



APRIL 23, 2024

# 2024 Annual Planning Outlook

# Agenda

This information session will provide an overview of the 2024 Annual Planning Outlook (APO) and the resource adequacy needs informing the IESO's subsequent procurements, as well as key considerations in planning for Ontario's Energy Transition. We will cover:

- Demand forecast
- Supply outlook
- Integrated needs
- Transmission activities and planned actions

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# Purpose of the APO

## 26-Year Outlook (2025-2050)

- Forecasts electricity demand; assesses reliability of electricity system; identifies capacity and energy needs
- Now merged with the Annual Acquisition Report; specifies acquisition targets and mechanisms to meet needs
- Provides sector with most current insights to guide investment decisions





# Demand Forecast

# Demand Forecast Summary

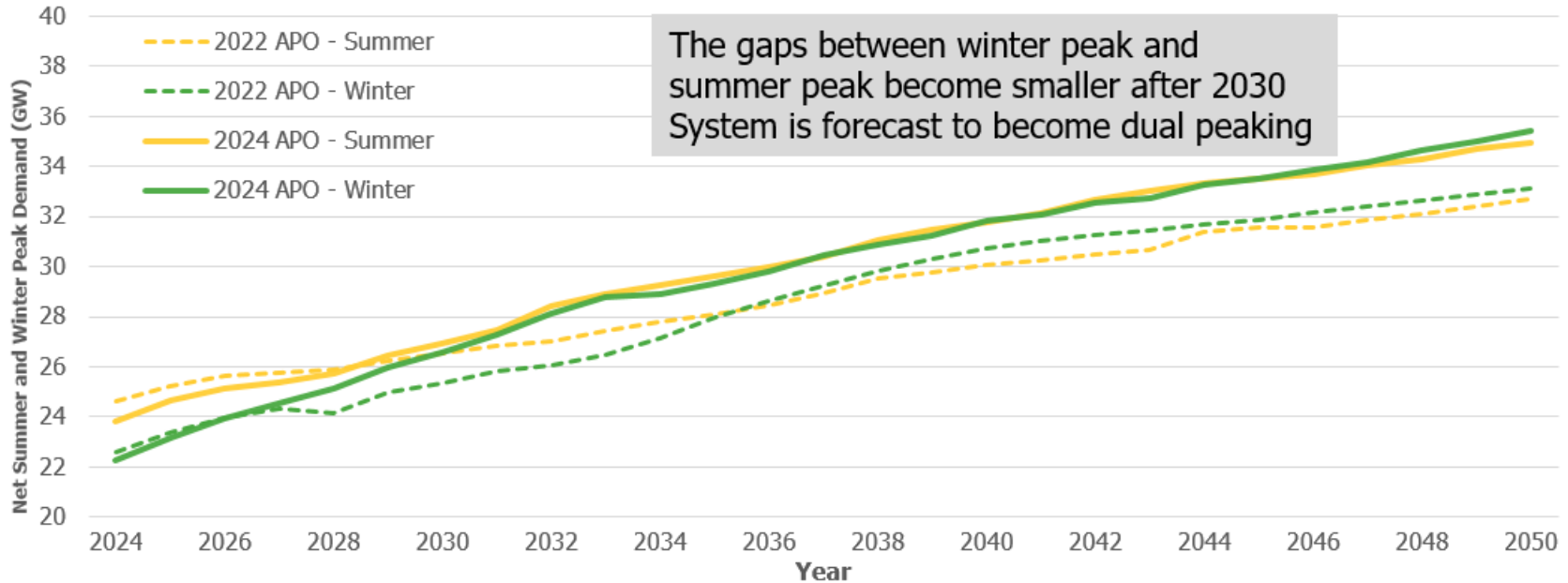
Increases in energy demand are attributed to:

1. Industrial sector projects
2. Updated transportation sector assumptions

Decreases in demand are attributed to:

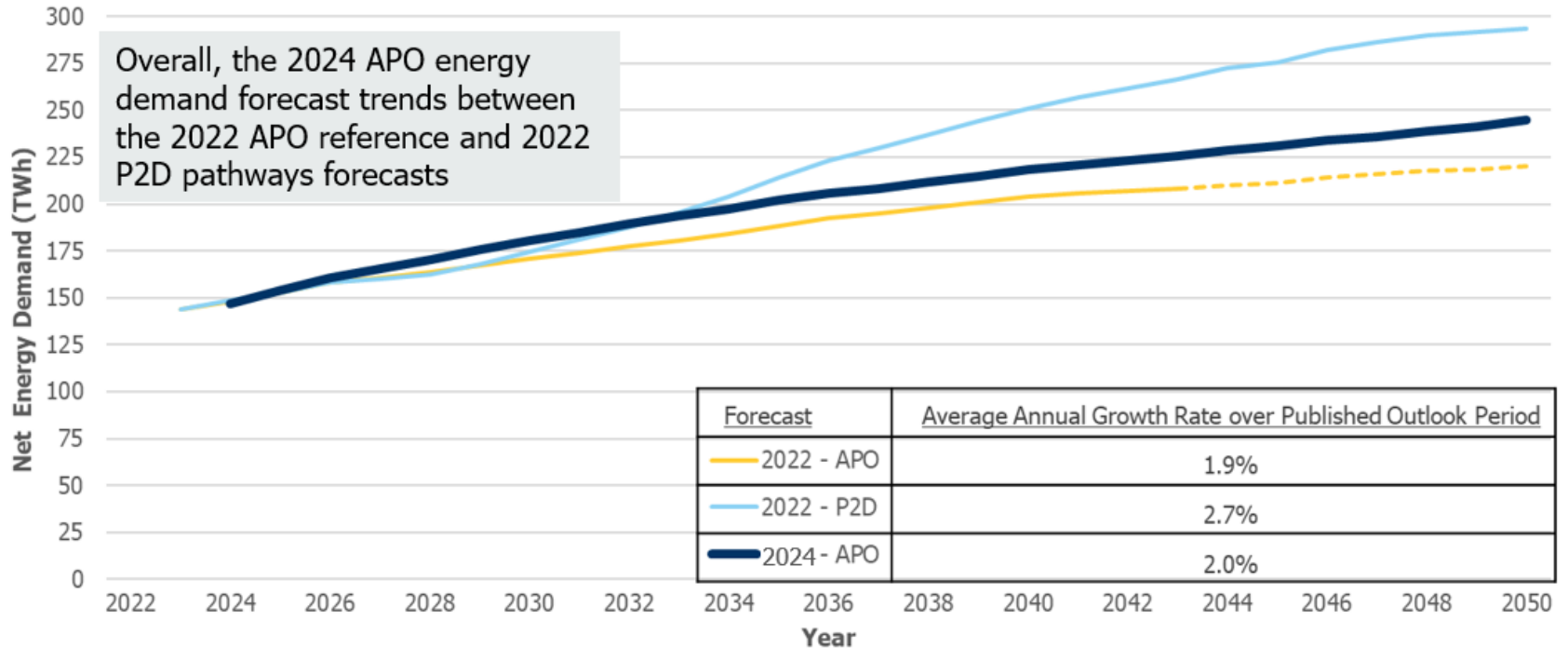
1. Updated electricity Demand Side Management program energy savings
2. Shifted peaks due to managed charging profiles for electric vehicles (EVs)

# Forecast Evolution – Dual Peaking



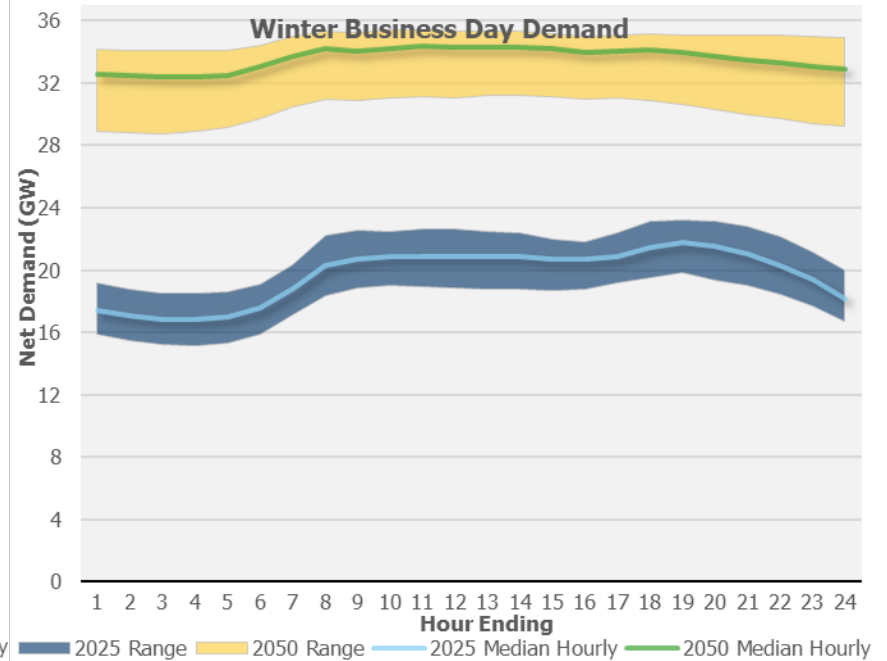
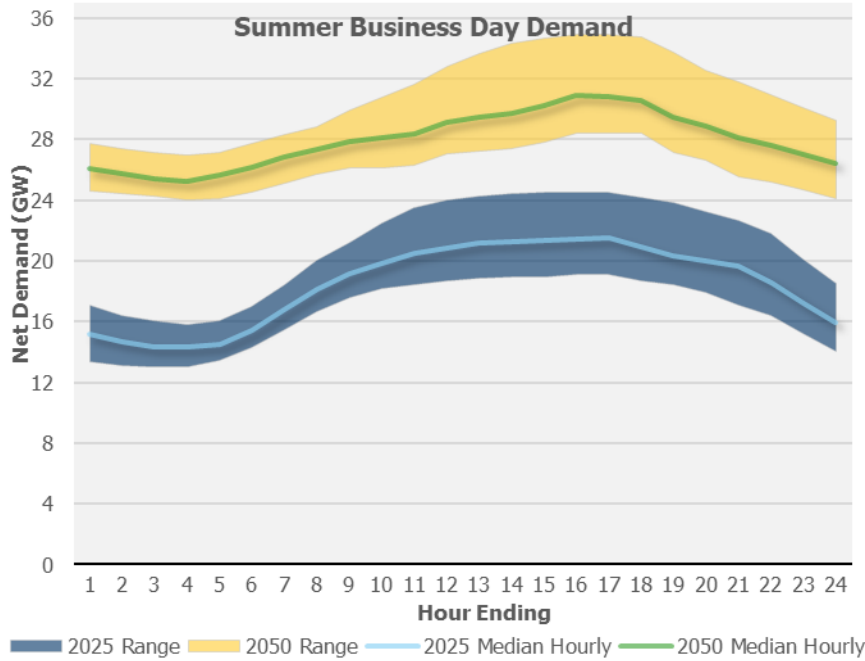
*\*APO 2022 results for 2044-2050 were not part of the published outlook*

# Annual Energy Demand Forecast



\*APO 2022 results for 2044-2050 were not part of the published outlook

# Daily Demand Profiles





# Risks and Uncertainties – Demand

- The demand forecast incorporates all **firm/known** policies, industrial projects, the Industrial Conservation Initiative, and federal EV targets for 2035 at the time of development
- Uncertainties may lead to an increase or a decrease in demand (see directional pressures indicated for each)



- Global economic trends
- Electricity demand-side management beyond current Framework
- Electrification
- Large loads
- Government policy supporting electrification and mining

## Key takeaways

- Demand is forecasted to increase, on average, by 2% a year over the coming decades, driven primarily by economic and population growth and decarbonization efforts



# Supply and Transmission Outlook, Needs, and Planned Actions

# 2024 APO Supply Cases

## As Is Case

- Existing and committed resources **until end of contract or commitment period**
- Explores the outlook under a 'do nothing' scenario

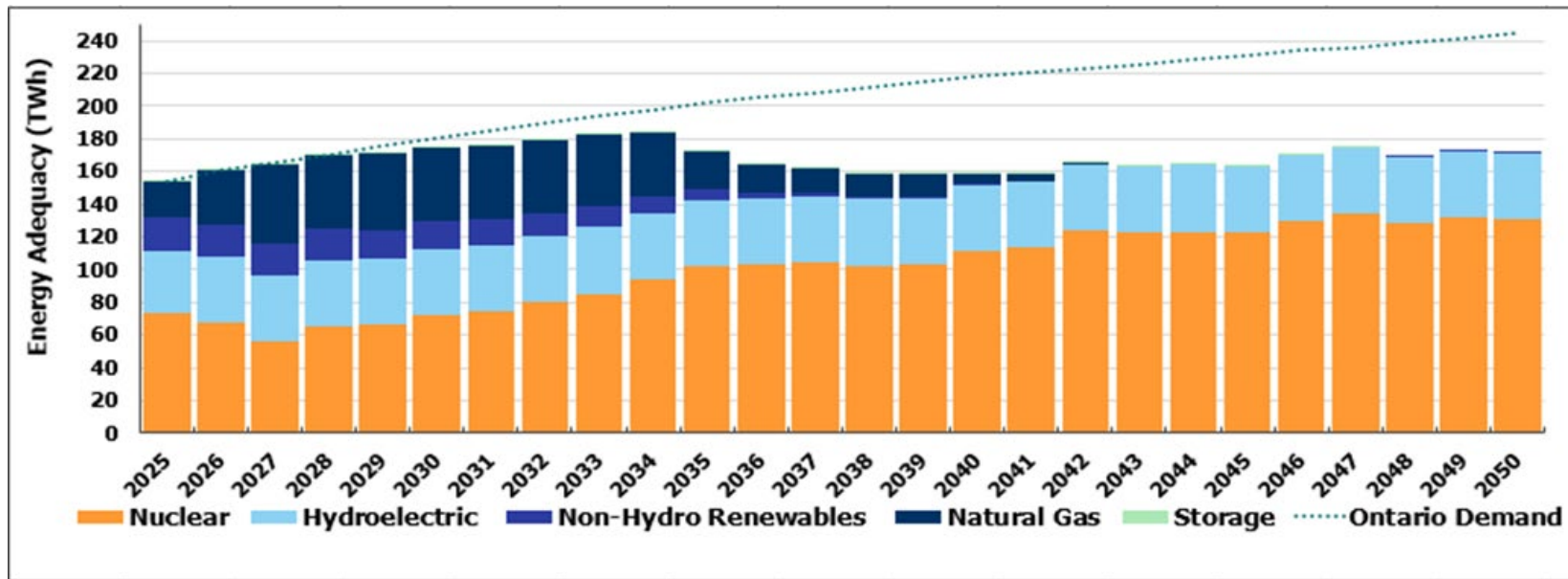
## High Nuclear Case

- As Is Case, with **Pickering Continued Operation, Pickering B Refurbishment, and Bruce C Expansion**
- Explores the potential impact of government policy decisions around nuclear

# Capacity Adequacy Outlook – Summer



# Energy Adequacy Outlook



Energy adequacy outlook is shown for 2024 APO High Nuclear

# Risks and Uncertainties

## Existing Resources and Transmission

- Aging generation & transmission assets, leading to decreased performance and more frequent outages
- Nuclear refurbishments and retirements
- Market exit of existing resources
- Uncertainty with the Clean Electricity Regulations and impacts on future participation of gas fleet & fuel security

## New Resources and Transmission

- Procurement targets not met (e.g., lack of municipal support, deliverability challenges, lead time required to build new transmission and generation)
- Resources contracted through a procurement do not reach commercial operation
- In-service delays for new resources
- Unreliable operation of new resources and technologies during first years of operation

# Integrated Needs

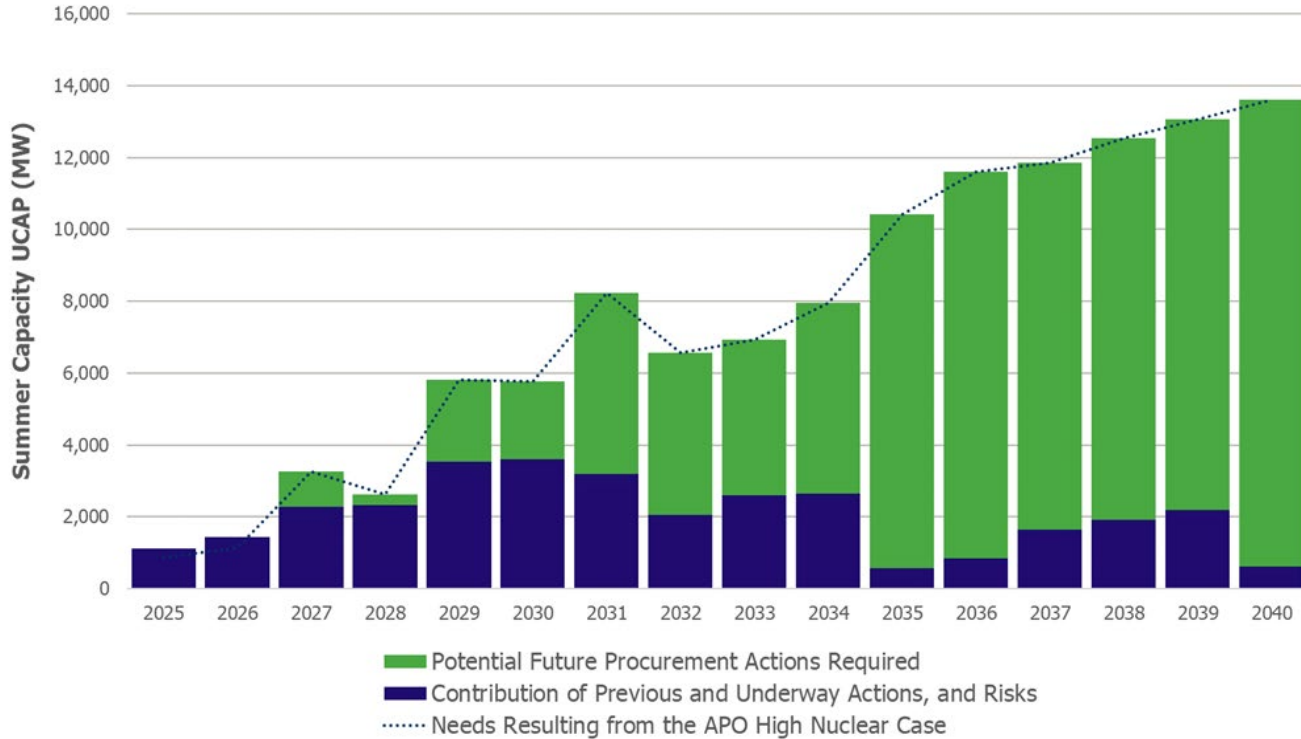
Before identifying planned actions for consideration in the Resource Adequacy Framework, the needs identified previously are integrated with anticipated contribution from actions that are underway, and uncertainties that may impact the contribution and timing of existing and new resources.

- E.g., anticipated resources secured from Long-Term 1 RFP or agreements with Hydro Quebec
- Some risks and uncertainties, higher risk of forced outages or new project in-service delays.

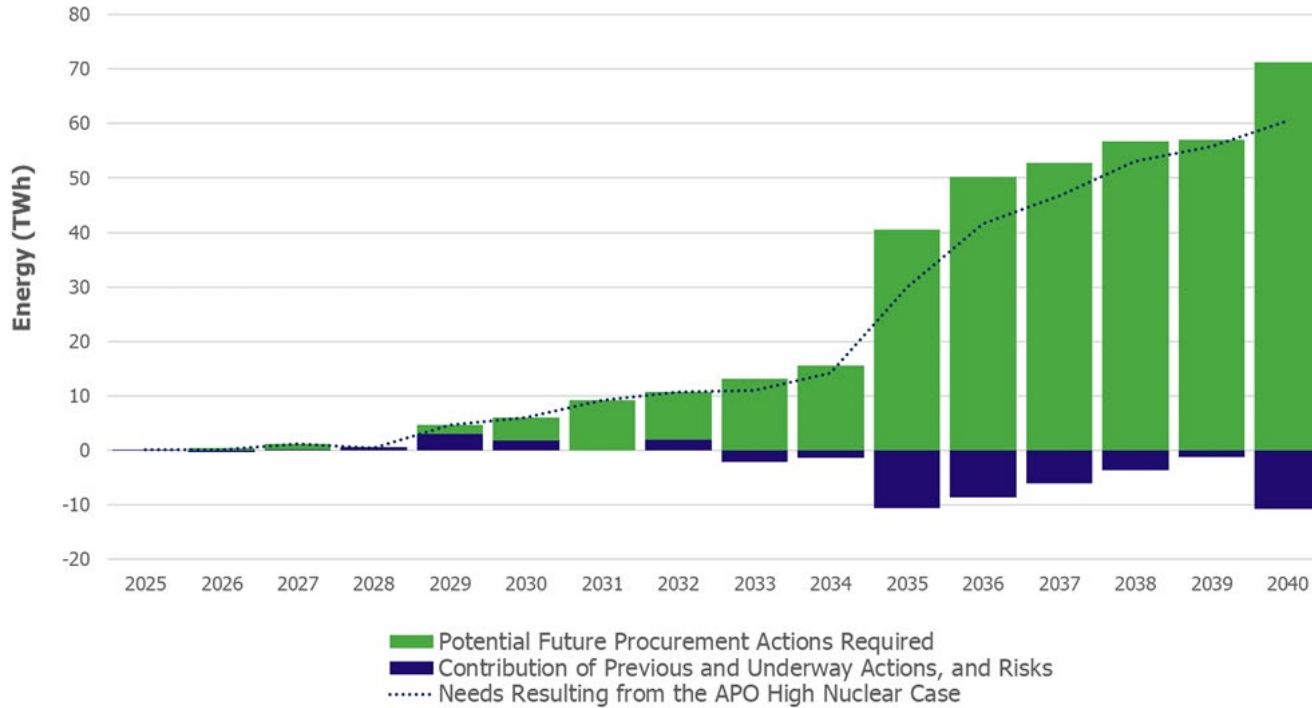
The 2024 APO shows an approximately ~5,000 MW and ~15 TWh shortfall emerging in the 2030-2034 period.



# Integrated Capacity Needs



# Integrated Energy Needs



# Planned Actions to Meet Needs

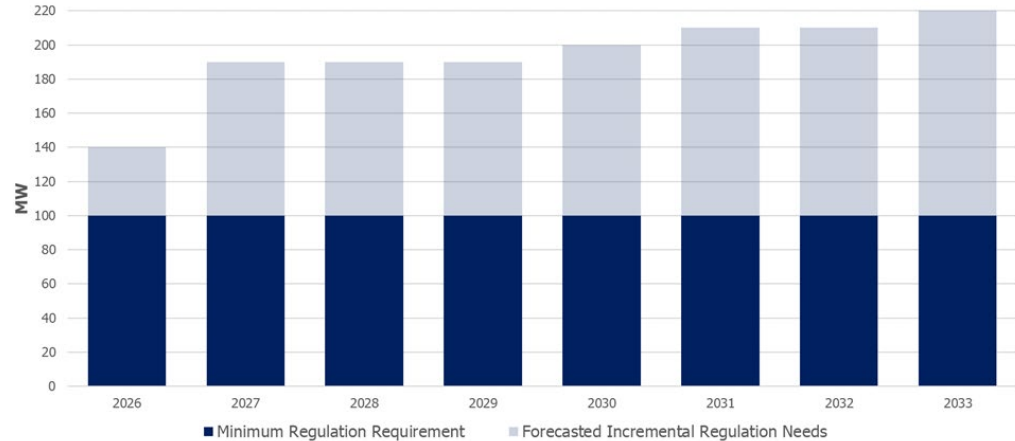
- Leveraging a regular cadence of procurements is critical to meeting Ontario's near- to long-term needs
- To help meet needs to 2034, the 2024 APO:
  - Sets firm capacity auction targets of 1,600 MW and 1,000 MW for summer 2025 and winter 2025/2026 obligation periods
  - Signals a target of 2,000 MW of non-emitting energy-producing resources by 2030 through the LT2 RFP
- Signals an additional 1,500 MW each, for LT3 and LT4 RFPs, by 2032 and 2034
- Identifies opportunities for capacity and energy from new and existing resources through medium-term RFPs
- **After 2035**, needs depend highly on the evolution and timing of government policy

# Summary of Planned Actions

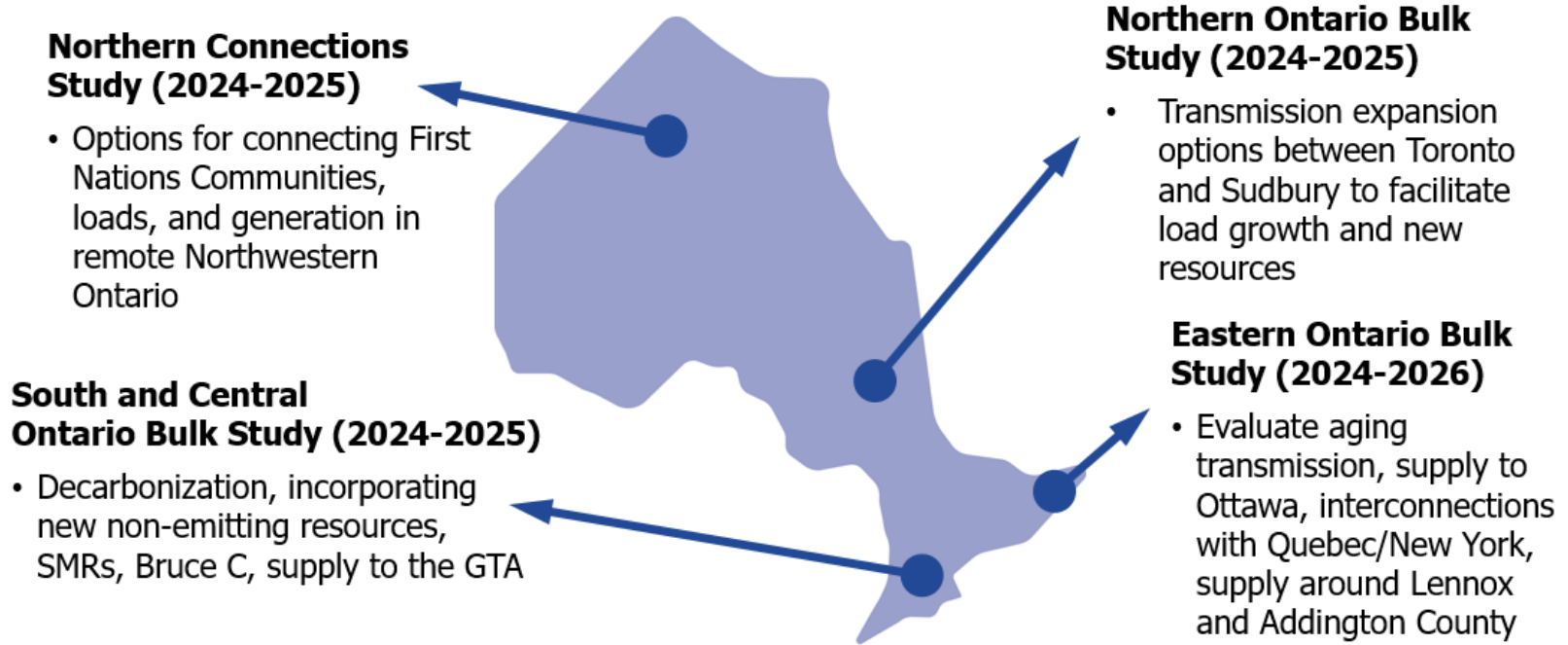
		2025-2026	2027-2029	2030-2034	
		Solutions identified previously are underway.	Supply needs increase following Pickering retirement and increasing demand. Solutions underway are expected to help address needs and IESO will work with the sector on additional actions that will be needed.	Longer-term electricity demand continues to grow with economy-wide decarbonization. The IESO has begun working with the sector to determine additional solutions to meet growing needs.	
SOLUTIONS	Short Term	Increase annual capacity auction target		Capacity auction target adjusted based on need	
		Proposed Pickering B extension			
	Medium Term	Capacity secured from the first Medium-Term RFP			
		Capacity and energy acquired from new resources and reacquired from existing resources coming off contract			
	Long Term	Capacity secured from Same Technology Upgrades Solicitation & Expedited Long-Term Procurement			
				Capacity secured from the first Long-Term RFP	
				Non-emitting, energy-producing resources secured from the second, third, and fourth Long-Term RFPs	
		Enhanced 2021-2024 Conservation and Demand Management Framework programs plus anticipated post-2024 programs			
		Contracts with generators to meet local reliability needs or policy direction			
		Capacity secured through a Memorandum of Understanding with Hydro Quebec			

# Operability Needs

- In addition to energy and capacity needs, Ontario's resource mix must contain the reliability services needed for grid operations
- Regulation services help balance normal fluctuations in supply and demand, and help restore frequency after a system event
- Incremental regulation service needs of ~40 MW begin in 2026, growing to 120 MW in 2033



# Transmission Schedule of Planning Activities



## Key Takeaways (1)

- Capacity shortfalls in the mid-2020s due to nuclear refurbishments/retirements and expiring contracts have been filled as a result of previous actions within the Resource Adequacy Framework, increased conservation and demand management targets, and other government policy decisions

## Key Takeaways (2)

- A supply shortfall of approximately 5,000 MW and 15 TWh emerges in the 2030-2034 period due to increasing demand and expiring contracts
- Growing capacity and energy needs necessitate a regular cadence of acquisitions and procurements, including:
  - Increased capacity auction targets and forward guidance
  - A target of 2,000 MW of non-emitting energy-producing resources in the Long-Term 2 RFP
  - An additional 3,000 MW by 2034 through subsequent Long-Term RFPs



## Key Takeaways (3)

- Bulk transmission studies (beginning in 2024 and covering southern, central, northern, and eastern Ontario) are required to assess system capabilities and to enable economic growth and decarbonization goals
- Post-2035 reliability needs are uncertain at this time, as they largely depend on the evolution and timing of government policy decisions
- Looking out to 2050, increasing system requirements are also driven by resources reaching contract expiry or market exit, and increased growth in demand

## Next Steps

- The next APO, expected in 2025, will update electricity system needs as the energy transformation in Ontario gathers momentum
- Participants are invited to submit feedback utilizing the Feedback Form posted on the APO session webpage
- Feedback is due by May 7, 2024

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# Thank You

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