DECEMBER 12, 2023

Windsor-Essex Regional Electricity Planning

Engagement Webinar #1

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Agenda

1. Ontario's Electricity Sector and IESO's Role
2. Regional Electricity Planning Process
3. Draft Electricity Demand Forecasts
4. Engagement and Next Steps
5. Discussion

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Connecting Today.
Powering Tomorrow.

We work with:

Generators >>> **Transmitters** >>> **Local Distribution Companies** >>> **Energy Consumers**

<<< **Communities** >>>

Seeking Input

As you listen today, consider any additional factors for:

Determining the electricity demand forecast for your region
What additional information, if any, should be incorporated in the proposed scenarios? How can the proposed scenarios best capture the range and uncertainty of growth potential while informing near-term infrastructure investments?

Identifying needs to be addressed
What areas of concern or interest about electricity should be considered as part of the planning process?

Engaging with communities and interested parties
What information is important to provide throughout the engagement? Does the proposed Engagement Plan provide sufficient scope and opportunities for input? What other engagement activities or methods should be considered?

Please submit your written comments by email to engagement@ieso.ca by January 5, 2024

Regional Electricity Planning Process

Electricity Planning in Ontario

Provincial/Bulk System Planning

Addresses provincial electricity system needs and policy directions.

Underway: Central-West Bulk Plan.

Regional Planning

Addresses local electricity system needs at the transmission system level.

Underway: Windsor-Essex Regional Electricity Plan.

Distribution Planning

Addresses local electricity system needs and priorities at the distribution system level.

Led by local distribution companies.

Electricity Planning in Windsor-Essex

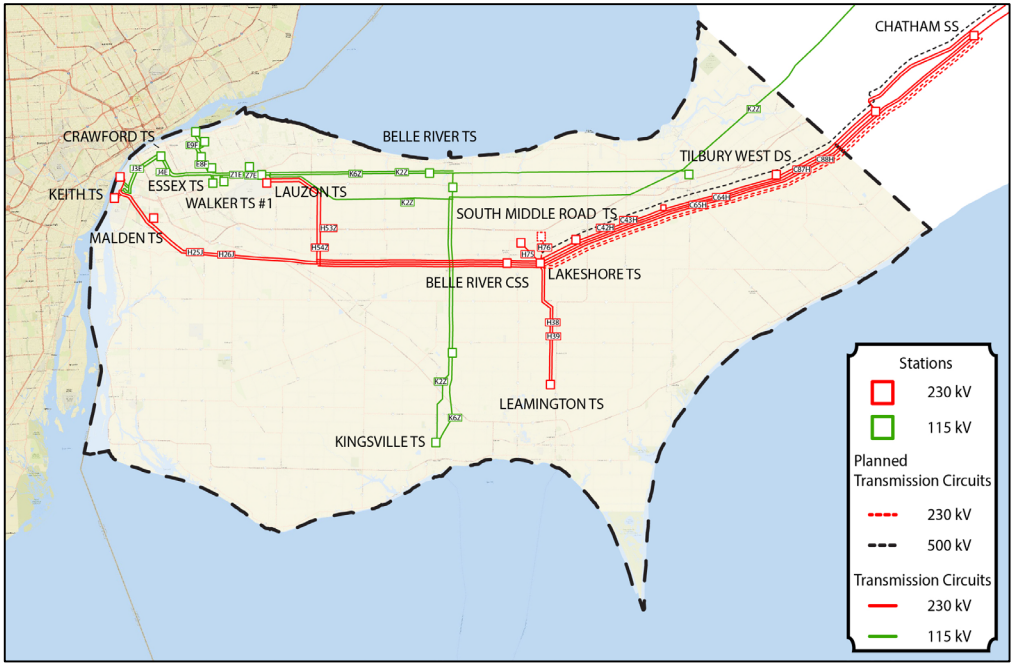
To meet your growing needs and ensure a reliable supply of electricity, the IESO:

- Has undertaken significant planning work since 2018 to address capacity needs to the Windsor-Essex electrical area including recommending three new sets of transmission lines, multiple new supply stations, 550 MW of local generation (already procured) and targeted funding for energy efficiency and innovation projects.
- Currently leading more electricity planning, including:
  - The third regional electricity plan, or Integrated Regional Resource Plan (IRRP), for the Windsor-Essex area to outline electricity needs and recommended solutions to ensure a reliable supply of electricity over the next 20 years, and
  - A Central-West bulk study, in light of the Volkswagen EV plant and strong potential growth broadly across Southwestern Ontario, to proactively capture a range of potential growth scenarios that can be implemented if/when large new loads materialize

Windsor-Essex Electrical Region

Area is serviced by 230 kilovolt (kV) and 115 kV lines and transformer stations (TS).

The electrical region encompasses a number of municipalities, Indigenous communities and Métis councils from the western portion of the Municipality of Chatham-Kent going west towards City of Windsor, Town of LaSalle and Town of Amherstburg.



Map for illustrative purposes.

Regional Electricity Planning Process

The regional system planning process ensures an affordable and reliable supply of electricity across Ontario. The process looks at the unique needs of each region, and considers a range of options and resources to keep the lights on.

The regional plan for the Windsor-Essex electrical area will be developed by a Technical Working Group, led by the IESO, and consisting of the local distribution companies and the transmitter.

Regional Planning Milestones for Windsor-Essex

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Components of a Regional Plan

Demand Forecast	Needs	Potential Solutions	Recommendations
How much power is needed over the planning timeframe?	What needs are emerging in the region that need to be addressed?	What kinds of solutions can meet the future needs for the region?	Based on an assessment of potential options, what recommended actions will ensure a reliable and adequate electricity supply for the region over the long-term?

Draft Electricity Demand Forecasts

Local Planning Drivers

Important considerations that influence the load forecasts:


Municipal/regional growth plans


Climate change action plans


Community energy plans


Business plans of major electricity consumers or large projects


Distributed energy resources/energy projects

Local Distribution Companies incorporate these drivers into the electricity demand forecast.

Developing the Demand Forecasts

Local distribution companies (LDCs) are the main conduit for demand forecasts, and they:

- Provided demand forecasts for each station they are supplied from,
- Incorporated municipal and community plans into their forecast, and
- Established forecasting assumptions based on customer growth plans.

LCDs have been updating their preliminary forecasts based on your input. In addition to LDC forecasts, the IESO works directly with customers and industry stakeholders to create demand forecasts for large electricity consumers that may seek connection on the transmission system.

What We've Heard So Far

Extensive engagement has been undertaken with 7 local municipalities, 20 greenhouse sector representatives and economic development agencies to understand issues and trends related to economic development and local energy solutions.

Key themes emerged:

- Greenhouse sector continues to show growth potential
- Strong interest and potential for on-site generation
- Importance of considering significant growth potential in the whole region across various sectors (industrial, agricultural, residential)
- Ensure infrastructure development matches growth

Forecast Scenarios

Two scenarios have been developed for Windsor-Essex:

- **Reference:** firm loads (current and planned), organic growth, etc.
- **High:** incorporate potential demand growth that is less certain, in terms of timelines, magnitude and location

While plan recommendations will primarily be driven by the reference demand forecast, the high forecast scenario will be considered to test the robustness of the plan, identify signposts to monitor forecast changes, and contemplate additional actions required if higher demand growth materializes.

Overview of Scenario Assumptions

Load	Reference Forecast	High Forecast
Residential	Growth rate applied by each local distribution company (LDC), informed by municipal input	Same as reference
Electrification and energy plans	Growth incorporated by each LDC, informed by municipal input	Same as reference
Greenhouse	Based on New Customer Connection Information forms received by Hydro One	All requests
Industrial	Projects and forecasts received from municipalities High certainty projects received from Invest WindsorEssex	Projects and forecasts received from municipalities All projects received from Invest WindsorEssex

Reference forecast will drive firm near- and mid-term recommendations. High forecast will be used to establish plan based on load thresholds rather than need years, direct early development work, and identify sign-posts to trigger further investments.

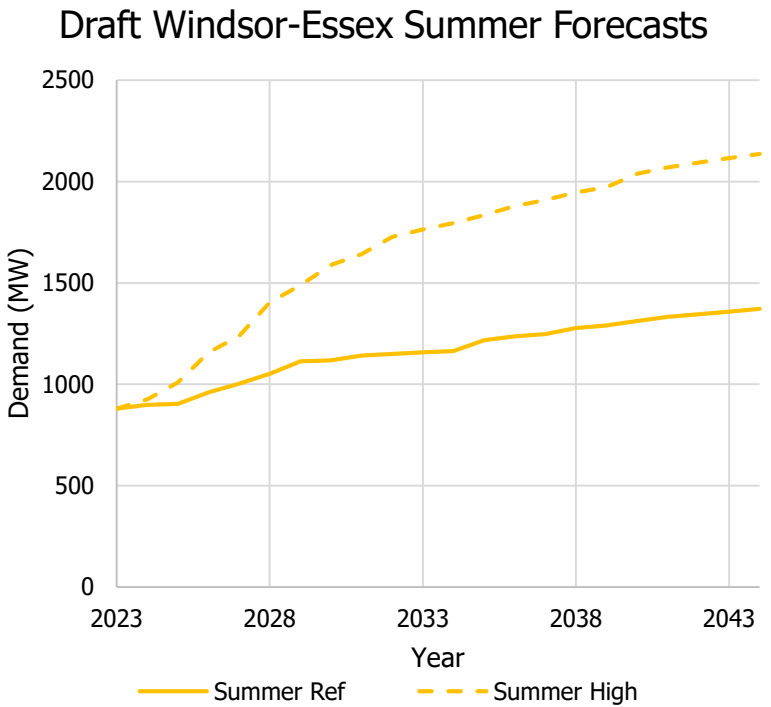
Draft Summer Windsor-Essex Forecasts

Key takeaways - Reference Scenario:

- Average growth rate of 2%, inline with provincial forecasts
- Near-term growth twice as high as 20-yr average growth rate, primarily driven by industrial growth in the region

Key takeaways - High Scenario:

- Average growth rate of 4% over 20-yrs; 10% over near-term
- Near-term growth 2.5x higher than 20-yr average growth rate, primarily driven by industrial growth in the region



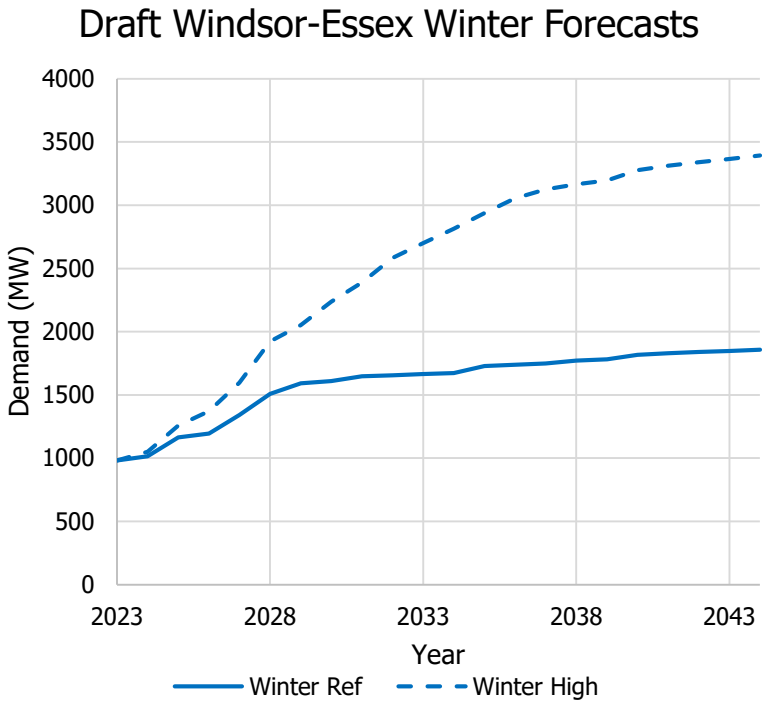
Draft Winter Windsor-Essex Forecasts

Key takeaways - Reference Scenario:

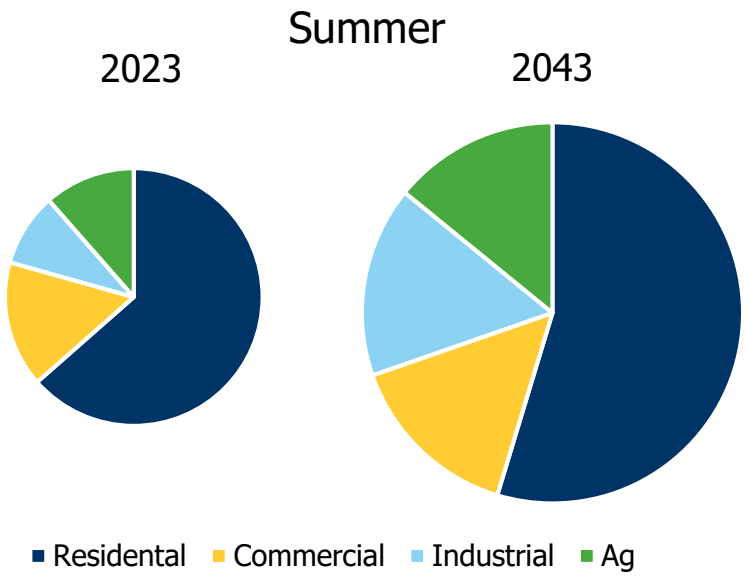
- Average growth rate of 2%; 9% in the near-term
- Driven by over 500 MW new greenhouse customer connection requests

Key takeaways - High Scenario:

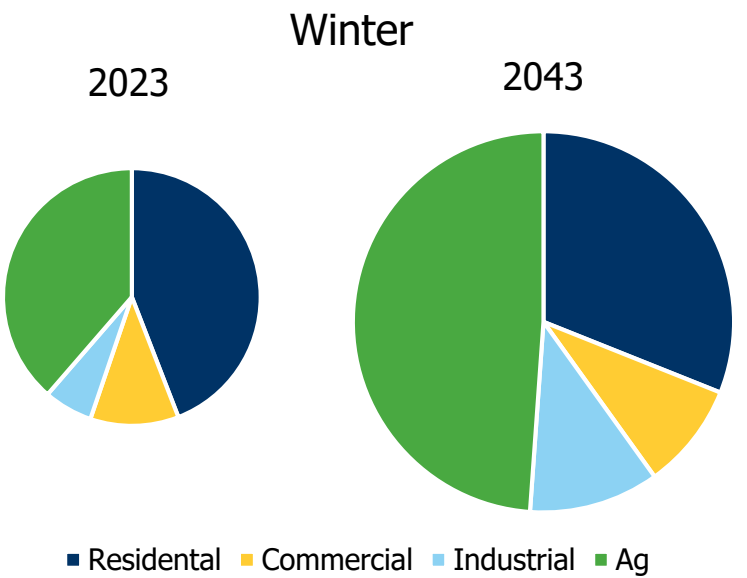
- Average growth rate of 6%; more rapid in the near- to mid-term with 11-15% growth
- Over 1,300 MW additional greenhouse load potential



Forecast Comparison by Load Type



Predominately residential load, with increased commercial, industrial and agricultural load by 2043



Currently roughly equal residential and agricultural load, with increased agricultural and industrial load by 2043

Engagement and Next Steps

Ongoing Engagement

Your input plays an important role in developing the electricity plan.

Participate in upcoming public webinars

Subscribe to receive updates on the IESO website –> select Windsor-Essex Region

Follow the Windsor-Essex regional planning activities online

Engagement Key Areas for Input

Milestone	Timeline	Community Input
Electricity demand forecast and Engagement Plan	Current	What economic development or other growth or project plans might influence the regional load forecast? What additional information should be considered?
Electricity needs and potential options	Q1-Q2 2024	What additional information should be considered in the study assumptions? What community feedback is there to the potential solutions? What other options should be considered?
Options analysis and draft recommendations	Q3-Q4 2024	What community feedback is there on the draft recommendations? What information should be considered in the recommendations?
Final IRRP	Q4 2024	

We Want to Hear From You

Determining the electricity demand forecast for your region
What additional information, if any, should be incorporated in the proposed scenarios? How can the proposed scenarios best capture the range and uncertainty of growth potential while informing near-term infrastructure investments?

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Next Steps

January 5, 2024 – Written feedback on draft electricity demand forecasts and Engagement Plan due

Q1-Q2 2024 – Studies will be conducted to determine needs based on the updated forecasts and potential options

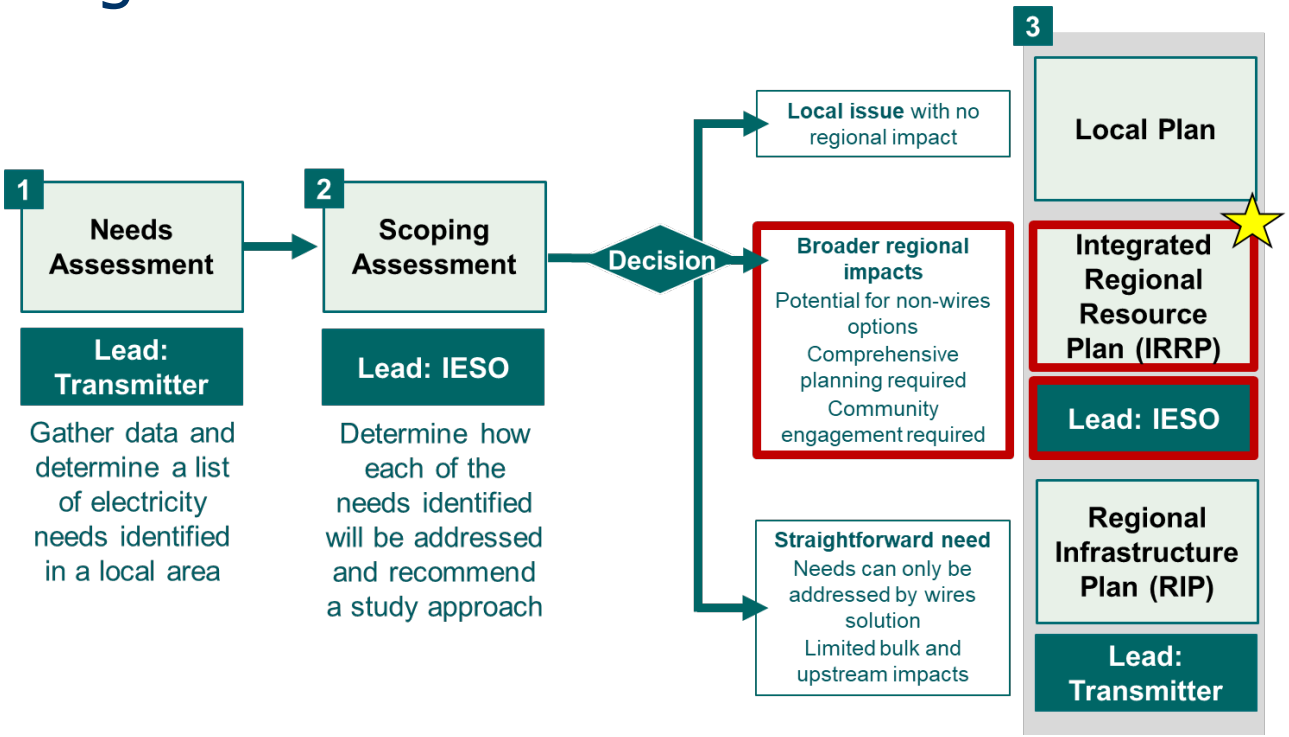
Q3-Q4 2024 – Present option analysis and draft recommendations to meet the needs

Q4 2024 – IRRP recommendations and report will be completed

Appendix

Technical Working Group

Determining the Need for an IRRP



Previous Regional Planning Cycle for Windsor-Essex

2019 Windsor-Essex electricity plan – Integrated Regional Resource Plan (IRRP) – recommended a number of actions to address emerging needs

Recommendation	Status
IESO Grid Innovation Fund targeted call for indoor agriculture projects	On-going support provided between 2020 – 2023
LED Incentive for greenhouses	On-going program until 2024
Upsize Keith T11/T12 end-of-life 230/115 kV autotransformers	Expected in 2023
Upsize Lauzon T5/T6 end-of-life stepdown transformers	Expected in 2026
Decommission Keith TS end-of-life T1 (115 kV/27.6 kV) transformer	Complete
Two new supply stations connected to Lakeshore TS, South Middle Road DESN 1 &2	DESN 1 in-service in 2022; DESN 2 expected in 2025

Other Planning Recommendations

Plan	Recommendation	Status
2019 Windsor-Essex Bulk Plan	Leamington SS	In-service 2022
	Chatham-to-Leamington double 230 kV circuit	Expected 2025
2021 West of London Bulk Plan	Lambton-to-Chatham double 230 kV circuit	Expected 2028
	Initiate bilateral negotiations for Brighton Beach GS	On-going
	Longwood-to-Lakeshore single 500 kV circuit	Expected 2030
	550 MW of new or existing local resources	On-going
2022 Windsor-Essex Addendum	Two new DESNs, connection lines to Lakeshore and option for tie line between Leamington and new DESNs	On hold
	Transfer excess Kingsville load to new DESNs	On hold
	Engage with customers on cost-justified measures for load restoration	On hold

Identifying Needs

Once the electricity demand forecast has been created, the IESO conducts an assessment to determine needs. Generally, needs studied in this process fall under the following categories:

- **Station capacity:** Ability of a station to deliver power from the grid down to the distribution systems.
- **Supply capacity:** Ability of the system to supply power through the transmission lines to a local area.
- **Asset replacement:** Station or transmission equipment has reached end of life.
- **Load restoration:** Ability of the system to restore power after select contingencies.
- **Load supply security:** Maximum amount of power that can be lost during select contingencies.

Preliminary Needs

Preliminary identified needs could be further refined, and new needs identified, as part of the detailed forecasting and evaluations.

Area	Need	Considerations
Kingsville-Leamington	(1) Various **station capacity** needs in 2023-2024. Continued load growth; more than 400 MW over the next 10 years	• Greenhouse growth location and rate have changed – shifted closer to Lakeshore, ramping up in 2027/2028 • Need to understand forecast developments, expansions, and operations now and into the future
Leamington	(2) **Load restoration and supply security** needs in specific outage situations	• Coordinated with station capacity needs in Kingsville-Leamington • Need to reassess previous recommendations for new stations and lines from Kingsville into Leamington
Windsor	(3) **Station capacity** needs at Lauzon TS identified by 2025 due to higher near-term growth forecast in the outskirts of the city driven by gradual organic growth	• In combination with further industrial growth in Windsor, may trigger a supply capacity need • Need to understand potential for industrial growth and decarbonization initiatives
Lakeshore	(4) **Station capacity** needs at Belle River TS driven by gradual organic growth	• Demand Side Management initiatives targeting the Belle River area could provide near-term relief