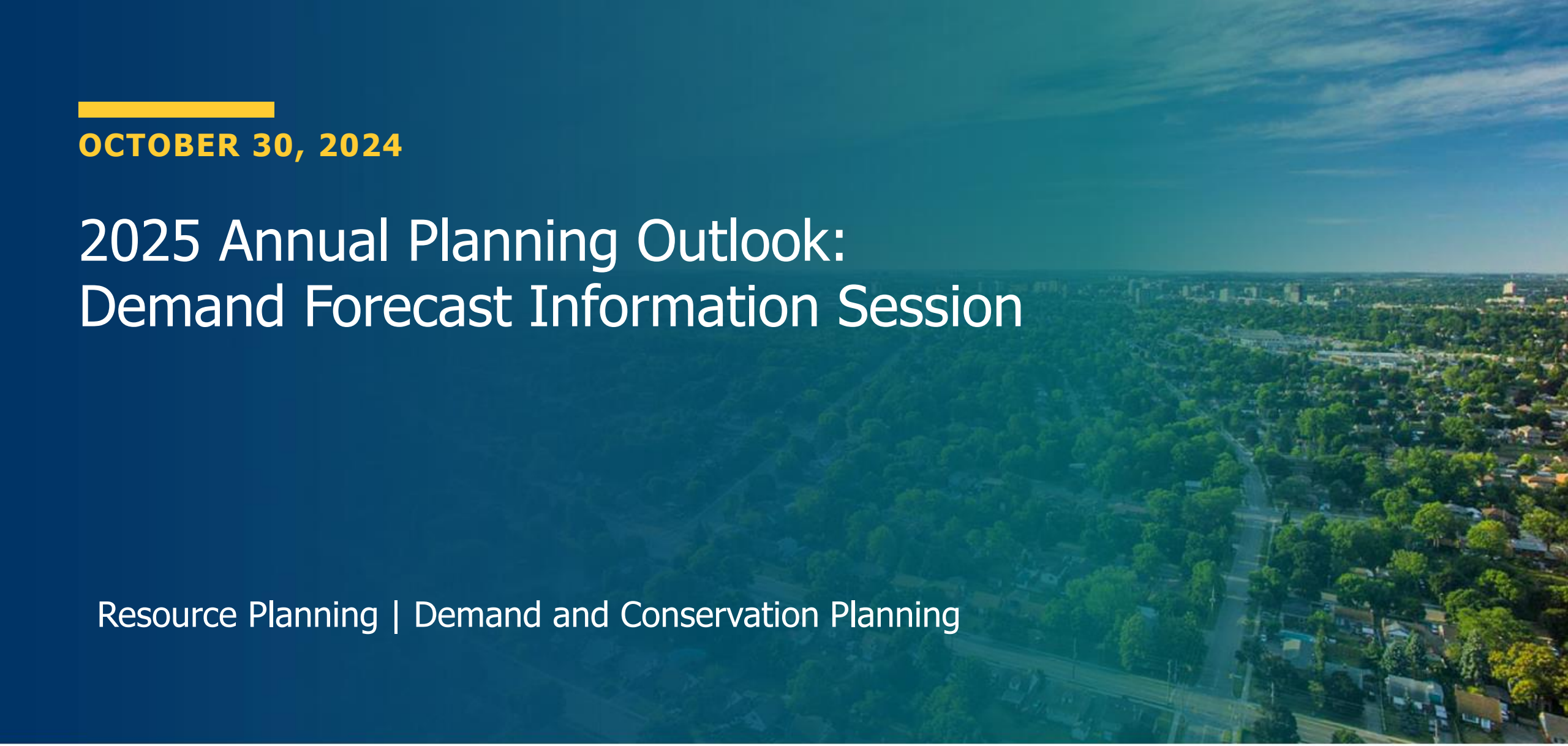
OCTOBER 30, 2024

2025 Annual Planning Outlook: Demand Forecast Information Session



Resource Planning | Demand and Conservation Planning

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Welcome and Introduction

- This engagement is conducted according to the IESO Engagement Principles
- Today's session will be recorded and available for viewing online

All documents associated with this engagement can be found on the 2025 Annual Planning Outlook

Participation

- For questions and comments click on the "raise hand" icon (hand symbol) at the top of the application window. This will indicate to the host you would like to speak
- To unmute audio, click on the microphone icon at the top of the application window
- Audio should be muted when not asking a question
- If experiencing connection issues contact engagement@ieso.ca or Microsoft Office Support

Today's Discussion

- This information session will provide an overview of the upcoming APO **demand forecast**, including a discussion on key growth drivers and associated uncertainties
  - The final APO, including system needs and planned actions, will be published in Q1 2025
- While this is an information session, written questions and comments can be submitted

Background

- The 2025 Annual Planning Outlook (APO) presents system reliability needs for years 2026-2050
- The next report, anticipated for Q1 2025, will present forecast electricity demand, the supply and transmission outlook, and system needs. It will discuss risks and uncertainties and specify acquisition targets and mechanisms to meet needs.
- Ontario is attracting investment from around the world and the economy is growing. With the system quickly evolving and the need for electricity resources increasing, the IESO is presenting the 2025 APO demand forecast now to ensure the sector is informed.

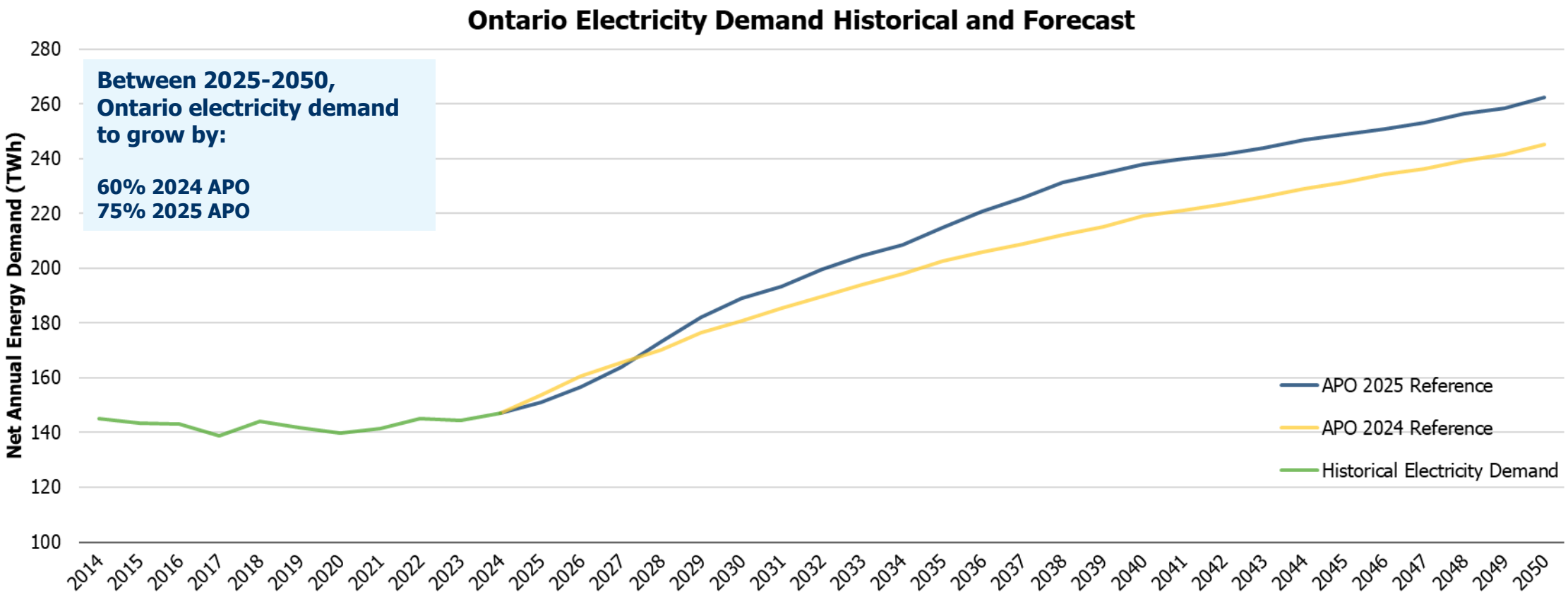
2025 APO Demand Forecast

Summary

- Electricity demand is forecast to increase 75% by 2050, 15% higher than previously forecast.
- Industrial sector and data centre growth are the primary new demand drivers.
- Commercial sector growth, increasing population, and electrification are also continuing to escalate electricity demand across the province.
- A procurement for new electricity generation and storage is being finalized, and targets and timelines will reflect faster demand growth.
- This work complements the many other actions underway, such as new nuclear, transmission, and demand side management programming.

Annual Energy Demand Forecast

- Electricity demand is forecast to grow by **75% by 2050**.



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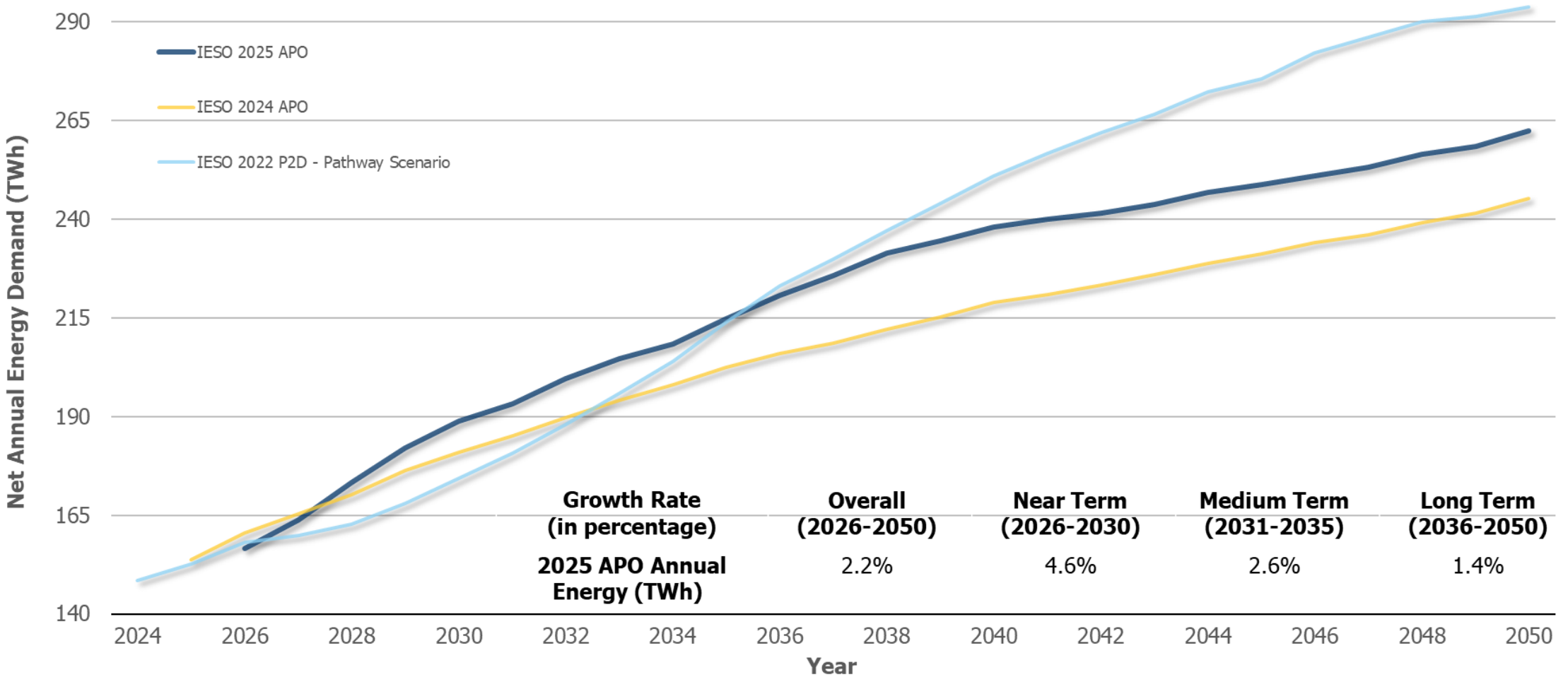
Annual Energy Demand by Forecast



Growth Rate (in percentage)	Overall (2026-2050)	Near Term (2026-2030)	Medium Term (2031-2035)	Long Term (2036-2050)
2025 APO Annual Energy (TWh)	2.2%	4.6%	2.6%	1.4%

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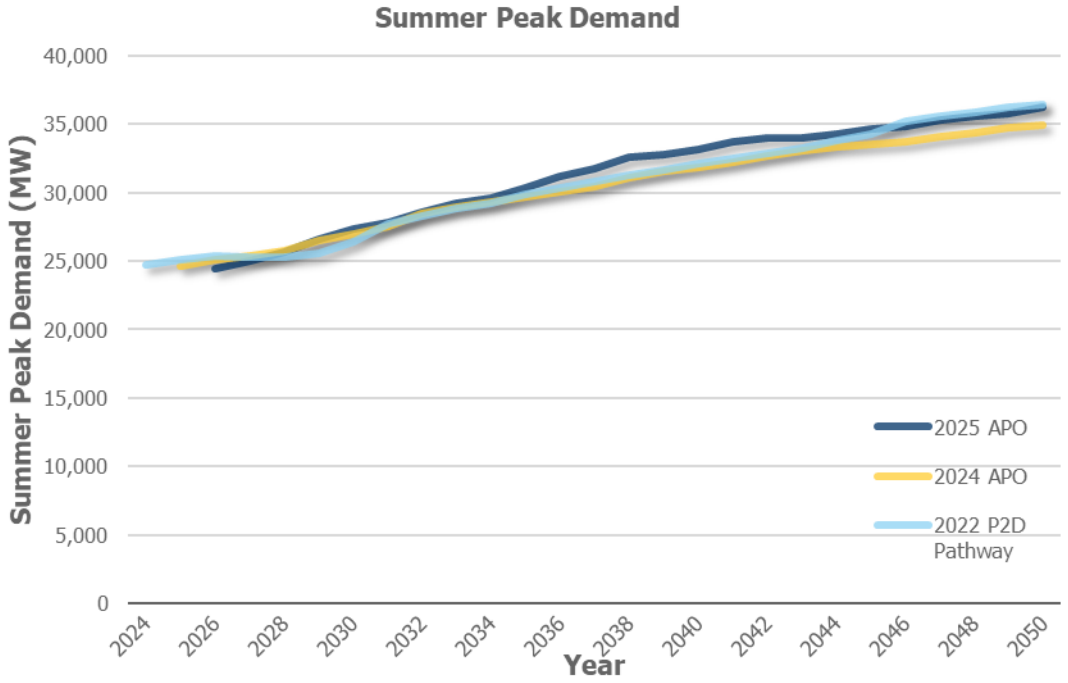
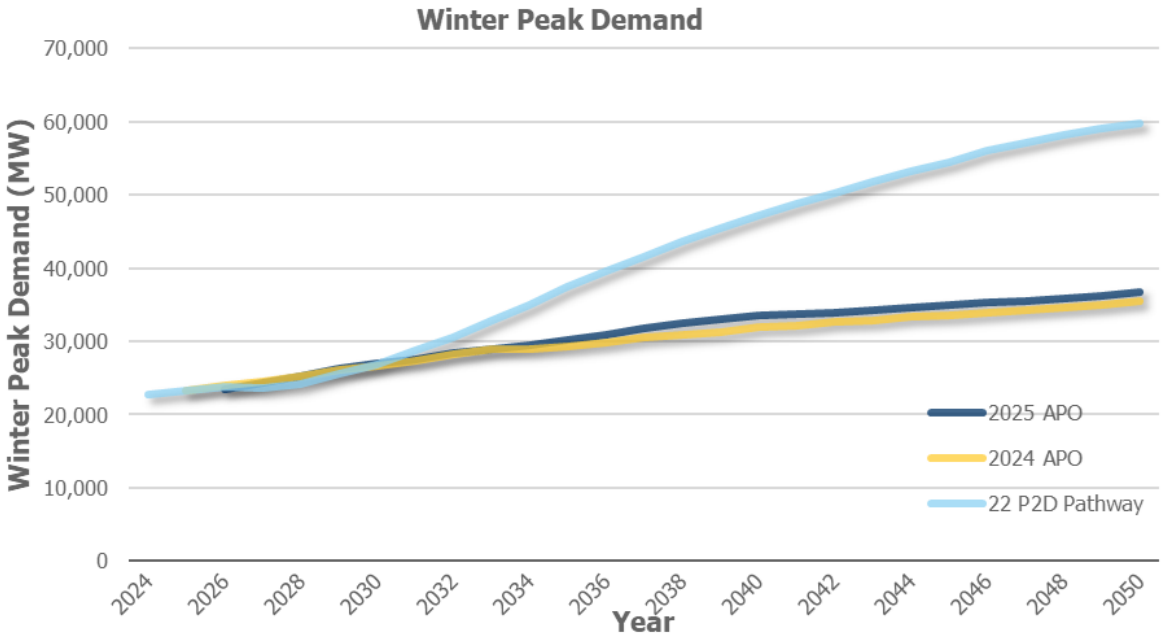
Seasonal Peak Demand

The system is forecast to become dual-peaking by 2030, with summer and winter peaks both around 27 GW

Average Annual Growth Rate Over Forecast Period

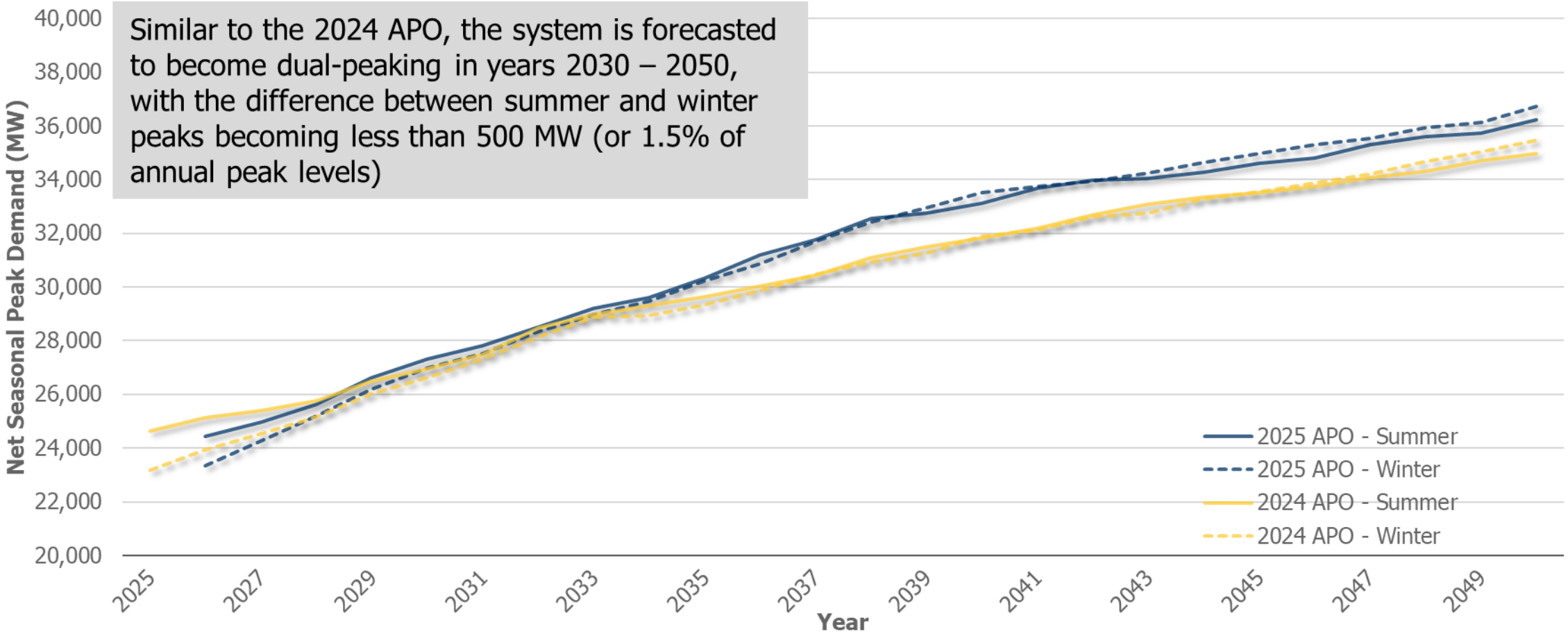
	2025 APO	2024 APO	2022 Pathways to Decarbonization (P2D) Study
Summer Peak	1.7%	1.5%	1.5%
Winter Peak	2.0%	1.8%	3.8%





Forecast Evolution – Dual Peaking System

Similar to the 2024 APO, the system is forecasted to become dual-peaking in years 2030 – 2050, with the difference between summer and winter peaks becoming less than 500 MW (or 1.5% of annual peak levels)



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Key Statistics & Drivers

2025 APO -

- **Energy:** grows 75%, from 151 TWh in 2025 to 263 TWh in 2050.
- **Summer Peak:** grows 50%, from 24,000 MW in 2025 to 36,240 MW in 2050
- **Winter Peak:** grows 60%, from 22,650 MW in 2025 to 36,740 MW in 2050

2025 APO vs 2024 APO -

- **Annual energy** is 12 TWh higher in 2035 than the 2024 APO
- **Summer peak** is 700 MW higher in 2035 than the 2024 APO
- **Winter peak** is 900 MW higher in 2035 than the 2024 APO

Growth Rate Comparisons

2025 APO Growth Rate	Overall (2026-2050)	Near Term (2026-2030)	Medium Term (2031-2035)	Long Term (2036-2050)
Annual Energy (TWh)	2.2%	4.6%	2.6%	1.4%
Summer Peak (MW)	1.7%	2.6%	2.1%	1.2%
Winter Peak (MW)	2.0%	3.6%	2.3%	1.3%

2024 APO Growth Rate	Overall (2025-2050)	Near Term (2025-2029)	Medium Term (2030-2034)	Long Term (2035-2050)
Annual Energy (TWh)	2.0%	3.7%	2.3%	1.4%
Summer Peak (MW)	1.5%	2.1%	2.0%	1.1%
Winter Peak (MW)	1.8%	3.2%	2.1%	1.3%

Demand Growth Overview

- The 2025 Forecast has higher demand growth in the near- and medium-term compared to the 2024 Forecast
- Demand growth influences are attributed to the following:
  - Specific commercial and industrial sector updates with significant new projects, and expected electrification at existing facilities (known as "Large Step Loads"), largely in the near- and medium-term
- Demand reduction influences are attributed to the following:
  - Updated Demand Side Management program savings
  - Decreased demand in the agricultural sector
- Significant uncertainties exist with many of these factors

2025 Forecast Updates – Factors Increasing Demand

Increases are attributed to:

- Inclusion of a substantial amount of new large potential and confirmed projects such as:
  - Data centres
  - Commercial sector building electrification
  - Industrial electric vehicle production and supply chain sub-sector
  - A small number of industrial sector economic development and decarbonization

  with commensurate level of increased uncertainty (project materialization, levels of demand, implementation timing, etc.)

2025 Forecast Updates – Factors Tempering Demand

Changes in 2025 APO throughout all years that temper increases:

- Agricultural sector – softening in West of London greenhouse sub-sector development
- Higher conservation program savings forecast based on updated program information and enhancements
- Increased Industrial Conservation Initiative response commensurate with forecasted increased industrial sector electricity demand
- Increased Peak Perks program demand savings forecasts based on first year results

2025 Forecast Updates – Previously Established Factors

Factors, drivers or sector electricity demand with no major variances with 2024 APO:

- Residential sector
- Commercial sector (excluding data centre sub-sector)
- Industrial sector demand (excluding automobile production updates; including northern Ontario mining long term development and electrification)
- Transportation sector
- Long term economic and demographic outlook

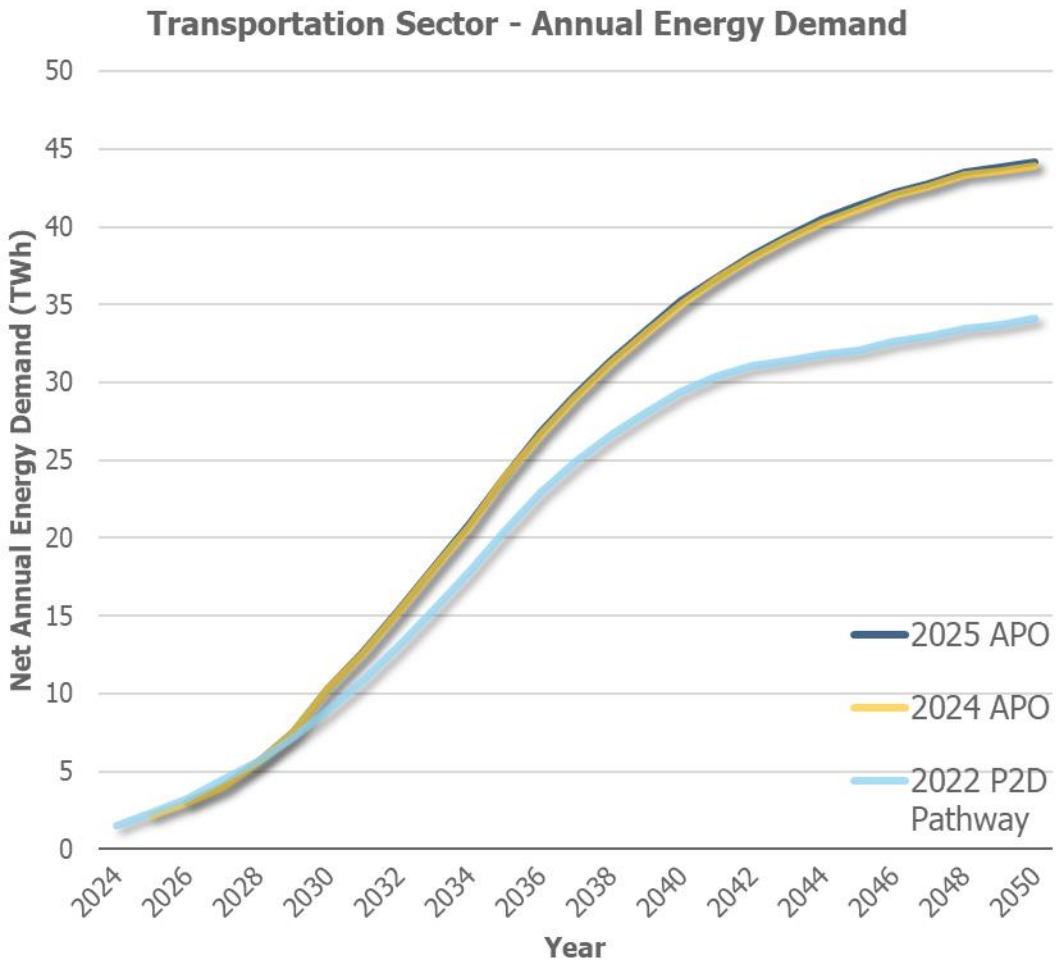
Sector-Level Insights

Transportation Sector

The numbers in the APO are aligned between the 2024 and 2025 forecasts. They are higher than the P2D forecast, which is consistent with the 2022 APO.

Transportation electrification includes EV and Rail projects (LRT, GO rail, and new subway).

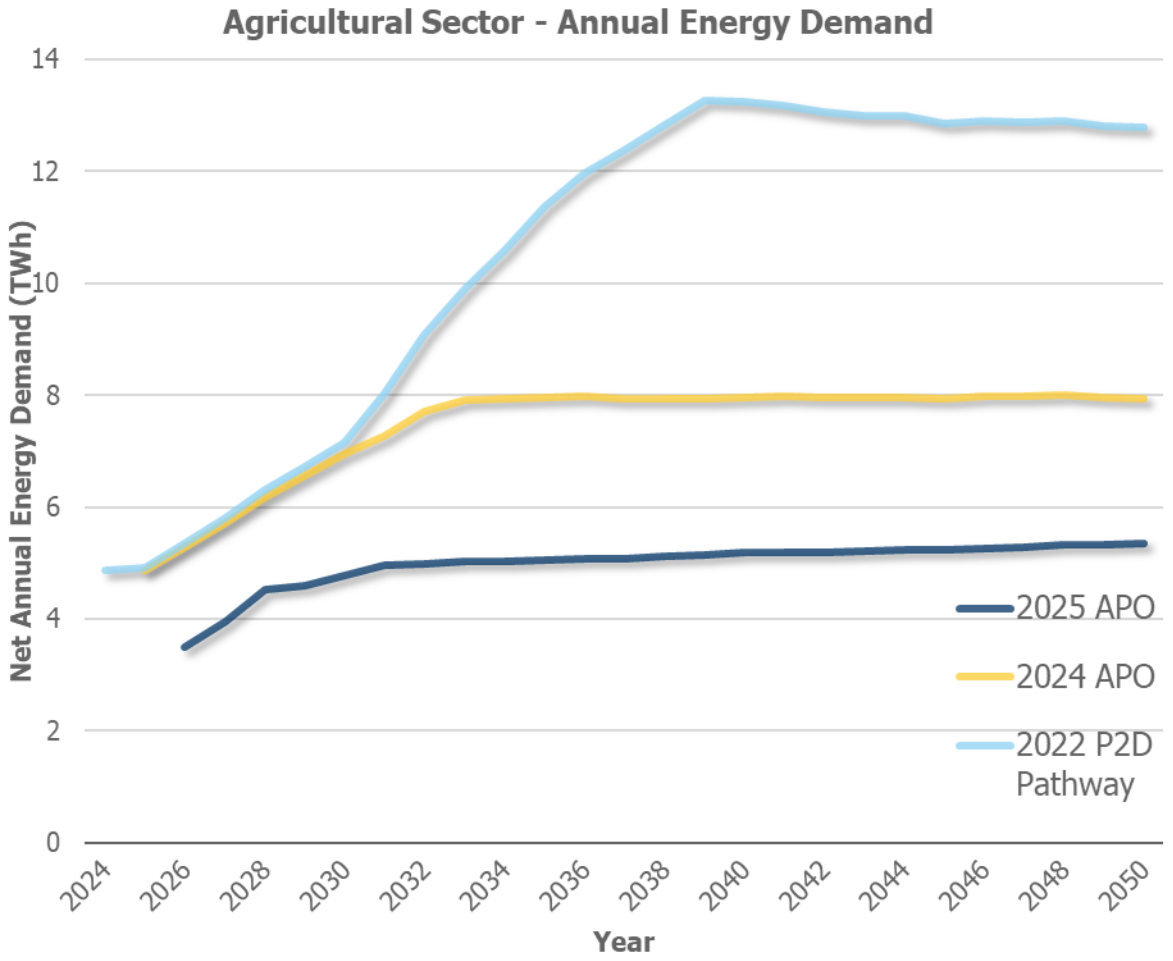
Includes federal LDEV target of 100% by 2035; and 60% by 2030.



Agricultural Sector

Agricultural demand continues to grow in the near-term, with indications of further pent-up potential in the sector.

However, long-term growth is significantly lower than the 2024 APO, based on updated forecasts of Windsor-Essex greenhouse growth.



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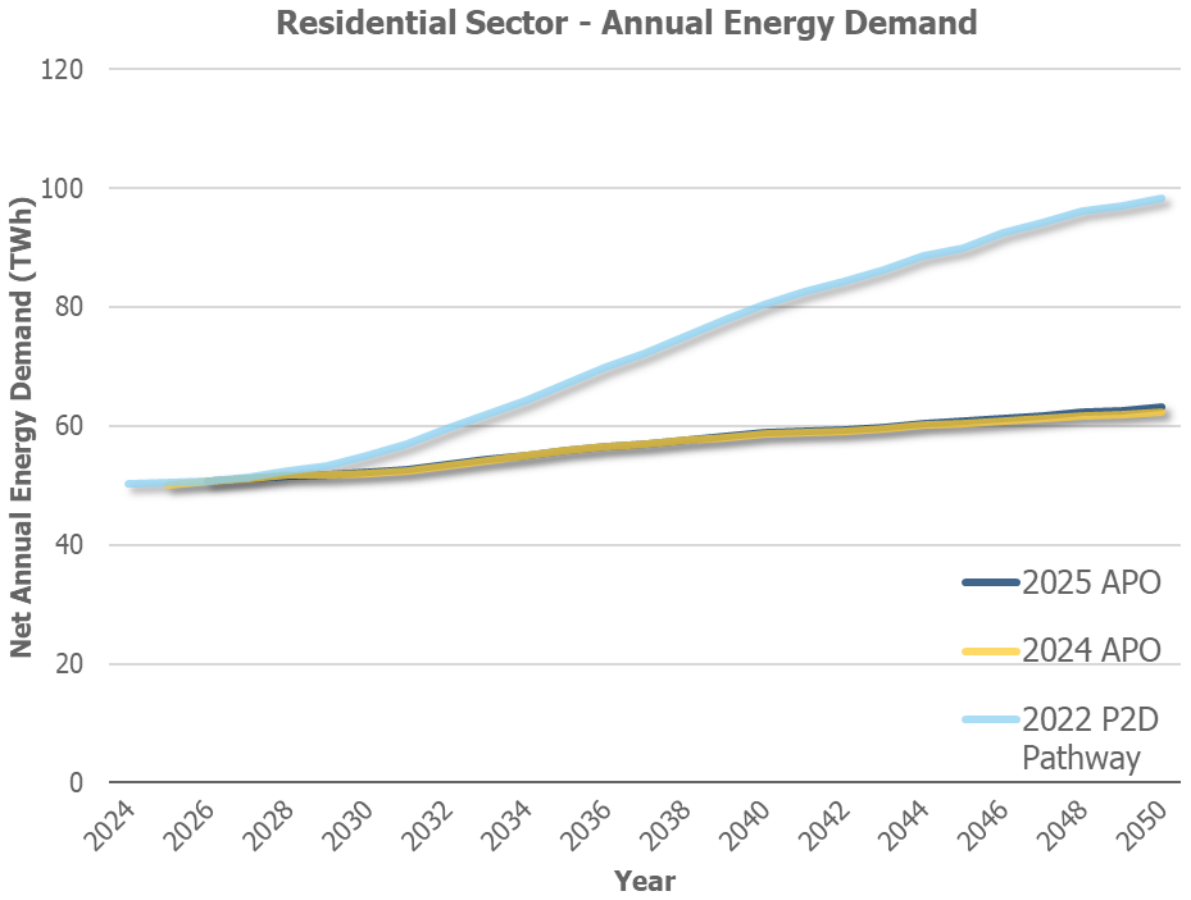
Residential Sector

Ontario's households are expected to grow 32% by 2050 to 8.3 million homes, and forecasted residential demand remains consistent with the 2024 APO with the addition of moderate growth.

The 2025 APO forecast includes 373,000 incremental heat pumps by 2050.

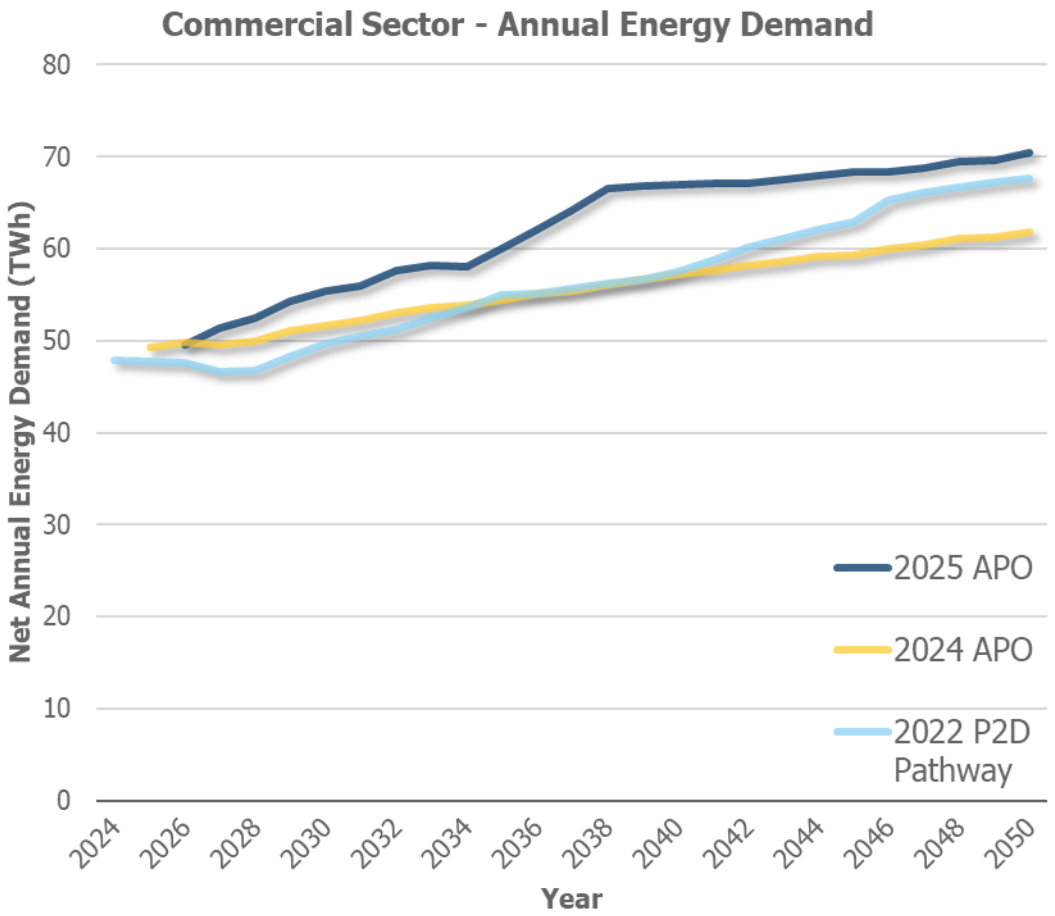


Commercial Sector, Including Data Centres

The addition of multiple data centre projects significantly increases the 2025 commercial sector forecast, compared to the 2024 APO and P2D. Data centre project growth could be significant over the next 15 years and is one of the top two new drivers of the 2025 APO demand forecast.

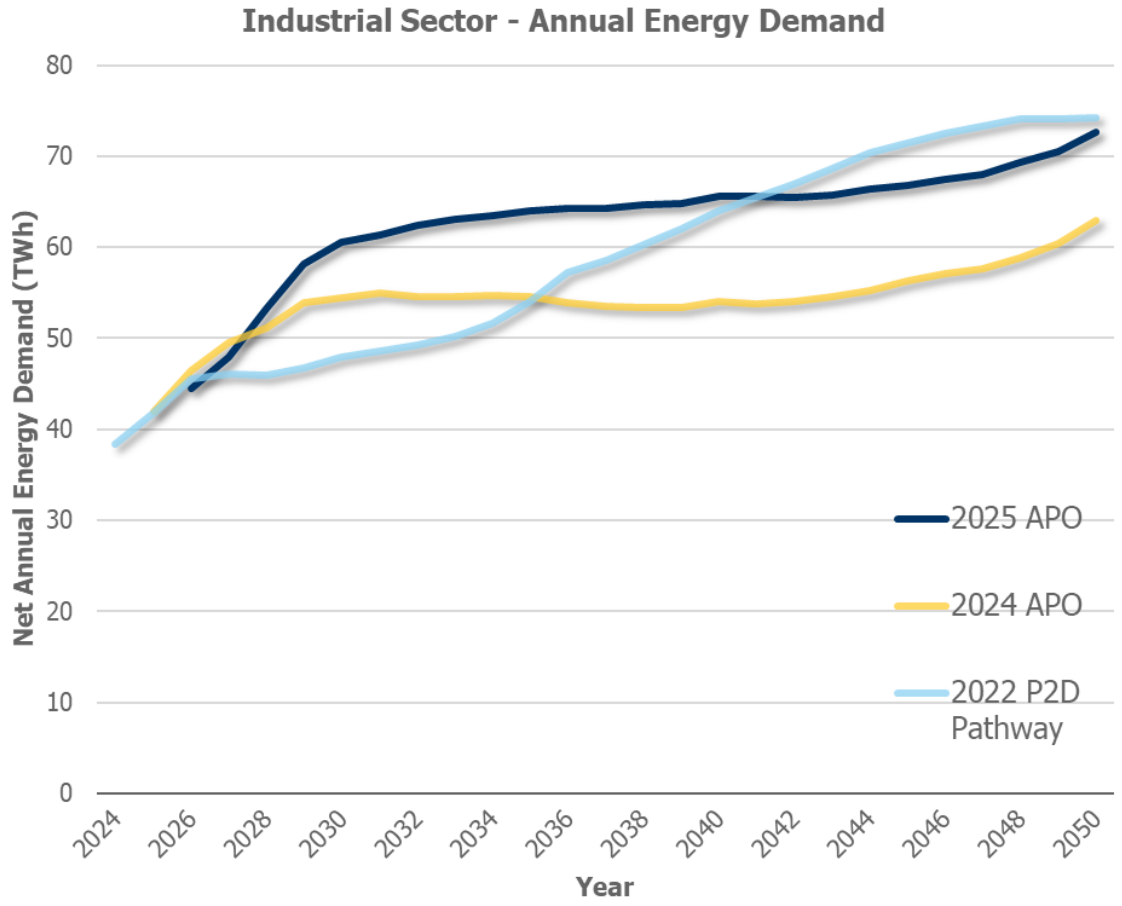
Data centre demand in the demand forecast: 14 TWh/yr, or 1,600 MW from 2038-2050.

Remainder of commercial sector effectively flat; average annual energy and peak demand growth rate from 2026-2050: ~+0.6%/yr.



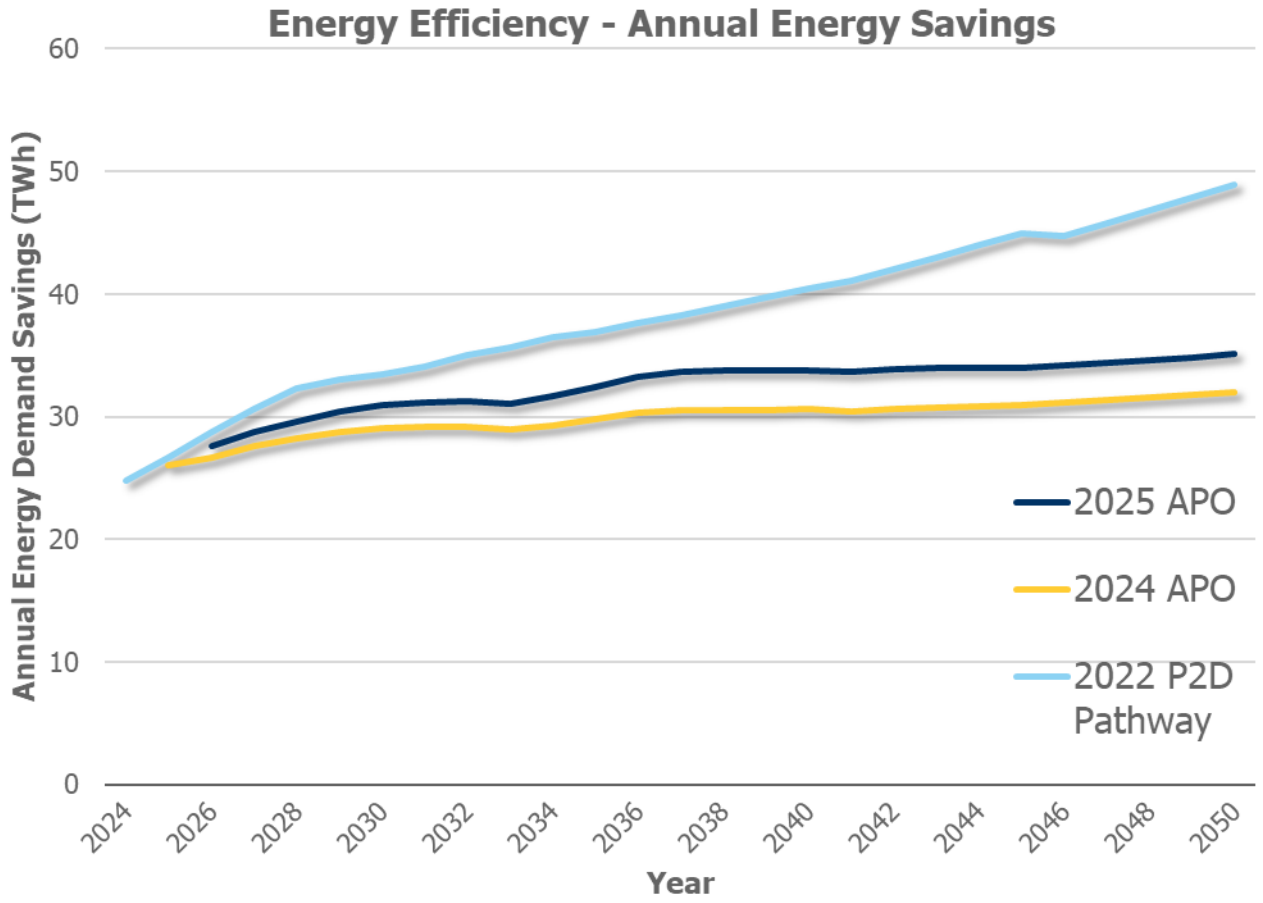
Industrial Sector

The industrial sector demand forecast in the 2025 APO is higher than the 2024 APO due to additional growth in the EV supply chain and primary metals subsectors.



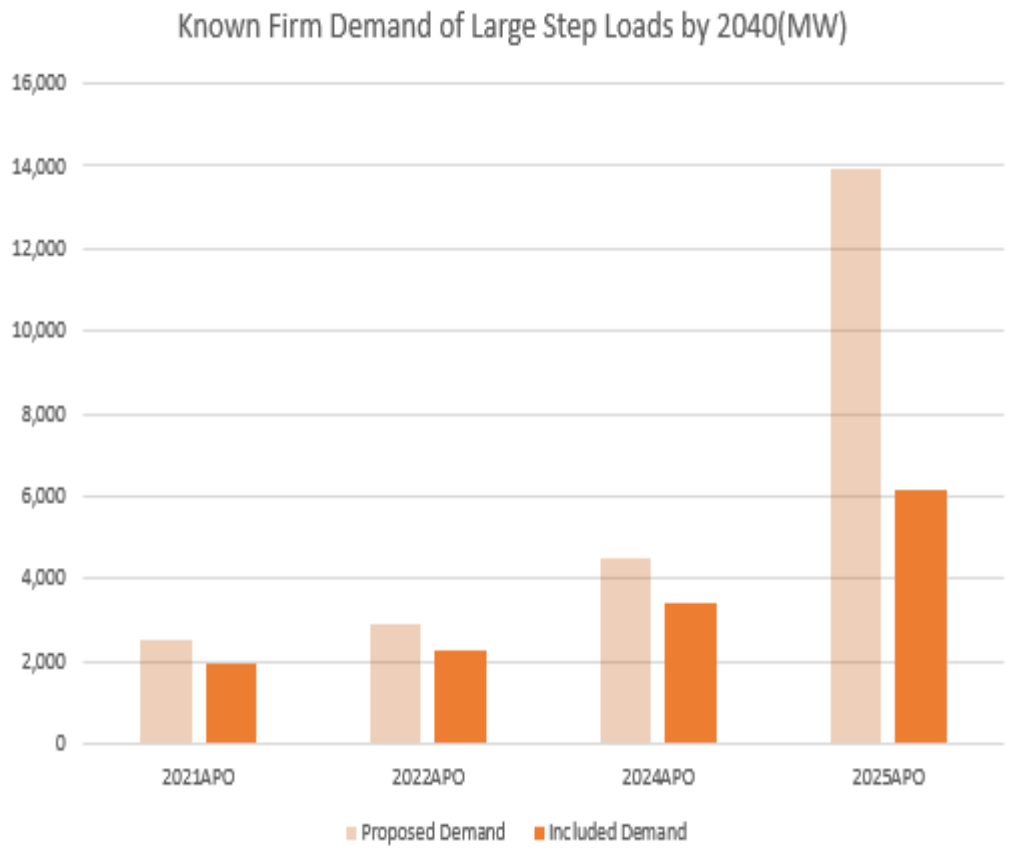
Energy Efficiency - Annual Energy Savings

The energy efficiency savings increased as compared to the 2024 APO based on updated program information and enhancements. A similar level of energy efficiency is assumed to continue for future years. As a result, saving levels for future energy efficiency were estimated higher than previous APO forecasts.



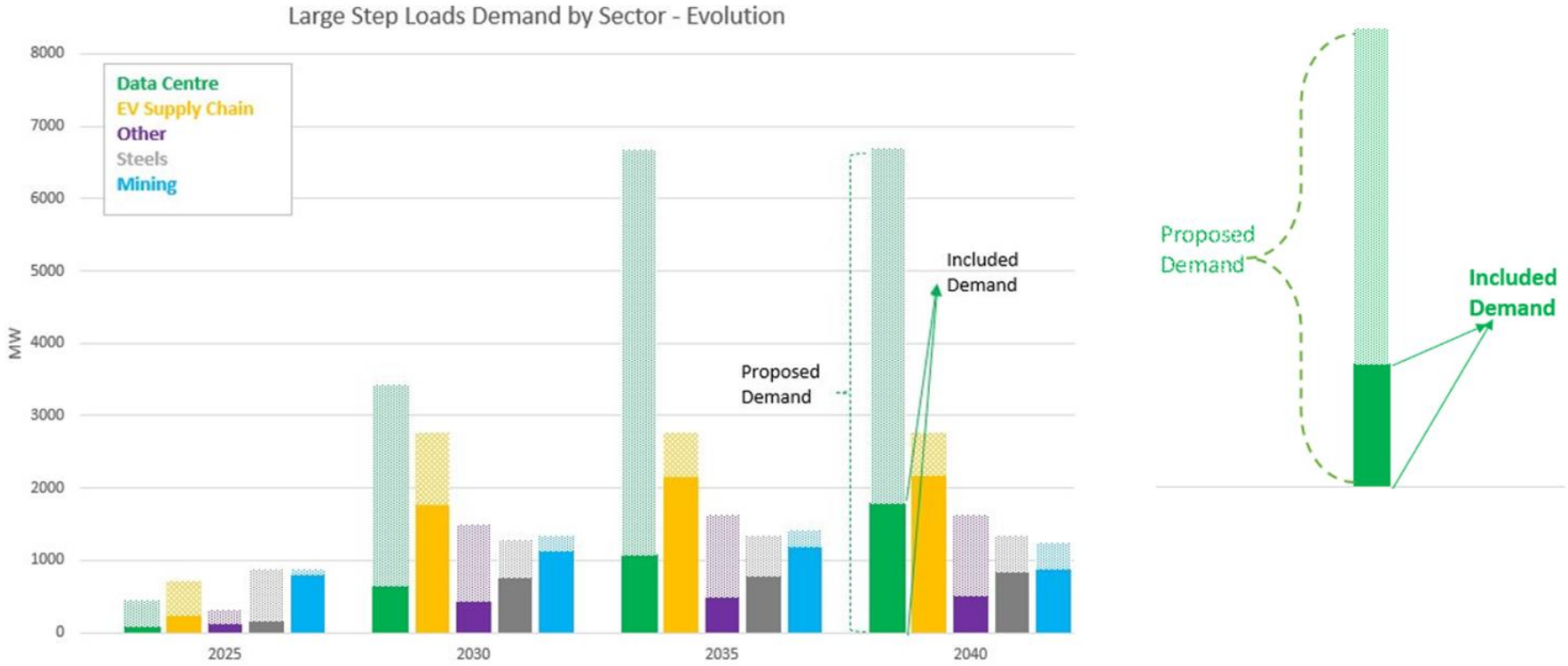
Large Step Loads

- The forecast shows significant growth due to large step loads. There is significant uncertainty associated with large step loads, including whether projects will come to fruition and their timelines, or whether new projects will be proposed and what their potential energy needs will be.
- The forecast will reflect demand from large step loads assessed by the IESO for certainty, e.g., projects that are known with certainty, have been announced, or have submitted a System Impact Assessment. This demand is referred to as **"Included Demand"** in the chart.
- Total demand associated with all potential projects is significantly higher. In the chart, **"Proposed Demand"** represents all demand submitted by proponents via different channels, such as MEDJCT or Hydro One.



Large Step Loads

This graph below provides a breakdown of the dark orange bars on the previous slide for the 2025 APO:



*'Other' includes large step loads from the following sub-sectors: Hospital, Universities & Colleges, Large Office, Food and Beverage, Chemical, Pulp & Paper Industry

Uncertainties and Risks

- Current and near-term state of economy
- Long-term demographic, affordability and productivity trends
- Materialization of:
  - Commercial data centres, and cryptocurrency mining projects;
  - Industrial automobile production & supply chain sub-sector transition to electric vehicles
  - Hydrogen production
- Industrial mineral extraction sub-sector project development and electrification
- Electrification technology development & acceptance: buildings, vehicles, industry
- General decarbonization strategies: thermal storage & networks, distributed energy resources
- Climate change on weather sensitive load
- Policy changes

Next Steps

Next Steps

- Analysis to support the development of the 2025 APO is underway
- The release of the 2025 APO is targeted for Q1 2025
- Whitepapers exploring demand uncertainties will be released in the future
- If you have any questions on the information shared today, please contact IESO Engagement at engagement@ieso.ca

Thank You

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