.

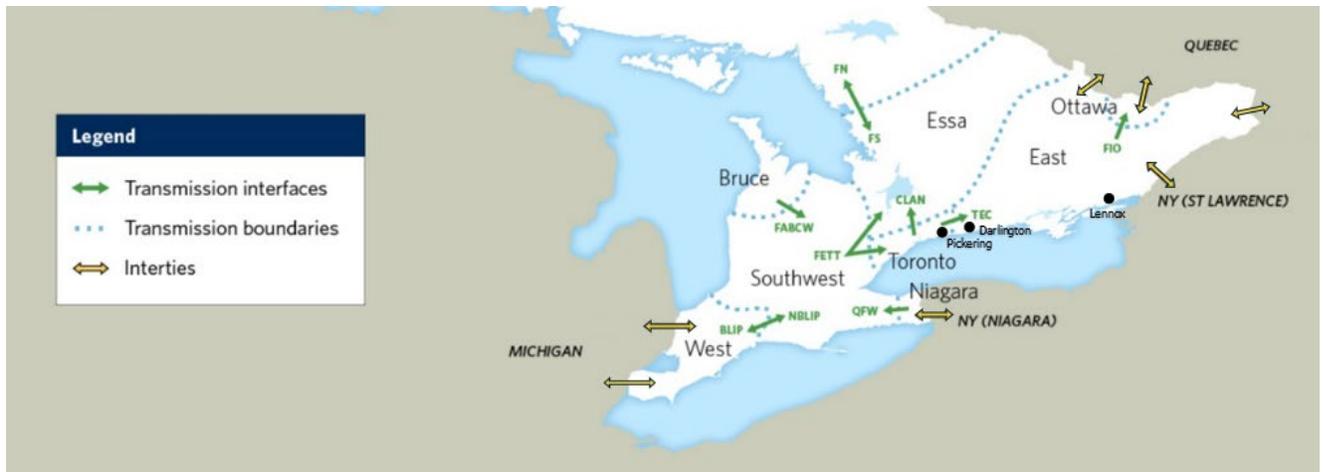
Ontario’s main internal transmission interfaces and interties with neighbouring jurisdictions are shown in Figures 14 and 15. More information about the transfer capabilities of Ontario’s transmission

interfaces and interties is provided in the [Ontario Transmission Interfaces and Interties Overview Module](#).

Figure 14 | Northern Ontario's Major Transmission Interfaces, Electrical Zones, and Interties



Figure 15 | Southern Ontario’s Major Transmission Interfaces, Electrical Zones, and Interties



Since the 2025 APO, transmission facilities that were in development have been completed and are now in service, providing benefits for Ontario ratepayers. This includes facilities that were part of the Windsor-Essex bulk transmission plan recommending transmission reinforcements in the west of Chatham area, as described in Table 3.

Table 3 | Description and Status of Recently Completed Bulk Transmission Projects

Project	Rationale
West of Chatham Area Reinforcements	<p>Addressing demand due to growth in the agricultural and automotive sector in the Windsor-Essex region.</p> <p>This multi-phase reinforcement project consists of a new Lakeshore TS and two sub-stations in Essex, and a new double-circuit 230 kilovolt (kV) transmission line from Chatham Switching Station (SS) in Chatham-Kent to Lakeshore TS in Essex.</p>

3.2.2 Planned Transmission System Expansion Projects

Planned transmission projects that are sufficiently far along in their planning and development to be considered committed projects for the purpose of long-term system planning are described in this section. The locations of these planned transmission projects are shown in Figures 16 and 17. The majority of the planned transmission projects summarized in Table 4 were recommended through the IESO’s transmission system plans; the table also indicates expected in-service dates and the implementation status for each project. Status categories are as follows:

- Early-Stage Project Development Work: Project design and engineering underway.
- Advanced-Stage Project Development Work: Ontario Energy Board, environmental assessments, and other project approvals pending or complete.

- Construction in Progress: Required approvals are in place and construction is underway.

The system needs and drivers for the included planned transmission projects have been described in detail in bulk transmission system plans, regional plans and regulatory approval submissions to the Ontario Energy Board¹⁴. For many of these projects, which were identified in *Energy for Generations* and are marked with a (*) in the table, subsequent action has been taken by the government to accelerate their development.

Figure 16 | Planned Transmission Projects — North¹⁵



¹⁴ Individual planning studies are published on the IESO’s [Regional Planning page](#).

¹⁵ Dotted lines in Figures 16 and 17 indicate conceptual locations for anticipated transmission projects, and not final routes.

Figure 17 | Planned Transmission Projects — South



Table 4 | Description and Status of Planned Bulk Transmission Projects

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
Waasigan Transmission Line (two phases)*		Description: The first phase of this project consists of a new double-circuit 230 kV transmission line between Lakehead TS (Thunder Bay) and Mackenzie TS (Atikokan), while the second phase consists of a new single-circuit 230 kV transmission line between Mackenzie TS and Dryden TS (Dryden). The project will increase supply to the region west of Thunder Bay. Status: Construction in progress.	Q3 2026 (phase 1) Q4 2027 (phase 2)	Hydro One First Nation Partnership ¹⁶

¹⁶ Consists of nine First Nation partners including Eagle Lake First Nation, Fort William First Nation, Gakijiwanong Anishinaabe Nation, Lac Seul First Nation, Nigigoonsiminikaaning First Nation, Ojibway Nation of Saugeen, Seine River First Nation, Waabigoon Lake Ojibway Nation, Lac des Mille Lacs First Nation.

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
Etobicoke Greenway Project (formerly Richview to Manby Transmission Line Reinforcement)	Toronto Integrated Regional Resource Plan (IRRP) – November 2021 IRRP Addendum	Description: This project will improve the bulk transmission supply into the city of Toronto. Status: Construction in progress.	Q4 2027	Hydro One
Flow East Towards Toronto (FETT) Capacity Upgrade (formerly Richview to Trafalgar Reinforcement)		Description: This project will increase the FETT transfer capability by approximately 2,000 MW through upgrades to sections of the existing 230 kV lines between Trafalgar TS (Oakville) and Richview TS (Etobicoke) and will enable some of the capacity required east of the FETT interface to be replaced with capacity sited elsewhere in the province. Status: Construction in progress.	Q4 2026	Hydro One
East of London Area Reinforcements	Central-West Bulk Plan - April 2024	Description: A section of the existing 230 kV path between Middleport TS (Hamilton) and Buchanan TS (London) will be rebuilt to increase supply capability in the London area region, improve transfer capability of the bulk Negative Buchanan-Longwood Input (NBLIP) interface, and to continue to support local economic development. Status: Early-stage project development work.	Q4 2026	Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
J5D Phase Angle Regulator (PAR) Replacement	Ontario-Michigan J5D Study	<p>Description: The existing PAR on J5D, a critical part of the interconnection between the high-voltage grids in Ontario and Michigan (in the Windsor area), is due to be replaced at its end of life. The PAR will be upgraded to increase its capability and improve control of scheduled intertie flows between the two jurisdictions.</p> <p>Status: Advanced-stage project development work.</p>	Q4 2028	Hydro One
Bulk System Reactive Requirements in Northern Ontario	Northern Ontario Voltage Study – IESO Technical Report – December 2023	<p>Description: Voltage support devices across northern Ontario are required to address operational challenges in managing high voltages on the system, and to support the integration of several transmission line projects planned in northern Ontario, including the Wataynikaneyap and Waasigan transmission line projects. The reactive support devices consist of:</p> <ul style="list-style-type: none"> two new shunt reactors at Porcupine TS (Timmins), and two new shunt reactors at Lakehead TS (Thunder Bay) by 2027 for voltage control; and 	2027–2029	Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
		<ul style="list-style-type: none"> one new line reactor at Mississagi TS (Algoma), and two new static synchronous compensators at Mississagi TS and at Algoma TS (Algoma) by 2029 for voltage stability. <p>While not directly recommended as part of the Bulk System Reactive Requirements in the Northern Ontario plan, the study referenced additional devices previously recommended through other studies that are still needed to help manage voltages in northern Ontario: a static synchronous compensator and shunt reactor at Lakehead TS (Thunder Bay), and two shunt reactors at Mackenzie TS (Atikokan).</p> <p>Status: Early-stage project development work.</p>		
West of London Area Reinforcements*	West of London Bulk Plan - September 2021	<p>Description: In addition to the West of Chatham reinforcements, this project is required to supply the agricultural sector growth in the Windsor-Essex region and improve transfer capability of the bulk NBLIP interface.</p> <p>This project consists of a new double-circuit 230 kV transmission line from Lambton TS (Sarnia) to Chatham SS (Chatham-Kent), and a new single-circuit 500 kV transmission</p>	<p>Q4 2028 (Lambton to Chatham)</p> <p>Q1 2030 (Longwood to Lakeshore)</p>	Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
		<p>line from Longwood TS (London) to Lakeshore TS (Essex).</p> <p>Status: Advanced-stage project development work for the Lambton TS to Chatham TS transmission line and early-stage project development work for the Longwood TS to Lakeshore TS transmission line.</p>		
Welland–Thorold Power Line	Niagara IRRP – December 2022	<p>Description: This project consists of a new double-circuit 230 kV transmission line from the existing 230 kV corridor in Thorold to the Crowland TS in Welland, to support strong demand in the Niagara Region.</p> <p>Status: Early-stage project development work.</p>	Q3 2029	Hydro One
Durham–Kawartha Power Line Project*	Gatineau Bulk Plan – December 2022	<p>Description: This project consists of a new double-circuit 230 kV transmission line from Clarington TS (Oshawa) to Dobbin TS (Peterborough).</p> <p>The transmission reinforcements ensure reliability in the Peterborough to Quinte West area over the next 20 years.</p> <p>Status: Early-stage project development work.</p>	Q4 2029	Hydro One
Northeastern Ontario Bulk Transmission System Reinforcements (Northeast Power Line, North Shore)	Northeast Bulk Plan – October 2022	<p>Description: This project consists of transmission reinforcements to support growing electricity demand in northeast Ontario, particularly in the areas of Sault Ste. Marie and Timmins, primarily driven by strong</p>	Q4 2029 for Mississagi to Hanmer	Hydro One First Nation Partnership Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
Link, Wawa to Timmins Transmission Line)*		<p>economic development in mining and other industry, electrification and decarbonization initiatives, government policies, and the need to enable new electricity resource development.</p> <ul style="list-style-type: none"> • a new single-circuit 500 kV transmission line between Mississagi TS (Algoma) and Hanmer TS (Sudbury), and two new autotransformers at Mississagi TS (Algoma); • a new double-circuit transmission line between Mississagi TS (Algoma) and Third Line TS (Sault Ste. Marie); and • a new single-circuit 230 kV transmission line (built to 500 kV standard) between Wawa TS (Algoma) and Porcupine TS (Timmins). <p>Status: Advanced-stage project development work. Early-stage project development work for the Wawa TS (Algoma) to Porcupine TS (Timmins).</p>	<p>Q4 2029 for Mississagi to Third Line</p> <p>Q4 2030 for Wawa to Porcupine</p>	<p>First Nation Partnership</p> <p>Hydro One</p>
Cambridge-Kitchener/Brant-Brantford Priority Transmission Project	Kitchener-Waterloo-Cambridge-Guelph IRRP	<p>Description: This project consists of a new 500/230 kV autotransformer station in Puslinch (south of Guelph) and new double-circuit 230 kV transmission line from the new Puslinch station to Preston TS (Cambridge), to address significant, high priority, urgent electricity infrastructure needs,</p>	2029–2031	Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
		<p>driven by new large-scale customers and electrification.</p> <p>Status: Early-stage project development work.</p>		
Lakeshore-Lauzon Power Line*	Windsor-Essex IRRP – April 2025	<p>Description: This project consists of a new double-circuit 230 kV transmission line from Lakeshore TS (Essex) to Lauzon TS (Windsor), to ensure reliability and support economic development in West Essex and Windsor.</p> <p>Status: Early-stage project development work.</p>	Q4 2032	
Bowmanville to the GTA Transmission Reinforcement*	South and Central Bulk Plan	<p>Description: The project will consist of a new double-circuit 500 kV line from Bowmanville SS (east of Toronto) to Cherrywood TS (Pickering) to enable the connection of the small modular reactors at Bowmanville SS and deliverability of eastern generation resources towards the Greater Toronto Area (GTA).</p> <p>Status: Early-stage project development work.</p>	Q4 2032	
High-Voltage Direct Current Supply to Toronto	Toronto IRRP – October 2025	<p>Description: This project will enable the load growth forecasted for Toronto under a number of future scenarios, while supporting load growth in the GTA more broadly and improving deliverability of eastern generation resources.</p>	2037 or earlier	

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
		Status: Project subject to a competitive procurement process.		
North-South Transmission Reinforcement*	Northern Ontario Bulk Plan – September, 2025	Description: This project consists of a new 500kV transmission line from Essa TS (Barrie) to Hanmer TS (Sudbury) that will support demand growth and the siting of new supply resources in northern Ontario.	Q1 2032	
		Status: Early-stage project development work.		
Northwest Transmission Reinforcement* Red Lake Area Supply Capacity*	Northwest Region IRRP Addendum – August 2025	Description: Reinforce the existing 115 kV Ear Falls to Red Lake and Dryden to Ear Falls transmission corridors. Hydro One Transmission will construct two new double-circuit 230 kV transmission lines — one from Dryden TS (Dryden) to Ear Falls TS (Ear Falls), and another from Ear Falls TS to Red Lake SS (Red Lake) — and install two new 250 MVA 230/115 kV autotransformers at Ear Falls TS. Wataynikaneyap Power will install two new 250 MVA 230/115 kV autotransformers at Red Lake SS.	2032	
		Status: Early-stage project development work.		
Greenstone Transmission Line*	Policy-Driven Project	Description: As described in <i>Energy for Generations</i> , in January 2025, Ontario signed the Shared Prosperity Agreement with Aroland First Nation. As part of that agreement, the	2032	Hydro One

Project	Transmission Plan or Study (If Applicable)	Description / Status	Expected In-Service	Transmitter
		<p>Government of Ontario is advancing permitting and development of the Greenstone Transmission Line — a new 230 kV transmission line between the existing 230 kV East-West Tie near Nipigon Bay (Thunder Bay) connects to a new 230 kV station near Longlac TS (Thunder Bay) and extends north to terminate at a new switching station in or near Aroland First Nation.</p> <p>Status: Early-stage project development work.</p>		

4. Resource Adequacy

The IESO closely monitors Ontario’s electricity system needs — energy, capacity, transmission, and operational characteristics — and works with sector stakeholders and communities to address potential shortfalls or constraints in a timely and cost-effective manner. Considering the demand forecasts, supply and transmission outlooks presented in previous sections, capacity and energy needs in this section are identified for each scenario over the entire outlook period. The reference scenario needs identified in the near and medium term are expected to be met with the in-flight actions discussed in Section 8. Compared to the 2025 APO, medium- and long-term resource adequacy needs have decreased due to a lower demand forecast and the contribution of resources secured through the MT2 RFP.

4.1 Reserve Margin

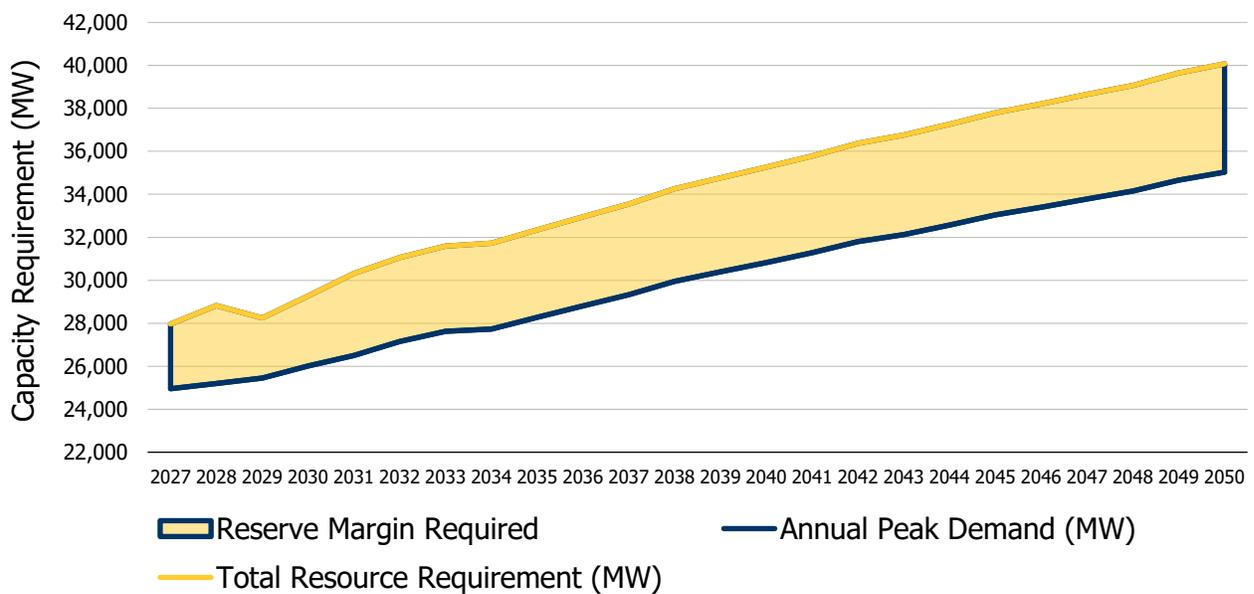
The IESO annually publishes a forecast of reserve margin requirement at the time of projected annual peak, which is shown in Figure 18; this is the amount of resources Ontario needs to have available over and above peak demand to satisfy loss of load expectation (LOLE) requirements of 0.1 days per year¹⁷ under normal weather conditions represented as a percentage of peak demand.

There are various reasons for year-to-year variations in the reserve margin requirement. In addition to the allowances for uncertainties identified by the Northeast Power Co-ordinating Council, the IESO includes additional reserve to account for risks associated with nuclear refurbishments and new-build nuclear, with the amount of reserve dependent on the refurbishment and project development schedules. A year with higher-than-average planned outages will also have a higher reserve margin requirement.

Calculation of the reserve margin requirement, which is based on the reference scenario, is described in the [Resource Adequacy and Energy Assessments Methodology](#) published with this APO.

Figure 18 | Reserve Margin Requirement, 2027–2050

¹⁷ As per Northeast Power Co-ordinating Council, Directory 1.



4.2 Provincial Capacity Adequacy Outlook

Capacity adequacy can be represented in terms of a surplus or deficit, relative to a set of demand and resource assumptions. A capacity deficit represents the total amount of capacity, on an effective capacity basis, that the IESO must acquire to satisfy the LOLE requirement of no more than 0.1 days per year of firm load being disconnected due to resource deficiencies. Nuclear reserve is also accounted for in the capacity adequacy outlook.

In Ontario, summer capacity needs are generally higher than winter capacity needs, which is driven by demand and resource performance. Summer peak demands, driven by air-conditioning loads, tend to be higher and more variable than winter peaks. In addition, performance of certain resources — particularly gas, hydroelectric, and wind — result in less effective capacity in the summer than in the winter. Increased winter demand is expected to shift Ontario from summer peaking to dual summer-and-winter peaking in the late-2030s (in the reference scenario), primarily due to growing greenhouse lighting and EV charging load, which is higher in the winter due to lower efficiency and cabin conditioning requirements in cold temperatures. As this occurs, winter capacity deficits are forecasted to be greater in the mid-2030s for most years. The methodology used to calculate effective capacity for each resource type also affects the reserve margin.

Capacity deficits for summer and winter periods over the outlook period are shown in Figures 19 and 20. Further assessment of summer capacity adequacy is provided in Section 8 and actions to address deficits are discussed in Section 9.

Reference Scenario

Compared to the 2025 APO, summer capacity needs in the near-term have decreased due to the inclusion of resources secured through the MT2 RFP and a lower demand forecast. Near-term needs are expected to be met with the in-flight actions described in Section 8. However, as shown in Figure 19, the capacity deficit increases over time and grows rapidly after 2033 due to existing resources reaching contract end. In the long term out to 2050, system requirements are driven by additional

resources reaching contract end, increasing demand and changes to nuclear refurbishment and new nuclear development schedules.

High-Demand Scenario

Capacity deficits emerge earlier in this scenario — by the late-2020s — with shortfalls that are more severe and escalate more rapidly than the other scenarios, due to accelerated demand growth. The resulting capacity adequacy deficits are significantly larger, exceeding 25 GW by 2050.

Low-Demand Scenario

Ontario’s capacity adequacy is improved in this scenario, with deficits emerging later in the outlook period and the system remaining in surplus or modest shortfalls until 2034. Both the pace and magnitude of deficit increases are less severe, with deficits of less than 15 GW throughout the planning timeframe.

Figure 19 | Summer Capacity Surplus/Deficit

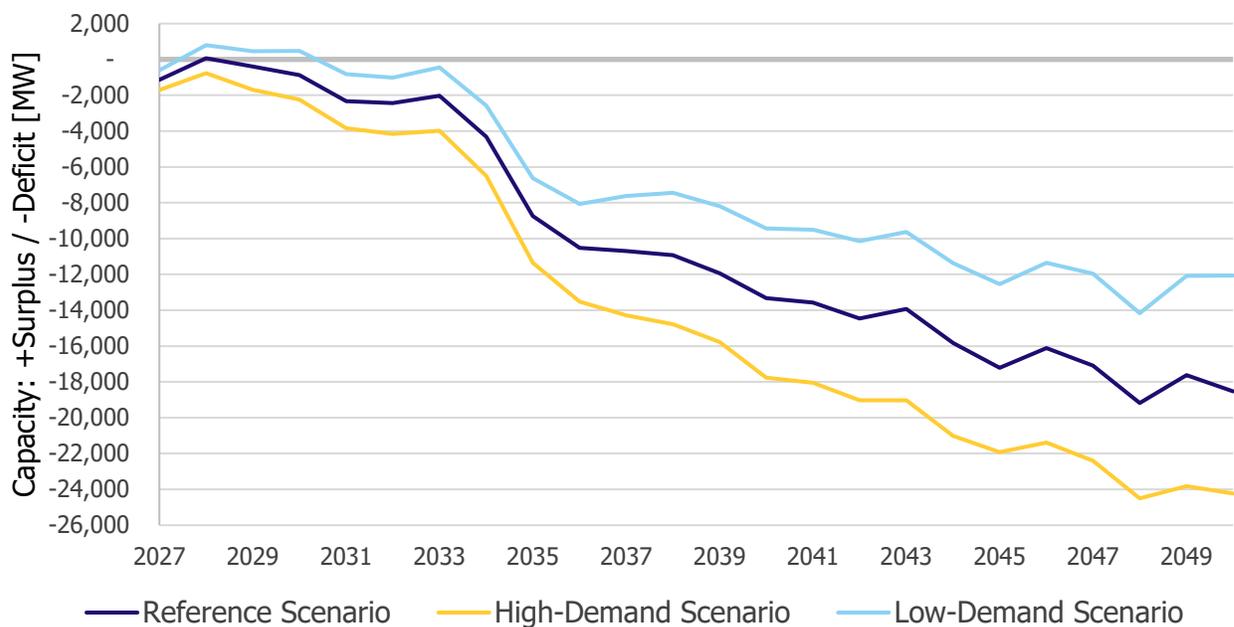
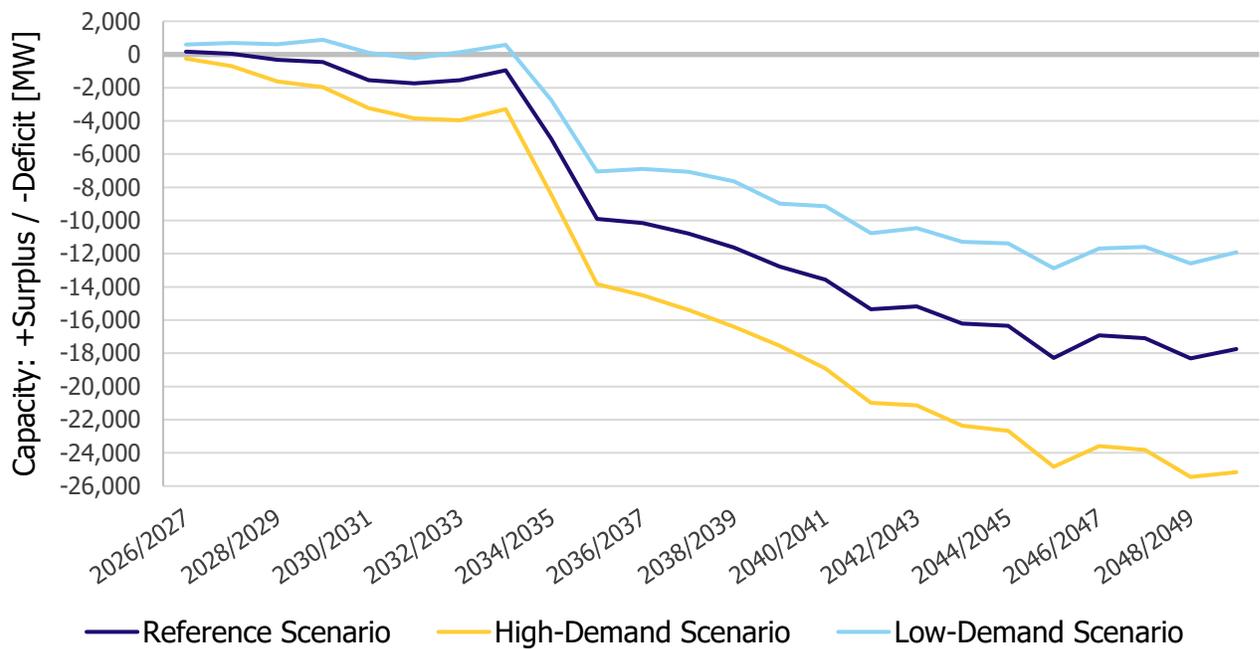


Figure 20 | Winter Capacity Surplus/Deficit



4.3 Provincial Energy Adequacy Outlook

The provincial energy adequacy outlook assesses whether there is sufficient energy available throughout the year to meet total electricity needs. A system that is capacity adequate for peak periods may still experience energy shortfalls due to resources that are energy-limited or have seasonal or operational constraints. This energy adequacy assessment evaluates the contribution of Ontario’s internal resources to meeting annual energy needs (i.e., excluding economic imports and exports).

Energy adequacy is assessed across the three planning scenarios, with each scenario illustrating how the energy balance evolves over the planning horizon and identifying periods where total supply is insufficient to meet forecasted demand.

The assessment for each scenario represents constrained production from Ontario’s natural gas fleet, within electricity system emission levels forecast in the [2025 APO Capacity Expansion Scenario, Costs, and Emissions Module](#). This approach was used to help inform the scope and type of actions needed to support maintaining an emissions trajectory to achieve a near-zero system by 2050.

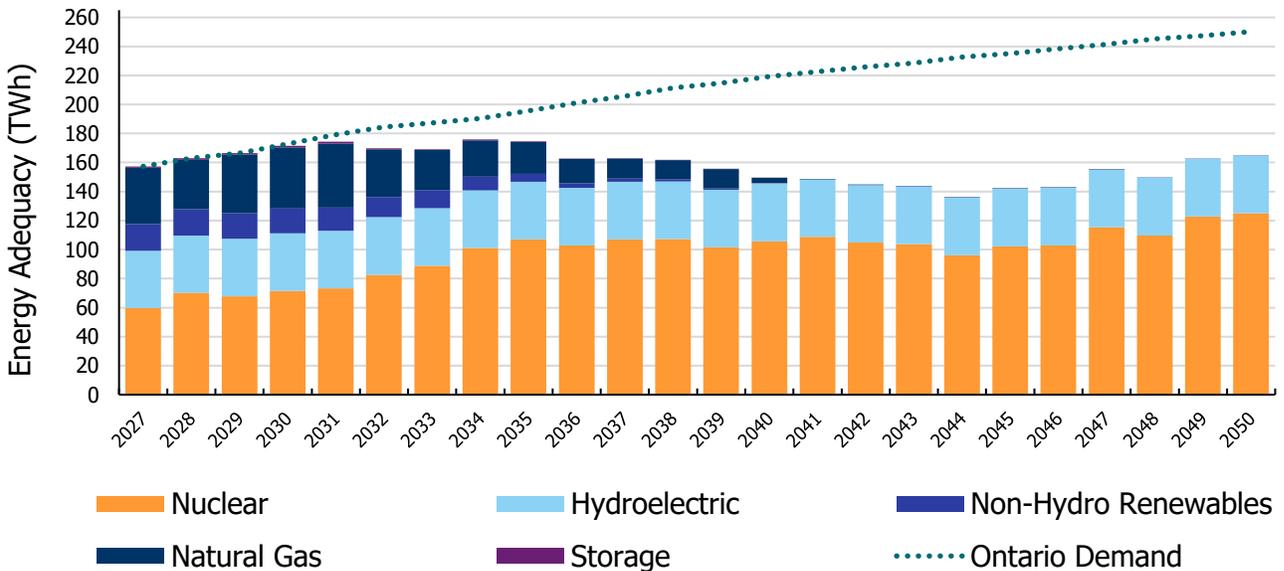
Reference Scenario

Energy needs emerge in 2031 in the reference scenario, as shown in Figure 21, reflecting increasing electricity demand and existing resources reaching contract end. Through the mid-2030s, as nuclear refurbishments conclude and system demand continues to increase, the energy adequacy gap increases. In the long term, the extent of the shortfall depends on the timing and availability of new energy-producing resources and the continued operation of existing baseload facilities.

Although Ontario’s refurbished nuclear fleet provides substantial energy throughout the outlook period, the combination of increasing demand and resources reaching contract end results in energy needs growing significantly after the mid-2030s. Hydroelectric production remains stable, non-hydro

renewables provide incremental energy, and storage provides the system with the flexibility to shift that energy by reducing curtailment during periods of surplus energy. While this helps to increase utilization of energy from non-hydro renewables, it does not offset energy needs resulting from the forecasted growth in demand.

Figure 21 | Energy Adequacy — Reference Scenario

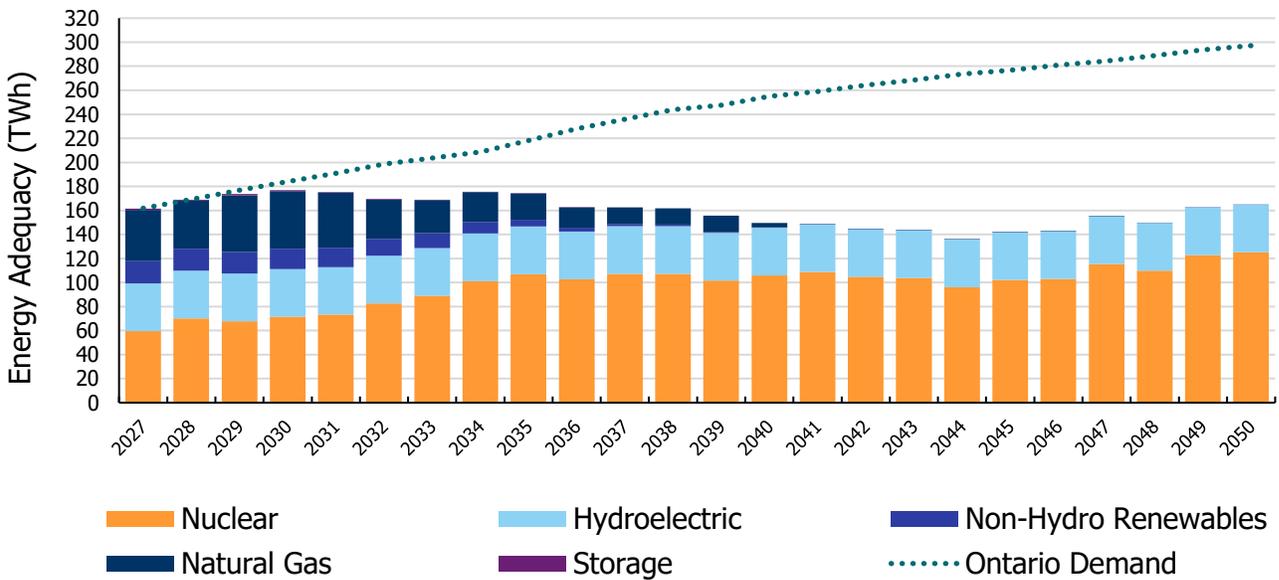


High-Demand Scenario

Energy needs emerge earlier in the high-demand scenario — around 2030 — as shown in Figure 22. As electricity demand increases more rapidly, total supply becomes insufficient to meet demand by the early 2030s, with the energy adequacy gap increasing throughout the 2030s and into the 2040s.

Hydroelectric production remains consistent while contribution from non-hydro renewables and storage increase in comparison to the reference scenario; however, these additions are not sufficient to meet the higher energy requirements. Energy needs continue to increase through the end of the planning horizon, emphasizing the need for timely development of new energy-producing resources.

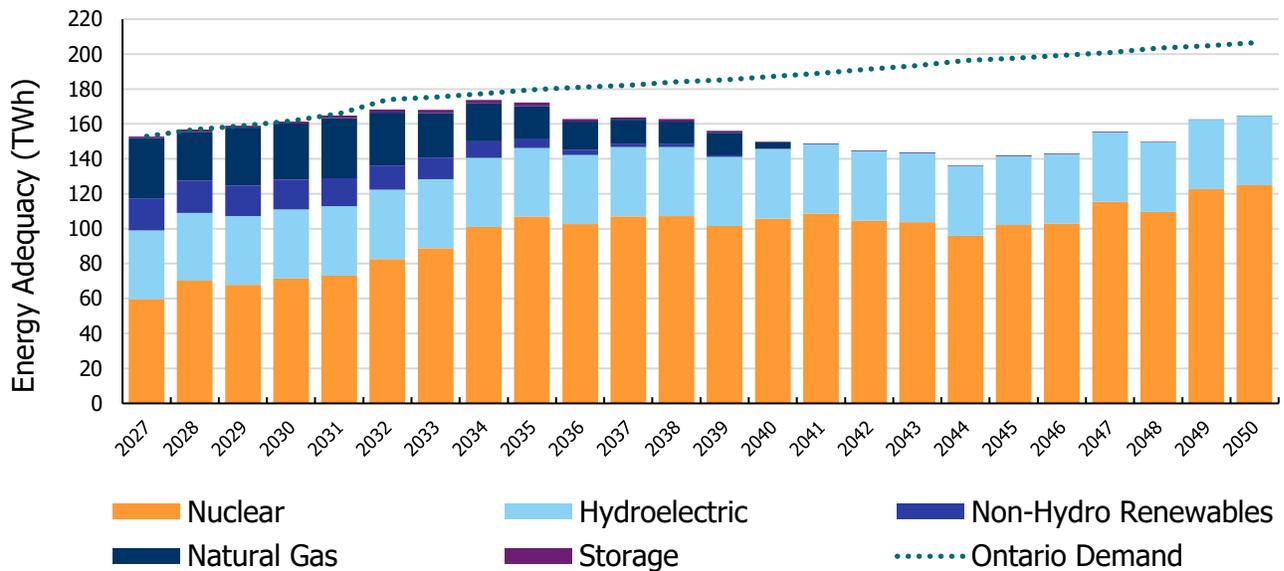
Figure 22 | Energy Adequacy — High-Demand Scenario



Low-Demand Scenario

Ontario’s energy adequacy improves in the low-demand scenario — as shown in Figure 23 — relative to the reference and high-demand scenarios, with energy needs beginning to appear in 2033. Energy adequacy is relatively stable through the early-2030s, supported by continued production from nuclear and hydroelectric resources. Storage provides incremental flexibility and energy balancing, while non-hydro renewables contribute additional supply within their variability limits.

Figure 23 | Energy Adequacy — Low-Demand Scenario



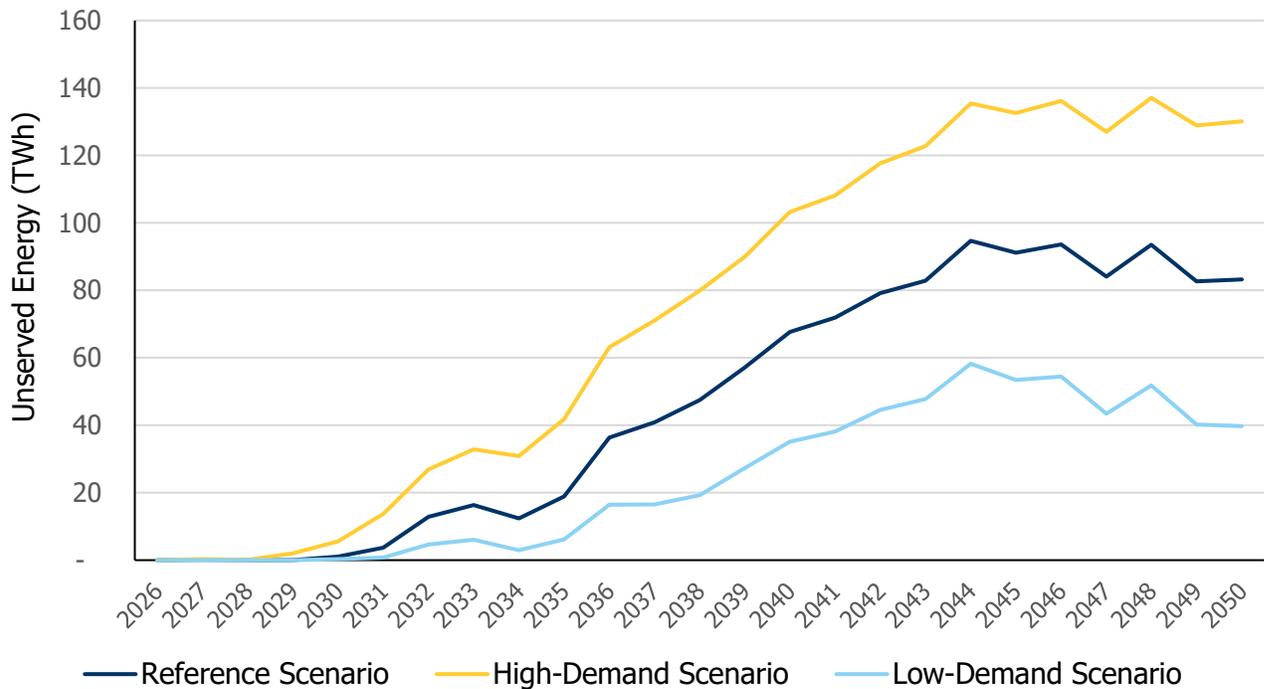
Unserviced Energy

Unserviced energy represents the amount of electricity demand unmet by existing and committed resources and indicates the severity of Ontario's long-term energy adequacy needs. As shown in Figure 24 and described below, unserved energy remains negligible in all scenarios through the late-2020s and begins to increase in the 2030s as resources reach contract end and forecasted demand increases.

- **Reference scenario:** Unserved energy begins to rise in 2031, reaching approximately 19 TWh by 2035 and peaking near 95 TWh in 2044.
- **High-demand scenario:** Unserved energy increases more rapidly, reaching about 42 TWh by 2035 and peaking near 137 TWh in 2048.
- **Low-demand scenario:** Unserved energy is relatively low, reaching about 6 TWh by 2035 and increasing to approximately 58 TWh in 2044 before declining slightly toward the end of the planning horizon.

These results demonstrate that while the timing and magnitude of energy needs vary by scenario, Ontario faces persistent and growing energy needs at the start of the 2030s and continuing to increase over the planning horizon.

Figure 24 | Potential Unserved Energy



4.4 Export Opportunities

The APO provides a forecast of Ontario's domestic electricity demand and reliability needs, with planned actions specified to meet those needs based on the reference scenario. While the overall trend of growth is reflected in all three scenarios presented in this APO, demand forecasting includes inherent uncertainty and assumptions that can change over time.

The IESO's iterative planning process helps to manage this uncertainty as needs are evaluated annually, and actions adjusted in response to changing system conditions. Export opportunities can also help to manage this uncertainty; establishing formal trade agreements with Ontario's neighbours can mitigate overbuild risks if some domestic demand does not materialize.

The IESO is exploring cost-effective opportunities to export non-emitting¹⁸ electricity to neighbouring Canadian jurisdictions, in support of *Energy for Generations*. In October 2025, the IESO provided a report-back to the Ministry of Energy and Mines assessing potential new interconnections with neighbouring Canadian jurisdictions, focusing on how Ontario could increase its interprovincial electricity trade capability.

In December 2025, the Government of Ontario signed a declaration of intent with New York State that set out objectives and areas for collaboration in mutual domains of interest. A Memorandum of Understanding was also signed between Ontario Power Generation and the New York Power Authority to collaborate on advancing development of nuclear technologies; opportunities to expand the trade of electricity between Ontario and New York will be explored under the agreement.

Ontario has historically been a net exporter of electricity; interties with neighbouring provinces and states provide ratepayer savings, support reliability in Ontario and neighbouring jurisdictions, and reduce emissions across the region. Moreover, Ontario's complementary seasonal demand profiles with Québec and Manitoba can be leveraged to support system reliability during seasonal peaks. Expanding intertie connections with Ontario's neighbouring provinces could provide enhanced reliability benefits and increased trade opportunities, while lowering costs associated with the necessary build-out of the system to support growing reliability needs.

The potential for electricity exports and other considerations will be further explored in the forthcoming 2026 Capacity Expansion Scenario and Outcomes Module.

¹⁸ Non-emitting electricity resources can include wind, solar, bioenergy, hydroelectric, nuclear and other technology types.

5. Transmission System

With capacity and energy needs forecast to increase over the planning horizon, a robust transmission system will play an increasingly critical role in ensuring deliverability of resources to supply forecasted demand provincially and locally. This APO summarizes known transmission system issues that must be addressed to ensure the system can reliably supply growth out to 2050, while facilitating changes in the provincial supply mix and the connection of new resources. Public policies that will further drive transmission expansion are also considered, and will shape the scope of the transmission plans to come; this includes looking for strategic transmission expansion opportunities to align with the long-term outlook to 2050 and beyond, carrying out corridor studies to preserve land for future transmission needs, as well as driving affordability through utilizing the IESO's proposed Transmitter Selection Framework to competitively procure eligible new transmission infrastructure.

The transmission system needs described in this section are informed by the IESO's studies performed for resource procurement deliverability and economic development, annual regulatory transmission planning reviews, as well as in-flight or recently published bulk and regional plans. Also reflected in this section are considerations from the Government of Ontario's *Powering Ontario's Growth: Ontario's Plan for a Clean Energy Future*, *Ontario's Affordable Energy Future: The Pressing Case for More Power*, and *Energy for Generations*. An updated Schedule of Planning Activities in Section 9.4 outlines the studies that are ongoing and anticipated to respond to the specific transmission system needs summarized in the following sub-sections.

5.1 Drivers of Transmission System Needs

This section describes the transmission system needs anticipated over the planning horizon, driven by forecasted demand growth and the evolving supply mix needed to support this growth. These changes will impact the nature of bulk power flows on the transmission system. Further, careful consideration is required as aging transmission equipment approaches the end of its expected service life. All these factors will contribute to a significant amount of transmission expansion, reinforcement and renewal in the coming decades.

Upcoming transmission planning will consider transmission system investments needed to maintain a reliable supply to support demand growth, and to connect new large industrial customers. These plans will also explore transmission's role in unlocking additional resource development potential, including options to enable the development of new small modular reactors and the proposed Bruce C complex, long-duration energy storage, hydroelectric resources, and new resources as part of long-term procurements. In addition, other opportunities to proceed with early planning and development work for transmission projects can help capitalize on strategic opportunities to support future growth and development. This includes continuing to co-ordinate with government to identify opportunities for protecting land corridors for future transmission development.

These drivers result in transmission system needs that are further described in the sections that follow and will be considered in the scope of the IESO's transmission studies and plans. Some of these activities are already underway, and others will be carried out over the coming years, with the timing and scope provided in the Schedule of Planning Activities in Section 9. The IESO will continue to engage regularly to share the status and results of the transmission planning activities on a quarterly basis.

The system needs and planning studies described below are organized broadly by region: southern Ontario, which includes southwestern Ontario and the GTA; eastern Ontario, which extends from the GTA to the Ottawa region; and northern Ontario, which extends from north of Barrie to include the northeast and northwest parts of the province.

5.2 Transmission Needs in Southern Ontario

5.2.1 South and Central Ontario Bulk Transmission Needs

The IESO is undertaking a comprehensive bulk plan for the transmission system across southern and central Ontario by reviewing the bulk system's capability to support future generation connections and demand growth in key areas. The scope of this plan includes the GTA northward to Essa TS near Barrie, parts of eastern Ontario, the Windsor–Hamilton corridor, and the Bruce area. The approach is designed to allow for interdependencies across a large part of Ontario to be considered in creating a strategic transmission expansion plan that addresses significant changes in demand patterns and the generation supply mix. These changes include the potential expansion of the Bruce NGS, incorporating new small modular reactors, and the potential for reducing Ontario's reliance on natural gas-fired generation in southern and central Ontario. Each of these changes will impact bulk electricity flows over a wide area.

In Q4 2024, the IESO recommended a set of early actions to accelerate the pace of future upgrades by reducing development lead times for new transmission projects when there is sufficient confidence in their necessity, and to minimize the risks with delaying implementation. The South and Central Bulk Plan includes two actions that were proposed and included in *Energy for Generations* released in June 2025:

- A new double-circuit 500 kV transmission line from Bowmanville to Markham — north of Toronto.
- Corridor preservation studies within the GTA.

Since the identification of these early actions, detailed study has continued for the needs and options, leading to the development of three portfolios of options, representing different approaches to meeting the study objectives. Each portfolio shares common elements (i.e., strategic, future-ready investments) critical for achieving key plan objectives under several futures, which include and build upon early actions¹⁹. The transmission reinforcements identified are future-ready actions to enable reliability, economic development and organic growth, as well as connection of supply resources:

¹⁹All portfolios also include *Powering Ontario's Growth* early actions for the Sudbury to Barrie 500 kV line and Barrie to Orangeville reconductoring to proceed.

- Two double-circuit 500 kV lines from the Bruce C site to Essa TS (Barrie) and to Longwood TS (London). These reinforcements are critical for Bruce C and to improve deliverability for western resources in future procurements; and support load growth in northern Ontario when paired with the previous recommendations for new 500 kV transmission from Barrie to Sudbury.
- One double-circuit 500 kV line from Bowmanville SS (east of Toronto) to Parkway TS (Markham), an early action, to enable small modular reactors at Darlington and allow further development of eastern resources to meet future needs.
- One 500 kV line from Essa TS (Barrie) to Kleinburg TS (Vaughan), providing flexibility to support different future scenarios, including load growth in northern Ontario driven by mining and resource development and in northern and western GTA, while addressing one bottleneck to further generation development in the north.
- New or expanded auto-transformation and station work at Essa TS (Barrie), Kleinburg TS (Vaughan), and Parkway TS (Toronto) to enable load growth serviced by these stations.
- One 230 kV double-circuit line within Mississauga between Meadowvale TS and Hurontario SS, and another within Oakville between Oakville TS and Trafalgar TS, alongside associated station expansion work and the introduction of auto-transformation at Milton SS (Milton) with a new 230 kV switchyard. These reinforcements support growth in the western GTA and city of Toronto and prepare the system to manage decreased reliance on local gas-fired generation.

In each portfolio, these future-ready investments are paired with additional reinforcements to meet the overall objectives of the South and Central Bulk Plan. Variations between portfolios are focused on different options for supporting growth (i.e., economic development) in the load centres.

Study work for the bulk plan will aim to conclude by Q2 2026, focused on refining the portfolios of options based on technical studies, stakeholder and community feedback, and developments from ongoing regional planning across the southwest and GTA. The IESO is also completing energy studies using production cost models and various generation scenarios to explore the impact of the location of these future resources on the economic performance of the different portfolios. The study will provide recommendations to address the identified needs emerging between 2035 and the early-2040s. Needs and options emerging in the 2050s will be studied in subsequent bulk plans.

5.2.2 Bulk Transmission Supply to Toronto

The IESO published an [IRRP for the city of Toronto](#) in October 2025 that recommended a new underwater high-voltage direct current line connecting downtown Toronto to the bulk transmission network at Bowmanville SS (east of Toronto). This line will enable the load growth forecasted for Toronto due to new community and economic development and electrification. Further, the line will enable Toronto to adapt to a changing supply mix; enhance system resilience; and is recommended to be in-service by 2037 or earlier.

5.2.3 Niagara Area Transmission

The IESO has initiated bulk planning encompassing the Niagara peninsula to ensure that the bulk transmission system is sufficient to supply continued strong economic development. The area of

focus for this study covers the Niagara area between Lake Ontario and Lake Erie. Niagara is an important source of hydroelectric power from the Beck Generating Stations and is interconnected with the United States through the New York–Niagara interconnection. The Niagara Bulk Plan aims to conclude in 2027.

Electricity demand is primarily driven by economic development of new and existing industries, particularly in Port Colborne, Thorold, Welland, and Niagara-on-the-Lake. The IESO has been monitoring the region, with the area load projections currently on track to exceed the high-electricity demand forecast developed in the [2022 Niagara IRRP](#), in which the recommendation to build a new 18 km, 230 kV double-circuit transmission line to Welland/Thorold by 2029 is on track, with the environmental assessment complete and regulatory approvals underway. This project will help support near-term load connections, as well as address asset replacement and load security needs.

As electricity demand continues to grow, the Niagara Bulk Plan will consider transmission reinforcements required in the medium to long term to ensure the bulk transmission supply capability to the area is sufficient to continue to accommodate demand growth for different scenarios informed by economic development opportunities. The plan will also look to ensure existing capabilities across Ontario's intertie with New York in the Niagara area are maintained and consider additional co-benefits when developing options for reinforcing the bulk system in the area.

5.3 Transmission Needs in Eastern Ontario

5.3.1 Eastern Ontario Bulk Transmission Needs

The IESO launched the Eastern Ontario Bulk Plan to ensure the bulk transmission system can reliably support the anticipated demand growth driven by increased electrification and economic development over the next two decades. The plan includes a comprehensive assessment of the transmission system's capability to service eastern Ontario; its ability to ensure reliable supply, support future growth, and enhance long-term system resilience; and opportunities to support the potential expansion of interties with neighbouring jurisdictions including Québec and New York. Informed by previous work, two focused assessments have been developed.

The Supply to Ottawa Study examines the capability of the bulk transmission system to serve the Greater Ottawa area, focusing on the Flow Into Ottawa (FIO) interface. The study identifies the need to enhance the FIO transfer capability to support regional demand growth and facilitate increased power transfers with adjacent jurisdictions. Primary drivers behind demand growth include increased electrification and economic development. Strengthening the FIO interface is critical for meeting regional demand and maintaining interconnection flexibility with neighbouring jurisdictions.

The Supply to Belleville Study focuses on the bulk transmission system serving the Belleville area, including considerations for a high-industrial growth scenario. Key drivers include anticipated economic development and industrial growth in the region. Enhancing the transmission system in this area will be key to supporting these opportunities while maintaining reliability and flexibility for future system needs.

Targeted for completion in Q2 2026, the Eastern Ontario Bulk Plan is being developed in close alignment with regional planning initiatives to ensure system-wide consistency and integration. While the plan is focused on identifying bulk-level transmission needs, it is co-ordinated with developments

from relevant regional plans — including Ottawa, Peterborough to Kingston, and St. Lawrence — to manage interdependencies and determine whether additional bulk-level actions are required.

5.4 Transmission Needs in Northern Ontario

5.4.1 Northeast and Northwest Ontario

Northern Ontario's transmission system is undergoing significant expansion to support economic development, electrification, reliability objectives and growing demand from critical minerals mining. This section summarizes recent bulk planning outcomes and ongoing regional plans in the northeast and northwest.

Demand in the region is driven by significant load growth in the mining sector, decarbonization in the metal production subsector, deployment of data centres, and the need to renew end-of-life infrastructure and connect off-grid First Nations. The demand forecasts that underpin each plan evaluate differing scenarios of growth to ensure uncertainty in forecasts can be accommodated. Increased transmission capability will also enable new generation development, including hydroelectric, variable renewable resources, and baseload sources, while improving system reliability and flexibility.

In September 2025, the IESO posted the [Northwest IRRP Addendum](#), which outlined electricity system needs in the North of Dryden sub-region, recommending a new 230 kV double-circuit line from Dryden to Ear Falls to Red Lake.

As for planning activities underway to address emerging needs, the IESO has launched bulk planning for the area north of Sudbury for reliable electricity supply that supports the region's economic growth objectives. The bulk plan will examine the capability of the bulk transmission system's ability to supply increasing levels of demand in the areas surrounding Timmins, Kirkland Lake, and Pinard. The demand in the region is driven by increasing levels of industrial and mining growth just north of Timmins. The plan will also look at creating opportunities to locate new non-emitting resources in the area and address challenges with load restoration, voltage management, and load security. Furthermore, the plan will explore transmission options needed to enable two potential hydroelectric sites — Nine Mile Rapids and Grand Rapids — in the Moose River Basin.

Also in the northeast, regional planning has been initiated in the East Lake Superior and Sudbury-Algoma electrical regions to ensure a reliable supply of electricity, and to support local growth and economic development. Studies will evaluate whether needs may be solved with wires or non-wires options, including generation or storage.

In the northwest, the IESO has launched the Northwest IRRP, which was advanced by expediting earlier planning stages to accelerate the commencement of the IRRP; the plan encompasses a vast area that includes the districts of Kenora, Rainy River, and Thunder Bay. It is bounded by Lake Superior to the south, the Marathon area to the east, and the Manitoba border to the west. Thunder Bay serves as a key focal point for development, with several processing projects underway, notably a lithium refinery in the Thunder Bay area.

The IESO is also continuing its work as part of the Northern Ontario Connection Study to identify transmission alternatives to enable connection of off-grid First Nations, prospective mining

developments in the Ring of Fire, and new hydroelectric generation opportunities. The IESO is presently engaging with local First Nations to explore the possible transmission alternatives.

5.5 Interties with Ontario's Neighbouring Jurisdictions

Ontario's interties are critical for enabling import and export activity, as well as enhancing system stability through participation in the Eastern Interconnection. The IESO participates in co-ordination activities with Ontario's neighbouring electrical jurisdictions to share data and information related to the interties, and to address issues that could have interjurisdictional impacts.

A study is underway to assess major equipment at the Ontario–Manitoba intertie, including two phase angle regulators and two step-up transformers that are approaching end of life. A joint Phase Shifter Study was initiated between the IESO, Manitoba Hydro, and Minnesota Power to create a plan to replace and/or upgrade this critical intertie equipment, ensuring continued energy transactions on the intertie.

To consider future opportunities for new or expanded interties, the IESO is currently leveraging ongoing bulk planning activities. Studies will consider intertie capability as one consideration when assessing options to address system reliability needs in areas near interties (e.g., Niagara, Eastern Ontario, and North of Sudbury Bulk Plans). The IESO may also consider opportunities to enhance trading activities, per *Energy for Generations*. If opportunities are identified, further investigation and a detailed study can then be initiated.

6. Operability

A reliable system is one that is both resource adequate and operable. In addition to meeting energy and capacity needs, Ontario’s resource mix must be able to provide the essential reliability services needed to support reliable grid operations and respond to the inherent variability and uncertainty of electricity supply and demand.

The operability assessments in this APO have been conducted for the outlook period 2027–2036, unless otherwise specified. Where applicable, assessments are based on the capability of existing and committed resources described in Section 3.1 and unconstrained access to all gas-fired capacity until the end of their contract or commitment period. Operability needs are anticipated to emerge for load following, operating reserve and regulation service, while primary frequency response capability is expected to remain adequate. These needs are subject to change as new resources are committed through the in-flight and planned actions described in Sections 8 and 9; future operability assessments will incorporate these updates.

More information on the operability attributes needed for the reliable operation of the electricity system, and the methodology to perform the assessments in this section, is provided in the [Operability Module](#).

6.1 Inertial Response and Primary Frequency Response

Inertial response and primary frequency response (“frequency response”) are essential reliability services required to stabilize system frequency following events that result in sudden frequency deviations from the nominal value of 60 hertz. The inertial and primary frequency response capabilities of system resources are expected to be sufficient to meet system requirements over the outlook period.

6.1.1 Inertial Response Assessment

The IESO is expected to have sufficient inertial response at this time due to the inertial support from Ontario’s baseload resources (e.g., nuclear and hydroelectric) as well as the inertia from large synchronous resources installed in the broader Eastern Interconnection. Further assessment will be required as synchronous resources reach end of useful life and are increasingly replaced with inverter-based resources (IBRs), such as wind, solar, and battery storage. These resources do not naturally contribute to the inertial response of the system but are capable of providing rapid response to system disturbances and can reduce the need for traditional inertial response. Subsequent APOs will consider a formal assessment of inertial response, as required.

6.1.2 Primary Frequency Response Assessment

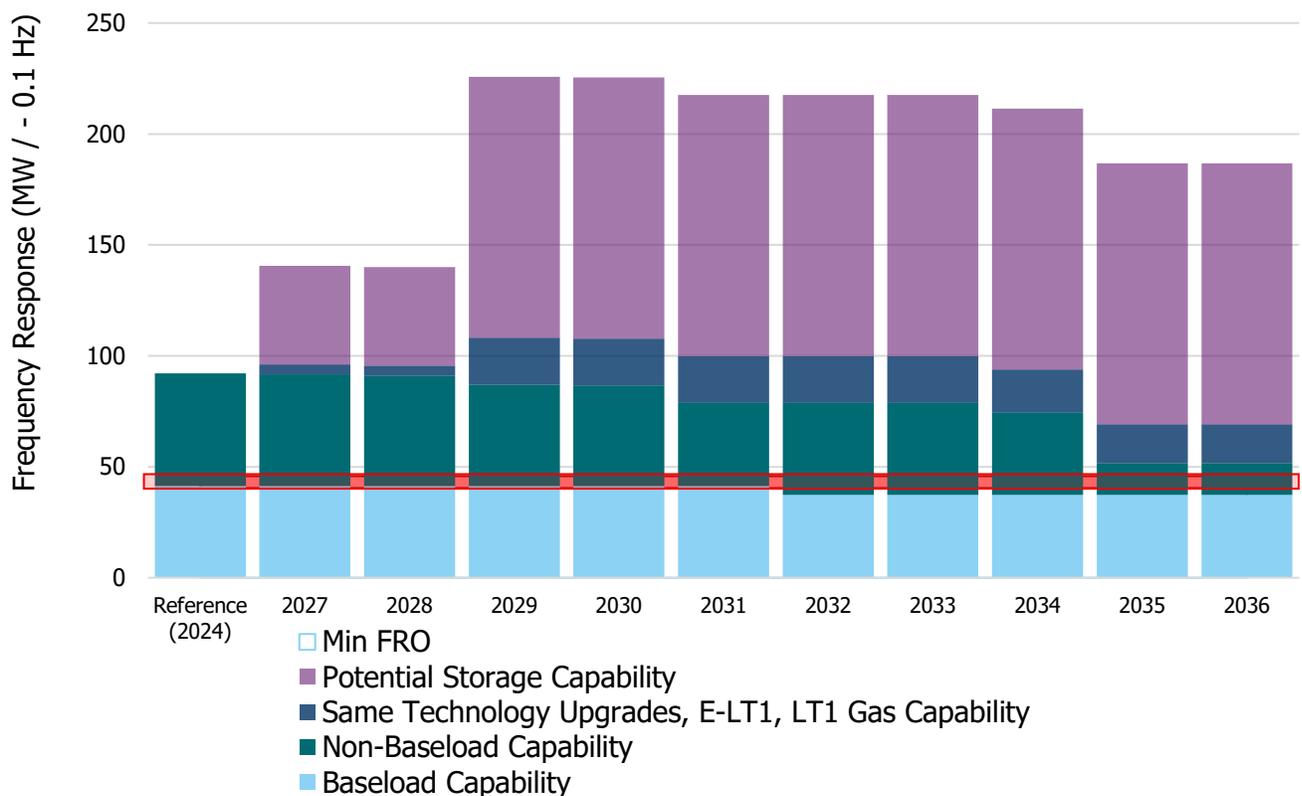
The IESO’s installed frequency response capability is anticipated to remain above the IESO’s Frequency Response Obligation (FRO) range over the outlook period.

Each year, the North American Electric Reliability Corporation allocates a minimum amount of frequency response that Ontario’s electricity system must provide to the Eastern Interconnection; this is known as the FRO. Meeting this minimum requirement requires having sufficient frequency responsive resources online at all times.

Figure 25 compares the IESO’s typical FRO range to the forecasted installed capability of frequency responsive generation resources on Ontario’s electricity system. During low-demand periods, the system is at higher risk of having insufficient frequency response because fewer frequency-responsive resources are online. Only frequency-responsive baseload resources, such as baseload hydroelectric, can be counted on to provide frequency response at all times to meet the IESO’s FRO. The expected frequency response capability from baseload resources is expected to drop below the IESO’s minimum FRO range starting in 2032.

Non-baseload frequency response capability — generally available during higher demand periods when more resources are required online — is forecasted to decrease as existing gas generators reach the end of their current contractual commitments. This decrease is expected to be partly offset by natural gas committed through the expedited first Long-Term (E-LT1) RFP, Same Technology Upgrade, and first Long-Term (LT1) RFP²⁰ as the additional capability becomes operational over the next few years. Decarbonization efforts such as the federal Clean Electricity Regulations are expected to limit the operation of gas-fired resources, potentially reducing their contribution to frequency response capability toward the end of the assessment timeframe and beyond.

Figure 25 | Primary Frequency Response Requirement Range and Capabilities



²⁰ Any gas resources procured through the first window of the LT2 RFP can also help offset the decrease in non-baseload frequency response capability in the early 2030s.

Going forward, frequency response capability from baseload resources will continue to be monitored as existing resources may be insufficient to ensure capability is available at all times to meet the IESO's FRO. Battery storage can be enabled to mimic the frequency response of a synchronous resource when connected to the grid. Storage resources committed through the E-LT1 and LT1 RFPs have potential to help ensure Ontario has sufficient capability; more operational experience is required to validate the performance and support from these resources during low-demand conditions. Future procurement design may consider the ability of resources to provide frequency response capability, as conventional synchronous resources (e.g., gas) reach end of contract over the assessment period.

6.2 Load Following

Load following, also known as ramping, refers to the ability of Ontario's dispatchable resources to follow real-time changes in Ontario's net load²¹ throughout the day. The load-following capability of Ontario's electricity system resources may fall short of meeting system requirements starting in 2034. Additional load-following resource capability may be required to meet system needs.

6.2.1 Load-Following Assessment

Load following is required to respond to both increases (ramp-up) and decreases (ramp-down) in net load – this assessment focuses on ramp-up load following needs²².

Figure 26 compares the ramp-up load-following capability of existing and committed resources with the forecasted ramp-up requirement for the summer period. Load-following requirements are anticipated to increase in the near-term proportional to demand growth, with the ramp-up requirement reaching approximately 4,500 MW in the summer of 2030, representing an incremental 500 MW of ramp-up requirement compared to the 2024 reference year. Beyond 2030, demand factors such as uptake of large loads and electrification (e.g., heating, EVs) are anticipated to shift end-use consumption patterns by raising overnight demand, resulting in load-following requirements reducing to 3,400 MW by 2036. In addition to the load-following requirement, a static allocation is shown to represent capacity required to be held back to meet real-time operating reserve (OR) requirements.

Shortfalls in ramp-up load-following capability may arise starting in 2034 as existing gas-fired resources reach contract end²³. The ability of gas-fired generators to provide load following may further be restricted due to decarbonization policy such as the Clean Electricity Regulations.

Battery storage resources expected to come online over the assessment timeframe are highly flexible and can provide load-following capability nearly equal to their installed capacity. However, as these resources are energy limited, state of charge or duration limitations may impact their effectiveness as a load-following resource. Reliance on storage resources for load-following capability may be required

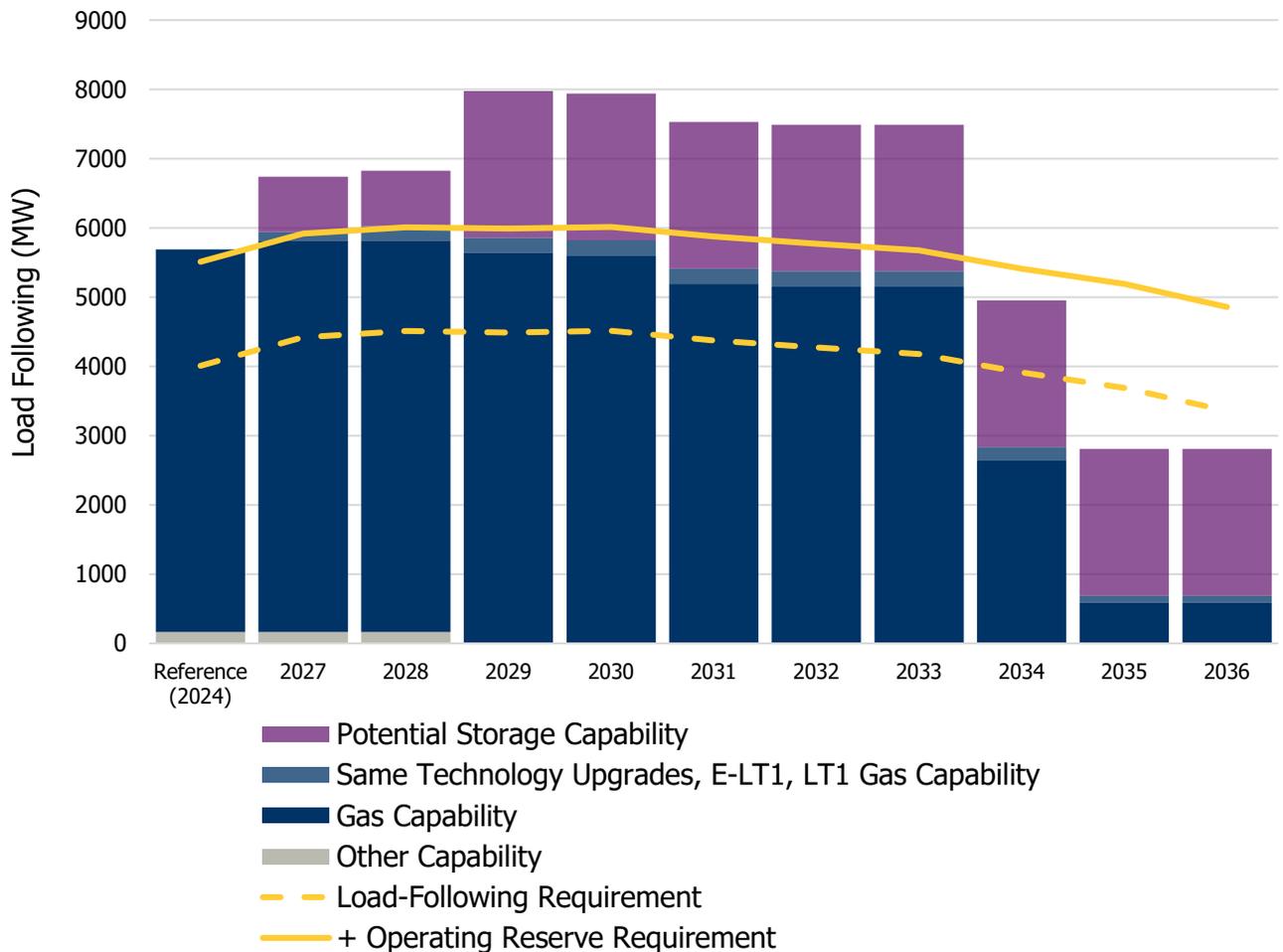
²¹ Ontario net load is defined as Ontario demand minus the output of wind and solar (variable) generation.

²² Ontario's ramp-down capability is not expected to be of significant concern over the outlook period. Future assessments may consider ramp-down load-following as needs emerge.

²³ Ramp-up capability from existing resources is assumed to be maintained without restriction until end of contract. For new, committed resources (e.g., gas and battery storage), load-following contribution was estimated and will be validated through operational experience.

as early as 2029 to meet the ramp-up requirement, while also satisfying the OR requirement. Broader operational experience will be needed to verify the scale of storage resources' contributions to load-following capability.

Figure 26 | Load-Following Requirement and Ramp-Up Capability



The need for flexible resources will be considered in future procurement design to ensure that the system has sufficient load-following capability in the next decade. Factors impacting the timing and scale of load-following needs may be considered in future assessments, and include:

- updates to the demand forecast;
- increases to variable generation capacity from future procurements;
- decarbonization policy and access to new or existing gas-fired capacity;
- actual operating experience with battery storage;
- contributions from peaking hydroelectric resources; and
- changes to baseload conditions, such as increased baseload demand or reduced baseload generation capacity, which affect the real-time utilization of load-following resources.

6.3 Operating Reserve

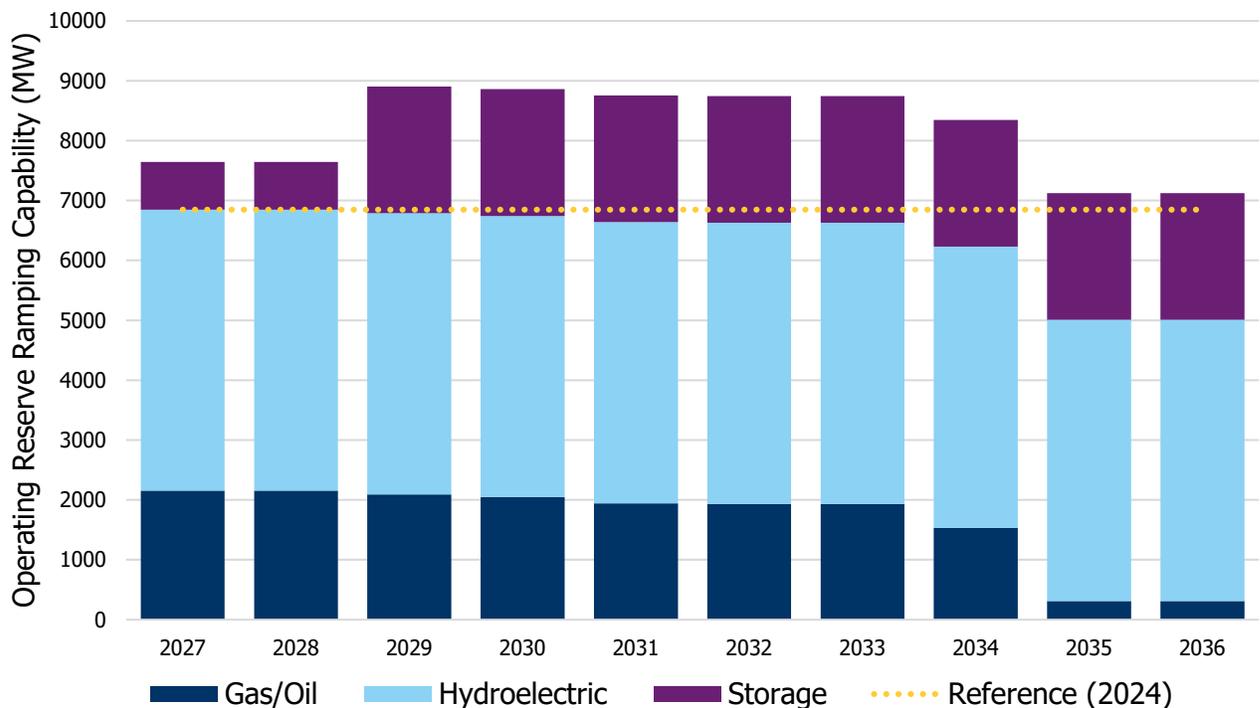
Operating reserve is the requirement for capacity to be held in reserve in real time, in addition to capacity dispatched to meet energy demand. The OR capability of system resources is expected to significantly reduce starting in 2034. In addition, the energy adequacy gap beginning in 2031 identified in the reference scenario of Section 4.3 signals a risk of OR shortfalls in this timeframe, which can be mitigated by the increased dispatch of existing resources as described in Section 8.3.

6.3.1 Operating Reserve Assessment

The IESO’s base OR requirement is not expected to change over the outlook period, as the single-largest contingency will continue to be the largest nuclear unit in the province. However, as more generation is connected to the system, certain outages or system conditions may result in increased occurrences where a single contingency is greater than the largest nuclear unit.

The OR-providing capability of existing and committed resources is shown in Figure 27 and indicates that OR capability is expected to increase in the first half of the forecast horizon, driven by the connection of committed storage resources. While the maximum capability of OR-providing resources in Ontario is represented, this capability is not available at all times, as it is dependent on real-time energy and load-following needs. As indicated in Section 6.2.1, starting in 2029 higher reliance is expected on storage resources to meet load-following requirements (plus the static allocation to meet OR requirements). In 2034, as flexible gas-fired resources reach contract end, a reduction in the capability of OR-providing resources is expected.

Figure 27 | Operating Reserve Capability from Flexible Resources



As energy needs emerge over the forecast period, Ontario’s resource mix will be challenged to meet the minimum OR requirements, as capacity that would otherwise have been able to provide OR will instead be allocated to meet energy needs. Committed storage resources are expected to play an

increasingly important role in meeting OR requirements; operational experience is required to validate the ability of these resources to contribute to meeting requirements and will be considered in future assessments. Actions being taken to mitigate energy shortfalls in the early-2030s can also help mitigate potential OR shortfalls before the significant decrease in capability starting in 2035. The need for OR-providing resources will be considered in future procurement design to ensure that the system has sufficient capability to meet OR requirements in the next decade.

6.4 Regulation

Regulation service is an ancillary service that the IESO contracts to help ensure the reliable operation of the power system, by providing minute-to-minute balancing to ensure electricity supply and demand are balanced. The IESO schedules a minimum of ± 100 MW of regulation, as required by the Market Rules.

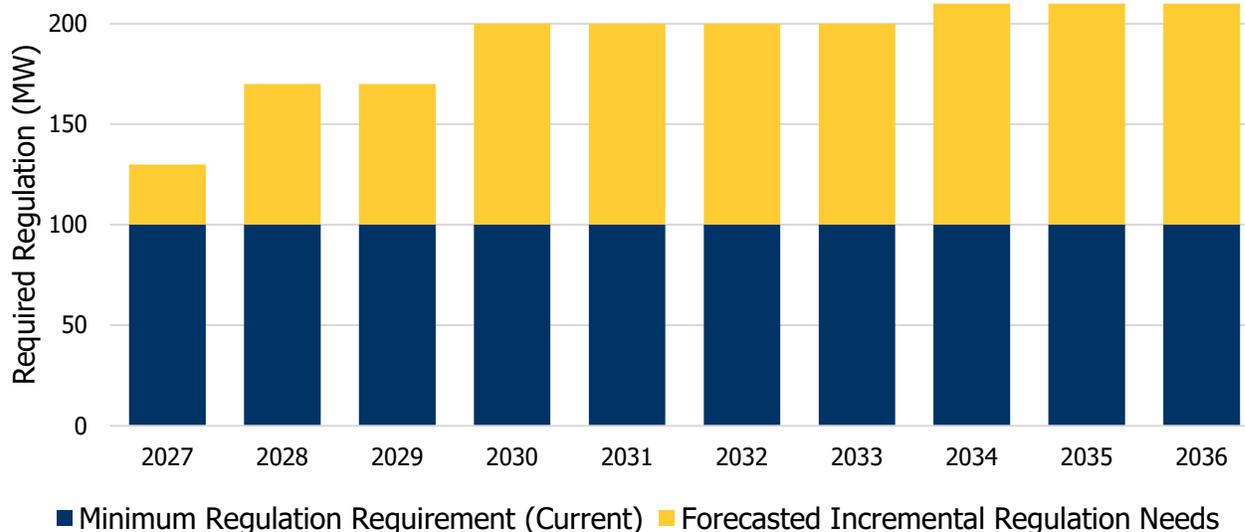
Regulation service requirements over the outlook period exceed the current 100 MW minimum requirement by 30 MW in 2027 and by up to 110 MW by 2034. The IESO is currently seeking new providers for regulation service to meet the identified incremental needs and will continue to strive to do so in a cost-effective manner. As part of this effort, the IESO will engage on the procurement of incremental regulation services in 2026.

6.4.1 Regulation Needs Assessment

The impact of forecasted load growth associated with loads that have highly fluctuating operating profiles — including electrification of industrial loads and public transit electrification and expansion — was assessed to determine the amount of regulation needed to maintain sufficient supply and demand balance. Figure 28 indicates incremental regulation needs of approximately 30 MW at the start of the forecast period in 2027²⁴, increasing to an incremental need of 110 MW in 2034. Compared to previous APOs, the change in regulation needs is the result of updates to forecast demand associated with industrial loads and transit electrification.

²⁴ The need for 30 MW of incremental regulation service in 2026 was identified in the 2025 APO, and as indicated in Figure 30, continues into 2027.

Figure 28 | Forecasted Incremental Regulation Needs



Future regulation needs are dependent on updates to the demand forecast, changes to the in-service dates or composition of future industrial loads, transit electrification and expansion, or increased penetration of variable generation resources. These dynamic factors, as well as operating experience from in-service industrial loads, will be incorporated into future assessments.

6.5 Voltage Control Service

The 2025 APO indicated that the staged shutdown of Pickering NGS, with the retirement of Pickering A units in 2024 and the planned refurbishment of Pickering B units starting in 2026, will result in the loss of more than 1,000 Mega Volt-Ampere Reactive of strategically located voltage control capability in the GTA load centre.

This loss of voltage control capability is expected to increase transmission losses, shift power flows from other regions, and heighten the need for robust voltage regulation, particularly during shoulder seasons and critical outages. As early as 2027, the IESO anticipates the need for additional voltage support in the GTA beyond existing Market Rules obligations for generating resources and transmission reinforcements.

Since publishing the 2025 APO, the IESO has:

- Identified generating and electricity storage units strategically positioned in the GTA that could help partially address these voltage support needs.
- Established initial contacts with the respective market participants to share the identified system needs and explore their potential participation in providing reactive support and voltage control services.

When a market participant is directed to provide a level of service beyond any performance requirements specified in Chapter 4 of the IESO's Market Rules, the market participant is entitled to recover the costs incurred. Upon receiving confirmation of the level of service these market participants are able to provide, the IESO will work to develop a cost recovery framework in advance

of the anticipated request to provide reactive support and voltage control services to strengthen GTA voltage support.

Building on the success of the IESO's initiative to address voltage control needs in the GTA area, the IESO will consider broader application of reactive support and voltage control services across Ontario's electricity system to meet evolving grid needs more efficiently.

7. Uncertainties

This section describes the uncertainties related to demand and supply that are considered in the assessment, to the extent possible. Incorporating potential uncertainties in the needs assessments ensures that the reliability needs of the electricity system can be met under a variety of potential outcomes, while balancing factors that could drive oversupply or inefficient outcomes.

7.1 Demand Uncertainties

Electricity demand is influenced by a range of factors, including consumer behaviour, economic trends, weather variability, and population and housing growth. The forecasts presented in Section 2 reflect the IESO's best assessment of current conditions and the most likely future trajectory of these drivers. Should any of these factors change, the IESO will update its analysis and incorporate the latest available information into the next APO.

7.1.1 Space and Domestic Hot Water Heating

Heat pumps are identified as the main space and domestic water heating technology used in electrification and are expected to consume less energy than traditional electric resistive heating systems. However, factors that contribute to forecast uncertainties in the long-term demand forecast include heat pump adoption, energy prices, variability in heat pump operation and government policy.

7.1.2 Electric Vehicles

Forecasting electricity demand related to EVs involves significant uncertainty. Multiple factors — including government policies and targets, technological innovation, consumer behaviour, supply chain dynamics, and global economic and geopolitical conditions — can all influence the rate of EV adoption. As a result, both the number of EVs on the road and the electricity required to charge them are difficult to predict with precision. Additionally, system peak demand is heavily influenced by the timing of EV charging. Without effective charging management strategies, widespread EV adoption could lead to substantial increases in peak demand, potentially requiring major capacity upgrades to the electricity system.

7.1.3 Large Step Loads

Large step loads refer to projects that connect to the grid with demand of 20 MW or more, typically coming online in substantial blocks over a short period rather than ramping up gradually. Currently, significant growth of these loads is expected in the commercial sector — driven primarily by the expansion of data centres — and industrial sector — particularly due to the development of the EV production supply chain. However, there is considerable uncertainty regarding the timing, scale, and geographic distribution of these new loads, influenced by shifting market dynamics and limited

publicly available information, and global economic and geopolitical conditions, with additional uncertainty this year due to tariffs. The IESO will continue to monitor developments in large step loads and collaborate with industry stakeholders to inform future demand planning.

7.1.4 Economy

In general, electricity demand is influenced by broader economic conditions, including fluctuations in income, employment, and overall output. It also depends on the pace of growth in the commercial and industrial sectors, particularly in relation to specific projects and their timelines. Additionally, emerging industries — such as battery materials production, hydrogen generation, and cryptocurrency mining — play an increasingly important role in shaping future electricity needs.

This year in particular, international trade tensions have introduced additional complexity, with tariffs having significant and multifaceted effects on Ontario's economy, particularly due to the province's deep reliance on U.S. trade. The added complexity is evident in the areas of trade exposure, gross domestic product and employment losses, sector-specific fallout, business confidence, and investment and broader economic risks.

7.1.5 Demographics

Population changes, geographic migration, federal immigration policy, and residential sector household count growth and formation shares are some demographic uncertainties influencing electricity demand.

7.1.6 Fuel Costs

Fluctuations in global and provincial fuel commodity prices, along with the costs of electricity generation resources within each province, can influence the marginal cost of electricity. These changes also affect discretionary and price-sensitive electricity demand. Additionally, fuel costs play a key role in determining capital investment decisions for a building's space heating systems, such as whether to choose electricity or natural gas as the primary energy source.

Policies and regulations that affect fuel and other costs — such as the Ontario Electricity Rebate or the Global Adjustment — along with electricity rate structures like Time-of-Use price periods, the Industrial Conservation Initiative, Ultra-Low Overnight Rates, the Interruptible Rate Pilot, and dynamic pricing pilots, can significantly influence electricity demand. These mechanisms, combined with energy efficiency initiatives, shape consumer behaviour and demand patterns by altering the cost and value of electricity consumption.

7.1.7 Technological Capabilities

Technological advancements in specific electricity end uses can significantly influence overall electricity demand. For example, fuels used for applications such as building and industrial heating or transportation are becoming increasingly interchangeable. Additionally, improvements in efficiency — such as the adoption of heat pumps for space and water heating with cold-climate capabilities and temperature-dependent performance — can reduce electricity consumption while maintaining service levels.

7.1.8 Energy Transition Policy Uncertainties Impacting Demand

Some policies and regulations that are in support of efforts to reduce emissions across the economy can drive direct and indirect electrification of sectors. These energy transition uncertainties stem from the evolving landscape of environmental policies, regulations, technologies, and market behaviours as Canada moves toward a lower-carbon future. They influence the timing, scale, and nature of electrification and new loads across sectors such as transportation, buildings, and industry.

For instance, shifts in energy efficiency standards or incentives for electric heating technologies (e.g., heat pumps) can accelerate or delay the adoption of electric space heating, impacting winter peak loads. Similarly, shifts in EV policy or consumer incentives can alter the trajectory of transportation electrification, impacting both daily load profiles and long-term infrastructure needs. These uncertainties make demand forecasting more complex, requiring flexible planning approaches that can adapt to a range of policy and technology scenarios.

7.1.9 Weather-Related Uncertainties Impacting Demand

Ontario is experiencing increasing variability in actual weather patterns and a divergence from historical norms, increasing uncertainty in weather-sensitive electricity loads and embedded generation profiles — both seasonally and in aggregate. As electrical loads may become more responsive to weather conditions (e.g., through electrified space heating), and as weather pattern variability continues to shift (e.g., rising temperatures and more frequent heatwaves increasing cooling demand), the uncertainty in electricity demand is expected to grow. The primary risk lies in underestimating future demand in forecasting models, which could lead to inadequate system planning and reliability challenges.

Acute events — such as more frequent and extreme heatwaves or cold snaps — primarily affect peak demand. For example, longer heatwaves can significantly increase summer peak electricity usage. Longer-term changes in weather patterns, like gradually rising average temperatures, tend to influence overall annual energy consumption. A typical example is warmer summer nights, which lead to extended use of air conditioning overnight and result in higher total energy consumption for cooling. As these risks evolve, the main concern is that demand forecasts may underestimate future electricity needs, potentially compromising system reliability and planning.

The IESO is actively working to better understand weather-related uncertainties and how they can be integrated into the APO. These efforts include exploring guidance on the use of weather projections that account for changing temperatures, developing relevant weather variables, and creating tools to incorporate this data into long-term electricity demand forecasts. As this work advances, the IESO will continue to engage with stakeholders to ensure transparency and collaboration.

7.2 Supply Uncertainties

7.2.1 Existing Resources

Uncertainties related to the future participation of existing resources could impact Ontario's supply and influence the outlook on resource and transmission system adequacy. The IESO will continue to monitor these risks and the resulting impacts and respond where possible.

7.2.1.1 Aging Assets and Decreased Performance

Ontario’s existing resources consist of facilities of varying ages, with a large portion of the fleet reaching end of useful life. Aging supply infrastructure applies upward pressure on future resource adequacy requirements, as performance typically decreases over time — observed through increased frequency and duration of planned outages and higher forced outage rates. This can be further exacerbated by climate-driven events and extreme weather conditions. Various levels of investment in existing facilities may be required to maintain the same level of reliability and performance that existed before, and to adhere to regulations.

Co-ordinating outages is expected to become more challenging during the years where new replacement facilities and supporting infrastructure are under construction and commissioning. Outage co-ordination will also be challenged as fluctuating weather and seasonal patterns affect the duration of shoulder seasons — which tend to be more optimal periods for scheduling of outages — and by the shift from a summer-peaking to dual-peaking system. In combination with the increased risk of forced outages resulting from an aging fleet, this increases uncertainty in the availability of supply and transmission to meet adequacy needs.

7.2.1.2 Nuclear Refurbishments

The nuclear refurbishment program, currently underway, has multiple nuclear units scheduled to be out of service for years at a time. Given the size of each unit, there is a risk to resource adequacy in this decade and the next if the return of units is delayed. Conversely, an advancement in the refurbishment schedule could shift the timing of resource adequacy needs.

The resource adequacy assessment in Section 4 includes additional planning reserve to manage risks related to nuclear refurbishments, and is further described in the [2026 APO Supply, Adequacy and Energy Outlook Module](#).

On June 11, 2025, the IESO was directed by the Minister of Energy and Mines to work with Bruce Power to explore the feasibility and cost-effectiveness of a second refurbishment of Bruce Units 1 and 2, which are expected to reach the end of their operating lives in 2043. Should refurbishment work proceed, subsequent planning outlooks may reflect the resource adequacy contribution from these units.

7.2.1.3 Resources Reaching Contract End

A significant number of resources reach the end of their contract term by the mid-2030s, increasing towards the end of the decade. Factors such as aging assets, revenue uncertainty and policy uncertainty may drive a portion of existing resources to exit the market after contract expiry and limit the pool of available supply to meet future needs.

Understanding these uncertainties, the IESO’s Resource Adequacy Framework offers regular re-contracting opportunities, including medium-term procurements, the annual Capacity Auction and the Local Generation Program (LGP). A portion of resources that participate in a procurement may not be successful in securing a contract or commitment, which may require needs to be met through other mechanisms²⁵.

²⁵ The IESO is authorized to enter reliability must-run contracts with generation assets that request to de-register.

In addition, a subset of resources reaching contract end may be repowered through future procurements, making capacity and energy from these resources unavailable to contribute to meeting resource adequacy needs during the redevelopment period. To mitigate potential risks to reliability, design of the second procurement window of the LT2 RFP will consider how to manage coordination of extended construction outages for existing facilities that repower.

The risk of existing resources being unavailable to contribute to meeting resource adequacy needs is considered in the integrated needs assessment in Section 8.

7.2.1.4 Weather-Related Uncertainties Impacting Resource Performance

As actual weather and seasonal trends diverge from historical trends, supply resources may perform differently from assumed historical performance. If the performance and contribution of resources is overestimated, there could be resource adequacy concerns at certain periods in the future. The IESO is monitoring how weather-related trends and events may impact resource performance, and the modelling capabilities available to assess the impact in subsequent APOs.

7.2.1.5 Availability of Non-Firm Imports

The non-firm imports included in the resource adequacy assessments in Section 4 reflect an estimate of imports that are likely to flow under tight supply conditions and higher prices. Factors impacting the flow of non-firm imports include the availability of excess supply in neighbouring areas in real time, sufficient intertie capability, and sufficient transmission capability in Ontario and the neighbouring area.

The availability of non-firm imports can impact Ontario's resource adequacy needs in the future. Development of new interties with neighbouring jurisdictions would expand Ontario's intertie capability and potentially increase the amount of non-firm imports that can be relied upon for resource adequacy. Conversely, changes in supply outlooks and tighter supply conditions in other regions may reduce the IESO's reliance on non-firm imports in subsequent APOs.

Moreover, the estimate of non-firm imports in future assessments may need to be adjusted to account for firm imports secured through the Capacity Auction and utilized under the 2024 Capacity Sharing Agreement with Hydro-Québec, which would consume intertie capability and reduce the likelihood of non-firm imports arising in the real-time energy markets.

7.2.2 New Resources

New resources of both existing and emerging technology types are expected to be integrated into Ontario's electricity system to help meet resource adequacy needs. New technologies are expected to play an important role in future procurements and a diverse portfolio of resources will be critical to meeting future reliability needs.

With any new resource type or new-build facility, there are various risks that may materialize at any point as resources reach milestones to fulfill requirements for commercial operation. These risks can include challenges to obtain the necessary permits and approvals (e.g., municipal approval and social acceptance); delays due to supply chain disruptions; or once a resource has reached commercial operation, an initial period of less reliable operation. Risks related to the contribution of new resources are considered in the integrated needs assessment in Section 8.

7.2.2.1 Procurement Targets Not Met

Various factors could result in a target for a given procurement not being met. One risk is that projects will be proposed in areas of the province with transmission limitations. To mitigate this risk, the IESO's deliverability assessment process ensures that procured resources avoid areas with limited connection availability due to transmission and/or distribution system limitations. Moreover, this process helps ensure that projects awarded contracts can operate with minimized risk of curtailment and congestion on the system. As the period of high procurement activity continues, deliverability limitations may increase until sufficient transmission and distribution infrastructure is in place — infrastructure that could have longer lead times than the supply projects it is intended to enable.

The [preliminary deliverability guidance](#) provided as part of the LT2 RFP indicated areas of the province where accommodating additional resources is challenged by transmission constraints present during the expected in-service dates of the proposed projects. This includes zonal limitations, congestion limits on areas and circuits, inverter-based resource specific limitations, and more.

Deliverability assessments that are part of future procurement periods may have different results due to:

- resources that come online from in-flight procurements, including the first window of the LT2 RFP;
- transmission upgrades identified in regional and bulk plans that come into service;
- transmission system upgrades that were recommended to Hydro One based on the results of final stage deliverability testing for the LT1 RFP and preliminary guidance for the LT2 RFP that come into service. The upgrades are expected to improve deliverability and allow more projects to contribute to meeting system needs;
- existing generation assets that retire or exit the market;
- changes in the nature of reliability needs (i.e., energy versus capacity); and
- changes in the demand forecast.

In addition to deliverability challenges, the risk of procurement targets not being met could result from lower participation in procurements, driven by external factors such as:

- potential opportunities in other markets leading to competition for capital;
- policy and regulatory uncertainty pertaining to resource eligibility, such as the Clean Electricity Regulations; and
- inability to secure municipal support and land-use restrictions.

7.2.2.2 Commercial Operation Not Achieved

Reaching commercial operation is not guaranteed after capacity or energy from a resource is contracted through a procurement process; this uncertainty has materialized in past procurements primarily due to an inability to secure the necessary permits for a project. Other reasons for not reaching commercial operation can include challenges with community support or securing financing. Resources that are procured through the IESO's competitive framework but are unable to reach commercial operation may increase resource adequacy needs.

7.2.2.3 Project In-Service Delays

All projects face development risks that can lead to in-service delays, driven by multiple factors. As the IESO experienced in the transition from coal generation to replacement supply, only 30 per cent of projects were in operation on schedule, with 60 per cent falling behind by an average of 10 months and the remainder failing to reach commercial operation.

Supply chain disruptions, increases in costs, shortage of skilled labour, permitting complexities, community acceptance, and geopolitical events increase the risk of delays in project development. These factors have already impacted certain projects that were recently procured and are anticipated to continue to pose risks, particularly as the development of new supply resources accelerates, potentially putting upward pressure on resource adequacy needs.

7.2.2.4 Reliable Operation of Resources

Experience has indicated that after a new resource comes into service, there is a period where the risk of equipment failure and forced outages is higher. While this risk decreases over time, the initial period of uncertainty can result in an increase in resource adequacy needs. In addition, new market participants may be unfamiliar with operating in the IESO's real-time market, which can result in a resource not being available when expected. With newer technologies expected to participate in upcoming procurements, the integration and reliable operation of new resource types is anticipated to take time and may put upward pressure on resource adequacy needs.

7.2.2.5 New-Build Resources

New resources can help to meet increasing demand over the long term; however, delays in project development may result in increased resource adequacy needs.

Energy for Generations indicated support for early-stage development of new hydroelectric stations in northern Ontario, to explore the feasibility of the Nine Mile Rapids and Grand Rapids sites in the Moose River Basin.

The IESO was also directed by the Minister of Energy and Mines on June 11, 2025 to support next steps in the Ontario New Nuclear Feasibility Study, and work with Ontario Power Generation and Bruce Power to continue evaluation and early planning for additional nuclear generation in the province, including large-scale reactors and small modular reactors. On Feb. 12, 2026, a partnership agreement between Ontario Power Generation and the Municipality of Port Hope was announced for new large-scale nuclear generation at the Wesleyville site. Many factors could result in project delays to new nuclear facilities, including the inability to secure community support, supply chain shortages, a need for more skilled workers, and new technology development risks. Schedule updates are incorporated into the APO as information becomes available and timelines for these nuclear developments are more defined; the IESO will include any necessary adjustments to reflect evolving conditions in future APOs. The resource adequacy assessment in Section 4 also includes additional planning reserve to manage risks related to new-build nuclear resources.

7.2.3 Energy Security

Energy security — having uninterrupted access to energy at an affordable price²⁶ — is increasingly challenged by geopolitical tensions, supply chain disruptions, and severe weather and ecological events — factors that can threaten the stability, cost, and availability of energy resources. Extreme natural events (e.g., extreme temperatures, storms) or the occurrence of historically atypical events, potentially exacerbated by shifting weather patterns, are cited in North American Electric Reliability Corporation’s *2025 ERO Reliability Risk Priorities Report* as continuing to present a significant risk to the resilience of the electricity system.

Ensuring long-term supply reliability involves planning and investing in energy infrastructure, diversifying energy sources, and securing contracts with suppliers to prevent future shortfalls even as demand grows or system conditions change.

The IESO’s annual planning and procurement process helps to mitigate risks to energy security. The supply outlook used as an input into the resource adequacy assessments in Section 4 considers historical production data for hydroelectric, and simulated data for wind and solar resources²⁷, which helps to capture the impact of extreme events on the performance of these resources in the probabilistic models. The Provincial Energy Adequacy Outlook assesses Ontario’s ability to meet its own electricity needs, without consideration of economic imports or exports across interconnections, and the analysis in Section 8 builds on these needs to identify actions to meet future reliability needs. The diversity of Ontario’s resource mix also helps to ensure that supply is provided from a range of fuel types and technologies sited across the province.

7.2.4 Policy and Regulatory Supply Uncertainties

Ontario’s supply mix continues to be informed by, and adapt to, government policy. Some of these policy and regulatory decisions have the potential to increase or decrease supply — subsequent planning outlooks are anticipated to reflect any decisions that are made. In addition, there are factors that can affect Ontario’s resource adequacy needs, such as policies implemented by both federal and provincial governments.

Nuclear Licensing: The supply outlook in this APO considers potential contribution from nuclear resources as indicated in *Energy for Generations*. Refurbishments of nuclear resources and development of new nuclear resources are subject to regulatory approval and the licensing process by the Canadian Nuclear Safety Commission; delays to licensing and approval may have an impact on resource adequacy needs.

Pumped Storage Projects: *Energy for Generations* indicated that pre-development work would be advanced on the proposed Ontario Pumped Storage Project, developed in partnership by TC Energy and the Saugeen Ojibway Nation. If the project proceeds, subsequent planning outlooks will reflect its resource adequacy contribution.

Clean Electricity Regulations: On Dec. 18, 2024 the federal government enacted the finalized Clean Electricity Regulations, placing emissions restrictions on generating units using fossil fuels starting in 2035. In 2024, the IESO identified that the restrictions described in the draft regulations could negatively impact the reliability of Ontario’s electricity system, electrification of the broader

²⁶ International Energy Agency.

²⁷ The [Resource Adequacy and Energy Assessments Methodology](#) provides more information on the methods used to capture hydroelectric, wind, and solar resource performance.

economy and economic growth, as there would be insufficient time to plan, procure and build suitable alternatives to natural gas generation and build the necessary supporting transmission infrastructure.

The IESO's energy adequacy assessments for this APO assumed constrained production from Ontario's natural gas fleet, remaining within the electricity system emission levels forecast in the [2025 APO Capacity Expansion Scenario, Costs and Emissions Module](#). This approach helps to inform the scope and type of actions needed to support maintaining an emissions trajectory to achieve a near-zero system by 2050 and helps to mitigate the reliability risk introduced by the Clean Electricity Regulations.

7.3 Transmission Uncertainties

Transmission projects could be subject to longer lead times due to external factors, which could impact the cost, timing, and scope of transmission projects recommended by the IESO. External factors that could result in transmission project delays include:

- permitting issues, such as routing approvals (e.g., land rights, environmental assessments, Indigenous consultations) and regulatory approvals (e.g., the Ontario Energy Board's Leave to Construct);
- global supply chain challenges when procuring or delivering equipment or material;
- constraints in skilled labour; and
- construction schedule delays due to weather, outage approvals, or other factors.

Risks associated with potential delays to the in-service date of transmission projects are assessed as part of bulk and regional planning and upon entering the IESO's connection process. As the project moves forward, if a transmission owner indicates that there may be a delay closer to the originally planned in-service date of a project, the IESO will assess the potential risks associated with these delays and identify temporary facilities and/or control actions that are required in the interim, until the project comes into service.

Other potential transmission risk mitigation strategies include:

- early and active community engagement;
- corridor preservation strategies;
- robust route selection processes informed by community input;
- advanced procurement to manage supply chain risks (e.g., a transmitter procuring several autotransformers in advance of anticipated need);
- risk-sharing or mitigation contracts through competitive transmission procurement;
- securing priority project status via Order-in-Council to shorten Ontario Energy Board reviews; and
- preservation of development options should needs change with time (e.g., plans for additional reinforcement if a higher growth scenario materializes).

8. Integrated Reliability Needs

The IESO conducts an integrated reliability needs assessment to identify remaining resource adequacy needs, with consideration for the supply uncertainties described earlier and previously planned in-flight actions.

This section builds on the reference scenario needs that were identified in Section 4, which considered the supply and transmission system outlooks described in Section 3, and integrates in-flight actions that are underway and the uncertainties discussed in Section 7, to present remaining needs up to 2040. Planned actions to address remaining needs are described in Section 9.

8.1 In-Flight Actions to Meet Reliability Needs

Recognizing that resources from in-flight actions can provide different services (e.g., capacity only, or both capacity and energy), contributions from the following actions were only considered in the integrated capacity needs assessment:

- The preliminary target capacity for the 2026 Capacity Auction was assumed for the summer 2027 obligation period, and the minimum target threshold of 1,000 MW was assumed to be acquired in the remaining years of the outlook period (Capacity Auction targets and the description of preliminary target capacity is described in Section 9.1).
- Remaining capacity from the 2016 Amended and Restated Capacity Sharing Agreement with Hydro-Québec Energy Marketing (HQEM).
- Capacity from the 2024 Capacity Sharing Agreement with HQEM, providing 600 MW of firm imports in summer 2028 to 2031, and assumptions on usage of previously banked capacity.

The following resources from in-flight actions can provide both capacity and energy, and their contribution is reflected in both the integrated capacity and energy needs assessments:

- Upgrades to hydroelectric generating units under Ontario Power Generation's Hydro Refurbishment Program²⁸.
- Upgrades to Bruce Power's nuclear generating units following refurbishments through its Project 2030 initiative²⁹.
- Anticipated energy and capacity contributions from resources procured through the first window of the LT2 RFP.

²⁸ [Eight OPG hydro stations to undergo life-extending refurbishments in eastern Ontario – Ontario Power Generation](#)
²⁹ [Bruce Power Project 2030: Powering Ontario's Hydrogen Potential](#)

- Potential new hydroelectric generating stations in northern Ontario, supported by the Ontario government³⁰.

8.2 Remaining Capacity Needs After Considering In-Flight Actions

Considering the in-flight actions in Section 8.1 and the supply-side uncertainties discussed in Section 7.2, summer capacity needs are expected to be met up to 2030. Remaining capacity needs are illustrated in Figure 29 for the summer period³¹ and are summarized in two time periods: 2031–2034 and 2035–2040.

Summer Capacity Needs: 2031–2034

Remaining capacity needs of more than 300 MW emerge in 2031 and grow to more than 2,800 MW in 2034. These needs are expected to be addressed through actions that include recontracting of existing facilities, Capacity Auction forward guidance targets, enhanced or additional eDSM or other targeted programs or procurements.

Summer Capacity Needs: 2035–2040

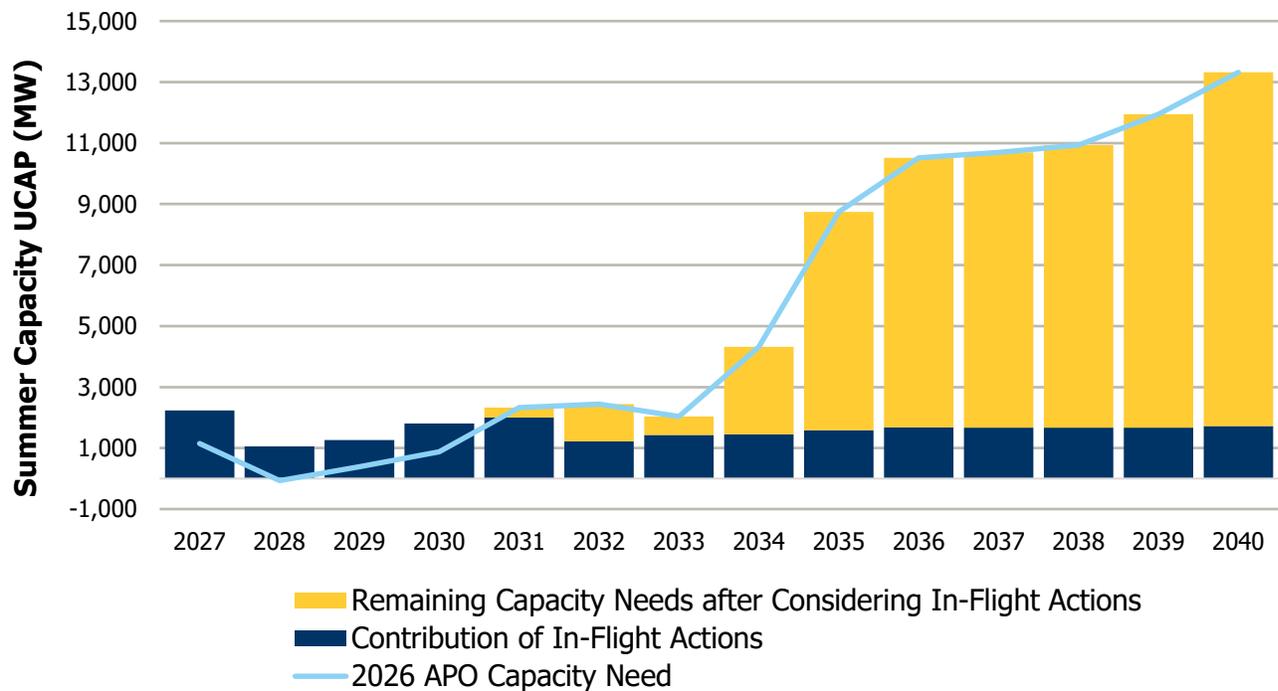
Needs in 2035 increase significantly to more than 7,000 MW and continue to grow through the end of the decade, reaching more than 11,000 MW in 2040. Continuing the actions described above, and securing capacity from resources through subsequent windows of the LT2 RFP and through the Long Lead-Time (LLT) RFP, can help meet a portion of these needs; however, meeting the balance of needs through the end of the decade will require additional actions and programs.

Supply uncertainties post-2035 can influence the extent of capacity needs such as reduced participation of existing resources due to retirements or market exit, project in-service delays, and outcomes of procurements being lower than expected. Decarbonization policies also bring uncertainty to the contribution of emitting resources beyond 2035. With capacity from emitting resources making up a large portion of existing resources with contracts expiring after April 2035, there is significant uncertainty in the magnitude of capacity needs in 2035 and beyond.

³⁰ [Ontario Pursuing New Hydroelectric Stations in Northern Ontario | Ontario Newsroom](#)

³¹ Although the province is expected to switch from summer peaking to dual peaking in the late-2030s, Ontario continues to show higher summer needs for the most part due to lower summer resource performance.

Figure 29 | Remaining Capacity Needs After Considering In-Flight Actions



8.3 Remaining Energy Needs After Considering In-Flight Actions

The assessment for remaining energy needs considered in-flight actions and uncertainties, consistent with the integrated capacity needs assessment. Remaining annual energy needs are illustrated in Figure 30 and are summarized below in three time periods: 2027–2031, 2032–2034, and 2035–2040.

Annual Energy Needs: 2027–2031

Energy needs over the 2027–2028 period are primarily driven by the risk of delays to refurbished nuclear resources and new projects committed through previous resource procurements. These risks can be mitigated by supporting on-time commercial operation of resources, enhanced or additional eDSM programming, and/or increased dispatch of existing and committed resources if required. Similarly, the minimal energy need in 2030 and the 3 TWh need in 2031 can be met through these actions, and recontracting of existing facilities.

Annual Energy Needs: 2032–2034

Energy needs reach almost 16 TWh over this period and are expected to be met with the actions described above, as well as procuring new or repowered energy-producing resources through subsequent windows of the LT2 RFP.

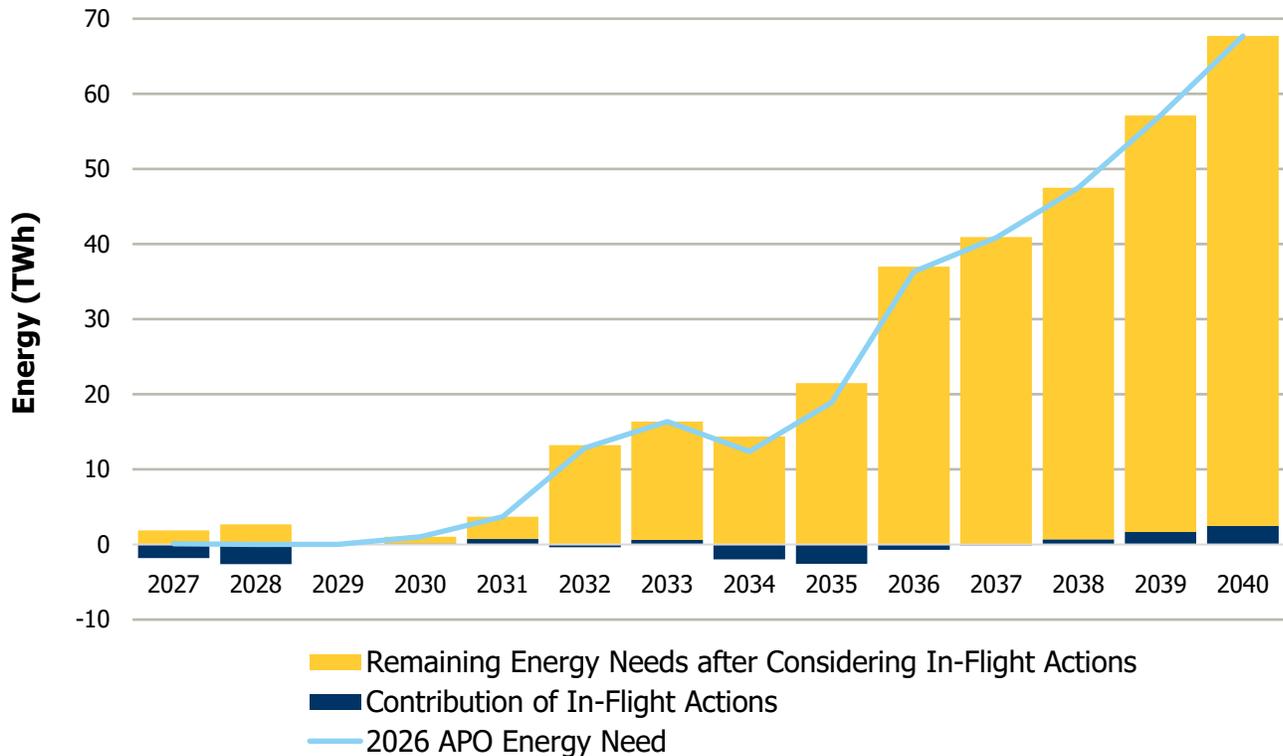
Annual Energy Needs: 2035–2040

The further increases in energy needs over the remainder of the decade range from 21 TWh in 2035 to 65 TWh in 2040. Continuing the actions identified above and setting adequate targets for new procurements and programs will be required to meet the higher needs in the latter half of the decade.

Supply uncertainties post-2035 will influence the extent of energy needs; these include reduced participation of existing resources due to retirements or market exit, project in-service delays, or outcomes of procurements being lower than expected.

Most significantly, the Clean Electricity Regulations bring uncertainty after 2035. Limited potential for energy from emitting resources, combined with long-term forecast demand growth, will increase energy needs. A variety of new energy-producing resources will be required on the system to address a range of energy needs arising in both winter and summer, and over different hours of the day.

Figure 30 | Remaining Energy Needs After Considering In-Flight Actions



Projects procured under the LT2 RFP can come online gradually in the early- to mid-2030s, helping to meet a portion of capacity and energy needs. The LLT RFP can help meet a portion of capacity and energy needs in the mid- to late-2030s; deployment of subsequent long-term procurements leveraging the Resource Adequacy Framework is also anticipated.

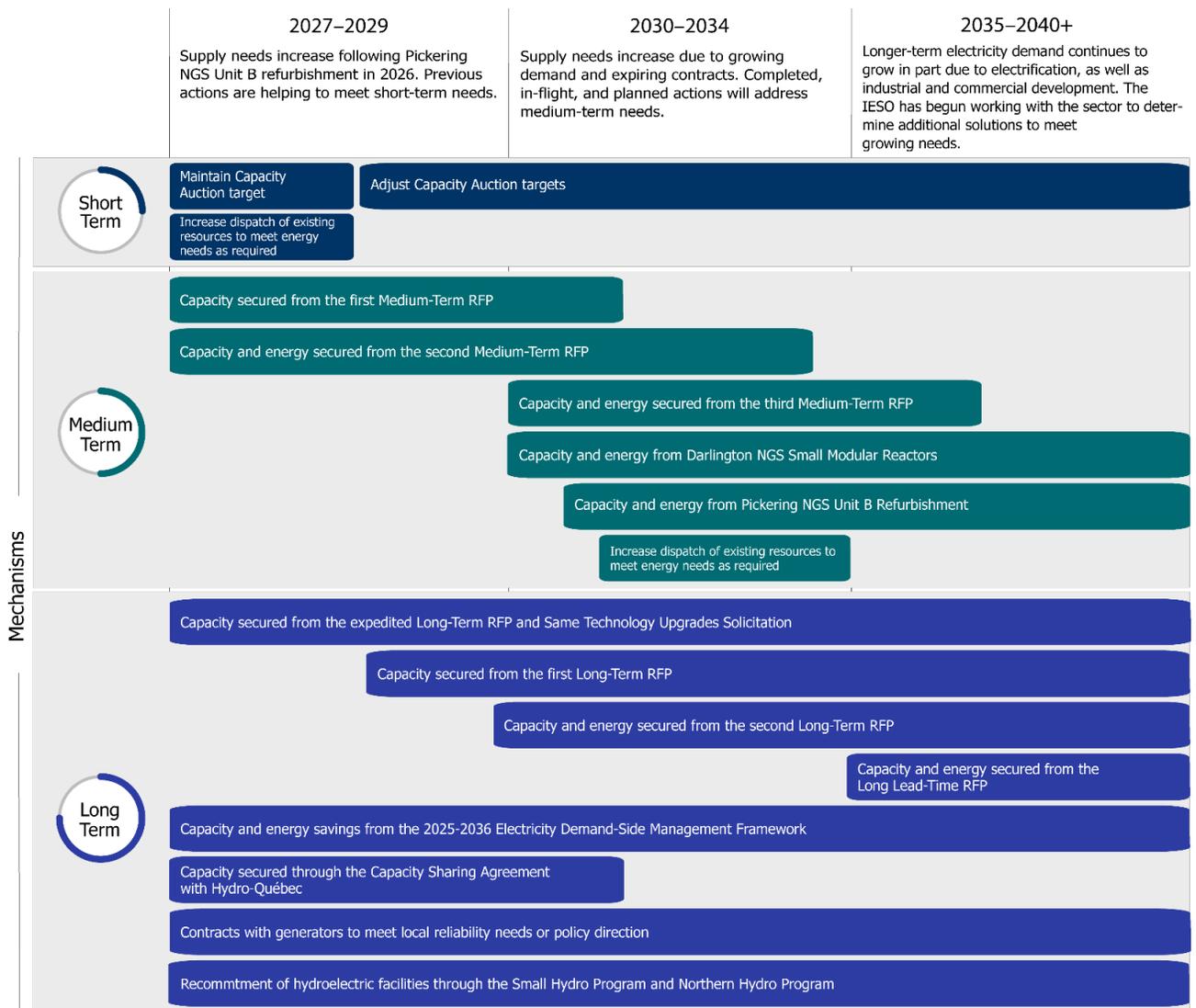
9. Planned Actions

The planned actions specified in this section align with the competitive mechanisms set out in the IESO's Resource Adequacy Framework, which provides flexibility to adjust to changing needs and enables competition to ensure ratepayer value. The actions also include prioritization of specific future transmission studies, as outlined by the Schedule of Planning Activities in section 9.4.

While the actions in this section are informed by integrated capacity and energy needs for the reference scenario, the magnitude of growth expected in the long-term across each of the reference, high, and low scenarios highlights the need for the IESO's ongoing resource procurement and development activities as well as other actions. Multiple scenarios offer the ability to track demand development and adjust to changing system needs through the capacity auction; shift procurement timing and/or targets; and explore opportunities for more load growth and increased exports.

Actions to meet Ontario's resource adequacy needs that are in-flight, planned or resulting from government policy are shown in Figure 31. This includes resources to be procured through the second, third, and fourth windows of the LT2 RFP and the LLT RFP, as well as capacity and energy from new and refurbished nuclear resources. Actions required to meet needs arising after 2035 are dependent on various factors that include recontracting of existing resources and the pace of demand growth.

Figure 31 | Meeting Ontario's Resource Adequacy Needs



9.1 Annual Capacity Auction

The annual Capacity Auction will continue as a near-term mechanism to secure capacity with a short forward period. For the remainder of the decade, the auction is expected to secure capacity and provide flexibility to balance changes in reliability needs.

The IESO continues to provide three stages of guidance for the Capacity Auction, each informed by the level of certainty about capacity needs going forward. The aim of this guidance is to signal the future direction and revenue opportunity for potential Capacity Auction participants.

Starting in 2026, a change will be made to the first stage of Capacity Auction guidance related to target capacity. For the auction taking place in Q4 2026, a preliminary target capacity has been established and is provided in this APO; the firm target capacity will be included in the Pre-Auction Report, anticipated to be published in summer 2026.

The second stage of guidance establishes a minimum target threshold for future Capacity Auctions, and the third stage provides a forward guidance on the range of potential target capacities for future auctions. This guidance, provided in Section 9.1.2, is updated annually with the APO.

To enhance the auction's ability to meet capacity targets, the IESO will continue to investigate opportunities to increase competition and available supply, while maintaining reliability as a top priority in terms of performance in accordance with dispatch instructions and fulfillment of obligations. Working with stakeholders to investigate future enhancements provides assurance that the Capacity Auction can adapt to evolving market conditions and continue to be a competitive, transparent and accessible marketplace for a diverse range of capacity resources.

9.1.1 Preliminary Target Capacity for the 2026 Capacity Auction

The following sets out the preliminary targets for the next Capacity Auction in Q4 2026 for the May 2027–April 2028 commitment period. The targets described in this section are expressed in terms of unforced capacity (UCAP).

Summer 2027 Obligation Period (May 1–Oct. 31, 2027): 1,800 MW Preliminary Target

Consistent with the forward guidance target outlined in the 2025 APO, the 2026 Capacity Auction has a preliminary target of 1,800 MW for the summer 2027 obligation period. The firm target capacity — to be provided in the Pre-Auction Report — may be incrementally increased, or decreased, relative to the preliminary target capacity, if necessary, if more recent information becomes available that warrants an adjustment. While the integrated capacity needs assessment in Section 8 indicated that capacity needs in the near term can be met with in-flight actions, maintaining the preliminary target at 1,800 MW serves the purpose of:

- providing a signal to the market that the auction remains a key mechanism to secure resources, with potential for growth in future years as capacity needs are identified in subsequent APOs;
- helping to mitigate risks to resource adequacy if one or more of the demand- or supply-side uncertainties discussed earlier in this outlook materialize; and
- ensuring that Capacity Auction resources continue to be available as a valuable mechanism for meeting peak demands during extreme weather events.

Winter 2027–2028 Obligation Period (Nov. 1, 2027–April 30, 2028): 1,200 MW Preliminary Target

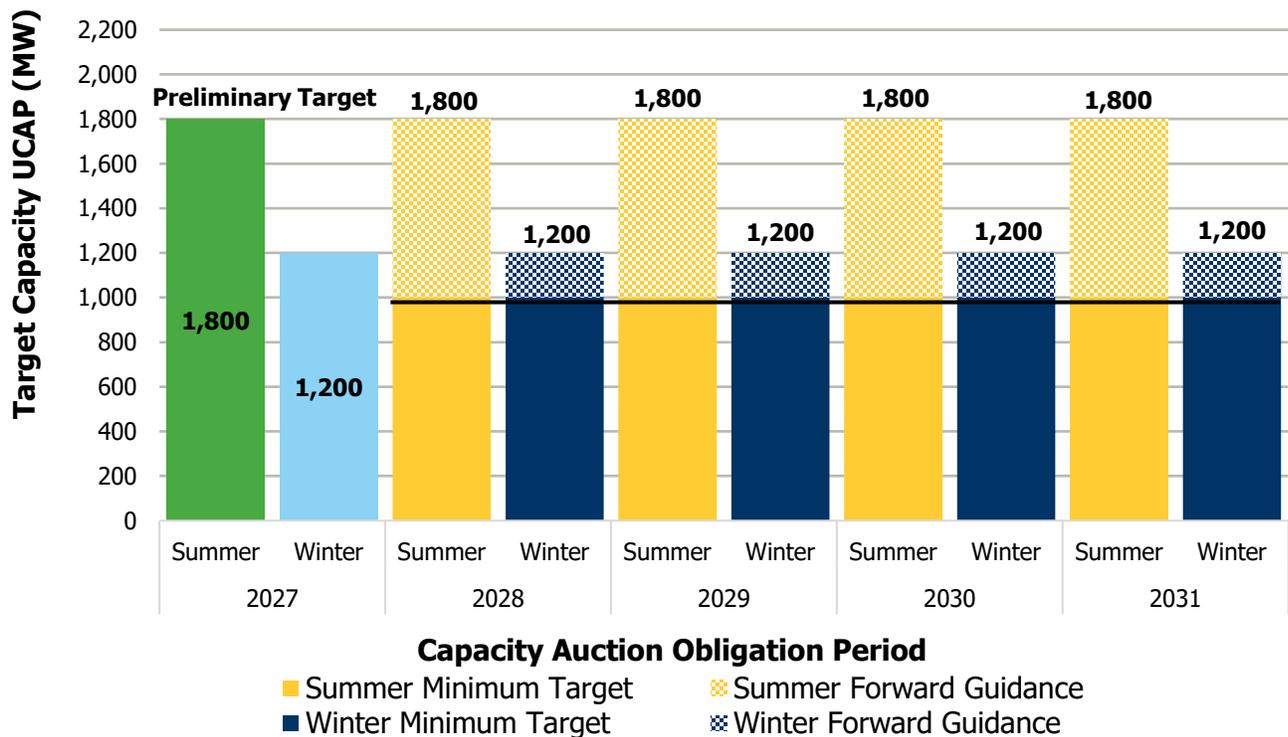
The 2026 Capacity Auction has a preliminary target of 1,200 MW for the winter 2027–2028 obligation period, maintaining the target established in the 2025 APO for the winter 2026–2027 obligation period. The firm target capacity — to be provided in the Pre-Auction Report — may be incrementally increased, or decreased, relative to the preliminary target capacity, if necessary, if more recent information becomes available that warrants an adjustment. Similar to the summer target, holding the winter preliminary target at this level helps mitigate risks to resource adequacy if demand- or supply-side uncertainties materialize. As winter needs begin to match and at times surpass summer needs (anticipated in the late-2030s) — growth in winter targets may be required in future years to meet reliability needs.

9.1.2 Minimum Target Threshold and Forward Guidance for Future Capacity Auctions

Consistent with the 2025 APO, the IESO will maintain the minimum target capacity for each obligation period at 1,000 MW to signal a predictable and stable marketplace for capacity suppliers to invest in operations in Ontario. This minimum target capacity also provides assurance to the IESO that resources will be available to meet reliability needs.

Forward guidance up to the summer 2031 and winter 2031–2032 obligation periods is provided in Figure 32, with both summer and winter target capacities maintained at 1,800 MW and 1,200 MW, respectively. As in past years the IESO will reassess forward guidance for future auctions and, if required, adjust guidance to help meet system needs. At the same time, the IESO will review the auction’s potential contributions to needs each year when adjusting targets.

Figure 32 | Capacity Auction Forward Guidance



9.1.3 Enhancements to the Annual Capacity Auction

The IESO continues to collaborate with stakeholders to implement enhancements to the auction, with the aim of enabling increased competition and greater resource reliability to continue to drive value for ratepayers. Enhancements will help to ensure that the auction can adapt to evolving market conditions and continue to be a competitive, transparent and accessible marketplace for a diverse range of capacity resources. Plans for future enhancements are detailed on the [Capacity Auction Enhancements stakeholder engagement page](#).

9.2 Medium-Term Procurements

Medium-term procurements help meet needs by competitively procuring existing resources coming off contract. Proponents are provided with greater certainty through flexible forward periods and five-year commitments. Procurements are executed every two to three years, as needed: this cadenced process provides the IESO with flexibility to adjust to changes in system needs, to maximize value of existing resources, and to adapt processes to lessons learned.

9.2.1 Third Medium-Term RFP

The third Medium-Term (MT3) RFP is expected to recommit competitively priced facilities with contracts that expire between 2030–2032. Proposals for the MT3 RFP are anticipated to be due in 2027, with final procurement timing subject to resource adequacy needs. Similar to the MT2 RFP and to ensure competitive recontracting of all resource types, the MT3 RFP and future medium-term procurements will include capacity and energy streams with separate targets for each. Contract award is anticipated in the second half of 2027, with target commercial operation dates between 2030–2032.

9.2.2 Subsequent Medium-Term Procurements

The number of resources expected to reach end of contract increases significantly starting in 2034. By the end of 2035, there is more than 9,000 MW of capacity (on a summer UCAP basis) from resources reaching contract end. Subsequent medium-term procurements will be executed using a cadenced approach to procure resources with contracts expiring in the next decade.

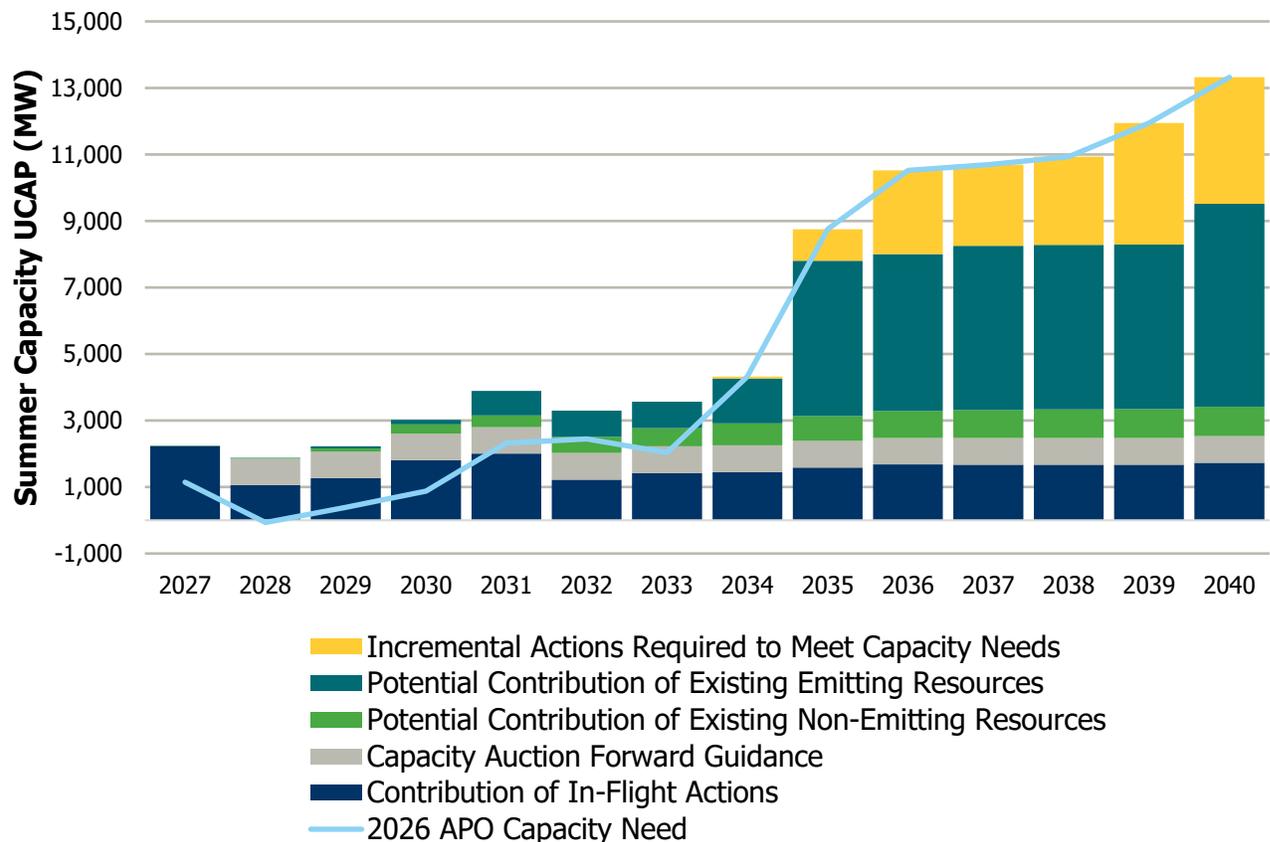
9.3 Fulfilling Resource Adequacy Needs

This section discusses the remaining capacity and energy needs, shown in Figures 33 and 34, respectively, and actions that can address these needs, after accounting for:

- in-flight actions described in Section 8.1;
- forward guidance targets for the Capacity Auction provided in Section 9.1; and
- potential contribution of existing non-emitting and emitting resources with expiring contracts that could be recontracted through future procurements.

The capacity needs of more than 7,000 MW identified in Section 8.2 are reduced with the actions above; needs of close to 950 MW emerge in 2035 on a summer UCAP basis. While this need can be met by resources procured through subsequent windows of the LT2 RFP and the LLT RFP, additional actions may be required to meet the balance of the 2,500 MW need in 2036 and sustained needs in the remainder of the decade.

Figure 33 | Incremental Actions Required to Meet Capacity Needs

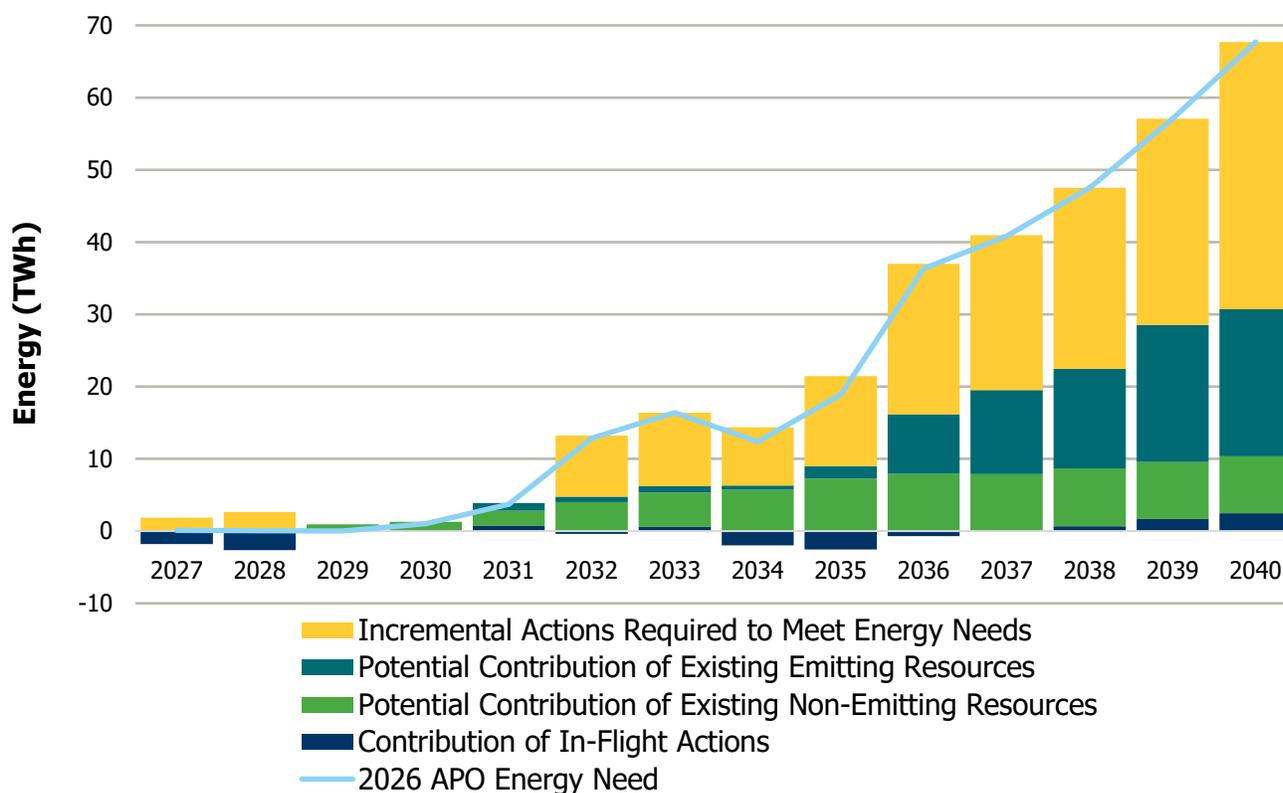


Similarly, the energy needs identified in Section 8.3 are reduced, with annual energy needs of more than 8 TWh emerging in 2032 and growing to more than 12 TWh in 2035. Needs emerging in 2032 will be considered in the setting of procurement targets for the second and third windows of the LT2 RFP, while needs in 2035 are expected to be met by resources procured through subsequent windows of the LT2 RFP and the LLT RFP.

The on-time delivery of nuclear refurbishments and new nuclear developments can address a significant portion of the forecast energy needs in the early-2030s. In addition, Ontario’s committed gas fleet is forecast to operate at levels far below total capability over this period; this provides the ability to dispatch additional energy from these resources as necessary, based on the future system build out and resulting energy needs. Combined with potential additional eDSM savings and cost-effective investments in new renewable generation, Ontario has multiple options for meeting energy needs in the early-2030s.

In the remainder of the decade, energy needs increase significantly as the Clean Electricity Regulations would limit production from most of Ontario’s gas fleet, reducing energy production from emitting resources when a large portion of contracts expire in the mid-2030s.

Figure 34 | Incremental Actions Required to Meet Energy Needs³²



The magnitude of capacity and energy needs indicated may change depending on materialization of in-flight actions, including resources committed through the IESO’s previous procurements reaching expected commercial operation dates, the actual capacity and energy contributions from resources procured through the first window of the LT2 RFP, and the actual contribution of existing resources post-contract expiry. The IESO will continue to evaluate needs and adjust actions, including future procurement targets, through the iterative APO process.

9.3.1 Second Long-Term Request for Proposals: Subsequent Windows

The cadenced approach to the long-term procurements provides ongoing investment opportunities in resource development that aligns with different resource types and development timelines and is informed by the IESO’s reassessment of needs through the annual planning process. This helps to protect against under- or over-commitment of resources; and takes advantage of continuing technological advances and associated reductions in costs.

³² Note that the energy impact of some risks considered in this analysis exceeds the expected contribution of in-flight actions, resulting in negative terawatt-hours (displayed in blue) and showing incremental actions are required to meet energy needs beyond what is indicated by the energy adequacy assessment in Section 4.3. Moreover, no energy is accounted for from resources acquired through the Capacity Auction, which specifically targets capacity services.

The LT2 RFP is structured to include multiple submission windows under distinct capacity and energy procurement streams³³, with the expected cadence and timing of procurements intended to ensure that eligible resources gradually enter the electricity system to meet needs.

Under the LT2 RFP, the totality of all energy procurements will target the procurement of contract capacity sufficient to enable the production of up to 14 TWh of annual generation from eligible energy-producing resources. Accounting for the 3 TWh target of the first window of LT2 RFP that was launched in June 2025, subsequent energy procurement windows will collectively target up to 11 TWh of annual generation from eligible energy-producing resources.

The capacity submission windows under the LT2 RFP will collectively target the procurement of up to 1,600 MW of eligible capacity resources. Accounting for the 600 MW target for the first window of LT2 RFP, subsequent capacity procurement windows will collectively target up to 1,000 MW of eligible capacity resources.

Table 5 illustrates preliminary capacity and energy targets and commercial operation dates (COD) for the second, third and fourth windows of the LT2 RFP. The number of windows, targets and dates are subject to change; final targets for Window 2 will be published in the LT2(c-2) and LT2(e-2) RFPs, and proposals are anticipated to be due in 2027. Provisions may be included in the LT2 RFP to allow the IESO to exceed the targets for future windows; shifting of targets in future windows may also be required.

Table 5 | Preliminary LT2 RFP Capacity and Energy Targets

LT2 RFP Procurement Window	Capacity Target	Energy Target
Window 1 – May 1, 2030 COD	600 MW	3 TWh
Window 2 – May 1, 2032 COD	400 MW	1-3 TWh
Window 3 – May 1, 2033 COD	300 MW	2-4 TWh
Window 4 – May 1, 2034 COD	300 MW	2-4 TWh

These targets, set for resources to be in service by 2034 or earlier, contribute to meeting the capacity and energy needs in the first half of the 2030s. Early operation incentives may be used to encourage earlier CODs, if required. Meeting the growing energy needs in 2036 and beyond will likely require additional actions.

9.3.2 Long Lead-Time Request for Proposals

³³ Each window of each stream is structured as a separate request for proposal (i.e. an individual procurement), in accordance with Ministerial direction.

The IESO began engagement on the LLT RFP in April 2025 and submitted a report-back to government in August 2025. The IESO continues to engage with stakeholders and communities on RFP and contract development, with final RFP and contracts expected following further policy direction.

Resources procured through the LLT RFP are expected to help reduce capacity and energy needs in the mid-2030s and over the long term, with potential contract terms of 40 years. The LLT RFP is structured as a single procurement window with distinct capacity and energy procurement streams, with targets of 800 MW and 1 TWh, respectively. The LLT RFP will be open to eligible projects with a lead time of five or more years and are expected to reach commercial operation by 2035.

9.3.3 Local Generation Program

The LGP is being designed to secure smaller-scale (100 kilowatt–10 MW), distribution-connected generation facilities to support the forecasted growth in Ontario’s electricity system. The LGP provides several opportunities:

- Cost-effectively secure approximately 2,000 MW of existing resources with expiring contracts over the next 10 years to help meet Ontario’s resource adequacy needs. In the future, the LGP could also offer contracts for new-build Distributed Energy Resources that can contribute to meeting the system’s resource adequacy needs.
- Partner with local distribution companies to target procurement of resources that can help meet local and system-wide supply needs.
- Create a new investment pathway for Distributed Energy Resources providers while allowing them to access alternative value streams.
- Safeguard against higher risks associated with larger infrastructure build-out (e.g., land use, siting, and community support challenges).
- Support local economic growth and future electricity export opportunities.

The LGP will meet the objectives of the Nov. 28, 2024 Directive from the Minister of Energy and Electrification. The IESO will continue to engage with stakeholders prior to the launch of the program.

9.3.4 Northern Hydro Program

On May 8, 2024, following the successful launch of the Small Hydro Program in December 2023, the Minister of Energy asked the IESO to design a Northern Hydro Program for existing facilities that have installed capacities above 10 MW and contracts with the IESO or the Ontario Electricity Financial Corporation expiring on or before April 30, 2043.

A report-back to the Minister of Energy and Electrification was submitted in December 2024. The IESO is engaging with stakeholders to finalize the design in anticipation of an expected launch of the program in Q1 2026.

9.3.5 Electricity Demand-Side Management

EDSM continues to play a key role in the power system, achieving energy and peak demand savings and, in turn, reducing energy and capacity needs. Using electricity wisely also offers benefits for individuals and businesses, as well as Ontario’s electricity system, where energy efficiency typically involves upgrading or replacing existing equipment with higher efficiency alternatives. EDSM offers one of the lowest-cost resources to address system needs, as it reduces the need for investment in new supply resources and supports the long-term reliability of the electricity system through reduction of demand on the grid.

On Jan. 7, 2025, the Minister of Energy and Electrification announced a new eDSM Framework for the years 2025–2036 to address provincial, regional, and local system needs with a budget of up to \$10.9 billion. The new framework includes programs for residential, commercial, institutional, municipal, industrial, and agricultural segments, in addition to programs for income-qualified households and on-reserve First Nations. The framework will be implemented through a series of three-year program plans, with a midpoint review in year six that offers flexibility to adapt programming to demand growth that may result in additional cost-effective achievable potential, and to changing customer and system needs.

The IESO’s plan for the first three-year term from 2025–2027 has a budget of \$1.8 billion and targets of 900 MW peak demand savings and 4.6 TWh of energy savings. New initiatives that are planned to be launched during this three-year plan include a new commercial heating, ventilation and air conditioning demand response program and energy efficiency in the new construction sector. The framework also includes beneficial electrification programming that will reduce greenhouse gas emissions in the province. Beyond 2027, the IESO plans to continue to grow eDSM targets in future program plans to maximize potential for these programs to cost-effectively meet system needs. The IESO will continue to engage with stakeholders and communities on critical aspects of the eDSM program plans.

9.4 Transmission Schedule of Planning Activities

The transmission system needs described in Section 5 will require planning to develop, evaluate and recommend solutions in bulk system plans. A Schedule of Planning Activities provides a snapshot of the IESO’s workplan for priority bulk system transmission plans over the next three years. If conditions evolve — for instance, if the generation or demand outlooks change, or new public policy direction emerges — then the need, scope and/or timing proposed for these planning studies may be revised. These transmission studies, also referred to as bulk system plans, are geared toward addressing those system needs that require a detailed evaluation of possible solutions, including transmission and other integrated alternatives. The IESO carries out stakeholder and community engagement for these studies according to their individualized engagement plan, and the final plans with detailed recommendations are published as stand-alone reports on the IESO’s website.

The Schedule of Planning Activities in Table 6 includes an estimate of the duration of each bulk plan, which will be further defined when the plan scope of work is developed and communicated through stakeholder and community engagement activities.

Table 6 | Schedule of Planning Activities

Area	Study Name	Start-End (Estimate)	Scope / Consideration
South and Central Ontario (including the GTA)	South and Central Ontario Bulk Plan (<i>Powering Ontario's Growth</i>)	2024–2026 (ongoing)	<p>Initiated to review the capability of the bulk system to support future generation connections and demand growth in key areas throughout southern and central Ontario, including the GTA, to enable a decarbonized power system in the future. The following considerations are included:</p> <ul style="list-style-type: none"> • Sufficiency of the bulk transmission supply to the GTA given future growth in electricity demand, and reduced reliance on existing local natural gas-fired generation. • Expansion for the 500 kV transmission system between Cherrywood TS (Pickering) and Bowmanville SS (east of Toronto) to enable continued expansion of generation, including small modular reactors, in eastern Ontario. • Continued assessment of the bulk transmission system between the Hamilton and Windsor areas to understand future transmission needs that could result from further economic development. • Transmission needed to enable expansion of the Bruce NGS. <p>This work also considers opportunities to preserve new or expanded corridors for future transmission development. Two new corridor studies, in addition to the ongoing northwest GTA corridor work, have recently been recommended as early outcomes of this work.</p>
Southern Ontario (including the GTA)	Niagara Bulk Plan	2026–2027	Proposed to review the capability of the bulk transmission system to continue to support economic development in the Niagara region, with consideration of the future role of the area's intertie with New York.

Area	Study Name	Start-End (Estimate)	Scope / Consideration
Southern Ontario (including the GTA)	South and Central Ontario Bulk Plan, Phase 2	2027–2028	Proposed to review the capability of the bulk system to support future generation connections and demand growth in key areas throughout southern and central Ontario in the 2050s.
Northern Ontario	Ontario-Manitoba Intertie Joint Study	2022–2026 (ongoing)	Initiated to proactively plan for end of life of critical transmission intertie equipment on the Ontario–Manitoba interconnection. This is a joint study between the IESO, Hydro One Networks, Manitoba Hydro and Minnesota Power.
Northern Ontario	North of Sudbury Bulk Plan	2025–2026 (ongoing)	To examine the capability of the bulk transmission system’s ability to supply additional increasing levels of demand in the areas surrounding Timmins, Kirkland Lake, and Pinard. The plan will also look at creating opportunities to potentially locate new non-emitting resources and opportunities for new or upgraded interconnections with Québec; and exploring transmission options needed to enable two potential sites in the Moose River Basin.
Northern Ontario	Northern Ontario Connection Study	2024–2026 (ongoing)	To evaluate transmission options for enabling connection of remote First Nations and prospective mining developments in remote northwest Ontario.
Eastern Ontario (including Ottawa)	Eastern Ontario Bulk Plan	2024–2026 (ongoing)	To examine the sufficiency of the bulk transmission system to reliably supply the demand growth expected in eastern Ontario; and exploring opportunities to improve the transmission system’s capability to support power transfers with neighbouring jurisdictions, including Québec and New York.

**Independent Electricity
System Operator**

1600-120 Adelaide Street West
Toronto, Ontario M5H 1T1

Phone: 905.403.6900

Toll-free: 1.888.448.7777

E-mail: customer.relations@ieso.ca

ieso.ca

 [@IESO_Tweets](https://twitter.com/IESO_Tweets)

 [linkedin.com/company/IESO](https://www.linkedin.com/company/IESO)