



Annual Planning Outlook

Supply, Adequacy and Energy Outlook Module

March 2026



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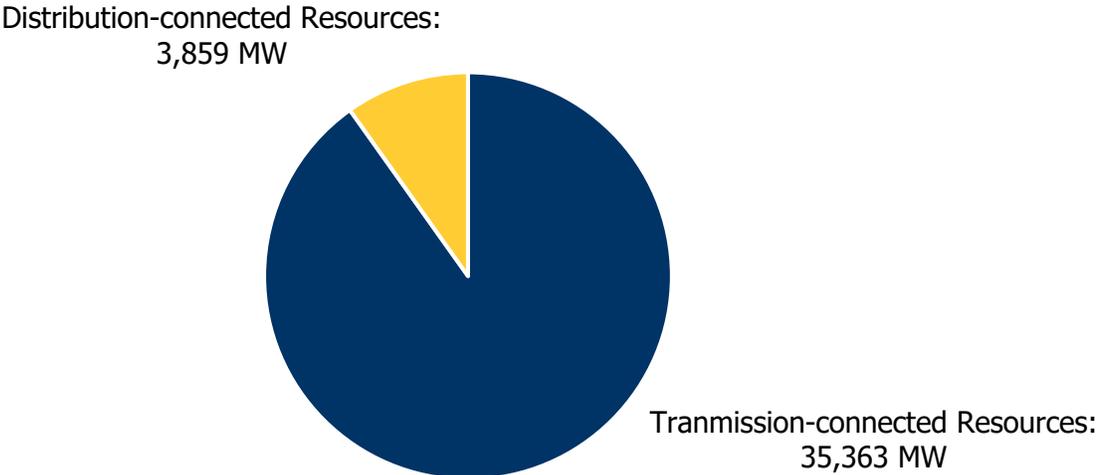
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1. Supply Outlook

1.1 Installed Capacity of Transmission and Distribution Connected Resources

Of the 39,222 megawatts (MW) of installed capacity that exists on the system today, approximately 90 per cent is connected to the transmission system, with the remaining 10 per cent connected to the distribution system. Transmission-connected resources are typically market participants that are connected to the IESO-controlled grid, while distribution-connected resources tend to be embedded resources consisting of either contracted or rate-regulated resources, and are mostly non-market participants. Distribution-connected resources exclude behind-the-meter resources that do not have a contract with the Independent Electricity System Operator (IESO), as the IESO has limited visibility of these resources. As shown in Figure 1, the installed capacity in 2026 of transmission-connected and distribution-connected resources is approximately 35,363 MW and 3,859 MW, respectively.

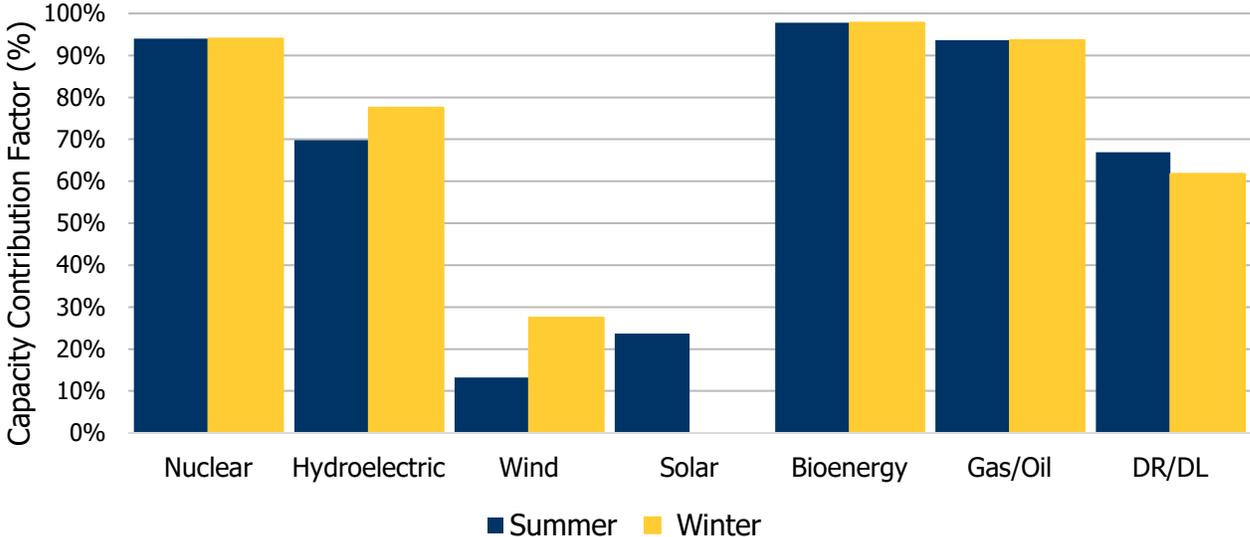
Figure 1 | 2026 Installed Capacity



1.2 Summer and Winter Capacity Contribution

Figure 2 represents the summer and winter peak capacity contribution by fuel type. As shown below, the capacity contribution of hydroelectric and wind resources are generally higher in the winter than in the summer, while the capacity contribution of solar and demand response (DR) / dispatchable loads (DL) - resources are higher in the summer.

Figure 2 | 2026 Summer and Winter Peak Capacity Contribution¹



Capacity contribution factors reflect forced outages as well as reductions due to ambient conditions. Seasonal differences in contribution factors for the different resource types are provided below.

- Nuclear, bioenergy, and gas/oil resources do not exhibit much variation between summer and winter capacity contributions.
- Hydroelectric capacity contribution factors are higher in winter due to increased water availability.
- Wind capacity contribution factors vary throughout the year because of seasonal wind patterns. Wind speeds are typically higher in winter causing increased average production and higher capacity contribution factors compared to summer.
- Solar contribution factors vary throughout the day, with the highest from noon to mid-afternoon. Since demand peaks are later in the evening in the winter, solar contribution factors are negligible in the winter and higher in the summer.
- DR and DL peak capacity contribution varies, as it depends on their bid values by season.

¹ DR/DL capacity contribution values are based on 2024 Capacity Auction resources and are provided for comparison only; these should not be interpreted as 2026 values. Capacity contribution factors are determined based on the last five dispatch tests or actual activations for hourly demand response resources .

2. Capacity Adequacy Outlook

2.1 Nuclear Reserve

Resource adequacy assessments reflect additional planning reserve to manage the risk of delays to nuclear refurbishments and new nuclear projects. The amount of additional planning reserve carried for summer and winter is shown in Figures 3 and 4.

Figure 3 | Planning Reserve for Nuclear Refurbishment, Summer

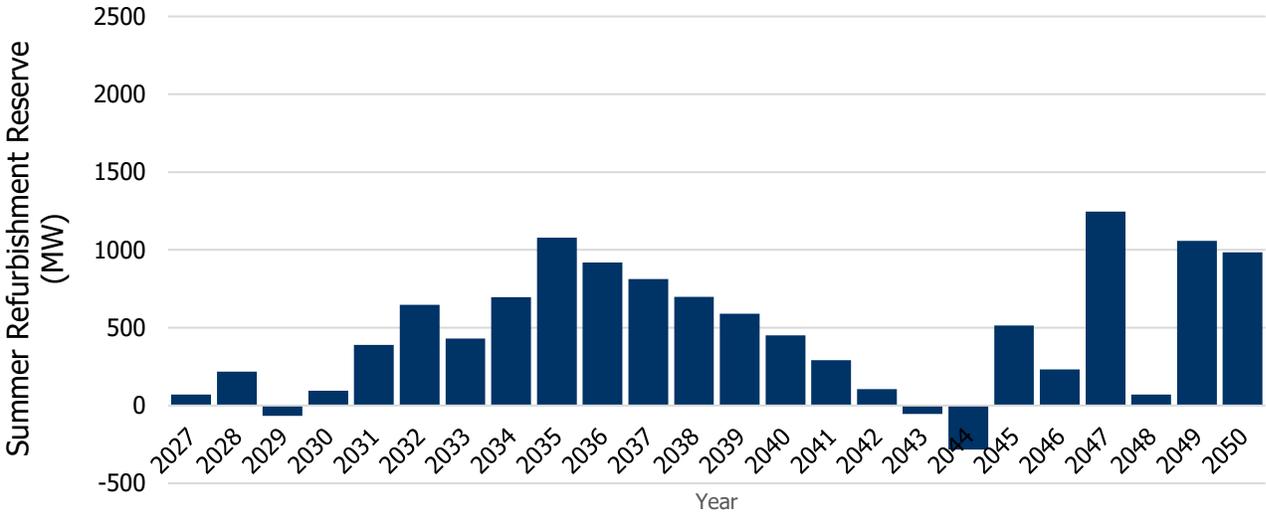
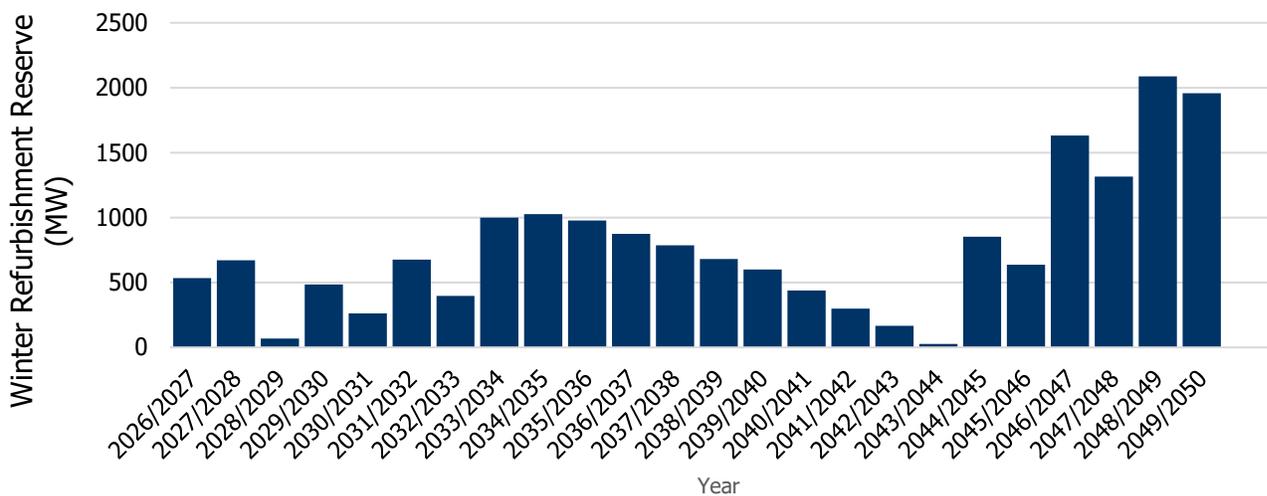


Figure 4 | Planning Reserve for Nuclear Refurbishment, Winter



2.2 Seasonal LOLE Allocation

The IESO's resource adequacy assessments meet the criteria specified in Northeast Power Coordinating Council, Directory 1, requiring an annual loss-of-load expectation (LOLE) of 0.1 days per year. The criteria do not provide guidance on how the LOLE should be allocated across seasons. The IESO allocates LOLE across seasons to minimize capacity needs, based on the prevailing supply and demand conditions within a given year.

The IESO's analysis has indicated that over the long-term, annual average resource requirements are minimized when the LOLE allocation is 0.06 days per year in summer and 0.04 days per year in winter. Different allocations are used in the near-term to minimize resource requirements. The LOLE allocation used for the 2026 Annual Planning Outlook (APO) capacity adequacy assessment is shown in Tables 1 and 2.

Table 1 | Summer LOLE Allocation

Season	2026	2027	2028-2050
Target LOLE (days/year)	0.09	0.09	0.06

Table 2 | Winter LOLE Allocation

Season	2026/27	2027/28	2028/29-2049/50
Target LOLE (days/year)	0.01	0.01	0.04

The impact of the 2026 APO LOLE allocation used in the near-term compared to the assumption used over the long-term is shown in Figures 5 and 6 for summer and winter for the reference scenario. This LOLE allocation has the effect of reducing overall needs.

Figure 5 | Impact of 2026 APO LOLE Allocation: Near-Term vs. Long-Term Assumption, Summer

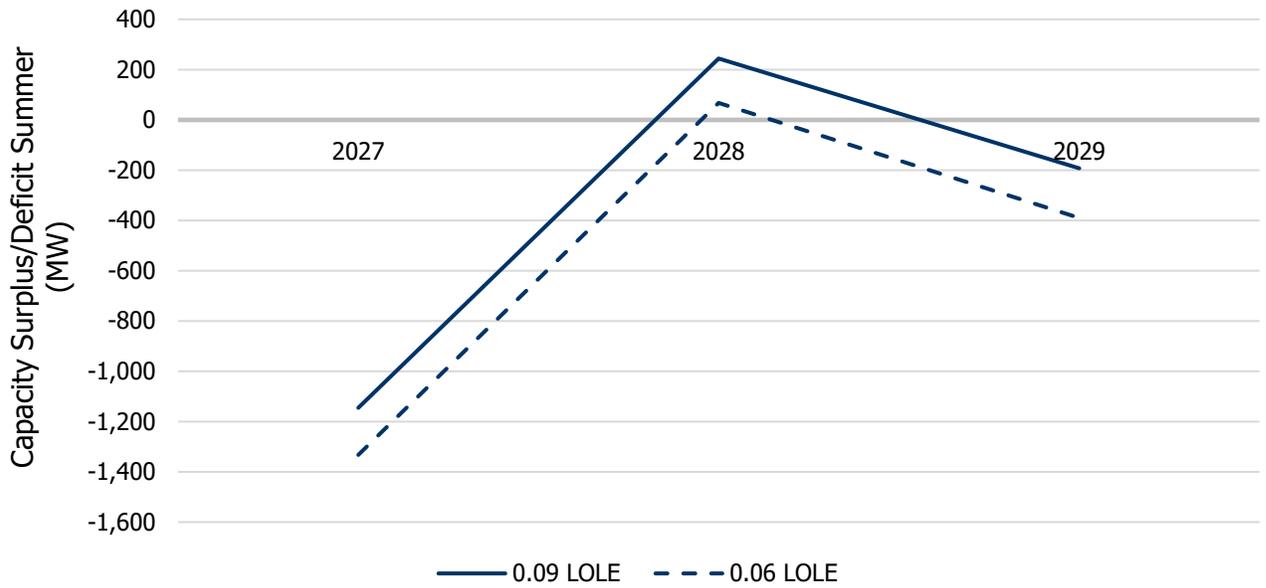
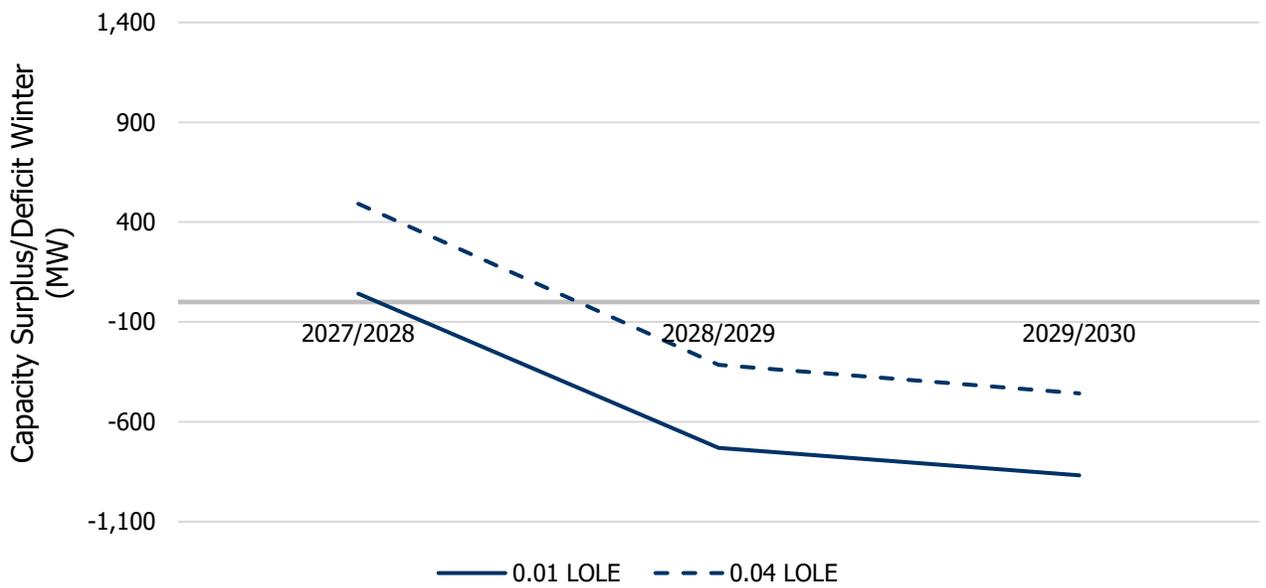


Figure 6 | Impact of 2026 APO LOLE Allocation: Near-Term vs. Long-Term Assumption, Winter



2.3 Consideration of Ontario's Electricity Trade Agreements

Under the 2016 Amended and Restated Capacity Sharing Agreement with Hydro-Québec Energy Marketing (HQEM), the IESO has the option to utilize the remaining 200 MW² (out of 500 MW) of firm import capacity in any summer period up to September 2030. Utilization of this capacity in a future summer period can reduce the need for additional actions to meet Ontario's resource adequacy needs; assumptions on timing of utilization of this capacity is considered in the Integrated Reliability Needs assessment of the 2026 APO.

The 2024 Capacity Sharing Agreement with HQEM requires Ontario to provide Québec with 600 MW of firm capacity in winter periods up to 2030-2031 (with the exception of winter 2026-2027). In return, Québec will provide Ontario with 600 MW of firm capacity in summer periods up to 2031; the magnitude and timing of utilization, and decision to bank capacity not required in a summer period, is at the IESO's discretion. The 2026 APO supply outlook includes the 600 MW of firm exports to Québec in the winter periods; assumptions on utilization of summer imports and banked capacity are considered in the Integrated Reliability Needs assessment.

2.4 Zonal Constraints

Locational requirements exist due to limitations on the transmission system, typically specified through "transmission transfer capability limits" over transmission interfaces.

To account for transmission transfer capabilities across Ontario's interfaces, the IESO specifies the minimum and maximum incremental capacity amounts required in certain regions of the province. These minima and maxima are typically presented at the zonal level, and in some cases are reported for groups of zones that share a common limiting interface. The zonal constraints calculation methodology described in this section is used to inform the annual Capacity Auction zonal limits.

A zonal minimum represents the minimum required capacity necessary to meet the provincial resource adequacy criterion. A zonal maximum represents the maximum amount of capacity in a zone that can contribute to provincial resource adequacy. In other words, the zonal minimum is a capacity requirement; capacity exceeding the zonal maximum does not provide further value from a resource adequacy perspective (e.g., transmission deliverability assessments may further reduce the maximum in some areas).

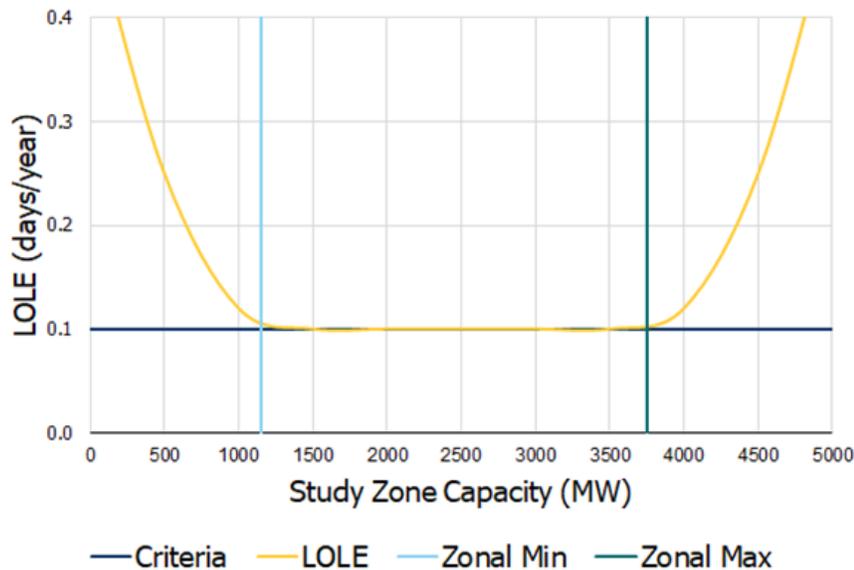
The methodology for establishing the transmission transfer capabilities is provided in the [Ontario Transmission Interfaces and Inerties Overview](#). These capabilities can have an impact on the extent to which a resource can contribute towards adequacy. The 0.1 days/year LOLE criterion is not set at a zonal level – it is an adequacy target for the province as a whole. While the same LOLE can be achieved by placing resources in different locations, some locations may be better suited than others as a result of interface limits.

Zonal minimum and maximum capacity values are calculated using zonal constraint curves. Zonal constraint curves are developed by adding or removing capacity in a zone and removing or adding a corresponding amount of capacity in the rest of the system, such that the total incremental capacity

² In 2025, the IESO requested 300 MW of firm imports from HQEM for the period of June 1 through September 30, 2026.

is constant. The zonal constraint curve is developed using a “two-zone” representation of the transmission system. The only interfaces that are represented in the capacity adequacy tool should be those that are connected to the study zone; the remainder are removed or set to a non-limiting value. The resulting system LOLE across a range of study zone capacities creates the zonal constraint curve, as shown in Figure 7.

Figure 7 | General Shape of Zonal Constraint Curve



The flat portion of the curve represents the range of study zone capacity where the system LOLE will remain approximately unchanged for an equal and offsetting amount of capacity in the rest of the system. Where the curve slopes upwards to the right, LOLE is increasing as study zone MWs are added and an equal amount of MWs are removed from the rest of the system. This indicates that additional MWs in the study zone cannot be fully utilized to offset capacity in the rest of the system and a zonal maximum can be established where the LOLE is greater than the LOLE threshold³.

Similarly, where the curve slopes upward to the left, LOLE is increasing as study zone incremental capacity is reduced and an equal amount of MWs are added in the rest of the system. This indicates that additional MWs in the rest of the system cannot be fully utilized to offset capacity in the study zone and a zonal minimum can be established where the LOLE is greater than the LOLE threshold.

Zonal adequacy constraints help identify where adequacy needs exist across the system and where they can most effectively contribute towards meeting resource adequacy needs. The zonal constraint curves described only reflect adequacy needs and not security needs. Security needs are considered as part of transmission assessments and may lead to additional constraints on the amount of capacity acquired in a zone.

For the zones without minimums, the assumption is that the zone’s resource adequacy needs would be satisfied by acquiring the system’s capacity need while not violating the zonal maximums. For zones without maximums, it implies that the true maximum is outside the scope/upper bound of the

³ LOLE threshold = System LOLE using target capacity requirement (per seasonal allocation) + 0.001 days/year

model and any capacity acquired would be capped at the provincial capacity need. Although zonal maximums limit the amount of capacity that can be added to a zone, the total amount of capacity added to all zones is limited by the global resource adequacy (capacity) need.

Table 3 provides a summary of the zones and their defining interfaces considered in the zonal adequacy assessment and Table 4 provides the assumed transmission transfer capability across each interface.

Table 3 | Zones and Defining Interfaces

Zone	Interface
Bruce	FABC
Niagara	QFW
Northwest	E-W
West	BLIP
Toronto+Essa+East+Ottawa	FETT, FN/FS
Northeast+Northwest	E-W, FN/FS

Table 4 | Transmission Transfer Capabilities (2027-2050)

Interface	Positive Direction	Negative Direction
	Interface Transfer Capability (MW)	Interface Transfer Capability (MW)
E-W	Ranges from 420 to 700	Ranges from 420 to 700
FABC	9,999	9,999
BLIP	Ranges from 2,460 to 3,775	Ranges from 1,510 to 1,625
QFW	Ranges from 2,025 to 2,110	9,999
FETT	Ranges from 6,950 to 7,350	9,999
TEC	9,999	9,999
FIO	2,950	9,999
FN/FS	Ranges from 1,865 to 1,979	Ranges from 1,750 to 2,270
CLAN	9,999	9,999

2.5 Hourly Probability of Loss of Load

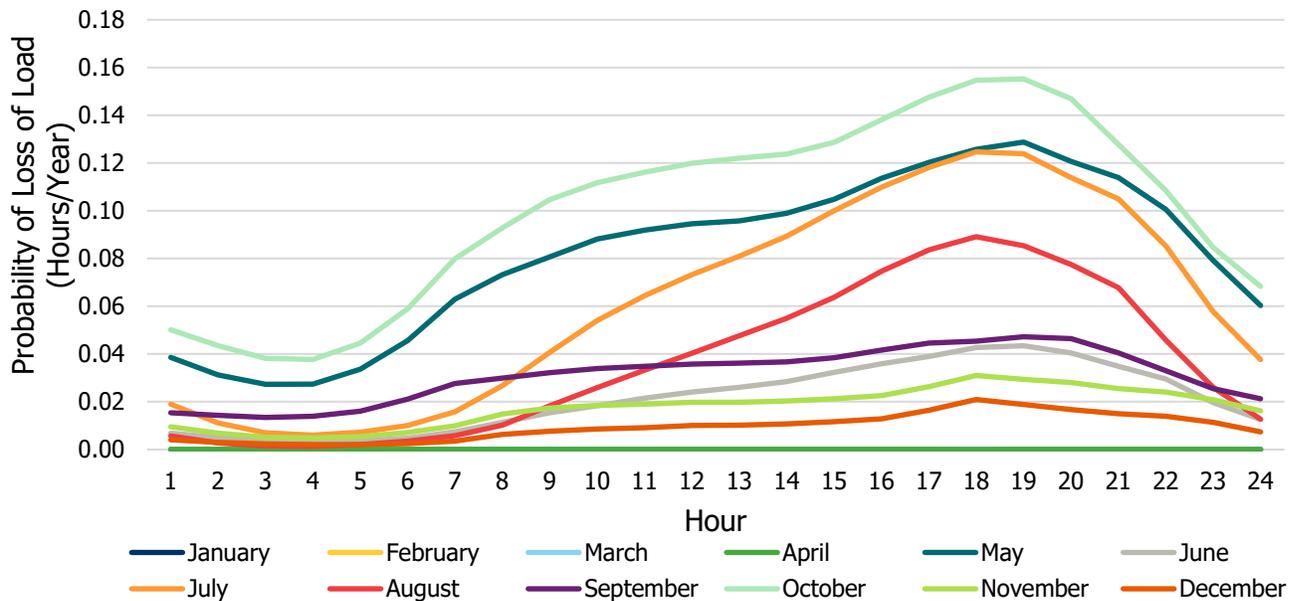
To further understand the characteristics of system needs and the types of resources that can meet these needs, the hourly probability of loss of load was analyzed for the year 2034 (as resource requirements significantly increase in this year due to contract expirations), against the resource adequacy outlook for the reference scenario in Section 4 of the 2026 APO⁴. Given the hourly load forecast and the available resources in each hour, the probability of loss of load is different for every hour. If the system’s reserve margin falls below zero in a particular hour, then loss of load is certain.

In the IESO’s probabilistic assessment, hundreds of simulations at different load levels are analyzed to determine a metric that best represents the probability of loss of load in each hour of the year. Figure 8 outlines the described metric in each hour of the day for each month in 2034 against the demand forecast and supply outlook. Summer months such as May, July, and October exhibit a higher probability of need during hours 16-22. Meanwhile, winter months such as November and December present a small spike around hours 9-10 and then a larger need during hours 17-23. In Ontario, summer months constitute most of the hourly needs given that the system is currently

⁴ The in-flight actions and risks identified in Sections 7 and 8 of the APO were not considered in this assessment.

summer peaking; however, the shape of the hourly profiles changes from year to year and is impacted by factors such as the demand forecast, load forecast uncertainty, supply forecast, outages and transmission constraints.

Figure 8 | Hourly Probability of Loss of Load, 2034



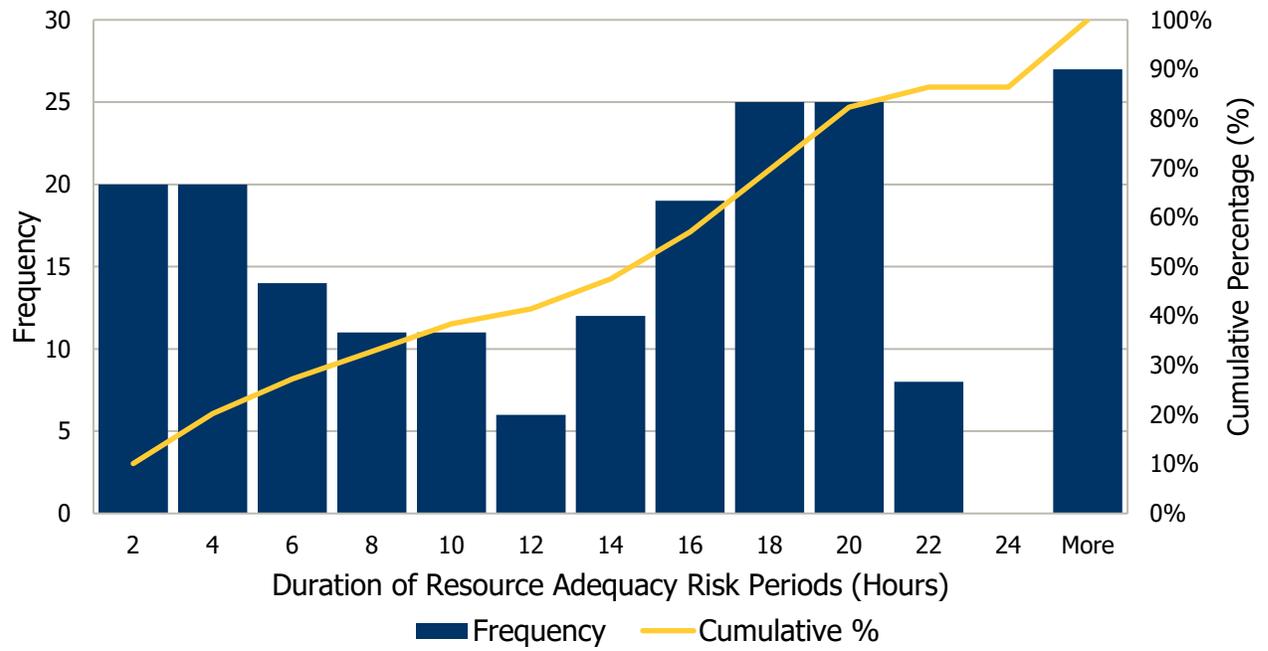
2.6 Duration of Loss of Load

The periods of resource adequacy risk identified in this report tend to be sustained for multiple, consecutive hours. Figure 9 shows the duration of risk periods in 2034. This assessment shows that the length of risk periods can vary greatly.

Looking at the entire range of outcomes observed in the IESO’s probabilistic assessments can inform future procurements on the value of resources that are capable of providing energy for a sustained period of time, particularly in preparation for the potential for severe weather conditions. The assessment indicates that:

- 20 per cent of events persist for up to four hours;
- 15 per cent of events persist for more than four and up to eight hours;
- 20 per cent of events persist for more than eight and up to 16 hours; and
- 45 per cent of events persist for more than 16 hours.

Figure 9 | Duration of Resource Adequacy Risk Periods, 2034



3. Energy Adequacy Outlook

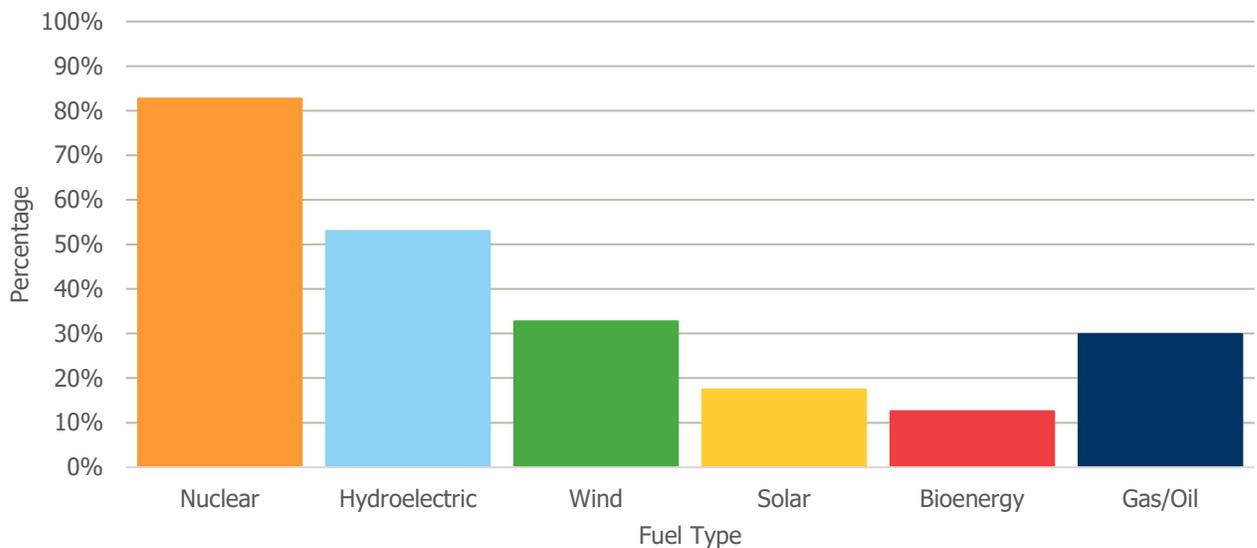
3.1 Exchange Rate and Ontario Natural Gas Price Forecast

The natural gas fuel forecast assumption is from the Sproule Price Outlook. These assumptions can be found in Table 2: Sproule Forecast – Henry Hub, Dawn, in the [2026 APO Fuel Cost Data Table](#).

3.2 Annual Energy Contribution Factors

Figure 10 represents the annual energy contribution factors by fuel type, based on averaged hourly production for the year 2025.

Figure 10 | 2025 Annual Energy Contribution Factors



Energy contribution factors reflect outages as well as reductions due to ambient conditions. The reasons for the differences in contribution by fuel type are as follows:

- Nuclear units are must-run resources that have minimal weather and fuel limitations. As a result, nuclear production remains high throughout the year. Annual nuclear energy production is primarily limited by planned and forced outages.
- Hydroelectric energy contribution varies by season and is highly dependent on the precipitation, making it stochastic in nature. Therefore, average annual hydroelectric production is lower than the peak-period capacity contribution shown in Figure 2.

- Wind energy production is dependent on seasonal wind patterns, and is also stochastic in nature. Wind energy generation is higher in the winter compared to the summer. In 2025, wind curtailment was seldom invoked. Wind energy production had a higher capacity factor compared to previous years.
- Solar energy production is dependent on time of day and season, and is greatest during noon to mid-afternoon in the summer and lower in winter. Due to these varying hourly and seasonal contributions, solar exhibits a low energy contribution. Solar energy production also shows the deterioration of solar panels over time, with capacity factors becoming lower year-over-year.
- Bioenergy is an energy-limited resource and energy contribution is limited by its fuel availability throughout the year.
- Gas/oil resources are only dispatched as needed by the system and hence their energy production is significantly lower compared to peak capacity factors in Figure 2.

3.3 Unserved Energy Description

Defining the characteristics of the unserved energy, for example, by timing and magnitude, is important to better understand the types of resources that can help meet these needs. Each resource type provides differently across seasons (e.g., if unserved energy is greater in the winter than in the summer, some resources such as solar and/or hydroelectric, may be less dependable as they produce less energy during the winter).

Figures 12 to 14 separate the annual unserved energy for the reference scenario in Section 4 of the [2026 APO](#) into winter, summer, and shoulder periods. The heat maps illustrate the total unserved energy, average unserved energy and maximum unserved energy during the winter, summer and shoulder seasons, over time of use (TOU) periods in Figure 11, across the study horizon. Note that time of use periods are not equal in duration, i.e., they do not contain the same number of hours. The figures indicated that unserved energy begins to grow around 2030 and is observed across all seasons, occurring most of the time in the winter.

Figure 11 | Time-Of-Use Period Definitions

Winter			Summer			Shoulder	
On-Peak	Mid-Peak	Off-Peak	On-Peak	Mid-Peak	Off-Peak	Mid-Peak	Off-Peak
December - March			June - September			April, May, October, November	
7 AM - 11 AM; 5 PM - 8 PM	11 AM - 5 PM; 8 PM - 11 PM	11 PM - 7 AM	11 AM - 5 PM	7 AM - 11 AM; 5 PM - 11 PM	11 PM - 7 AM	7 AM - 11 PM	11 PM - 7 AM

Figure 12 | Total GWh Unserved Energy by TOU periods

Year	Winter			Summer			Shoulder		Annual Total
	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak	Mid Peak	Off Peak	
2026	0	0	1	0	0	0	0	0	1
2030	46	41	70	37	45	59	482	259	1,039
2035	1,532	1,804	2,723	1,962	2,721	3,050	2,816	2,298	18,907
2040	5,827	7,610	12,492	5,053	7,307	10,140	10,015	9,248	67,692
2045	7,398	9,670	16,701	5,992	8,893	13,031	14,736	14,730	91,151
2050	7,188	9,334	16,054	5,823	8,622	11,975	12,413	11,789	83,198

Figure 13 | Average MWh Unserved Energy by TOU periods

Year	Winter			Summer			Shoulder		Annual Average
	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak	Mid Peak	Off Peak	
2026	0	0	0	0	0	0	0	0	0
2030	76	53	45	70	52	39	347	169	119
2035	2,516	2,304	1,801	3,716	3,092	2,007	2,047	1,481	2,158
2040	9,459	9,609	8,218	9,570	8,303	6,671	7,279	5,959	7,706
2045	12,148	12,350	11,046	11,348	10,106	8,573	10,709	9,491	10,405
2050	11,802	11,920	10,618	11,028	9,798	7,879	9,021	7,596	9,497

Figure 14 | Max MWh Unserved Energy by TOU periods

Year	Winter			Summer			Shoulder		Annual Max
	On Peak	Mid Peak	Off Peak	On Peak	Mid Peak	Off Peak	Mid Peak	Off Peak	
2026	3	0	331	0	0	0	0	0	331
2030	2,251	1,784	2,417	2,687	2,201	2,546	5,656	3,844	5,656
2035	9,168	7,204	7,569	9,376	9,393	7,574	8,127	7,998	9,393
2040	14,011	14,462	13,530	14,262	13,904	13,528	12,252	11,233	14,462
2045	17,852	17,800	16,946	16,572	15,922	15,598	16,910	16,206	17,852
2050	17,751	17,559	17,848	17,792	17,536	18,530	13,196	13,702	18,530

Duration curves can also provide insights at the extremes (e.g., baseload and peaking requirements). Similar to the figures above, Figures 15 and 16 represent the unserved energy described in the reference case in Section 4 of the 2026 APO.

Figure 15 separates annual unserved energy by season and demonstrates that unserved energy is greater in the winter than in the summer, illustrating that some resources (e.g., solar) may be less dependable as they produce less energy during the winter.

For this analysis, summer months are assumed to be May to October; winter months are November to April.

Figure 15 | Unserved Energy by Season

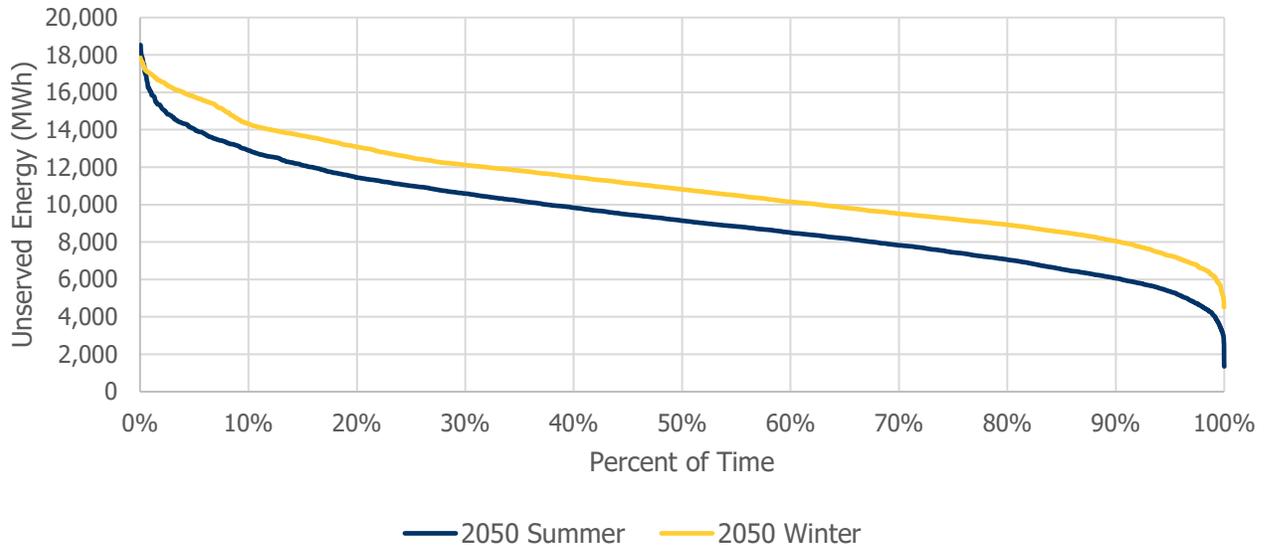
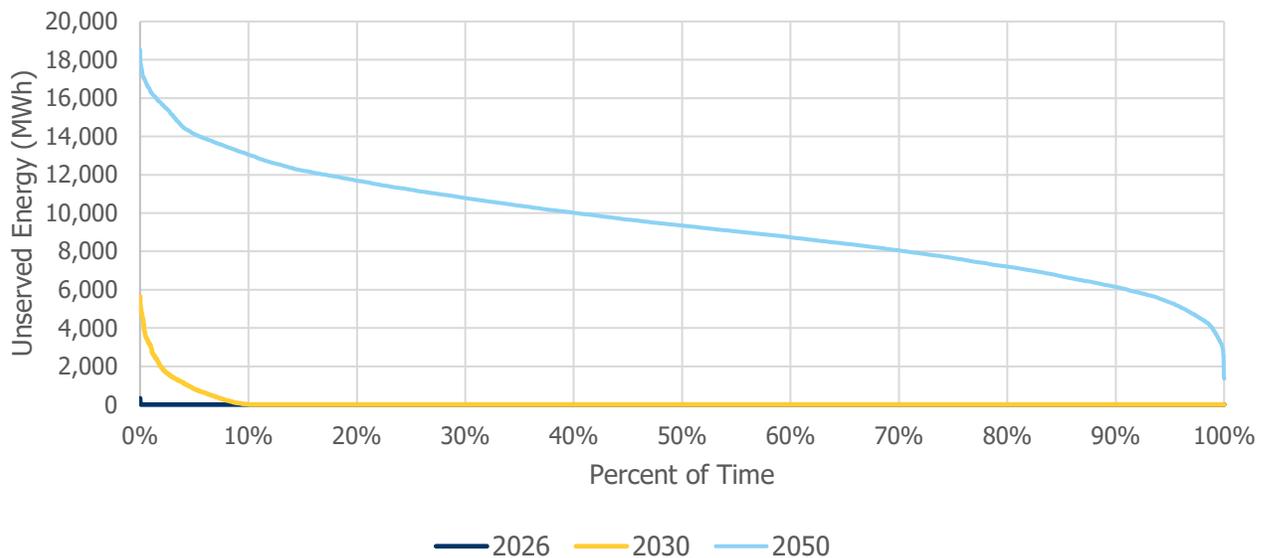


Figure 16 shows duration curves of the unserved energy need for years 2026, 2030 and 2050, to illustrate the relationship between capacity requirement and utilization. In the base case, in 2030, a portion of the total energy need is not served (unserved energy) for about 10 per cent of the year, as illustrated in Figure 16. By 2050, the energy not served occurs in all hours of the year; with a sizeable baseload amount that will be required at all times.

Figure 16 | Unserved Energy Duration Curve



The need for baseload resources is not significant in the near term, but is expected to increase over the planning horizon. The peaking portion of the duration curve may be met by capacity products.

3.4 Interpretation

Overall, the trends in the energy outlook in the 2026 APO are consistent with previous outlooks. The 2026 APO indicates that surplus baseload generation is not a concern over the outlook period, with growth in demand over the long-term increasing capacity and energy requirements. Nuclear generation continues to be a major source of generation in Ontario. The extent to which existing resources continue to operate beyond contract expiry will shape future supply needs as primarily capacity or energy driven.

Energy results are shown for normal or median conditions. Weather conditions can have a substantial effect on energy demand and production from wind, hydroelectric, and solar resources. When interpreting energy outlooks, focus should be on trends, order of magnitude, and relative direction.

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