

Ontario Reserve Margin Requirements 2020-2024

December 2019

Purpose

- The IESO maintains an adequate reserve margin to ensure there is enough electricity available to compensate for volatility in factors that impact supply and demand.
- In accordance with Section 8.2 of the Ontario Resource and Transmission Assessment Criteria (ORTAC), the IESO annually publishes a five-year forecast of reserve margin requirements at the time of projected annual peak.¹
- Reliability standards require that the IESO maintain enough capacity such that the Loss of Load Expectation (LOLE)² is no more than 0.1 days/year.
- The IESO calculates LOLE and capacity requirements by performing a probabilistic resource adequacy assessment.

¹ Historically, the IESO has published this as a standalone document, the Ontario Reserve Margin Report. Going forward, the Annual Planning Outlook (APO) will satisfy this requirement.

² Loss of load expectation (LOLE) is a measurement of resource adequacy, defined as the average number of days per year during which supply is expected to be insufficient to meet demand.

Results

	2020	2021	2022	2023	2024
Reference Case Summer Peak Demand (MW)	23,970	24,250	24,340	24,420	24,640
Summer Effective Capacity (MW)	28,100	28,120	27,300	25,660	26,460
Total Resource Requirement (MW)	26,950	26,680	27,060	27,740	27,070
Reserve Margin Available (MW)	4,130	3,870	2,960	1,240	1,810
Reserve Margin Requirement (MW)	2,980	2,430	2,720	3,320	2,430
Capacity Surplus (MW)	1,150	1,440	240	-2,080	-620
Reserve Margin Available (%)	17%	16%	12%	5%	7%
Reserve Margin Requirement (%)	12%	10%	11%	14%	10%

- The total resource requirement is the amount of effective capacity needed to meet resource adequacy standards.
- The reserve margin available is the amount by which the effective capacity of existing resources³ exceeds peak demand under normal weather conditions.
- The reserve margin requirement is the amount by which the total resource requirement exceeds peak demand under normal weather conditions.
- Beginning in 2023, existing resources are insufficient to meet summer capacity requirements. This shortfall has been identified in previous IESO assessments.

³ The forecast of existing resources includes planned resources, resources with expired contracts, and resources with expired auction commitments. It does not include nuclear resources on refurbishment outage or expected to retire.

Interpretation

- The reserve margin requirement of 10 to 14% is lower than the requirements published in the IESO's 2018 Ontario Reserve Margin Requirements (ORMR) report and the NERC 2018 Long-Term Reliability Assessment (LTRA).
- Much of the difference is due to the accounting of resources in each assessment.
- In NERC assessments and prior ORMR assessments, the effective capacity of thermal resources was equal to their installed capacity (ICAP). Effective capacity is now calculated using unforced capacity (UCAP).⁴ UCAP more closely estimates a resource's value for meeting capacity needs.
- There are also differences in the accounting of some resources between the reports:
 - This document considers embedded generation and demand response on the supply side of the equation.
 - Previous ORMR reports considered embedded generation as a load modifier and demand response as supply.
 - The LTRA considers embedded generation and demand response as load modifiers.
- Since 2018, the IESO has performed routine updates to the demand forecast and supply assumptions.
- For more information on how reserve requirements are assessed, please refer to "IESO Planning Outlook: Overview of Resource Adequacy", presented to stakeholders on April 12, 2019 found here: <http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Planning-Outlook>

⁴ For thermal resources, $UCAP = ICAP * (1 - EFOR_d)$, where $EFOR_d$ is Equivalent Forced Outage Rate on Demand.