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**Presentation from the  
Independent Electricity System  
Operator (IESO)**

**Présentation de la Société  
indépendante d'exploitation du  
réseau électrique (SIERE)**

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**Role and duties of the IESO in  
Ontario**

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**Rôle et les obligations du SIERE en  
Ontario**

Commission Meeting

Réunion de la Commission

**October 5, 2021**

**Le 5 octobre 2021**

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**OCTOBER 5, 2021**

# Ensuring the Reliability of Ontario's Electricity System: Supply, Demand and the Role of Nuclear Generation

**Leonard Kula and Chuck Farmer**

Vice-Presidents, Markets & Reliability and Planning, Conservation & Resource Adequacy

# Who We Are and What We Do



Reliably operate Ontario's province-wide electricity system on a 24/7 basis



Support innovation and emerging technologies



Create electricity market efficiencies



Work closely with communities to explore sustainable options



Plan for Ontario's future energy needs



Enable province-wide energy conservation

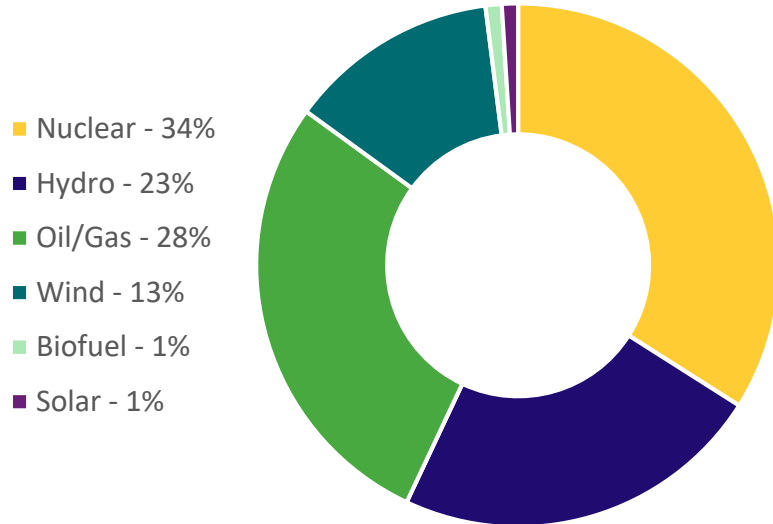
# Ontario's Changing Electricity Landscape

- After periods of surplus, Ontario is moving into a period of supply shortfalls
- Demand is expected to increase over the next 20 years as transportation electrifies and the economy recovers
- Existing generation contracts are expiring and the Pickering nuclear plant will retire mid-decade
- Extreme weather events due to climate change are happening more frequently
- Communities are helping to address local, regional and provincial needs

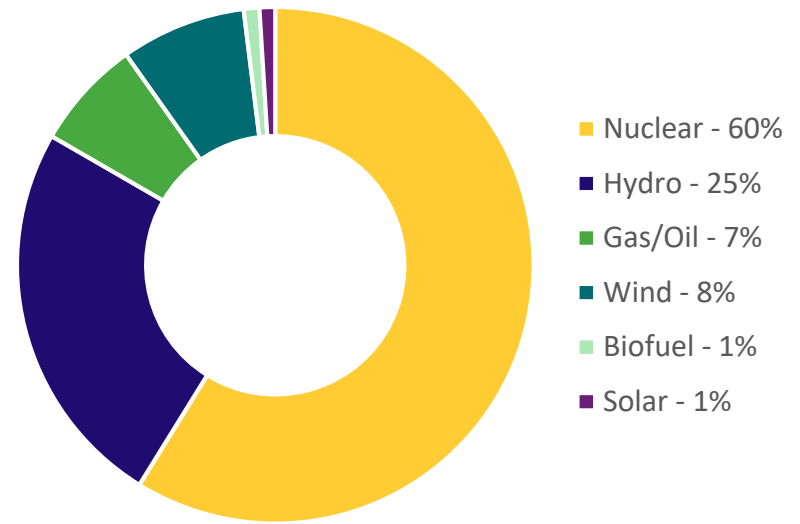


# Ontario's Electricity Supply Mix

## Installed Capacity 2020



## Energy Production 2020



# Key Changes Since 2019 Annual Planning Outlook (I)

## Demand

- In the near term, Ontario's energy needs have been impacted by the pandemic and have been lower than previously forecast
- Consumption patterns are changing as the economy adapts to and recovers from the pandemic and more remote work becomes the new normal
- Over the longer term, the forecast is higher as transportation electrifies, industries pivot to serve new markets, and investments in decarbonization accelerate

# Key Changes Since 2019 Annual Planning Outlook (II)

## Supply

- The supply outlook is relatively unchanged from previous outlooks but the IESO has worked closely with nuclear asset owners to minimize the disruption caused by refurbishments and retirements
- The latest supply forecast shows slightly higher resource availability in the early 2020s, which is the result of Ontario Power Generation's deferral of nuclear refurbishments
- Over the course of the outlook period, many contracts held by existing resources will reach end of term – most contracts that expire in 2020s are gas; wind, hydroelectric and solar contracts begin to expire in the 2030s
- Policy decisions (provincial and federal) have the potential to impact both supply and demand

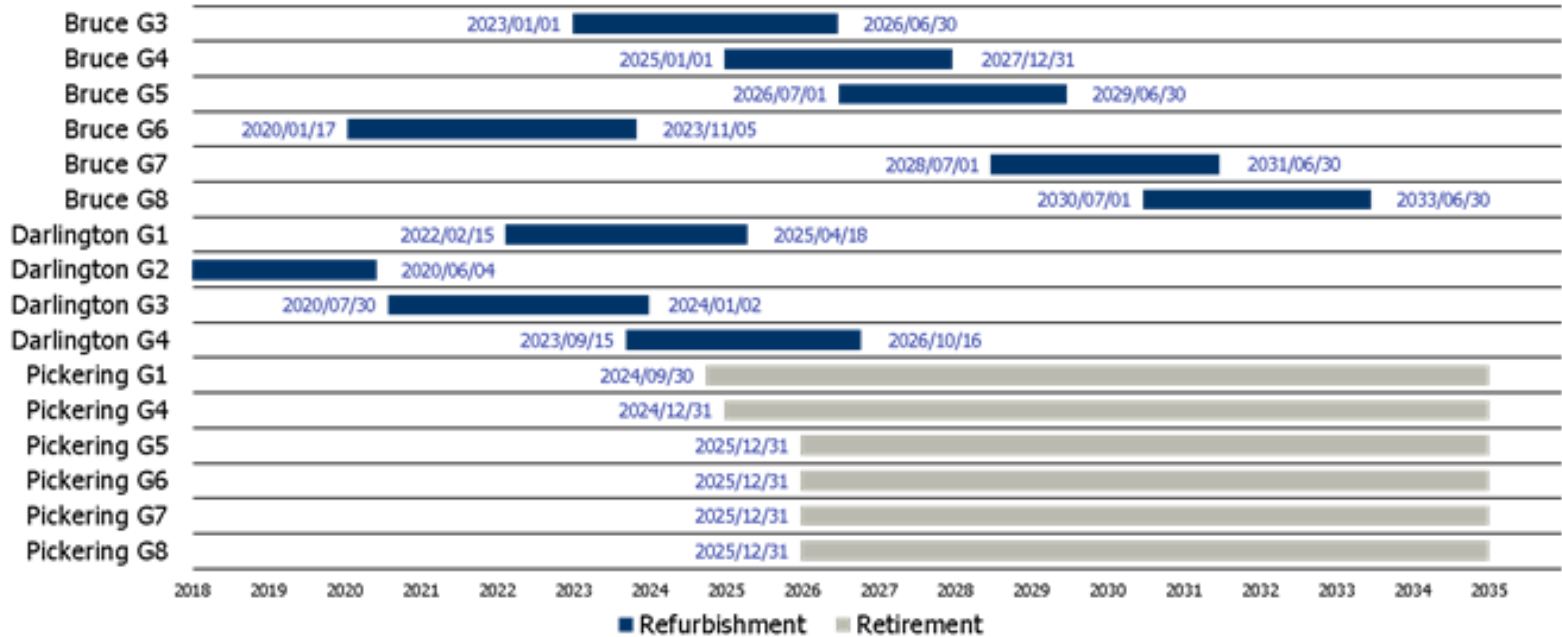
# Key Changes Since 2019 Annual Planning Outlook (III)

## Resource Adequacy

- After years of oversupply, we see the need to re-contract existing resources and acquire new ones
- A summer capacity need emerges in 2022 with the need for new resources emerging in 2025
- A winter capacity need emerges in 2022/2023 with the need for new resources emerging in 2025/2026
- If existing resources that come to the end of their contract do not continue to participate, the potential for unserved energy emerges later in the decade
- To maintain reliability, the IESO has developed and is implementing a new Resource Adequacy Framework that includes short-, medium- and long-term acquisition mechanisms



# Nuclear Refurbishment Schedule



# Nuclear Unit Hydrogen Levels / Recent CNSC Orders (I)

- Bruce Power notified the IESO in a timely manner that pressure tube sampling showed unexpected results
  - Bruce Power and OPG continue to proactively update the IESO as information becomes available
- The IESO is aware of CNSC Orders and is monitoring the hearings that are taking place
- A defined process for the restart of units, with effective coordination among all parties, will support reliable power system operations

## Nuclear Unit Hydrogen Levels / Recent CNSC Orders (II)

- Prior to CNSC Orders, the IESO operated the power system with expectations that nuclear units would be unavailable up to four days following a forced outage. Requirements to acquire restart approval might impact timelines.
- Weekly adequacy assessments for the next 12+ months indicate that supply will be tight in summer 2022 under Extreme Conditions
- The IESO has taken steps to maintain reliability:
  - Extra coordination between control rooms and planning staff
  - Scenario and contingency evaluations should units be delayed returning from outages
  - If needed, short-term actions such as deferring approved maintenance outages for other generation and transmission assets and relying on additional imports of energy

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# Thank You

[ieso.ca](http://ieso.ca)

1.888.448.7777

[customer.relations@ieso.ca](mailto:customer.relations@ieso.ca)

[engagement@ieso.ca](mailto:engagement@ieso.ca)



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