Reliability Outlook

An adequacy assessment of Ontario's electricity system

July 2025 - December 2026

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Executive Summary

Ontario's electricity system is prepared for the summer and is expected to have adequate supply for the remainder of the year.

Electricity demand is projected to grow modestly, with firm demand expected to rise by 1.0% in 2025 and 2.7% in 2026. The outlook reflects lower demand projections compared with previous forecasts due to evolving economic conditions, including slower growth from data centres and electric vehicle manufacturing facilities. Long-term growth is expected to remain strong.

Recent actions have cost-effectively secured supply that will help meet reliability needs this summer and beyond. This includes:

- New battery storage projects procured through the Expedited Long-Term (E-LT1) RFP are expected to connect to the grid throughout the Outlook period, while the Oneida Energy Storage Project recently achieved commercial operation in Q2 2025.
- Approximately 2,100 MW cleared in last year's Capacity Auction for summer 2025.
- Upgraded capacity resources procured via the Same Technology Upgrades Solicitation, which are expected to come online throughout this year.
- Approximately 250,000 smart thermostats that are enrolled in the Save on Energy Peak Perks demand response program, which reduces peak demand on hot summer days. Current participants – which consist of residences and, new this year, small businesses – can deliver a demand reduction of about 200 MW.

This will also be the first summer season following the launch of the renewed market on May 1, 2025, which introduced a Day-Ahead Market that commits resources the day before real-time through financially binding schedules, increasing operational and price certainty.

Looking ahead, the IESO expects to have sufficient reserves to meet system needs in 2026 with the exception of one week currently projected in the latter half of the year. The IESO will work closely with market participants to co-ordinate outages during this time to mitigate reliability issues. The outlook is expected to improve in future publications as a result of updated information and planned actions to secure supply to meet increasing demand.

Resources procured through MT2 RFP, which concluded in Q2 2025, are expected to continue contributing to the grid under the renewed contract terms starting next summer. The MT2 RFP demonstrates how the IESO is making best use of existing supply and driving down costs.

The IESO has also chosen to utilize 300 MW of the 2015 Capacity Sharing Agreement, amended and restated in 2016, with Hydro-Québec for the delivery period beginning on June 1, 2026, and ending on September 30, 2026.

Refurbishment of Ontario's nuclear resources is ongoing, and schedules remain on track at Bruce and Darlington facilities. With Pickering "A" now retired, all the units that remain operational at that site – Pickering "B" – will continue operation through to September 2026.

As always, the IESO is actively co-ordinating and planning with market participants to maintain reliability. With more overlapping outage requests, some combinations of transmission and/or generation outages could create operating challenges. Generators are advised not to schedule outages during periods when reserves are forecast to be low, and they are strongly encouraged to plan ahead and carefully co-ordinate the timing of outages with IESO staff. Outage requests during periods when reserves fall below the adequacy threshold might not be granted, and further outage co-ordination may be required.

Table of Contents

Executive Summary **1**

1. Introduction **6**

2. Updates to this Outlook **7**

2.1 Updates to Reporting 7

2.2 Updates to the Demand Forecast 7

2.3 Updates to Resources 7

2.4 Updates to the Transmission Outlook 7

3. Demand Forecast **8**

3.1 Demand Forecast Assumptions 8

4. Supply Forecast **11**

4.1 Supply Forecast Assumptions 12

4.1.1 Generation and Electricity Storage Resources 12

4.1.2 Generation Capability 14

4.1.3 Demand Measures 16

4.1.4 Firm Transactions 17

4.1.5 Summary of Resource Assumptions 17

5. Adequacy Assessment **20**

5.1 Capacity Adequacy Assessment 20

5.1.1 Firm Scenario with Expected Weather 20

5.1.2 Planned Scenario with Expected Weather 21

5.1.3 Comparison of the Current and Previous Weekly Adequacy Assessments for the Firm Expected Weather Scenario 22

5.2 Energy Adequacy Assessment 23

5.2.1 Summary of Energy Adequacy Assumptions 24

5.2.2 Results – Firm and Planned Scenario with Normal Weather 24
5.2.3 Findings and Conclusions 25

6. Transmission Reliability Assessment 28
6.1 Transmission Projects 28
6.2 Transmission Outages 28
6.3 Transmission Considerations 28

7. Resources Referenced in This Report 32

8. List of Acronyms 33

List of Figures

Figure 4-1 | Monthly Wind Capacity Contribution Values 15

Figure 4-2 | Monthly Solar Capacity Contribution Values 16

Figure 5-1 | Expected Weather: Firm Scenario Reserve Above Requirement 21

Figure 5-2 | Expected Weather: Planned Scenario Reserve Above Requirement 22

Figure 5-3 | Comparison of Current and Previous Outlook: Firm Scenario Expected Weather Reserve Above Requirement 23

Figure 5-4 | Forecast Energy Production by Fuel Type (Firm Scenario) 26

Figure 5-5 | Forecast Monthly Energy Production by Fuel Type (Firm Scenario) 26

List of Tables

Table 3-1 | Forecast Energy Demand Summary 9

Table 3-2 | Forecast Seasonal Peaks 9

Table 3-3 | Large Step Load Impacts, Firm and Planned Demand 9

Table 4-1 | Existing Grid-Connected Resource Capacity 12

Table 4-2 | Committed Generation and Electricity Storage Resources Status 13

Table 4-3 | Monthly Historical Hydroelectric Median Values for Normal Weather Conditions 14

Table 4-4 | Summary of Available Resources 18

Table 5-1 | Summary of Zonal Energy for Firm Scenario, Expected Weather 24

Table 5-2 | Summary of Zonal Energy for Planned Scenario, Expected Weather 25

Table 5-3 | Energy Production by Fuel Type for the Firm Scenario, Expected Weather 27

Table 5-4 | Energy Production by Fuel Type for the Planned Scenario, Expected Weather 27

Table 8-1 | Additional Resources 32

1. Introduction

This Outlook covers the 18 months from July 2025 to December 2026, and supersedes the Outlook released on March 24, 2025.

The purpose of the 18-month horizon in the *Reliability Outlook* is to:

- Advise market participants of the resource and transmission reliability of the Ontario electricity system.
- Assess potentially adverse conditions that might be avoided by adjusting or coordinating maintenance plans for generation and transmission equipment.
- Report on initiatives being implemented to improve reliability within this time frame.

This Outlook assesses resource and transmission adequacy based on the stated assumptions, following the Methodology to Perform the Reliability Outlook. Due to uncertainties associated with various assumptions, readers are encouraged to use their judgment in considering possible future scenarios.

Additional supporting documents are located on the Reliability Outlook webpage.

Security and adequacy assessments are published on the IESO website on a daily basis and progressively supersede information presented in this report.

For questions or comments on this Outlook, please contact us at 905-403-6900 (toll-free 1-888-448-7777) or customer.relations@ieso.ca.

2. Updates to this Outlook

2.1 Updates to Reporting

In support of continuous improvement and alignment with the core mandate of the Reliability Outlook, the content from the Operability section will be merged with other sections in the report. This adjustment helps to eliminate redundancy and enhance clarity of the document. Furthermore, the IESO will continue to review and evaluate sections of the report and where appropriate, refine, consolidate, or remove sections to better align with the objective of the assessment providing forward-looking insights into the reliability of the Ontario electricity system.

2.2 Updates to the Demand Forecast

Continuing from Q1 2025, two demand forecasts, using probabilistic weather modelling, are generated to forecast increases in large step loads being proposed in Ontario and their associated uncertainties. The demand models use actual demand, weather, and economic data through to the end of March 2025. The latest business intelligence regarding large step loads was incorporated in mid-May. Actual weather and demand data for April and May 2025 are included in the tables.

2.3 Updates to Resources

This *Reliability Outlook* considers planned generator outages over the 18-month period, submitted by market participants to the IESO's outage management system as of May 26, 2025. Market participants are required annually to submit information to enable the IESO to conduct reliability assessments. This information, provided to the IESO through Form 1230, was submitted in Q2 2025. Continuing from Q1 2025, hydroelectric and wind resources are updated to include probabilistic parameters, and is described in the Methodology to Perform the Reliability Outlook, and the reserves above requirement (RAR) are calculated based on a probabilistic "expected" value in place of historically using normal and extreme weather.

2.4 Updates to the Transmission Outlook

This Outlook also considers transmission outage plans that were submitted to the IESO's outage management system by May 20, 2025.

3. Demand Forecast

Forecasted energy demand is expected to grow over this Reliability Outlook period, with a projected increase of 1.0% for 2025 and 2.7% in 2026 (firm demand). Peak and energy demand are projected to be lower in this Reliability Outlook compared to the previous Outlook. Lower projected population and employment growth are expected to moderate energy growth over the forecast horizon. Anticipated electric load growth from numerous large step loads in the form of electric arc furnaces, electric vehicle (EV) battery manufacturing facilities and data centres has been lowered due to the current economic uncertainty. However, electrification of vehicles and industrial sectors still remains a long-term growth driver.

The IESO is responsible for forecasting electricity demand on the IESO-controlled grid. This demand forecast covers the period from July 2025 to December 2026 and supersedes the previous forecast released in March 2025. Tables of supporting information are contained in the 2025 Q2 Outlook Tables.

Weather-adjusted electricity demand increased by 1.7% to 140.4 TWh in 2024. At the start of 2025, all the economic fundamentals were on a positive trajectory. Reduced inflation and the corresponding Bank of Canada interest rate reductions positioned the economy for growth over 2025 and 2026.

Economic uncertainty could lead to slower growth in electricity demand. However, despite current conditions the longer-term trends will continue. Data centres and generative artificial intelligence is a growth sector with an appetite for the low emissions electricity within Ontario. The electrification of Canadian homes and businesses and the growth in electric vehicles will push demand higher over the longer term. The firm and planned forecasts in this Outlook are nearly identical due to uncertainty surrounding the next steps for large step loads.

The demand forecast faces significant uncertainties in both the economic outlook and in terms of new loads on the system. Geopolitical events will continue to impact both economic growth and energy demand.

3.1 Demand Forecast Assumptions

As both firm and planned demand scenarios have been created for this quarter, weekly demand forecasts have been moved from this report into the Reliability Outlook Data Tables to save space. However, summaries for forecast energy demand and forecast seasonal peaks have been updated below to indicate the results of the planned demand scenario.

- The **planned scenario** demand forecast includes loads that are less certain to reach commercial operation in this forecast period but are large enough to warrant considering their impact on grid operations.
- The **firm scenario** demand forecast includes future loads with a high probability of reaching commercial operation in this forecast period.
- The **normal weather** simulation represents a 50/50 distribution of probabilistically modelled data. This means that 50% of observations would exceed the normal value and 50% of observations would fall below the normal value.
- The **extreme weather** simulation represents a 97/3 distribution of probabilistically modelled peak demand data. This means that 3% of observations would exceed the extreme peak value and 97% of observations would not exceed the extreme value.

Table 3-1 | Forecast Energy Demand Summary

Year	Normal Weather Energy Firm Scenario (TWh)	% Growth in Energy Firm Scenario	Normal Weather Energy Planned Scenario (TWh)	% Growth in Energy Planned Scenario
2025	142.1	0.7%	142.2	0.8%
2026	145.6	2.5%	146.0	2.6%

Table 3-2 | Forecast Seasonal Peaks

Season	Firm Normal Weather Peak (MW)	Firm Extreme Weather Peak (MW)	Planned Normal Weather Peak (MW)	Planned Extreme Weather Peak (MW)
Summer 2025	23,168	25,418	23,171	25,421
Winter 2025-26	22,311	23,146	22,345	23,179
Summer 2026	23,951	26,289	23,992	26,331

Table 3-3 | Large Step Load Impacts, Firm and Planned Demand

	Firm		Planned	
Demand Forecast	Energy (GWh)	Peak (MW)	Energy (GWh)	Peak (MW)
Summer 2025	338	190	412	193
Winter 2025-26	648	359	706	393
Summer 2026	798	406	890	448

Notes on Table 3-3:

"Large step loads" are a category of potential load growth consisting of new facilities that intend to connect to Ontario's power system. The capacity required from the grid and expected timing of connection present uncertainty in the demand forecast. As such, they are treated as large *step* increases in demand and are incremental to the underlying demand growth from economic activity and population growth. The Firm forecast includes those large loads that are highly likely to proceed on time. The Planned forecast includes large loads that are less certain in timing.

4. Supply Forecast

The IESO expects to have sufficient reserves for the Outlook period under the firm scenario and expected weather conditions.

In Q2 2025, outcomes from the Medium Term 2 RFP were made available, which was one of the contributing factors to alleviating previously projected shortfalls in summer 2026. The planned scenario considering expected weather indicates sufficient reserves for the entirety of the outlook period.

This section assesses the adequacy of resources to meet the forecast demand. Resource adequacy is one of the reliability considerations used for approving generation and transmission outages. When reserves are below required levels, with potentially adverse effects on the reliability of the grid, the IESO may require deeper co-ordination with market participants requesting outages based on their order of precedence. Conversely, when reserves are above required levels, additional outages can be contemplated, provided other factors – such as local considerations, operability or transmission security – do not pose a reliability concern. In those cases, the IESO may place an outage at risk, signaling to the facility owner to consider rescheduling the outage.

Ontario's existing installed generation capacity is summarized in Table 4-1. The forecast capability at the Outlook peak is based on the firm resource scenario, which includes resources currently in commercial operation, and takes into account deratings, planned outages and an allowance for capability levels below rated installed capacity.

Table 4-1 | Existing Grid-Connected Resource Capacity

Fuel Type	Total Installed Capacity (MW)	Forecast Capability at 2025 Summer Peak [Firm-Normal] (MW)	Number of Stations	Change in Number of Stations compared to previous quarter	Change in Installed Capacity (MW) compared to previous quarter
Nuclear	12,184	9,550	4	0	0
Hydroelectric	8,866	5,295	76	0	4
Gas/Oil	10,468	8,980	30	0	18
Wind	4,943	735	42	0	0
Biofuel	287	255	4	0	-1
Solar	478	66	10	0	0
Storage	250	175	1	1	250
Demand Measures	-	1,050	-	-	-
Firm Imports (+) / Exports (-) (MW)	-	689	-	-	-
Total	**37,476**	**26,796**	**167**	**1**	**271**

4.1 Supply Forecast Assumptions

4.1.1 Generation and Electricity Storage Resources

All generation and electricity storage resources scheduled to come into service, be upgraded or be shut down within the Outlook period are summarized in Table 4-2. This includes generation and electricity storage projects in the IESO's connection assessment and approval (CAA) process, those under construction, and contracted resources. Details regarding the IESO's CAA process and the status of these projects can be found on the Application Status section of the IESO website.

The estimated effective date column in Table 4-2 indicates when the market registration process is expected to be complete for each generation and electricity storage resource, based on information available to the IESO as of May 22, 2025. Two scenarios are used to describe project risks:

- The **planned scenario** assumes that all resources scheduled to come into service are available over the assessment period.
- The **firm scenario** assumes that only resources that have reached commercial operation status and completed commissioning at the time this assessment was completed are available.

Generators with expiring contracts and planned shutdowns or permanent[1] retirements that have a high likelihood of occurring are considered for both scenarios.

Table 4-2 | Committed Generation and Electricity Storage Resources Status

Project Name	Zone	Fuel Type	Estimated Effective Date	Project Status	Firm (MW)	Planned (MW)
Same Technology Upgrades	Various	Gas	2025-Q2 to Q4	Under Development	0	255
Brighton Beach Upgrade	West	Gas	2025-Q2	Under Development	0	43
Expedited – Long Term 1 Projects	Various	Various	2026-Q2 to Q3	Under Development	0	1177
Pickering B	Toronto	Nuclear	2026-Q4	Facility Out of Service	-2,064	-2064
Total					-2,064	-589

Notes on Table 4-2:

The total may not add up due to rounding and does not include in-service facilities. Project status provides an indication of the project progress, using the following terminology:

[1] Given the evolving nature of resource acquisitions and commitments in Ontario, Table 4-2 will be listing new resources as they commission and existing resources that are expected to permanently retire or mothball at the end of their current commitments.

- Under Development – projects in approvals and permitting stages (e.g., environmental assessment, municipal approvals, IESO connection assessment approvals) and projects under construction
- Commissioning – projects undergoing commissioning tests with the IESO
- Commercial Operation – projects that have achieved commercial operation status under the contract criteria, but have not met all of the IESO's market registration requirements
- Expiring Contract – contracts that will expire during the Outlook period are included in both scenarios only up to their contract expiry date. Generators (including non-utility generators) that continue to provide forecast output data are also included in the planned scenario for the rest of the 18-month period.
- Retirement – projects scheduled for permanent shutdown.

4.1.2 Generation Capability

Hydroelectric

A monthly forecast of hydroelectric generation output is calculated based on median historical values of hydroelectric production and contribution to operating reserve during weekday peak demand hours. Through this method, routine maintenance and actual forced outages of the generating units are implicitly accounted for in the historical data (see the first row in Table 4-3).

To reflect the impact of hydroelectric outages on the RAR and allow the assessment of hydroelectric outages as per the outage approval criteria, the hydroelectric capability is also calculated, without accounting for historical outages (see the second row of Table 4-3). Table 4-3 uses data from May 2002 to March 2025, which are updated annually to coincide with the release of the Q2 Outlook.

Table 4-3 | Monthly Historical Hydroelectric Median Values for Normal Weather Conditions

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Historical Hydroelectric Median Contribution (MW)	6,068	5,995	5,786	5,858	5,929	5,647	5,516	5,216	5,000	5,331	5,604	6,076

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Historical Hydroelectric Median Contribution without Outages (MW)	6,610	6,570	6,366	6,389	6,383	6,190	6,088	5,867	5,910	6,180	6,393	6,580

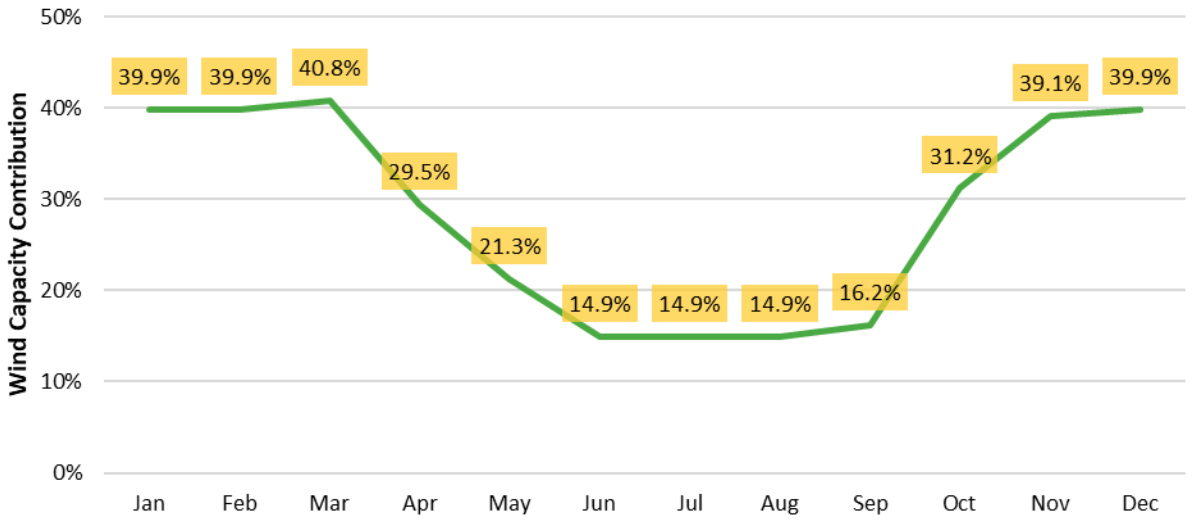
Thermal Generators

Thermal generators' capacity, planned outages and deratings are based on market participant submissions. Forced outage rates on demand are calculated by the IESO based on actual operational data. The IESO will continue to rely on market participant-submitted forced outage rates for comparison purposes.

Wind

For wind generation, monthly wind capacity contribution (WCC) values from the weekday peak hour are used. The process for determining wind contribution can be found in the Methodology to Perform the Reliability Outlook. Figure 4-1 shows the monthly WCC values, which are updated annually with the release of the Q2 Outlook.

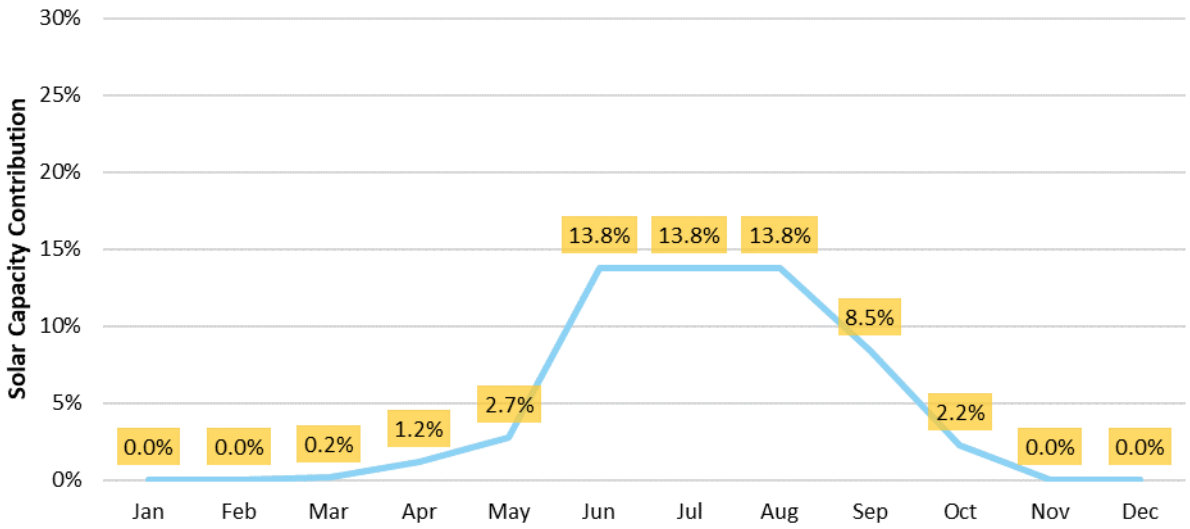
Figure 4-1 | Monthly Wind Capacity Contribution Values



Solar

For solar generation, monthly solar capacity contribution (SCC) values from the weekday peak hour are used. Information on how the solar contribution is calculated can be found in the Methodology to Perform the Reliability Outlook. Figure 4-2 shows the monthly SCC values, which are updated annually for the release of the Q2 Outlook.

Figure 4-2 | Monthly Solar Capacity Contribution Values



4.1.3 Demand Measures

Both demand measures and load modifiers can impact demand, but differ in how they are treated within the Outlook. Demand measures, such as dispatchable loads and demand response procured through the IESO's capacity auction, are not incorporated into the demand forecast and are instead treated as resources. Load modifiers are incorporated into the demand forecast. The impacts of activated demand measures are added back into the demand history prior to forecasting demand for future periods.

The 2024 Capacity Auction, which secured 2,089 MW of 2025 summer capacity (May 1, 2025 – Oct. 31, 2025) and 1,523.6 MW of winter capacity (Nov. 1, 2025 - April 30, 2026), was included in the modelling for this outlook. Capacity targets from the IESO's 2025 Annual Planning Outlook have been included and modelled as demand measures in the firm and planned resource scenario out to summer 2026.

Peak Perks, the demand response program that reduces a participating home or small business's energy consumption by automatically adjusting their registered smart thermostats, expects to leverage about 250,000 smart thermostats during peak electricity demand periods this summer. The program is expected to yield demand reduction of about 200 MW during peak hours between June and September.

4.1.4 Firm Transactions

Capacity-Backed Exports

The IESO allows Ontario resources to compete in the capacity auctions held by certain neighbouring jurisdictions, but only if Ontario has adequate supply and no reliability concerns. New York Independent System Operator (NYISO)[2] will allow up to 13 MW of capacity-backed exports from Ontario between May 2025 and October 2025.

Capacity Sharing Agreement

A 2015 Capacity Sharing Agreement, amended and restated in 2016, with Hydro-Québec saw Ontario provide 500 MW of capacity to Quebec in the winter of 2015/16. Ontario currently has a commitment from Quebec to return 500 MW of firm capacity for four months during a summer of the IESO's choosing. The IESO has chosen to utilize 300 MW for the delivery period commencing June 1, 2026 and ending September 30, 2026, with the remaining 200 MW banked for use in a later summer.

The 2024 Capacity Sharing Agreement between the IESO and Hydro-Québec (outlined in the memorandum of understanding[3]) permits for the swap of 600 MW of capacity over a period of up to seven years, starting in winter 2024/2025. Under the agreement, the IESO will provide 600 MW to Hydro-Québec in the winter and Hydro-Québec will provide 600 MW to the IESO in the summer. The IESO may choose to bank any amount of the 600 MW of summer capacity provided in a given year, to be used in a later summer during the agreement, allowing capacity to be saved until it is required. The IESO has chosen to bank 600 MW from the 2024 Capacity Sharing Agreement for the HQEM Delivery Period commencing May 1, 2026, and ending October 31, 2026, for use in a later summer. More information can be found in the 2023 Capacity Sharing Agreement Backgrounder.

Please note that capacity that is called upon under these agreements is already considered when determining the 1,000 MW / 2,000 MW adequacy threshold.

4.1.5 Summary of Resource Assumptions

To assess future resource adequacy, the IESO must make assumptions about the amount of available resources. The Outlook considers two scenarios: a firm scenario and a planned scenario.

[2] http://icap.nyiso.com/ucap/public/rgt_availability_display.do

[3] https://news.ontario.ca/en/release/1003444/the-governments-of-ontario-and-quebec-support-new-electricity-trade-agreement

The starting point for both scenarios is the existing installed resources shown in Table 4-1. The planned scenario assumes that all resources scheduled to come into service are available over the assessment period. The firm scenario considers only those resources that have reached commercial operation status as of the time of this assessment. Generator-planned shutdowns or retirements that have a high likelihood of occurring are considered for both scenarios. They also both reflect planned outages submitted by generators. Table 4-4 shows the available resources that are forecast over the 18-month Outlook, under both scenarios in normal weather conditions, and at the time of the summer and winter peak demands.

Table 4-4 | Summary of Available Resources

Notes	Description	Summer Peak 2025 Firm Scenario	Summer Peak 2025 Planned Scenario	Winter Peak 2025/2026 Firm Scenario	Winter Peak 2025/2026 Planned Scenario	Summer Peak 2026 Firm Scenario	Summer Peak 2026 Planned Scenario
1	Installed Resources (MW)	37,476	37,632	37,476	37,773	37,476	38,850
2	Total Reductions in Resources (MW)	12,420	12,444	10,532	10,688	12,837	13,257
3	Demand Measures (MW)	1,050	1,050	818	818	2,013	2,013
4	Firm Imports (+) / Exports (-) (MW)	689	689	-420	-420	300	300
5	Available Resources (MW)	26,796	26,927	27,342	27,483	26,952	27,906
6	Bottling (MW)	0	0	319	423	0	0
7	Available Resources without Bottling (MW)	26,796	26,927	27,661	27,906	26,952	27,906

Notes on Table 4-4:

Installed Resources: The total generation capacity assumed to be installed at the time of the summer and winter peaks.

Total Reductions in Resources: The sum of deratings, planned outages, limitations due to transmission constraints and allowances for capability levels below rated installed capacity.

Demand Measures: The amount of demand reduction expected to be available at the time of peak, under a normal weather simulation.

Firm Imports/Exports: The amount of expected firm imports and exports at the time of summer and winter peaks, under a normal weather simulation.

Available Resources: Installed Resources (line 1) minus Total Reductions in Resources (line 2) plus Demand Measures (line 3) and Firm Imports/Exports (line 4). This differs from the Forecast Capability at System Peak shown in Table 4-1 due to the impacts of generation bottling (transmission limitations).

Bottling[4]: The amount available at the source but which cannot be delivered to the point of use because of restrictions in the transmission system.

Available Resources without Bottling: Available resources after they are reduced due to bottling.

[4] IESO Market Manual 7: System Operations, Part 0.7.6: Glossary of Standard Operating Terms

5. Adequacy Assessment

5.1 Capacity Adequacy Assessment

The capacity adequacy assessment accounts for zonal transmission constraints resulting from planned transmission outages assessed as of May 20, 2025. The generation planned outages occurring during this Outlook period have been assessed as of May 26, 2025.

5.1.1 Firm Scenario with Expected Weather

The firm scenario incorporates all capacity that had achieved commercial operation status as of May 22, 2025. Similarly, the firm scenario includes all demand that has a high probability of materializing in the next 18 months.

Expected Weather is a subset of all weather data selected through an iterative process used to determine weekly peak demand values for the purposes of calculating Reserve Above Requirement (RAR). For more information, please refer to the Methodology to Perform the Reliability Outlook.

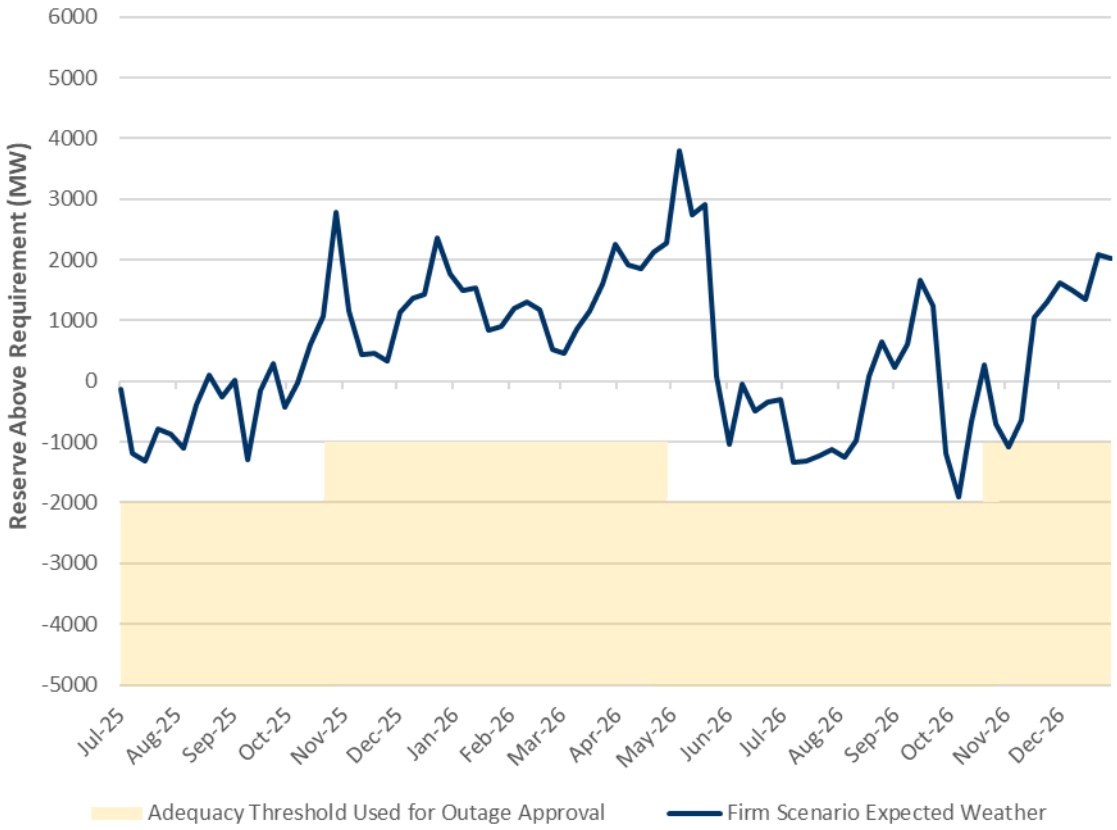
Figure 5-1 shows RAR levels, which represents the difference between available resources and required resources. The required resources equals forecasted firm demand plus the required reserve. The threshold decreases to -1,000 MW in the winter months to better reflect the lowered amount of imports to Ontario that can be relied on from other regions, compared to the summer months.

The IESO expects to have sufficient reserves for the Outlook period, however, the current RAR projection of -1,090 MW for the week ending November 8, 2026 is slightly lower than the -1,000 MW winter period threshold. Additionally, the current RAR projection of -1,897 MW during the week ending October 11, 2026 is close to the -2,000 MW summer period threshold. When the RAR drops close to or below -2,000 MW in the summer or -1,000 MW in the winter, market participants and the IESO may need to further co-ordinate outages.

The IESO will continue to work closely with participants that have planned outages to ensure Ontario maintains adequate reserves. Ontario may have to rely on up to 2,000 MW of supply from other jurisdictions and/or additional operating actions in order to ensure reliability, especially during periods of low reserves.

Under periods of tighter supply conditions, planned generator maintenance outages are difficult to schedule. Generators are advised not to schedule outages during periods when reserves are forecast to be low, and are strongly encouraged to plan ahead and co-ordinate the timing of outages with IESO staff. Outage requests during periods when reserves fall below the adequacy threshold will be put at risk and further outage co-ordination may be required.

Figure 5-1 | Expected Weather: Firm Scenario Reserve Above Requirement

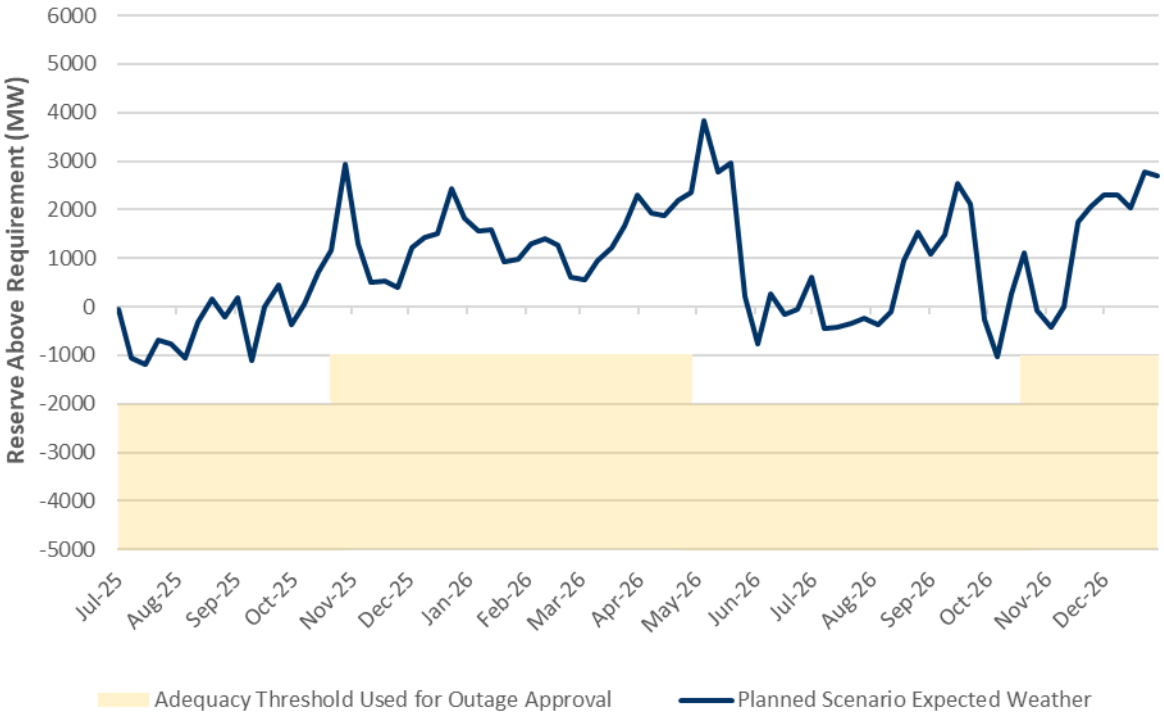


5.1.2 Planned Scenario with Expected Weather

The Planned scenario incorporates all existing capacity, as well as all capacity expected to come into service. As noted as of last quarter and on a go-forward basis, the planned scenario is calculated using planned demand. More information on this update can be found in the Methodology to Perform the Reliability Outlook. Approximately 1,474 MW of new generation capacity is expected to connect to Ontario's grid over this Outlook period. Planned Demand reflects incremental loads that are less certain but are large enough to warrant considering their impact on grid operations. Table 3-3 outlines the planned demand compared to firm.

Figure 5-2 shows RAR levels under the Planned scenario. Reserves do not fall below the adequacy threshold requirements in this outlook period.

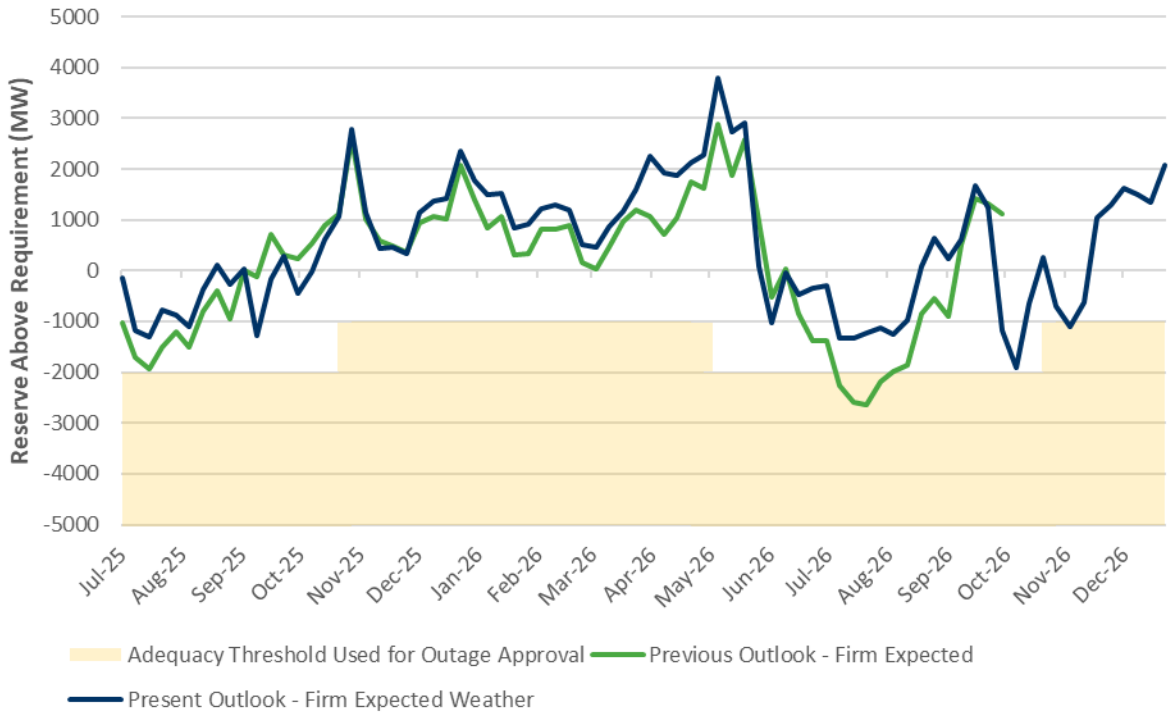
Figure 5-2 | Expected Weather: Planned Scenario Reserve Above Requirement



5.1.3 Comparison of the Current and Previous Weekly Adequacy Assessments for the Firm Expected Weather Scenario

Figure 5-3 compares forecast RAR values in the current Outlook with those in the previous Outlook that was published on March 24, 2025.

Figure 5-3 | Comparison of Current and Previous Outlook: Firm Scenario Expected Weather Reserve Above Requirement



Resource adequacy assumptions and risks are discussed in detail in the Methodology to Perform the Reliability Outlook.

5.2 Energy Adequacy Assessment

This section assesses energy adequacy to determine whether Ontario has sufficient supply to meet its forecast energy demands, while highlighting potential adequacy concerns during the Outlook time frame. At the same time, the assessment estimates the aggregate production by resource category to meet the projected demand based on assumed resource availability. This assessment is based on both firm demand with firm supply and planned demand with planned supply. The planned scenario produces a potential future scenario which will be used for informational purposes only at this point in time; it is not being used to assess outage approvals.

As the Energy Adequacy Assessment is not used for outage management specifically, and Ontario is and has been in an environment of sufficient energy adequacy for the past several quarters, the IESO intends to remove this section of the Reliability Outlook report in future quarters.

5.2.1 Summary of Energy Adequacy Assumptions

The Energy Adequacy Assessment (EAA) uses the same set of assumptions as the capacity assessment outlined in Tables 4-1 and 4-2, which indicate the total capacity of committed resources and when they are expected to be available over the next 18 months. The monthly forecast of energy production capability, based on energy modelling results, is included in the Reliability Outlook Data Tables.

For the EAA, the firm scenario is presented in Table 5-1 with the planned scenario in Table 5-2, both under typical weather (50/50 energy and peak demand) demand conditions. The key assumptions specific to this assessment are described in the Methodology to Perform the Reliability Outlook.

5.2.2 Results – Firm and Planned Scenario with Normal Weather

Table 5-1 and Table 5-2 summarize the energy simulation results over the next 18 months for both the Firm and Planned scenarios with normal weather demand both for Ontario and for each transmission zone.

Table 5-1 | Summary of Zonal Energy for Firm Scenario, Expected Weather

Zone	18-Month Energy Demand TWh	18-Month Energy Demand Average MW	18-Month Energy Production TWh	18-Month Energy Production Average MW	Net Inter-Zonal Energy Transfer TWh	Zonal Energy Demand on Peak Day of 18-Month Period GWh	Available Energy on Peak Day of 18-Month Period GWh
Bruce	0.9	68	62.0	4,705	61.1	1.6	118.9
East	13.7	1,040	19.8	1,501	6.1	28.0	102.8
Essa	14.2	1,078	3.5	264	-10.7	29.9	17.0
Niagara	7.6	576	21.8	1,656	14.2	18.2	49.7
Northeast	16.8	1,273	15.0	1,141	-1.8	29.9	37.7
Northwest	4.7	360	6.8	518	2.1	7.3	19.9
Ottawa	13.7	1,043	0.8	58	-12.9	33.9	1.7
Southwest	43.1	3,269	10.5	795	-32.6	97.6	26.0
Toronto	79.1	6,006	60.0	4,550	-19.1	191.6	124.1
West	23.7	1,799	20.0	1,519	-3.7	53.3	78.9
Ontario	**217.5**	**16,511**	**220.1**	**16,708**	**2.6**	**491.3**	**576.8**

Table 5-2 | Summary of Zonal Energy for Planned Scenario, Expected Weather

Zone	18-Month Energy Demand TWh	18-Month Energy Demand Average MW	18-Month Energy Production TWh	18-Month Energy Production Average MW	Net Inter-Zonal Energy Transfer TWh	Zonal Energy Demand on Peak Day of 18-Month Period GWh	Available Energy on Peak Day of 18Month Period GWh
Bruce	0.9	68	62.0	4,709	61.1	1.6	118.9
East	13.8	1,048	19.8	1,504	6.0	29.3	109.0
Essa	14.3	1,082	3.5	262	-10.8	30.4	21.0
Niagara	7.6	576	21.9	1,659	14.3	18.3	49.6
Northeast	16.8	1,275	15.0	1,141	-1.8	30.0	37.5
Northwest	4.7	360	6.8	519	2.1	7.3	19.9
Ottawa	13.7	1,043	0.8	59	-12.9	33.9	1.7
Southwest	43.2	3,280	10.7	814	-32.5	99.1	34.0
Toronto	79.6	6,038	59.9	4,550	-19.7	193.0	128.6
West	23.8	1,803	20.5	1,553	-3.3	53.7	87.6
Ontario	**218.4**	**16,573**	**221.0**	**16,770**	**2.6**	**496.6**	**607.8**

5.2.3 Findings and Conclusions

The EAA indicates that Ontario is expected to have sufficient supply to meet its forecast energy needs throughout the outlook period for the Firm scenario with normal weather demand, without having to rely on support from external jurisdictions. Under the Planned scenario, the energy outlook shows increased energy production, signifying that planned resource additions more than offset any changes in demand.

The figures and tables in this section are based on a simulation of the province's power system, using the assumptions presented within the Outlook to assess whether Ontario will be energy adequate.

Figure 5-4 breaks down projected production by fuel type to meet Ontario's energy demand for the next 18 months, while Figure 5-5 shows the expected production by fuel type for each month. The province's energy exports and imports are not considered in this assessment. Table 5-3 and 5-4 summarizes these simulated production results by fuel type, for each year.

Figure 5-4 | Forecast Energy Production by Fuel Type (Firm Scenario)

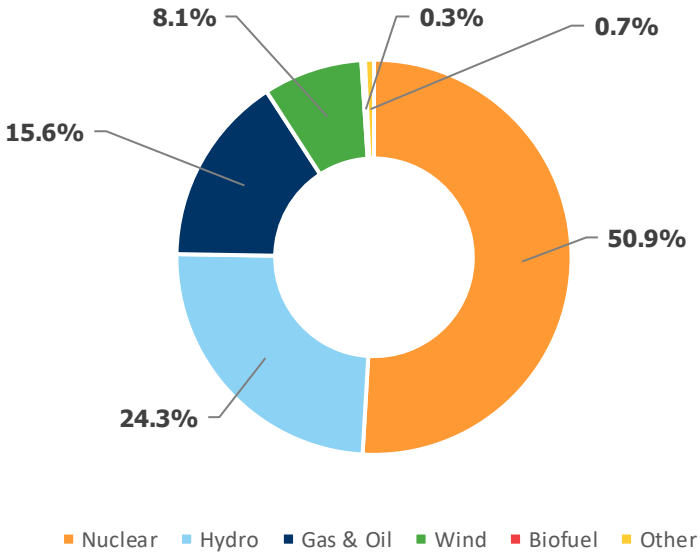


Figure 5-5 | Forecast Monthly Energy Production by Fuel Type (Firm Scenario)

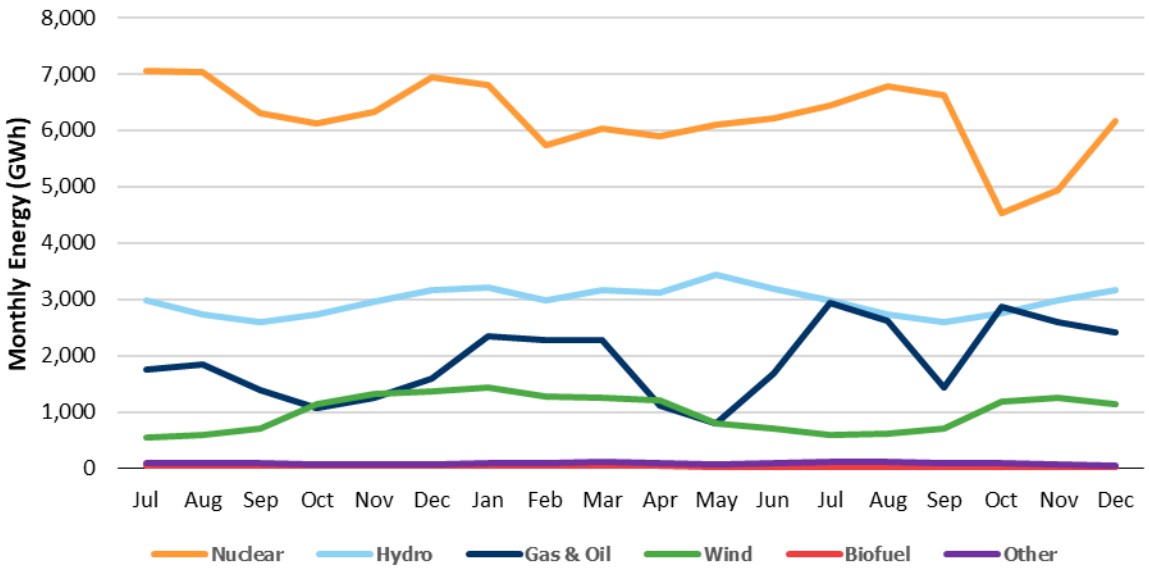


Table 5-3 | Energy Production by Fuel Type for the Firm Scenario, Expected Weather

Fuel Type (Grid-Connected)	2025 (Jul 1 – Dec 31) (GWh)	2026 (Jan 1 – Dec 31) (GWh)	Total (GWh)
Nuclear	39,796	72,304	112,099
Hydro	17,204	36,369	53,573
Gas & Oil	8,919	25,401	34,320
Wind	5,682	12,209	17,892
Biofuel	243	409	652
Other (Solar & DR)	500	1,106	1,606
Total	**72,343**	**147,798**	**220,141**

Table 5-4 | Energy Production by Fuel Type for the Planned Scenario, Expected Weather

Fuel Type (Grid-Connected)	2025 (Jul 1 – Dec 31) (GWh)	2026 (Jan 1 – Dec 31) (GWh)	Total (GWh)
Nuclear	39,800	72,312	112,112
Hydro	17,204	36,369	53,573
Gas & Oil	8,998	25,559	34,557
Wind	5,693	12,437	18,130
Biofuel	243	409	651
Other (Solar & DR)	501	1,433	1,934
Total	**72,439**	**148,519**	**220,957**

6. Transmission Reliability Assessment

Ontario's transmission system is expected to continue to reliably supply province-wide demand for the next 18 months. However, some combinations of transmission and/or generation outages could create operating challenges. For this reason, planned outages will necessitate enhanced co-ordination between transmitters and generators. Planned outages for certain windows may need to be rescheduled.

6.1 Transmission Projects

This section considers the information transmitters have provided with respect to transmission projects that are planned for completion within the next 18 months. The list of transmission projects can be found in Appendix B1. Note that the planned in-service dates in this table and throughout this document are as of March 2025. Any changes will be communicated through subsequent Reliability Outlooks.

6.2 Transmission Outages

The IESO's assessment of transmission outage plans is shown in Appendix C, Tables C1 to C11. The methodology used to assess the transmission outage plans is described in the Methodology to Perform the Reliability Outlook. This Outlook reflects transmission outage plans submitted to the IESO as of May 20, 2025.

6.3 Transmission Considerations

The purpose of this section of the report is to highlight projects and outages that occur over a period in excess of two weeks and may significantly affect reliability and/or the scheduling of other outages. For more information about the IESO's transmission zones and interfaces, please see the Transfer Capability Assessment Methodology.

There are a significant number of major generation and transmission projects either currently underway or expected to begin in the near future. As the timing of many of these projects overlap with each other and can require multiple equipment outages, reliability assessments are increasingly complex.

Another key factor impacting outage management is the amount of extended forced transmission outages. With more overlapping and urgent outage requests, operating the power system is becoming increasingly difficult. Prioritizing the timely repair of a forced outage is necessary to reduce the impact on the delivery of other ongoing capital projects, and to enable other necessary maintenance outages to proceed.

In considering the possibility of equipment failure, tighter supply conditions and other factors such as supply chain delays, further outage co-ordination or rescheduling may be required. Transmitters and generators are strongly encouraged to plan ahead, co-ordinate with one another, submit outage requests early, and co-ordinate with the IESO. Scheduling outages at desired times may be difficult due to the significant number of major projects that are planned for the same time. Furthermore, outages are not guaranteed as unanticipated equipment failures may change reliability assessments.

One important aspect of grid equipment outages is recall time. Recall times indicate how long it takes for equipment on outage to return to service. Minimizing recall times increases the likelihood of outages being approved. If many outages are non-recallable, it can be difficult to accommodate an additional outage to repair a critical equipment failure as there needs to be a reliable plan to reposture the system. If multiple equipment failures occur, there may be instances where outage management alone will not address the concern. Under such circumstances the IESO may need to rely on additional non-firm imports or emergency operating procedures in order to ensure reliability. More information on actions the IESO can take to ensure reliability can be found in Market Manual 7.1: IESO Controlled Grid Operating Procedures.

Bruce, Southwest, and West Zones

The Bruce B 500 kV switchyard is being rebuilt and is nearing completion. The Bruce A 500 kV switchyard rebuilding stages are starting in Q3 2025. As a result, there will be many outages to equipment within the 18-month period that will have significant impact on the flow out of the Bruce zone and flows between West and Southwest zones. In addition, there is also a planned six-week outage starting July 13, 2026, on circuit N582L which will have significant impact on the flows between these zones.

Toronto, East, and Ottawa Zones

There are ongoing nuclear refurbishments of multiple units with overlapping timelines. As a result, it will be increasingly challenging for market participants to take outages impacting the Flow East Towards Toronto (FETT) interface given increased west-east flow from resources in Southwestern Ontario along those circuits. Of note, the FETT Capacity Upgrade (i.e., Richview-Trafalgar Reinforcement) project to address future needs is underway; the project is expected to be in-service by Q1 2026. The Etobicoke Greenway Project (formerly the Richview TS to Manby TS Transmission Line Reinforcement) will improve the bulk transmission supply into the city of Toronto to supply the urban centre's growing demand. This project is expected to be in-service by Q2 2026.

Northwest, Northeast, and Essa Zones

To meet growing electricity need in the Northwest, mainly driven by economic development and electrification of mining activities, the Waasigan Transmission Line is currently under development. Phase 1 of the project, which consists of a new double-circuit 230 kV transmission line between Lakehead TS and MacKenzie TS, is expected to be in-service by Q3 2026. Outages to the parallel circuits, as well as at Lakehead TS and MacKenzie TS will be required in order to integrate the new circuits, and will temporarily reduce system resiliency during this time. Phase 2 of the project, which consists of a new 230 kV transmission line between MacKenzie TS and Dryden TS, is recommended to be in-service by Q4 2027.

In the Sault Ste. Marie area, there will be an increase in load because of Algoma Steel converting their coke-fired furnaces to electric-arc furnaces (EAF). Phase 1 of the project, which involves EAF operating with up to 140 MW of load connected to Patrick St TS and Lake Superior Power (LSP) generating units being brought back in-service, is expected to be completed by Q3 2025. Subsequent phases of the project, which will have the EAF operating with up to 250 MW of load connected to the new 230/115 kV Tagona West TS, are scheduled beyond the horizon of this outlook. The fluctuating nature of electric-arc furnace operation in an electrical area with limited transmission will require special attention to manage voltage and power fluctuations, particularly prior to the completion of the system reinforcements recommended in the Northeast Bulk System plan. In the interim, these fluctuations will be managed by dynamic reactive resources and load management systems that will be implemented as part of the project.

The following outages will impact the flow in and out of the Northeast and Northwest zones:

- a planned two-week outage starting June 24, 2025, to circuit X27A;
- a planned two-week outage starting June 29, 2025, to circuit A5A;
- a planned two-week outage starting July 15, 2025, to circuit T1M; and
- a planned six-week outage starting September 2, 2025, to circuit S22A

Interconnections

Circuit K21W has been out of service since May 2024 due to a phase angle regulator (PAR) failure, resulting in an unplanned, long-term outage. This circuit plays a key role in supporting power transfers between Ontario and Manitoba systems, and its continued outage is expected to impact the transfer capability. While no immediate mitigation measures are in place, a joint study has been initiated between the IESO, Manitoba Hydro, and Minnesota Power to assess long-term replacement options.

Additionally, the following outages will impact the transfer capability between Ontario and its other interconnected neighbors:

- A planned four-week outage starting June 2, 2025, to circuit P33C, and another planned four-week outage starting July 2, 2025, to circuit B31L, impacting the Ontario-Quebec interconnection

- A planned two-week outage starting August 31, 2025, to circuit L51D, and another planned two-week outage starting September 17, 2025, to circuit J5D, impacting the Ontario-Michigan interconnnection

7. Resources Referenced in This Report

The table below lists additional resources in the order they appear in the report.

Table 7-1 | Additional Resources

Resource	Location in this Report
Reliability Outlook Webpage	Introduction
Security and Adequacy Assessments	Introduction
2025 Q2 Outlook Tables	Throughout
Connection Assessments and Approval Process	Assessment Assumptions
Methodology to Perform the Reliability Outlook	Throughout
Capacity Auction	Demand Measures
Enabling Capacity Exports	Firm Transactions
Ontario Resource and Transmission Assessment Criteria	Transmission Considerations
NERC Transmission Planning Standard TPL-001-4	Transmission Considerations
NPCC Directory #1	Transmission Considerations
Market Manual 7.1	Throughout
Annual Planning Outlook	Resource Adequacy

8. List of Acronyms

Acronym	Definition
CAA	Connection Assessment and Approval
DR	Demand Response
EAA	Energy Adequacy Assessment
FETT	Flow East Toward Toronto
GS	Generating Station
GTA	Greater Toronto Area
ICI	Industrial Conservation Initiative
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
kV	Kilovolt
LDC	Local Distribution Company
MW	Megawatt(s)
NERC	North American Electric Reliability Corporation
NPCC	Northeast Power Coordinating Council
NYISO	New York Independent System Operator
ORTAC	Ontario Resource and Transmission Criteria
PAR	Phase Angle Regulator
RAR	Reserve Above Requirement
RAS	Remedial Action Scheme
SBG	Surplus Baseload Generation
SCC	Solar Capacity Contribution
TS	Transmission/Transformer Station
TWh	Terawatt-hour(s)
WCC	Wind Capacity Contribution

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