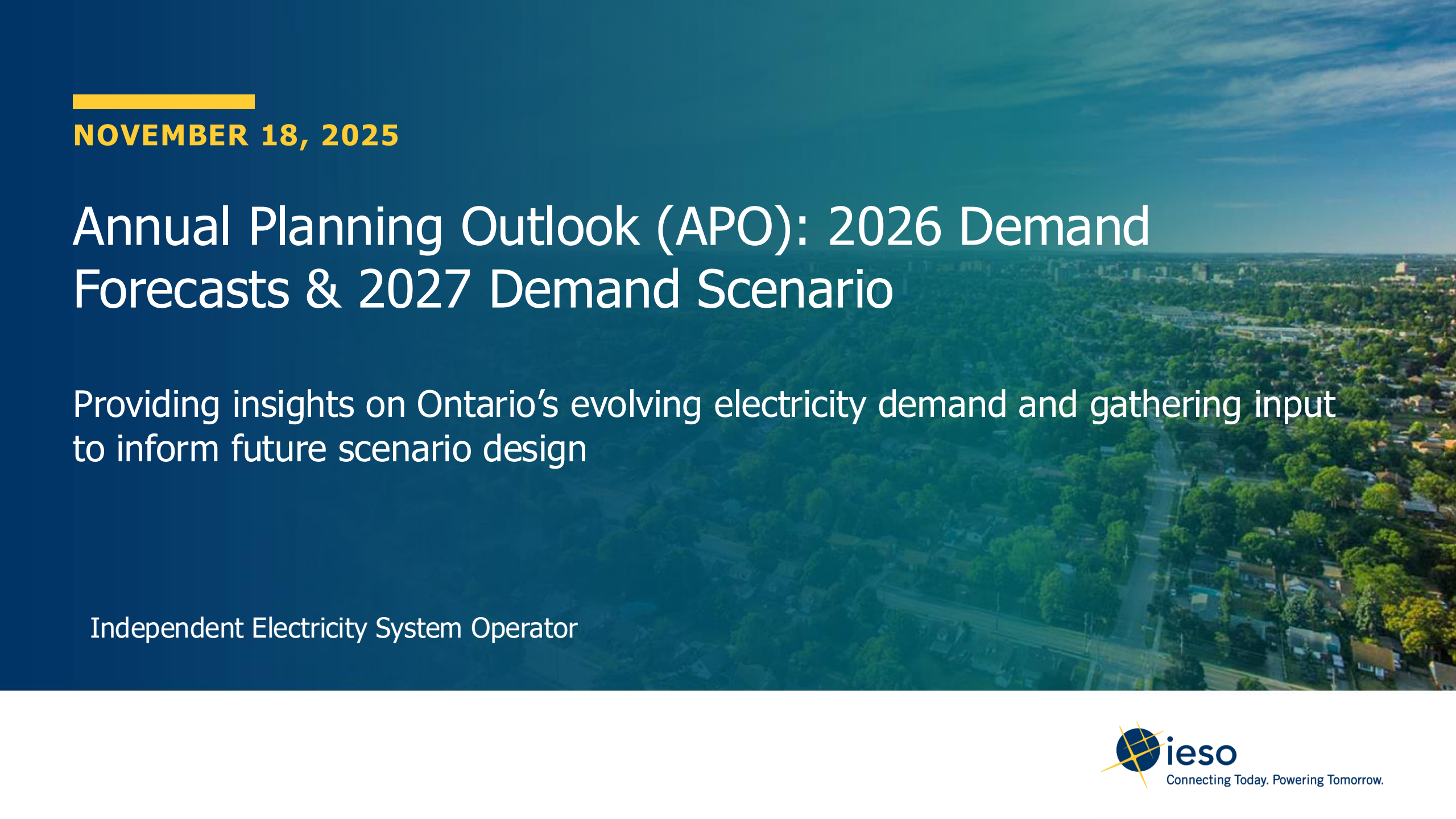




NOVEMBER 18, 2025

Annual Planning Outlook (APO): 2026 Demand Forecasts & 2027 Demand Scenario

Providing insights on Ontario's evolving electricity demand and gathering input to inform future scenario design

Independent Electricity System Operator

Purpose and Background

Purpose:

The IESO's Annual Planning Outlook (APO) provides a long-term view of Ontario's electricity system, including forecasts of demand, supply outlook, transmission needs, and planned actions. This ensures reliable, cost-effective electricity planning for the province.

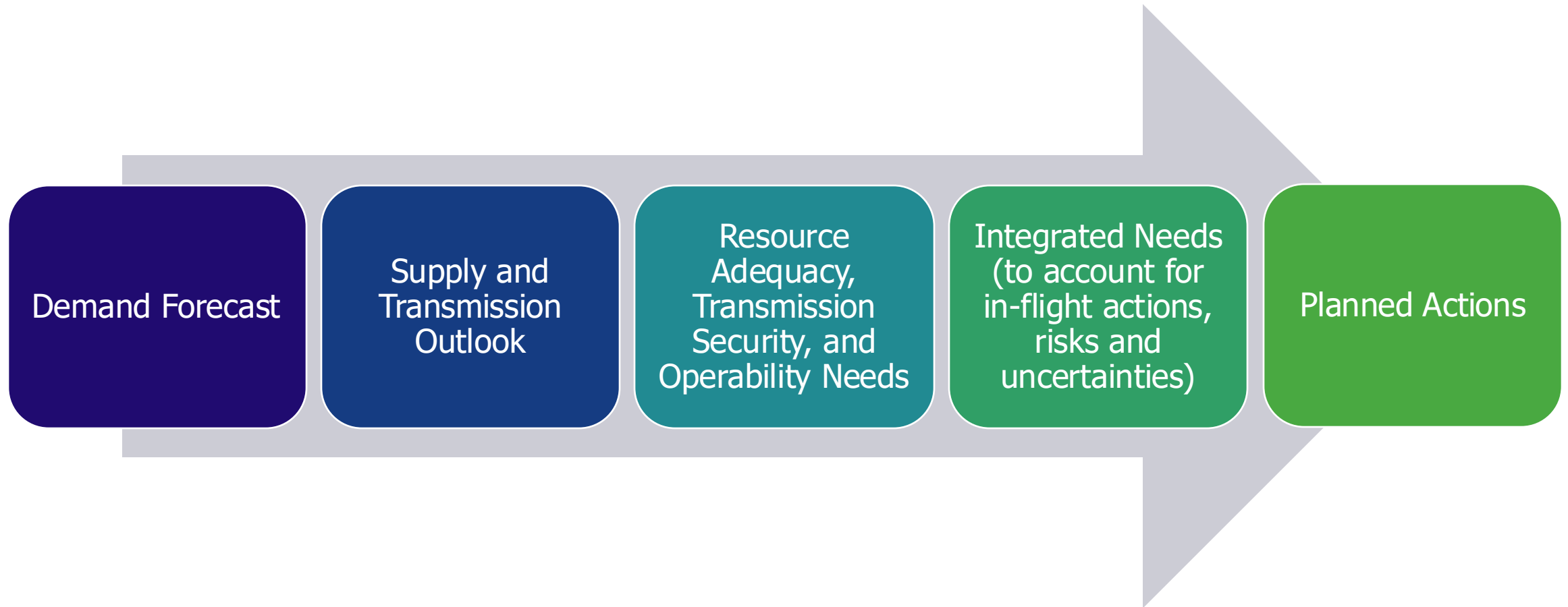
Objectives for Today's Session:

1. 2026 APO Demand Forecast: Share preliminary insights into reference, high, and low demand scenarios. Report analysis expected to be completed in Q4 2025 and publication targeted for Q1 2026.
2. 2027 APO Demand Scenarios: Present the IESO's latest thinking on key demand drivers and preliminary scenario assumptions and seek stakeholder feedback on scenario design and scope.



2026 Annual Planning Outlook Demand Forecast

Development of the APO



Introducing Scenarios

The 2026 APO will present three electricity demand forecast scenarios, aligning with the Minister of Energy and Mines' Integrated Energy Plan Implementation Directive (June 12, 2025).

- **Reference Scenario (Ref):** Analogous to previous APOs, this scenario represents high-confidence policy, government announcements and continuing trends
 - Note: The reference scenario definition has been updated to reflect current trends and conditions, compared to previous outlooks that reflected all existing and confirmed policies at the time of forecast development
 - This update will ensure that the reference scenario continues to serve its purpose for downstream planning & procurement activities, while considering insights from additional scenarios
- **High Demand Scenario (HDS):** Represents a future featuring economic acceleration and stronger electrification trends driven by policy and consumer choice
- **Low Demand Scenario (LDS):** Represents a future featuring lower economic activity and weaker electrification trends driven by policy and consumer choice

2026 APO Reference Scenario: Updates from 2025 APO

- The 2026 reference demand forecast continues to show robust long-term growth, reflecting both areas of stronger demand and areas where growth has moderated compared to 2025.
- The 2026 APO Reference Scenario demand forecast has slightly lower (but still very strong) demand growth compared to the 2025 APO demand forecast
 - The **2026 APO** reference scenario will indicate net annual energy demand growth of **65% to 2050 (250 TWh)**, compared to the **75% growth (262 TWh)** indicated in the **2025 APO**

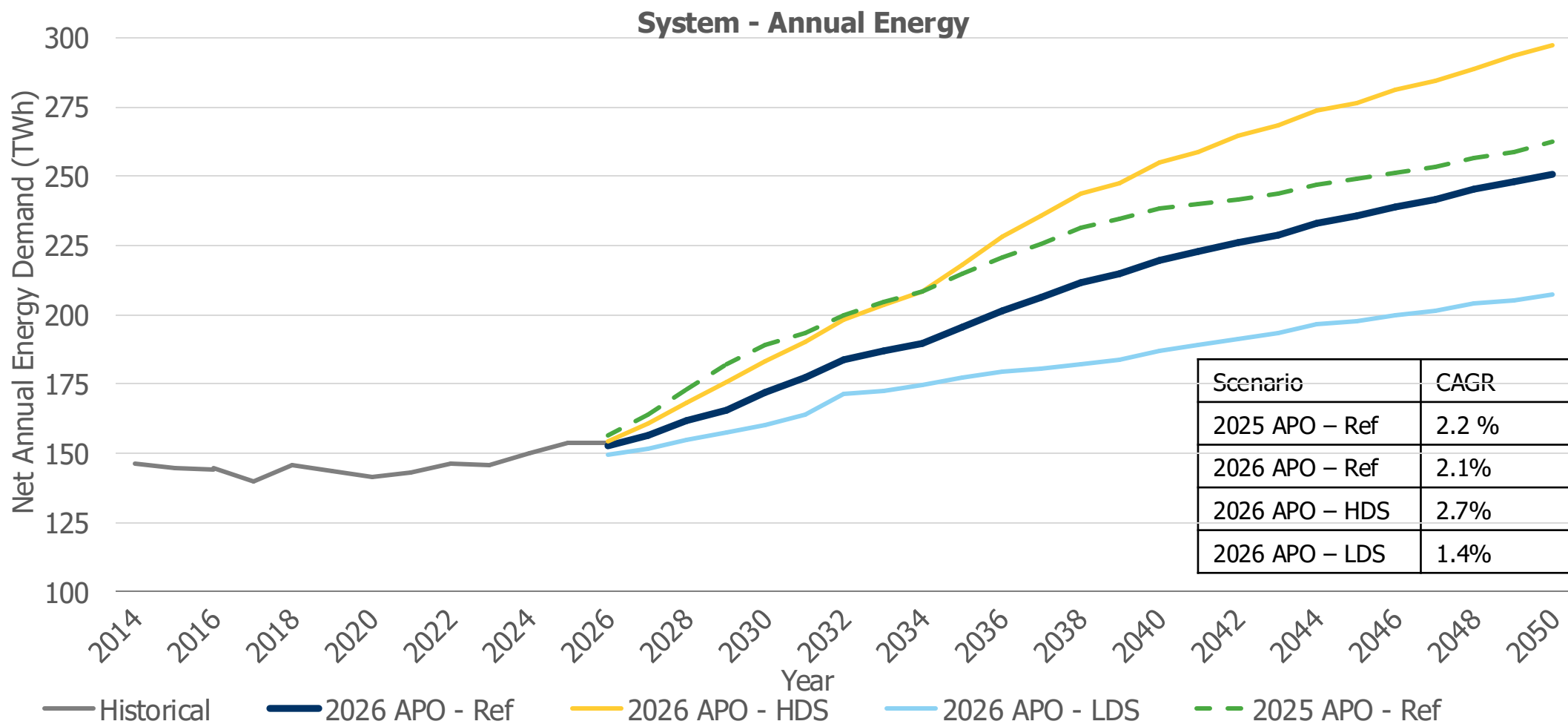
Drivers of stronger demand growth:	Drivers of reduced demand growth:
Commercial floorspace expansion Data centre demand	Higher electricity Demand Side Management program savings Decreased population and household forecast (still indicating high growth overall) Delays in industrial large step loads Lower EV adoption forecast

- Significant uncertainties remain, but the IESO's iterative planning and resource adequacy cycles enable timely responses to evolving conditions.

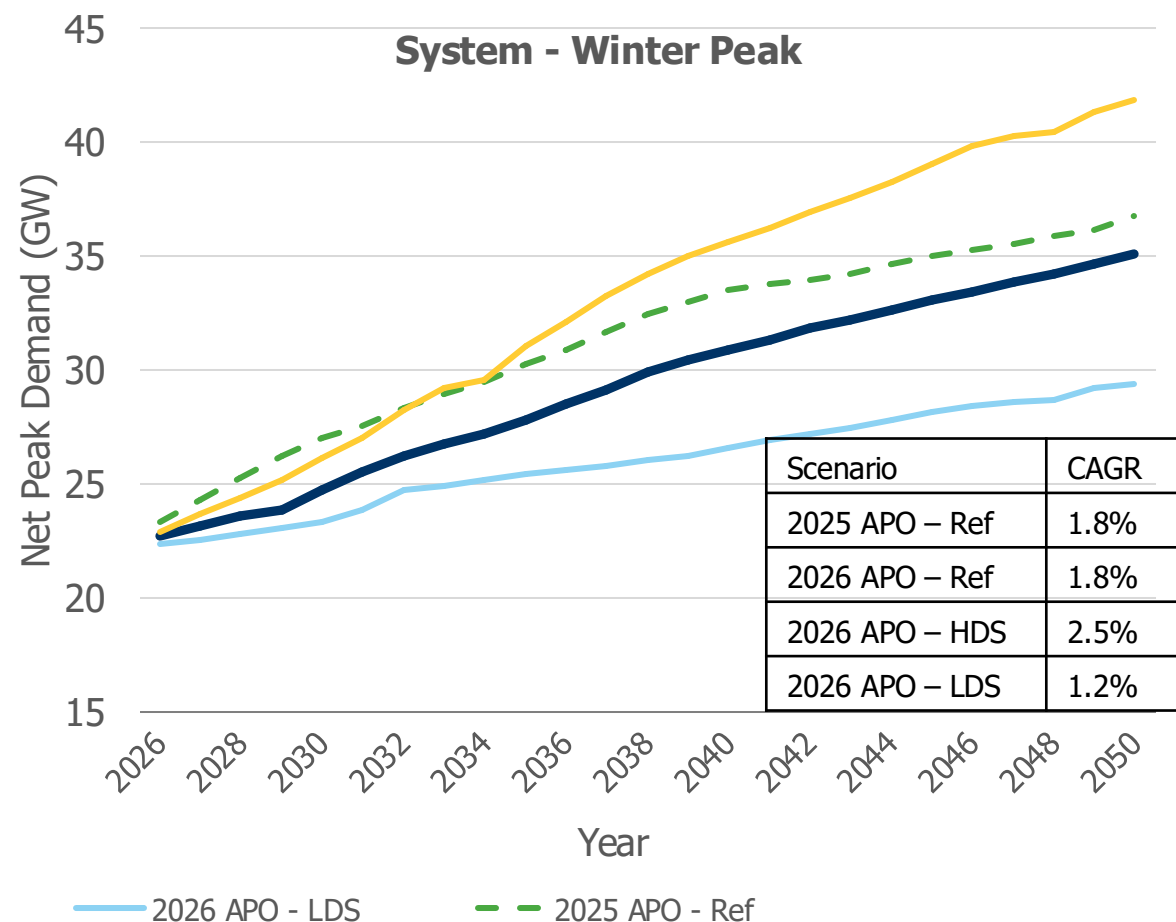
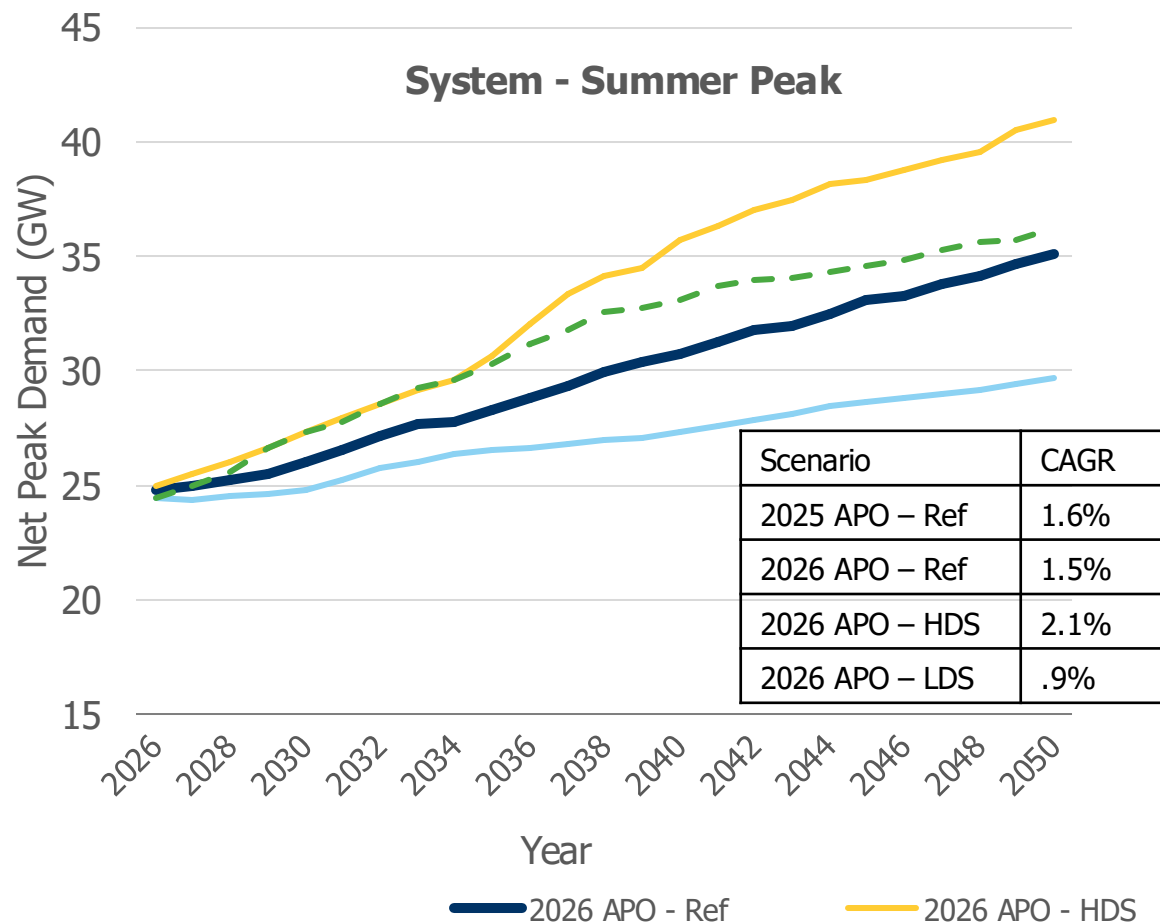
Key Takeaways

- The IESO's latest APO forecast shows that Ontario's electricity demand is expected to continue to increase significantly over the next several decades, driven by electrification, economic, and population growth.
- While this APO reflects short-term impacts caused by current geopolitical uncertainty, the long-term forecast shows that Ontario is poised to continue growing through the 2030s and beyond - consistent with trends seen in the 2025 APO.
- The 2026 forecast also reflects the new electricity Demand Side Management (eDSM) framework and its considerable contributions on slowing demand growth by helping families and businesses use electricity more efficiently.
- With the scale of growth expected in the long term, it is important that Ontario continues to make investments in new infrastructure to ensure the system can stay ahead of economic development.
- The IESO's iterative planning and procurement processes are designed to ensure the IESO, the sector, and the province have the tools to respond to changes and preserve flexibility as it makes future-ready investments.

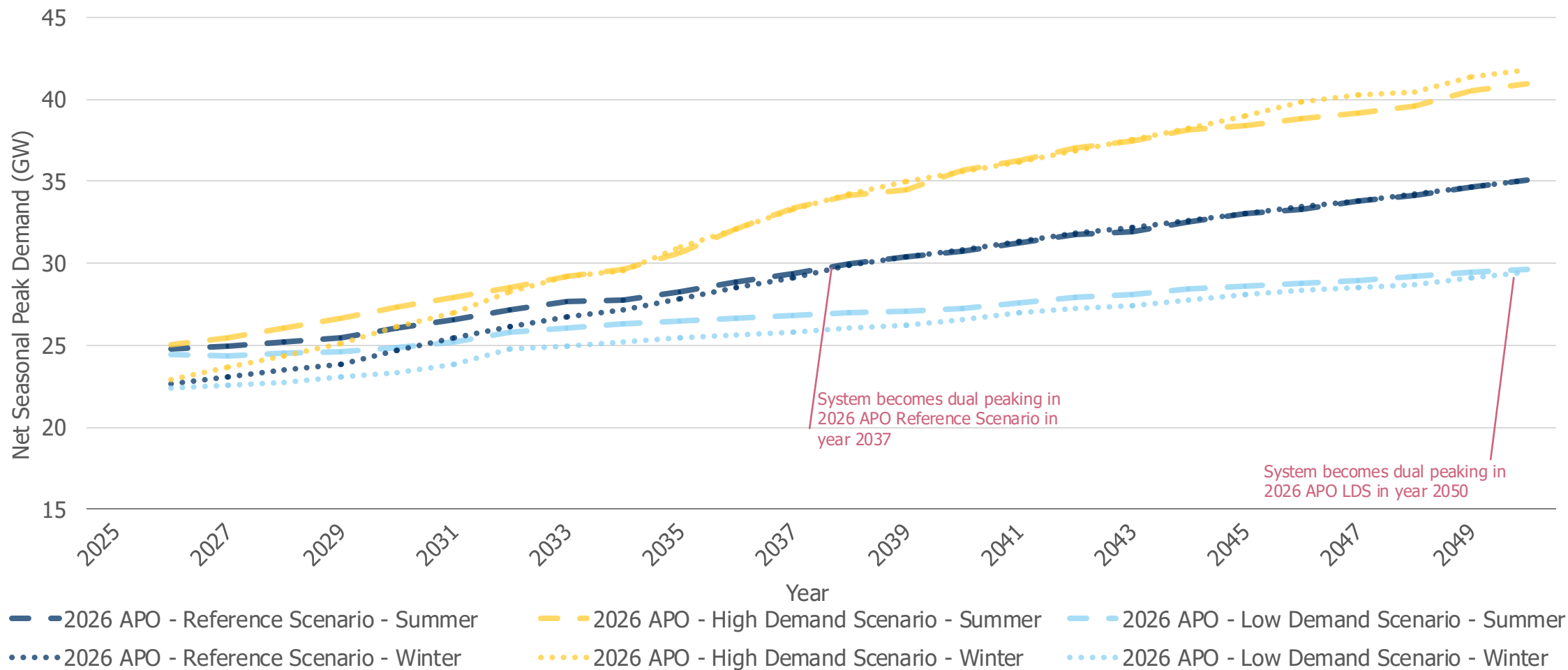
2026 APO: Energy Forecast



2026 APO: Seasonal Demand Forecast



2026 APO: Dual Peaks





2027 Annual Planning Outlook: Electricity Planning Scenarios

Forecast Scenarios: Narratives

The IESO is developing three electricity planning scenarios that present faster/slower demand growth compared to the reference, and supply assumptions that correspond with the level of demand growth in each scenario

- **Reference scenario:** Similar to previous APOs, this scenario represents high-confidence policy, government announcements and continuing trends
- **High scenario:** Represents a future featuring economic acceleration and stronger policy and consumer-driven electrification trends
- **Low scenario:** Represents a future featuring slower economic activity and weaker consumer and policy-driven electrification trends

The treatment of select macro-level, demand drivers under each scenario is discussed on the following slides

Demand Forecast Drivers (1)

Variable	Reference	High	Low
Building Electrification Policy	No municipal standards Continued IESO/Enbridge/NRCan programs incenting heating electrification over forecast period	Green Standard-like building code adopted broadly by major Ontario municipalities resulting in all new building space heating, water heating post 2040 being heat pumps, and all cooking and clothes drying being electric Continued IESO/Enbridge/NRCan programs incenting heating electrification over forecast period Assuming Building Performance Standards being considered by major municipalities. 40% emissions reduction by 2030 and >80% reduction by 2050. Applies to all existing buildings >25,000 SQFT.	No municipal standards IESO/Enbridge/NRCan programs incenting heating electrification conclude after current frameworks/budget allocation

Demand Forecast Drivers (2)

Variable	Reference	High	Low
Transportation Electrification	Continued considerable growth in EV adoption but below federal EV sales targets Rail projects, including Confederation LRT in Ottawa, phase one and two; ION LRT in Waterloo, phase one and two; Eglinton crosstown, phase one and two; Finch west LRT; Hurontario LRT; Hamilton LRT; Ontario line new subway; Yonge subway extension; GO rail electrification	Strong growth in EV adoption consistent with federal EV sales targets that being reviewed. Rail projects same as reference	Moderate to low growth in EV adoption Rail projects same as reference

Demand Forecast Drivers (3)

Variable	Reference	High	Low
Auto/steel sectors	Continued growth of sectors, including announced and confirmed large step load projects	Continued growth of sectors, including higher percentage of potential large step load projects	Slowdowns in sector growth
Nation building and priority projects		Critical minerals driving higher mining Alto high-speed rail More housing	
Industrial mineral extraction & processing sub-sector	Growth based on known projects with moderate adjustment for project uncertainty, some mining electrification, and continued mining growth	Growth based on known projects, some mining electrification, and continued mining growth with higher growth rate and accelerated development timelines due to potential impacts of renewed focus on critical minerals	Lower growth based on known and unknown projects, lower overall growth rates, and lower mining electrification

Demand Forecast Drivers (4)

Variable	Reference	High	Low
Electricity Demand Side Management (eDSM)	Initially aligned with 2025-2027 eDSM program plan then higher long-term savings levels reflecting planned continued growth of eDSM targets and budgets and load growth. It is assumed that new savings each year represent 1% of the gross demand forecasted for the year.	Initially aligned with 2025-2027 eDSM program plan then higher long-term savings levels reflecting planned continued growth of eDSM targets and budget and higher load growth. It is assumed that new savings each year represent 1% of the gross demand forecasted for the year.	Initially aligned with 2025-2027 eDSM program plan, long-term savings levels consistent with current program plans levels adjusted for load growth. It is assumed that new savings each year represent 0.9% of the gross demand forecasted for the year.
Data centre development	Growth based on known projects and growth rate consistent with identified project pipeline	Growth based on known projects and higher growth rate	Growth based on known projects with a lower growth rate



Emerging Developments: Industrial Decarbonization & Hydrogen

Purpose

- The IESO's Research team along with its consulting partner Dunskey Energy & Climate Advisors have finalized two research initiatives across 2025:
 - Industrial Decarbonization
 - Hydrogen in Ontario
- This presentation is intended to provide a high-level overview of these research initiatives
- The findings of these initiatives are intended to inform long-term demand forecasting and scenario development for future APOs, and IESO is seeking feedback from stakeholders on forecast assumptions for these emerging developments.

Industrial Decarbonization – Research Objectives

- To date, much of the IESO's decarbonization and electrification focus has centered around transportation and residential/commercial heating.
- The Industrial Decarbonization initiative was developed to provide a better understanding of the decarbonization pathways for key industrial sectors in Ontario and the corresponding impact on Ontario's energy system by:
 - Evaluating sector-specific decarbonization technologies and strategies for a representative participant in six key industrial sub-sectors (mining, pulp & paper, steel, cement, refining and chemicals).
 - Illustrating a typical decarbonization journey for a model facility in each identified sub-sector, leveraging the most cost-effective solutions.
 - Exploring ways the IESO can support decarbonization decisions through targeted incentives and programs.

Industrial Decarbonization – High Level Findings

- Decarbonization pathways are sub-sector specific with different technology considerations for each sub-sector. Certain sub-sectors have simpler paths for decarbonization as all their processes can electrify while other sub-sectors have high heat processes and need to rely on technologies such as hydrogen and carbon capture utilization & storage (CCUS) to decarbonize.

Sector	Electricity Share 2025	Pathway			Electricity Share 2050	Avg Power 2050 (MW)
Refining	6%	HPs	Direct Electrification	CCUS	46%	271 (+590%)
Petrochemicals	5%	Heat Pumps	Direct Electrification	CCUS	42%	72 (+780%)
Cement	12%	ALCFs	Green H ₂	CCUS	69%	336 (+890%)
Steel	16%	Alternative Process	Green H ₂	Blue H ₂	49%	1,160 (+450%)
Pulp & Paper	17%	Heat Pumps	CCUS		19%	88 (+2%)
Mining	47%	Heat Pumps	Direct Electrification		100%	3.7 (+60%)

Hydrogen in Ontario - Objectives

The Hydrogen in Ontario research initiative was developed to improve the IESO's understanding of the opportunities and challenges for hydrogen to support decarbonization and its potential grid impacts. This research initiative was comprised of three main workstreams:

- Using existing decarbonization studies (Ministry Pathways Study, Canada's Energy Future) to forecast Ontario's hydrogen demand out to 2050 by end-uses, including analyzing the potential for imports and exports to and from Ontario.
- Identifying the different production methods to meet this hydrogen demand, including the necessary infrastructure to support a broader hydrogen economy and a projected levelized costs of hydrogen (LCOH).
- Determining the impacts of this hydrogen production on the IESO's demand forecast.

Hydrogen in Ontario – High Level Findings

- Under modest growth scenarios, where hydrogen is assumed competitive for industrial decarbonization and heavy freight transportation, the projected 2050 demand for hydrogen in Ontario is ~ 700 kt.
- Hydrogen is highly reactive and has low volumetric density which makes it difficult and expensive to store underground and to transport via pipelines, trucks or ship:
 - Large-scale imports/exports of hydrogen and hydrogen hubs in Ontario are challenging.
 - Ontario's hydrogen needs will mostly be met through decentralized production within Ontario either close to or on-site at hydrogen end use locations.
- Production of hydrogen will mostly be through electrolysis (green hydrogen) with some potential for steam methane reformation + carbon capture (blue hydrogen).
- The production of hydrogen through electrolysis will add significant power and energy demand to Ontario's grid:
 - Results show potential electrolyser demand of approx. 5000 MW and 36 TWh by 2050 to meet Ontario's projected 2050 demand.
 - The increase to system peaks can be mitigated to approx. 800 MW using curtailment strategies and can be further mitigated if electrolysers are powered by dedicated renewables built on-site.

Next Steps for Industrial Decarbonization & Hydrogen

Results have already supported the IESO's advice to government on the development of Ontario's low-carbon hydrogen strategy, including:

- Development of the IESO's Hydrogen Interruptible Rate Pilot.
- Design of the IESO's 2025 Hydrogen Innovation Fund (HIF) program.

Upcoming publications

- A hydrogen technical paper will be developed in 2026, summarizing findings and lessons learned from the HIF.

Ongoing research integration

- The IESO's Research team continues to monitor climate policy and government directives to inform its work on industrial decarbonization and hydrogen, collaborating with the APO team to determine how to incorporate these insights into the 2027 APO.

Stakeholder input

- The IESO welcomes feedback on how these emerging developments should be reflected in the 2027 APO scenarios



Emerging Developments: Beneficial Electrification (BE)

Beneficial Electrification (BE)

Beneficial Electrification is defined as using electricity to reduce overall GHG emissions in Ontario in a manner that minimizes electricity system impacts (i.e. efficient electrification).

BE adoption is assumed to be driving the following primary and secondary inputs

Primary Inputs

- 2025-2027+ eDSM 3-year Plans – BE measures only for propane, oil and wood heated residential homes
- Enbridge Gas approved DSM Plans for BE measures in Natural Gas heated buildings by sector (plan details are dependent on approval and publication of Enbridge DSM Plans)
- Federally funded fuel switching programs, such as CGHAP for propane, oil and wood heated homes

Secondary Inputs

- Federal Policy initiatives that may drive electrification of end uses – such as emissions caps, funding for decarbonization, etc.
- Available market insights about BE measures adoption by municipal, institutional and/or industrial consumers

BE Adoption Methodology

Primary Inputs drive annual adoption of Building Electrification (BE) measures by fuel type.

Program Sources:

- Propane, Oil, Wood: Adoption based on eDSM & NRCan participation.
- Natural Gas: Adoption based on Enbridge DSM programs.

Persistence: BE measures are assumed to remain in place throughout the forecast period, leading to cumulative adoption.

Post-Program Adoption:

- If funding ends, adoption may stop or slow to natural market rates.
- If programs continue or expand, adoption increases accordingly.

Adoption Cap: Cumulative adoption is limited by the total number of dwellings per fuel type.

Non-Residential Adoption: Based on Market Insights and known BE projects with measurable energy impacts.



Next steps

Overall Next Steps: 2026 and 2027 APOs

2026 APO Publication

- Analysis to be completed Q4 2025, publication targeted Q1 2026.

2027 APO Development

- The IESO will continue to integrate insights from industrial decarbonization, hydrogen, and beneficial electrification into scenario design and assumptions.
- The IESO will continue to monitor developments in economics, policy, industry, and other areas to incorporate updates into the 2027 APO

Stakeholder Engagement

- Stakeholders are encouraged to provide any additional insights or perspectives on today's topics that would benefit IESO in its scenario design for the 2027 APO. The Feedback form is available here: [Annual Planning Outlook](#).

Thank You

ieso.ca

1.888.448.7777

customer.relations@ieso.ca

engagement@ieso.ca



@IESO_Tweets



facebook.com/OntarioIESO



linkedin.com/company/IESO