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IESO Demand Forecasting Overview – Space Heating

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Agenda

- How we forecast long-term electricity demand
- Latest space heating technology breakdown in Ontario
- Space heating electrification in the 2025 APO and P2D forecasts
- Latest commercial and residential forecasts
- Uncertainties and opportunities

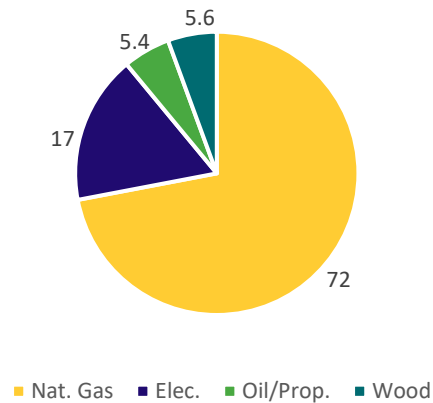
Long Term Demand Forecast

- The IESO produces a long term demand forecast annually as part of the Annual Planning Outlook, which identifies anticipated electricity resource needs in Ontario
- The demand forecast is produced with an end use model, which uses a variety of drivers such as household forecasts, economic data, and fuel rates to forecast electricity growth
- Large loads, such as electric district energy loads, are also considered
- Regional electricity system planning forecasts are produced by local distribution companies, and also inform the APO forecast

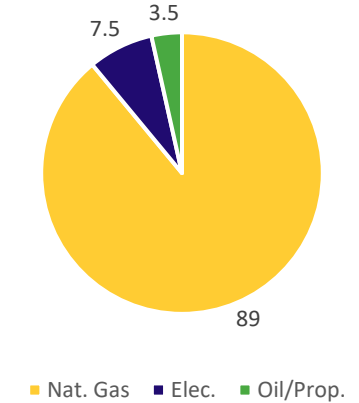
Current Breakdown of Space Heating Tech in Ontario

- Space heating is currently dominated by fossil fuel sources
- Electrifying this end-use would greatly increase electricity demand requiring generation, transmission and distribution expansion
- Heat pumps are expected to be the main space heating electrification technology, using less electricity than electric resistive heating and emitting less greenhouse gases than fossil fuel heating

2021 Residential Space Heating Energy Source Shares (%)



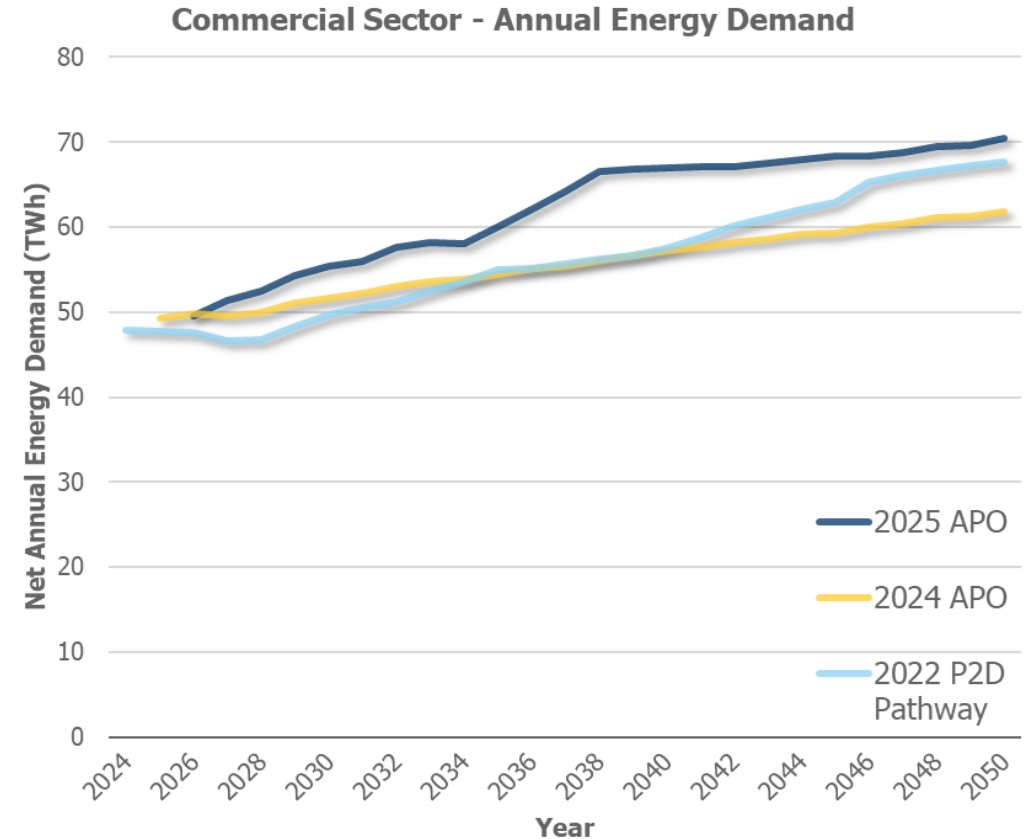
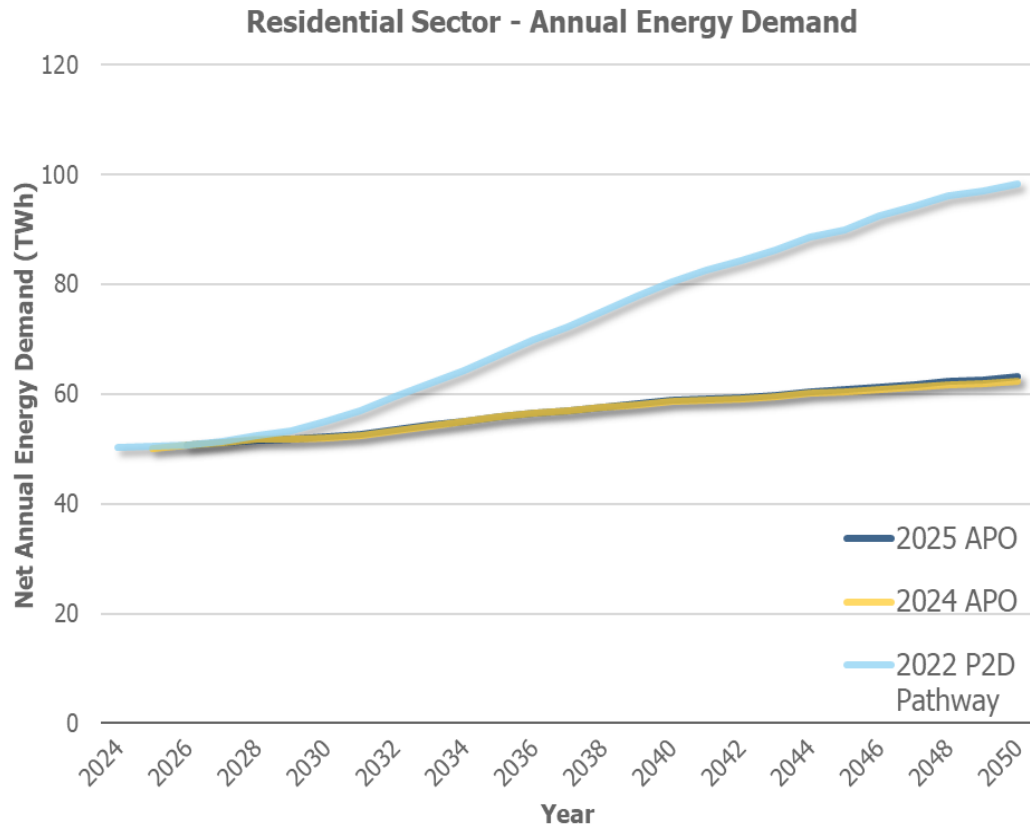
2021 Commercial Space Heating Energy Source Shares (%)



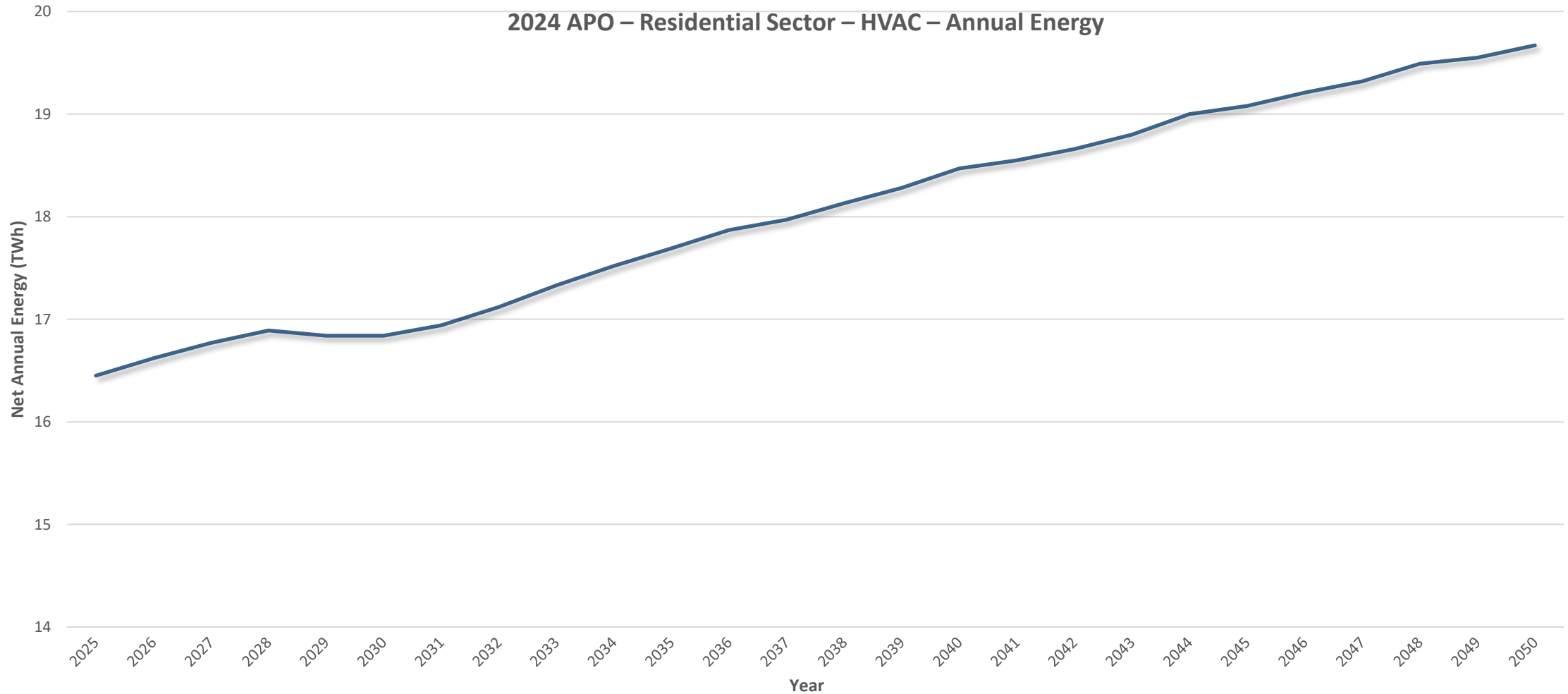
Space heating electrification in 2025 APO and P2D

- The 2025 Annual Planning Outlook projects 523,000 heat pumps by 2050, which represents approximately 7.6% of all households
- This heat pump growth is driven by Toronto Green Standard requirements for residential new construction in the City of Toronto; and customer preferences which are based on operating costs and voluntary decarbonization - since space heating is typically more economical (lower upfront cost) with natural gas, it is expected that majority of households will continue to choose natural gas heating systems unless government policies require otherwise
- For contrast, the demand forecast produced for the 2022 Pathways to Decarbonization report, which considered a high electrification scenario, projected 6.25 million heat pump by 2050
- This represents the maximum potential for heat pump adoption assuming every household to be electrically heated via heat pump and does not undertake a cost-optimization exercise comparing different decarbonization options on the demand side

Latest Results in 2025 APO by Sector, and with P2D included



2024 APO – Residential Sector – HVAC – Annual Energy



Major Driver of Growth – Uncertainties

- Data on uptake by heat pump type
- Backup heating operation (depends on capacity and backup source)
- Fuel prices / carbon tax
- Codes & Standards (municipal green building standards vs OBC; mandatory vs voluntary standards)

Major Driver of Growth – Opportunities

- The IESO's 2025 Residential End Use Survey will provide fresh visibility on heat pump adoption and use
- IESO is developing a new long-term demand forecasting tool with the ability to analyze the impacts of climate change on weather sensitive end-uses such as heating, cooling and refrigeration to improve forecast accuracy
- Government is planning to release an Integrated Energy Plan in 2025 "to coordinate all energy resources, including electricity, natural gas, and other fuels, to ensure that the province's energy needs are met in a coordinated and long-term manner"
- New heat pump incentives available from Save on Energy programs

Thank You

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