

A night-time aerial view of the Toronto skyline, showing illuminated skyscrapers and city lights against a dark sky. The image is partially obscured by a dark blue gradient overlay on the left side where the text is located.

DECEMBER 5, 2024

Toronto Regional Electricity Planning

Webinar #2 Draft Electricity Needs

Traditional Territory Acknowledgement

The IESO acknowledges the land we are delivering today's webinar from is the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples.

We also acknowledge that Toronto is covered by Treaty 13 signed with the Mississaugas of the Credit First Nation, and the Williams Treaties signed with multiple Mississaugas and Chippewa bands.

Agenda

1. Land Acknowledgement
2. Ontario's Electricity Sector and the IESO's Role
3. Recap: Overview of Electricity Planning in Toronto, the Regional Electricity Planning Process and the Demand Electricity Forecasts
4. Regional Electricity Needs
5. Background on Determining Options
6. Local Achievable Potential Study
7. Next Steps & Discussion



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Summary

- The City of Toronto is expected to see a significant increase in electricity demand by 2044, driven by urban development and intensification, electrification and decarbonization initiatives.
- The regional electricity plan will evaluate a mix of potential solutions, including wires and non-wires alternatives, with the goal of ensuring a reliable supply of electricity to Toronto and understanding the opportunities of a local decarbonized grid.
- At this point in the planning process, several electricity system needs have been identified:
 - A number of stations and transmission lines will reach their limits due to electricity demand growth. Reducing reliance on Portlands Energy Centre would create an immediate capacity gap.
 - Work is underway to address near-term needs, and alternatives for addressing needs in the medium and long-term will be assessed in subsequent stages of plan development.
- Feedback and community perspectives are important. Engagement opportunities will be offered at key milestones and subsequent engagements.

Seeking Input

Regional Planning:

- Perspectives regarding the high-level needs identified
- Perspectives regarding how to meet the electricity needs to inform upcoming milestones
- Additional information that should be provided in future engagements to help understand perspectives and insights

Local Achievable Potential Study (APS):

- Feedback on scope, methodology, and potential uses for the APS that the IESO should consider
- Additional data sources or regional policies/trends that should be considered

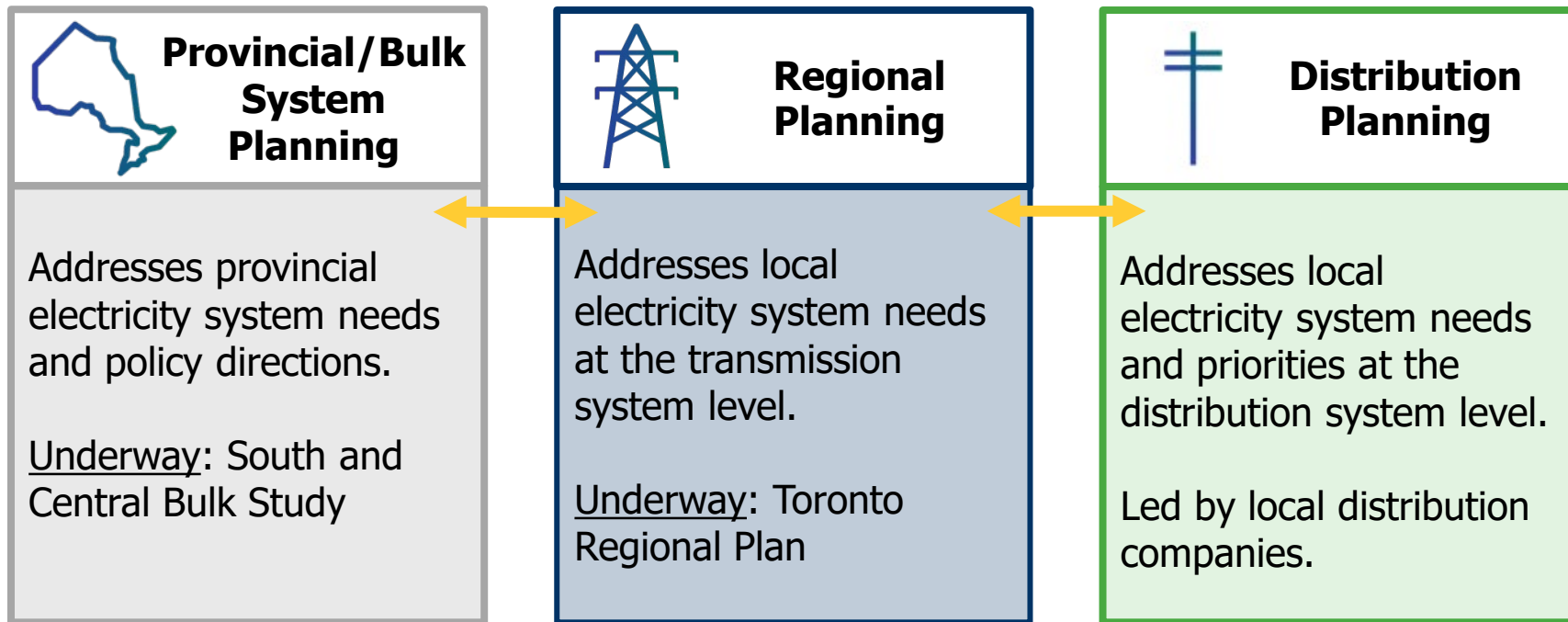
IESO welcomes written feedback until January 3, 2025.

Please submit feedback to engagement@ieso.ca.



Recap: Regional Electricity Planning Process & the Demand Forecasts

Electricity Planning in Ontario*

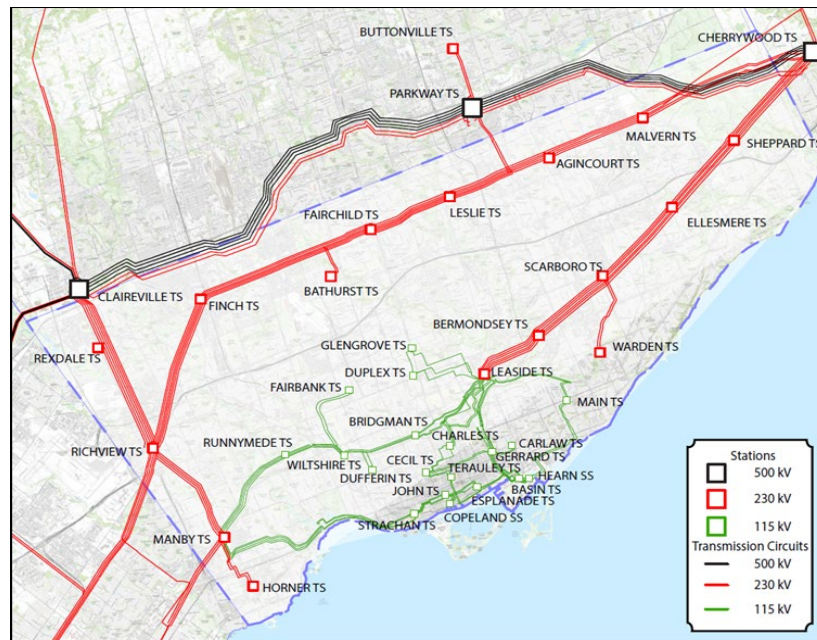


Regional Electricity Planning in Toronto

An Integrated Regional Resource Plan (IRRP) is being developed by a Technical Working Group coordinated by the IESO with Toronto Hydro-Electric System Limited and Hydro One Networks Inc.

Informed by feedback, the plan considers new growth, redevelopment, alignment with climate action plans, and the implications of reducing reliance on the Portlands Energy Centre.

Indigenous communities that may be potentially impacted or may have an interest based on treaty territory, traditional territory or traditional land uses: Alderville, Chippewas of Beausoleil, Chippewas of Georgina Island, Chippewas of Rama, Curve Lake, Hiawatha, Mississaugas of Scugog Island, Mississaugas of the Credit, Six Nations of the Grand River, Haudenosaunee Confederacy Chiefs Council/Haudenosaunee Development Institute and Métis Nation of Ontario.

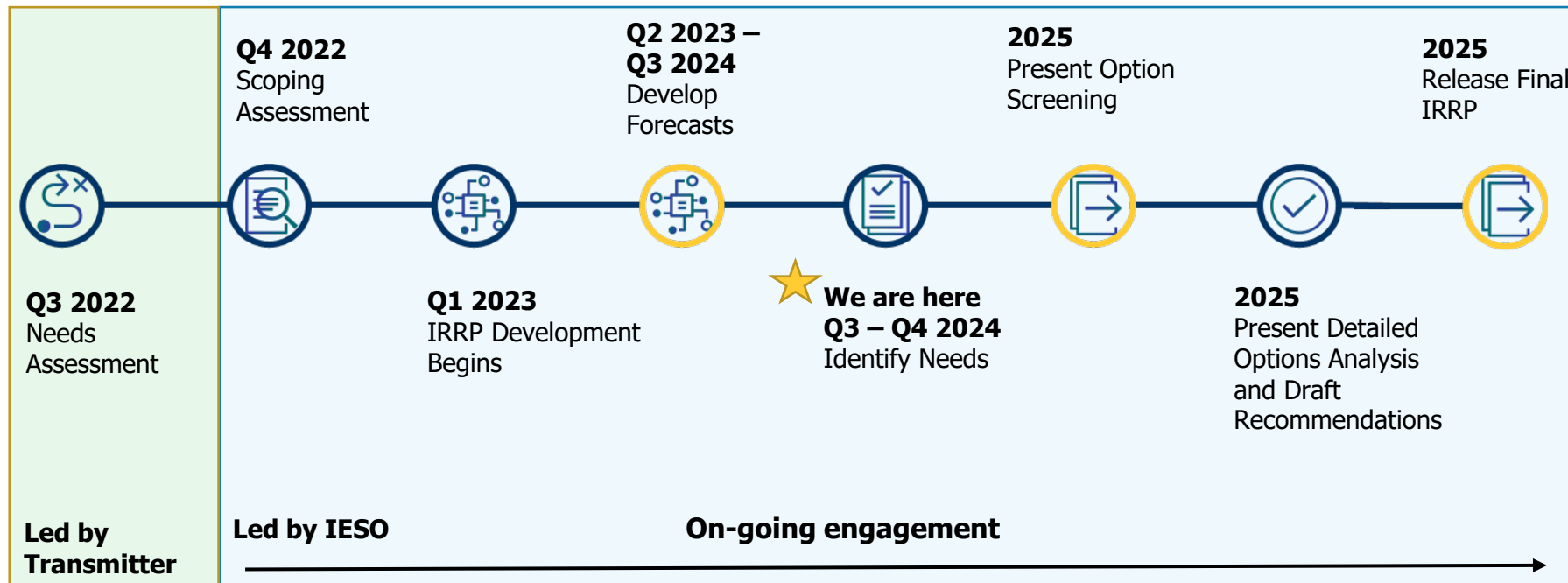


Map for illustrative purposes

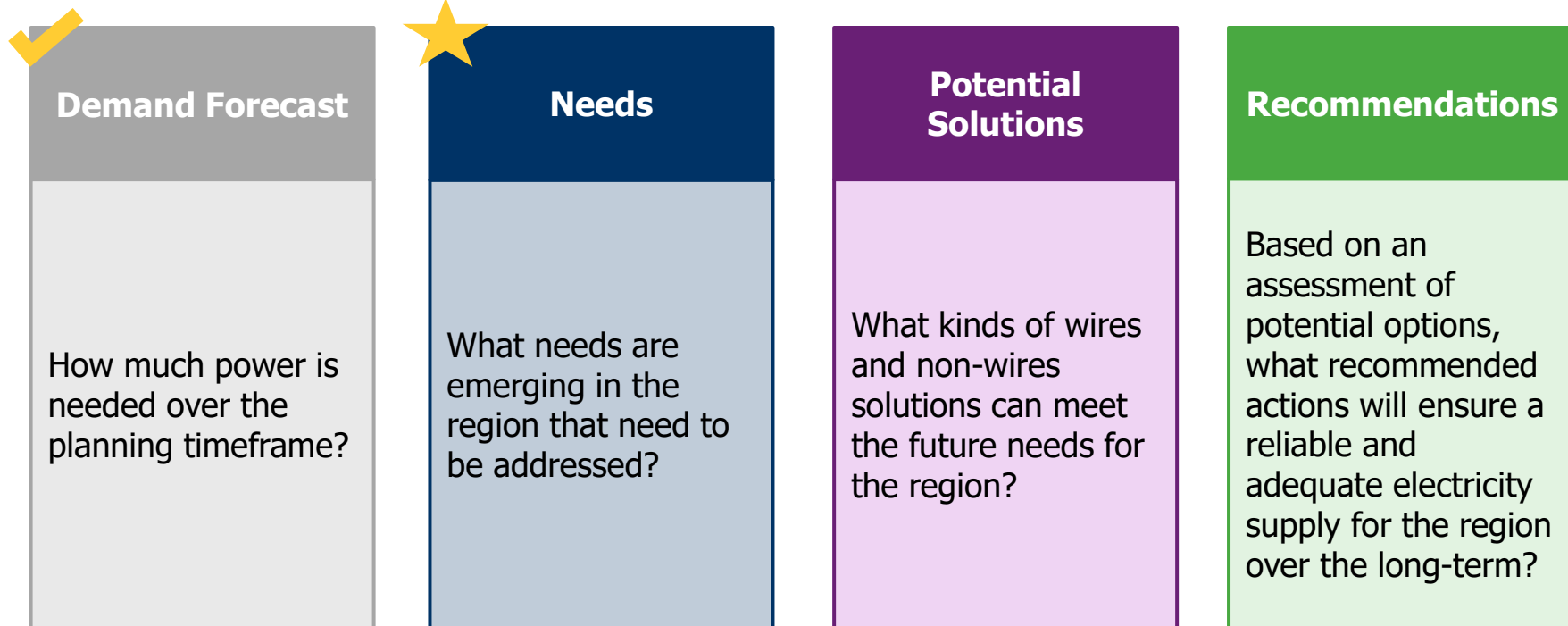
Background on Electricity Planning in Toronto

- Regional planning has been on-going in Toronto and across Ontario to address electricity needs.
- The recommendations from the previous regional planning cycles included transmission infrastructure reinforcements, transmission refurbishments and geotargeted energy efficiency.
- These investments have ensured new customers can connect to the system, reliability criteria are met or exceeded, electricity supply remains diversified, and the renewal of aging infrastructure.
- Continued growth requires additional planning. In parallel with the Toronto IRRP, a coordinated study of the bulk transmission system is underway for South and Central Ontario.
 - The study will focus on understanding the sufficiency of the bulk transmission system to enable future growth in electrical demand, decrease reliance on local natural gas-fired generation, and enable large scale new generation, such as the connection of small modular reactors at Darlington.

Regional Planning Timeline



Components of a Regional Plan



Recap: Developing the Demand Forecast

Developing the 20-year electricity demand forecasts included:

- Receiving information from Toronto Hydro, including:
 - Forecasts of loading on each transmission station that supplies Toronto
 - Municipal and community plans incorporated into the forecast, including: Official Plan, Secondary Plan Areas, TransformTO Net Zero Strategy, Green Bus Program, 2030 Emissions Reduction Plan, and Electricity Vehicle Strategy.
 - Forecasting assumptions based on customer growth plans, including the Port Lands redevelopment, Downsview Secondary Plan, Golden Mile Secondary Plan.
- Engagement with the municipality, customers, and other interested parties to understand potential growth and decarbonization plans and provide opportunity for input.
- Accounting for the impacts of demand-side management (such as energy efficiency), distributed energy resources, and extreme weather conditions in the electricity demand forecast.

Recap: Forecast Scenarios

Two demand forecast scenarios were developed to assess electricity needs:

- **Reference:** firm loads (current and planned), organic growth, electrification adoption rates based on current policies (eg. TransformTO)
- **High Electrification:** reference plus potential demand growth that is less certain, and assuming the highest electrification adoption rates

More details can be found in the [Forecasting Methodology](#) document.

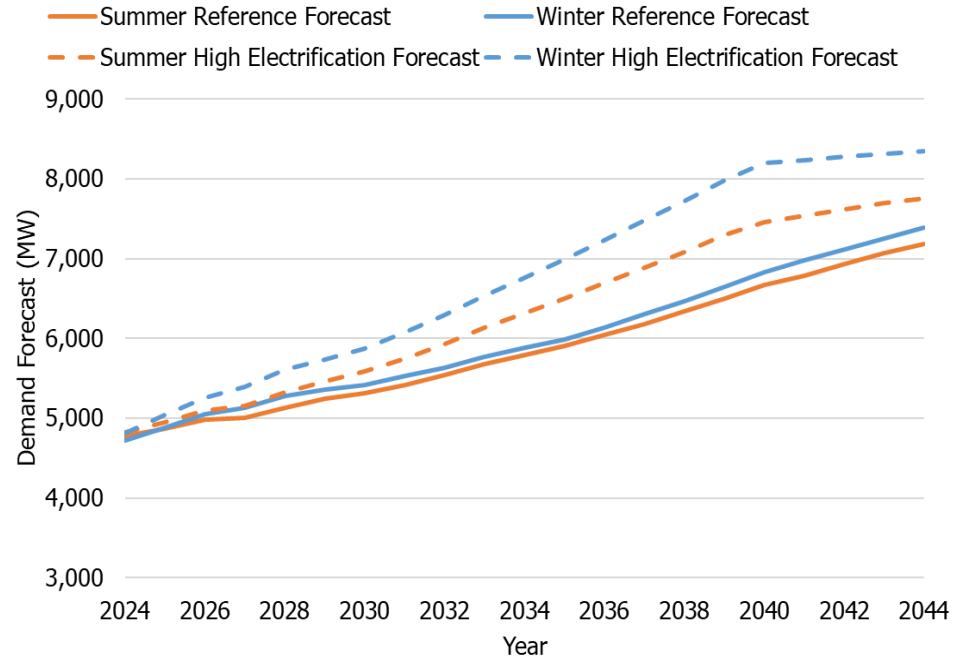
Forecast will drive recommended solutions: Plan recommendations will be driven by the reference demand forecast. Options will be assessed for meeting the high electrification forecast which will test the robustness of the plan, identify signposts to monitor forecast changes, and contemplate additional actions in case higher demand growth materializes.

Feedback Received

Key Areas of Feedback	Incorporating Feedback/Considering Feedback ¹
Ensure alignment with TransformTO	Decarbonization is being contemplated at multiple levels as part of regional planning. The IESO will assess a plan, for a future without Portlands Energy Centre, by understanding the options and timing to ensure a reliable and affordable supply of power.
Provide more information	The IESO began providing detailed methodology and load forecasts early in the process to enable purposeful community and stakeholder participation and input. Additional information was shared since the April webinar. For more information, please visit the IESO website .
Explore alternative solutions, such a non-wire alternatives	Once the forecast scenarios and needs are finalized, the IESO will screen and evaluate wire and non-wire options to meet the needs. To further enhance and supplement the regional planning work underway for Toronto, the IESO (with contributions from Toronto Hydro) is conducting a local achievable potential study in the City to identify potential for behind-the-meter DERs and energy efficiency to meet the needs.
Potential for solar	A diversity of solutions will likely be needed to provide a reliable supply of electricity to Torontonians. Solar is just one of the options we will consider. Right now, we are focusing on presenting the identified needs.

Final Toronto Demand Forecasts

- In Toronto, demand could grow by **70% to 100% by 2044** based on the summer and winter forecasts. In comparison, Ontario electricity demand could grow by 75% by 2050.
- Growing demand is primarily driven by community development plans, decarbonization policies, electrification, and economic growth.
- These projections will impact the regional electricity infrastructure, and will require innovative solutions to meet local demand, including wires and non-wires solutions.





Regional Electricity Needs

A Note on Planning Concepts

Capacity vs. Energy vs. Voltage	<ul style="list-style-type: none">Capacity represents the maximum amount of electricity that the system can supply in a point of time (measured in MW), energy (measured in MWh) represents the amount electricity provided over a period of time. Electricity is transmitted via different voltage levels (ranging from 13.8 to 500 kV) depending on the amount of electricity needed.
Peak demand	<ul style="list-style-type: none">Represents the highest levels of electricity consumption during specific periods of the year (i.e., summer, winter). This plays a very important role as there needs to be enough capacity to meet the highest level of demand.
Timing	<ul style="list-style-type: none">Near-term (2025 to 2030), medium-term (2031 to 2035) and long-term (2035+).
10 MW vs 100 MW	<ul style="list-style-type: none">10 MW could power a university campus including dorms, classrooms and buildings, while 100 MW could power a substantial part of a city's infrastructure, including neighborhoods, commercial and public services.10 MW is significant but manageable, while 100 MW requires a number of solutions to meet the need.

Electricity Need Types

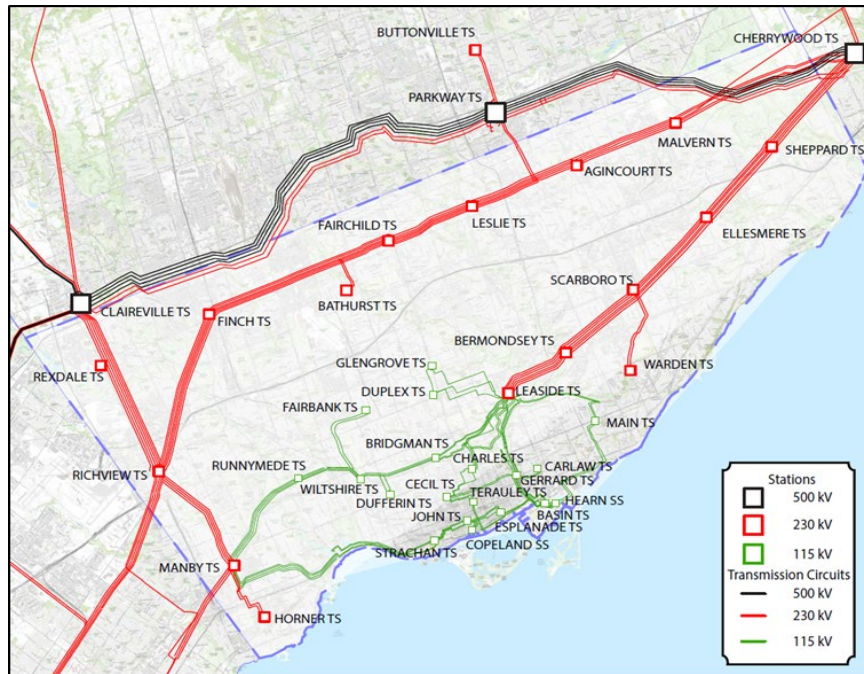
Generally, needs identified in this process fall under the following categories:

- **Station capacity:** Ability of a station to deliver power from the high-voltage grid down to the distribution system.
- **Supply capacity:** Ability of the transmission system to supply power through the transmission lines to a local area.
- **Asset renewal:** Station or transmission equipment replacement as determined by age and the assessed condition of the asset.
- **Load supply security:** Maximum amount of power that can be interrupted following specific planning contingencies.
- **Load restoration:** Ability of the system to restore power after an interruption or loss of load.

Determining Electricity Needs




To identify electricity needs, the IESO:

- Modeled the 230 kilovolt (kV) and 115 kV transmission lines, stations and supply points within the City of Toronto.
- Applied the performance criteria from the various North American regulatory standards to determine the capability of existing lines and stations.
- Used the forecast scenarios to determine when the capabilities of existing transmission lines and stations will be exceeded and the magnitude of those exceedances.

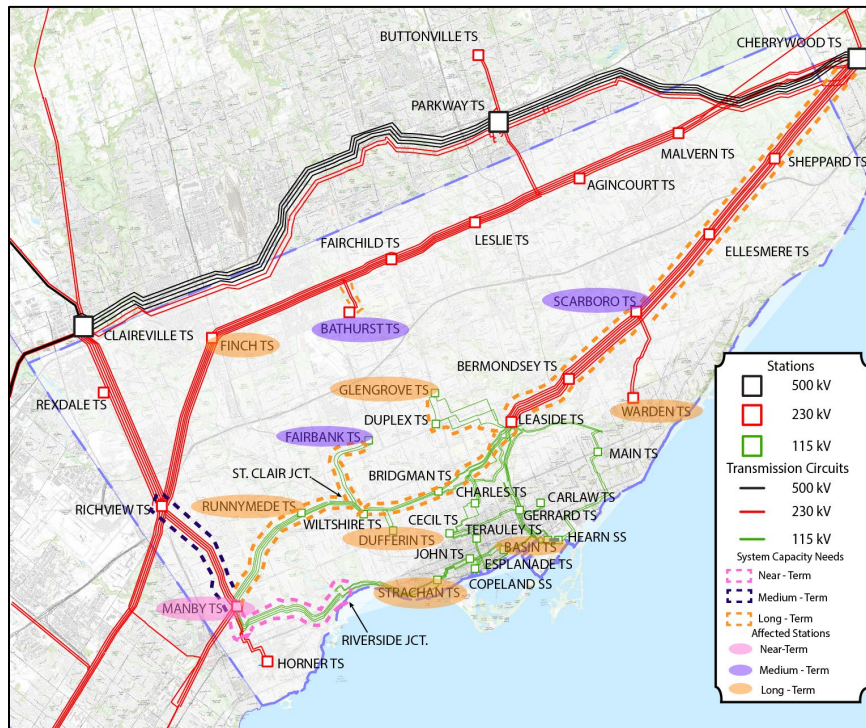


Electricity Needs in Toronto (1/2)

Based on forecasted growth, the following needs have been identified:

Timing	Impacted Equipment
 Near-term	1 Station 2 Circuits
 Medium-term	3 Stations 1 Circuit
 Long-term	7 Stations 9 Circuits

For these needs, Portlands Energy Centre is assumed to remain in service to understand needs required due to forecasted growth and electrification. Reducing reliance on Portlands Energy Centre is considered in upcoming slides.

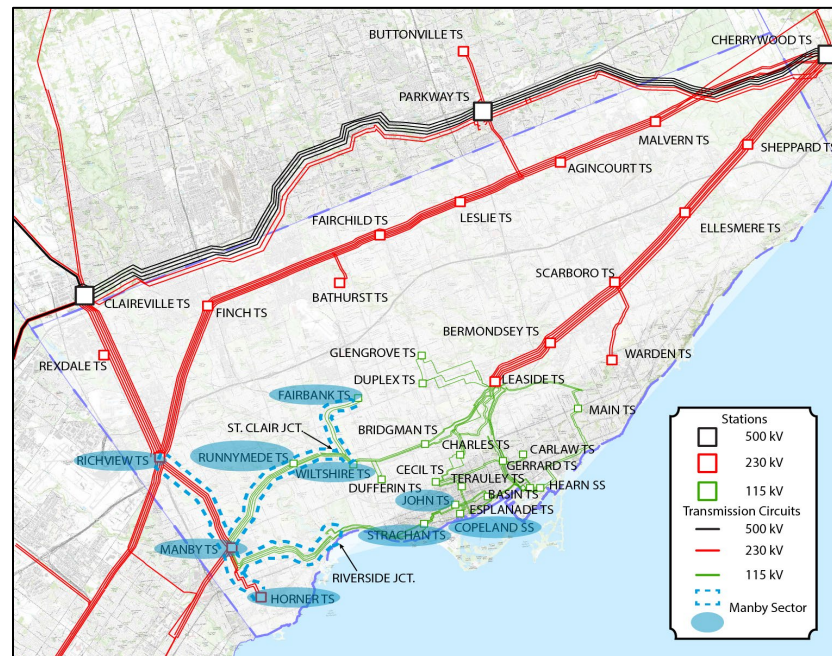


Electricity Needs in Toronto (2/2)

- Each area of the City has its own unique needs, which are detailed in the appendix.
 - The growing demand for electricity results in **significant electricity infrastructure needs**, which will require innovative solutions, including large scale wires and non-wires solutions.
- The **timing of the needs varies from short to long-term**, and Western Toronto is the only area with short-term needs.
 - The high electrification forecast accelerates both the timing and magnitude of certain capacity requirements in parts of Western and Eastern Toronto.
 - Reducing reliance on Portlands Energy Center will lead to larger supply needs in Eastern Toronto.
- Given the medium to long-term timing, certain **options can be recommended in the report and further refined over the next planning cycles** as growth materializes.
- There is **work underway by Hydro One and through energy efficiency measures to address the near-term needs**. As part of the IRRP, the Technical Working Group is developing a plan, that will be informed by feedback, to maintain reliability as demand continues to grow.

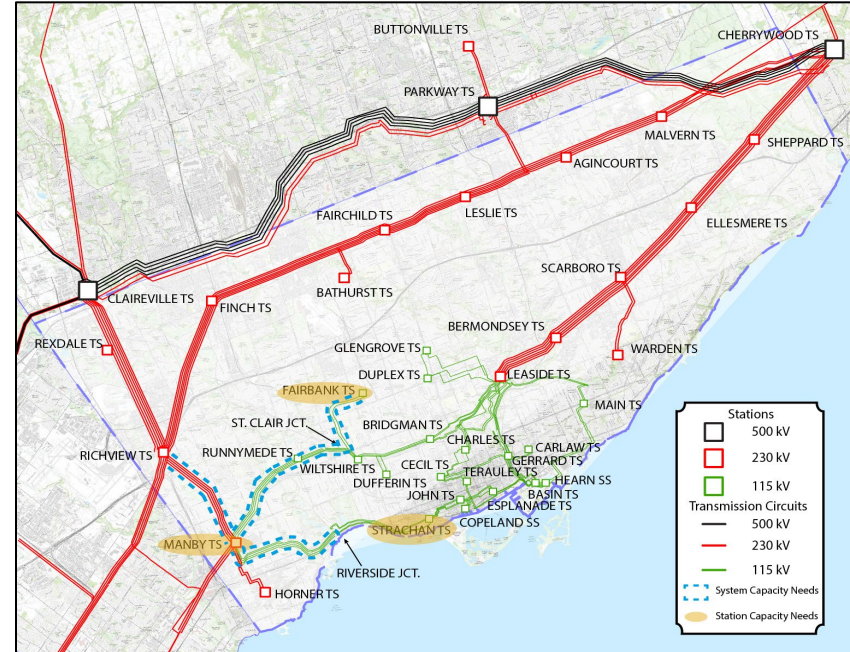
Western Toronto (Manby Sector) Background

- Western Toronto area or Manby Sector is highlighted on the map in blue.
- Area is serviced by a combination of 230 kilovolt (kV) and 115 kV lines and nine stations, which provide power to southern Etobicoke and portions of the downtown core.
- The electricity consumed in the area is supplied by the transmission infrastructure at Manby Transmission Station (TS).
- To meet growing needs in 2021, rebuilding an existing idle 115 kV line from Richview TS to Manby TS to 230 kV standard was recommended. This work is in progress.



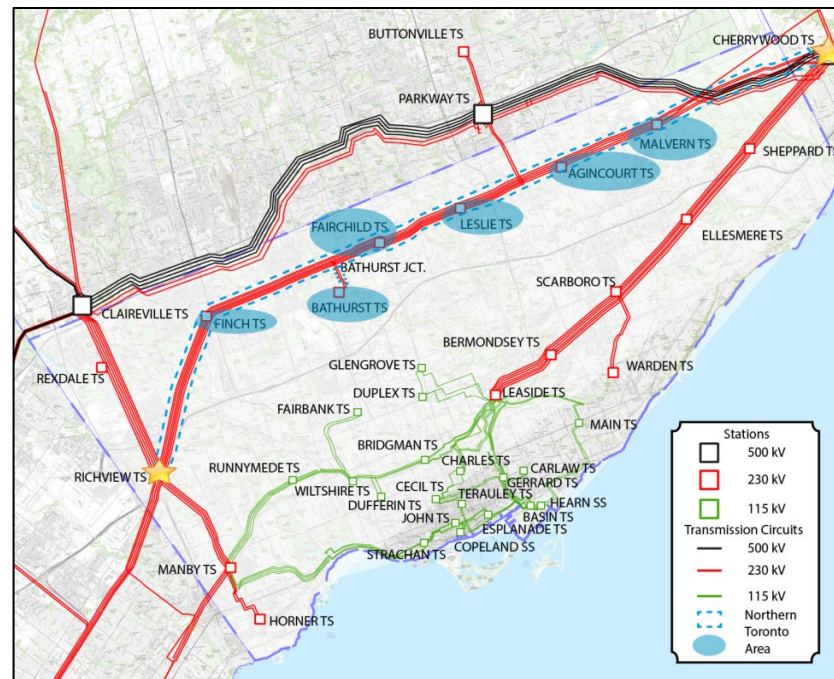
Western Toronto Area Summary

- Based on forecasted growth, the following needs have been identified: **three station capacity needs** (highlighted in yellow) and **supply capacity needs in most corridors** (highlighted in blue) in this sector.
- As part of the reference forecast, station and capacity **needs start to occur in the short-term** in key areas, and the needs are advanced by the high electrification forecast.
- There is work underway by Hydro One that will support the near-term needs and targeted energy efficiency programs to reduce demand.
- Some of these needs are significant and will require a mix of wire and non-wire options to meet the growing demand.



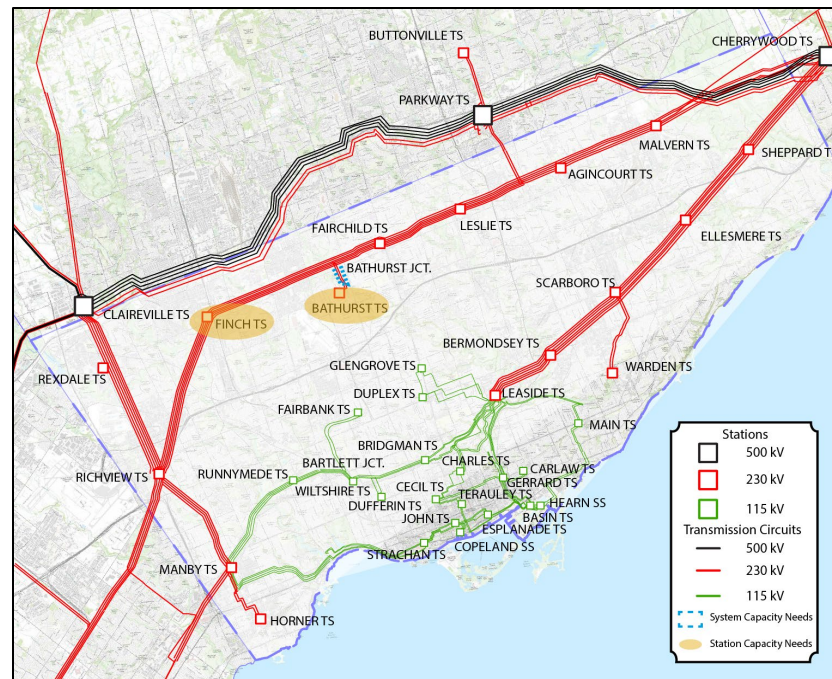
Northern Toronto Area (Finch Corridor) Background

- Northern Toronto or Finch Corridor is highlighted on the map in blue.
- Area is serviced by 230 kV lines and stations, which provide power to North York, part of Etobicoke and Scarborough.
- All the electricity consumed in the area is supplied through transmission infrastructure between Cherrywood TS and Richview TS.



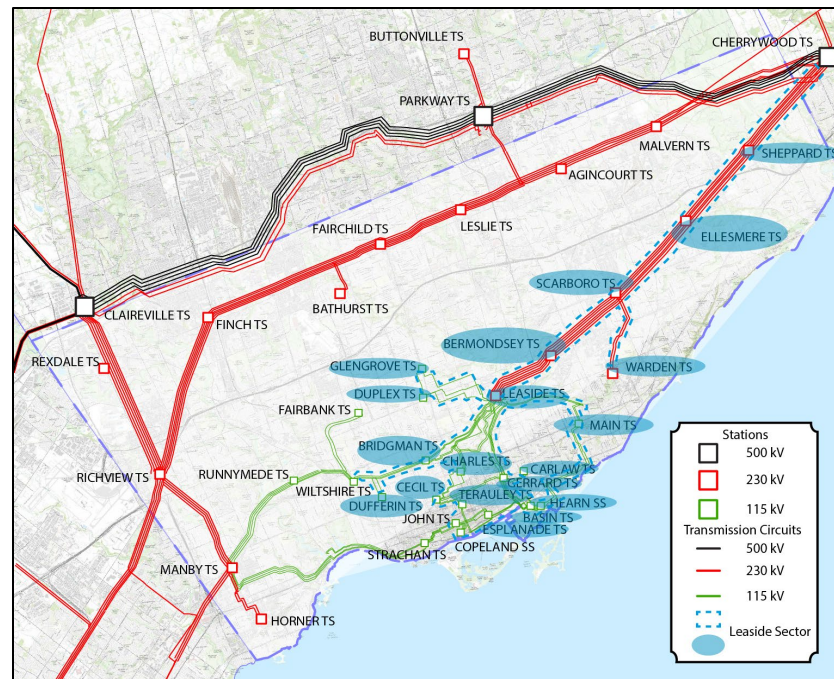
Northern Toronto Area Need Summary

- Needs in this area are being driven by the Update Downsview secondary plan.
- Based on the forecasted growth, the following needs have been identified: **two station capacity needs** (highlighted in yellow) and **one system capacity need** (highlighted in blue) in this sector.
- As part of the reference forecast, needs in the Northern Toronto Area start to occur in the medium to long-term, and the high electrification forecast advances the timing and magnitude of need at one station.
- Given the significant needs, a mix of larger scale, wire and/or non-wire options will be required.
- Given the timing, options can be determined during this cycle and further refined over the next planning cycles as growth materializes.



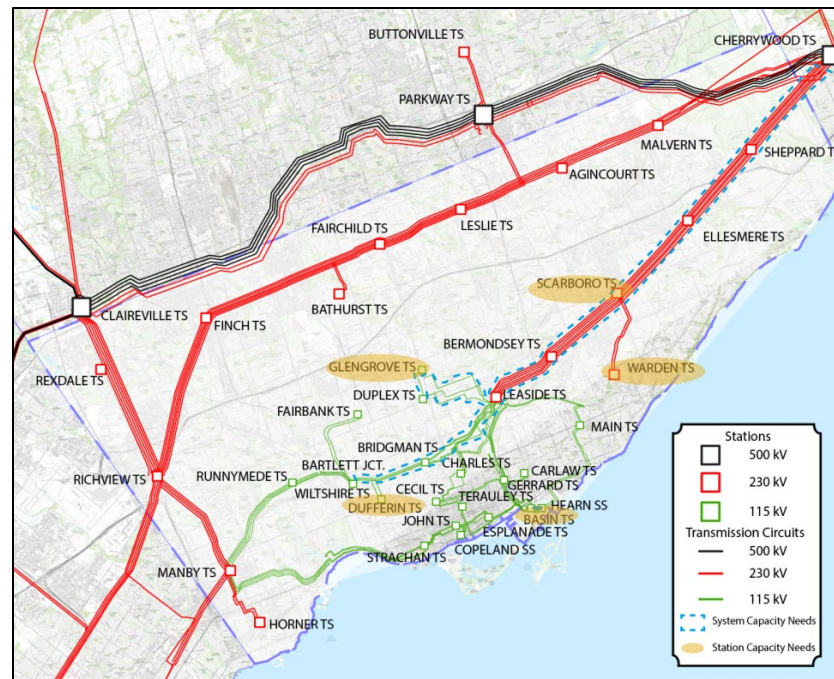
Eastern Toronto (Leaside Sector) Background

- Eastern Toronto area or Leaside Sector is highlighted on the map in blue.
- Area is serviced by 230 kV and 115 kV lines and stations, which provide power to parts of eastern, midtown Toronto and portions of the downtown core.
- Majority of the electricity consumed in the area is supplied through transmission infrastructure at Leaside TS from Cherrywood TS.
- Portlands Energy Centre also provides local capacity - crucial to meeting local reliability during periods of peak demand, or transmission outages.



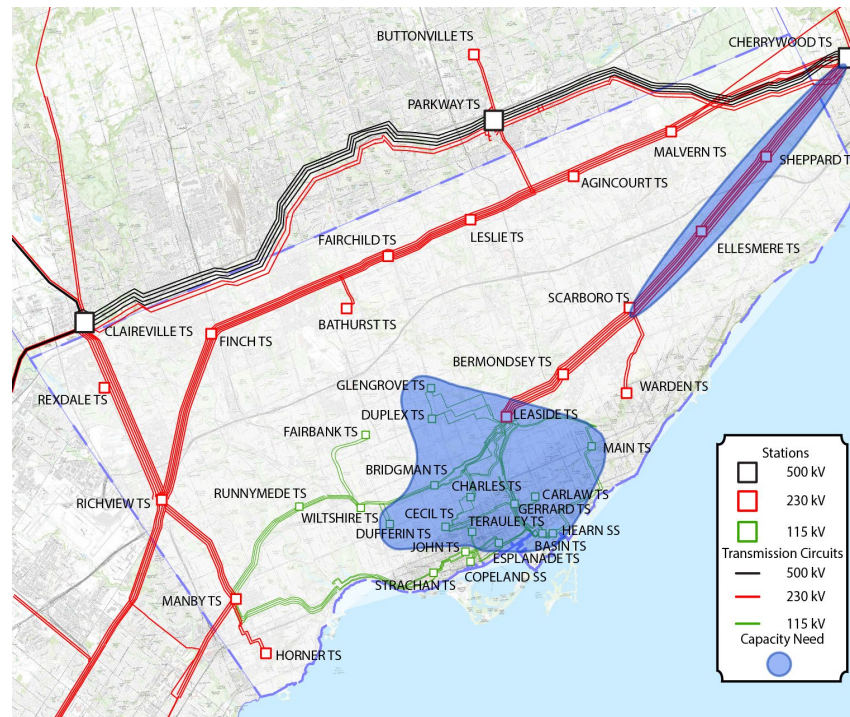
Eastern Toronto Area Summary

- Needs in this area are being driven by local growth, especially from two key secondary plans (Golden Mile and Port Lands).
- Based on forecasted growth, the following needs have been identified: **five station capacity needs** (highlighted in yellow) and **seven supply capacity needs** (highlighted in blue) in this sector.
- As part of the reference forecast*, **needs occur predominantly in the long-term**, and the high electrification forecast* advances the timing to medium-term, and magnitude of need in key areas.
- Given the size of need, a mix of wire and/or non-wire options will be required.
- Given the timing, options can be determined during this cycle and further refined over the next planning cycles as growth materializes.



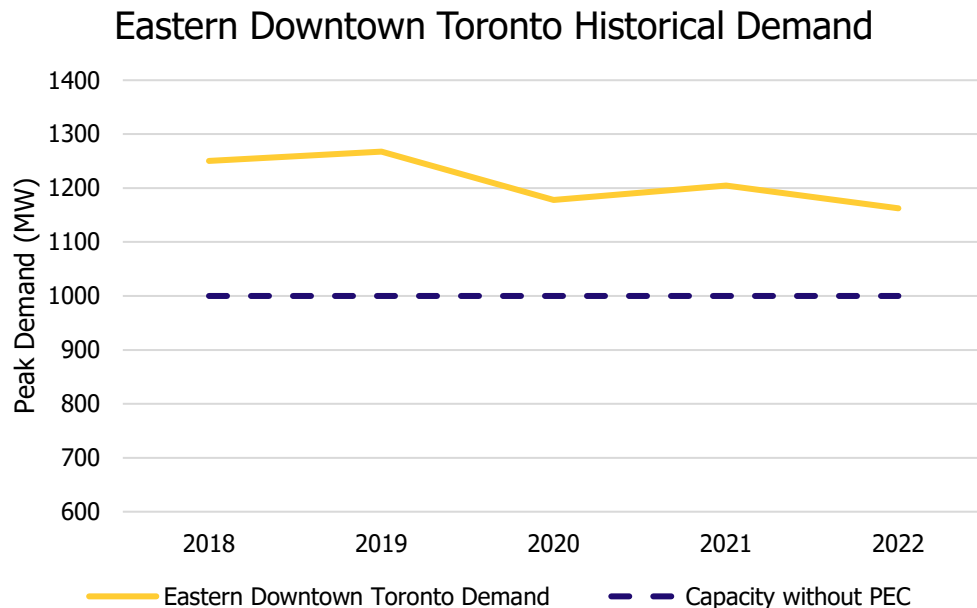
Overview of the Portlands Energy Centre (PEC)

- PEC is a 550 MW natural gas-fired generating facility located in the Port Lands in Toronto.
- The facility normally supplies power directly to the eastern portion of Toronto, and provides system benefits including:
 - Reliability at Cherrywood TS by preventing overloading of the system.
 - Stability through voltage and reactive power support.
 - Flexibility by providing a responsive supply of power during transmission outages.



Reducing Reliance on PEC – Needs Summary

- **Needs will be seen on the system as soon as PEC retires.** By 2035, there will be a capacity need of ~480 MW, growing to ~1,300 MW by the late 2040s.
- Reducing reliance on PEC amid growing demand for electricity introduces large scale needs, and will require large scale solutions, including both wire and non-wire options.
- The Technical Working Group will evaluate a scenario for a future without Portlands Energy Centre, by understanding the options and timing to ensure a reliable and affordable supply of power to the City of Toronto.





Background: Determining Options

Background: Determining Options

A combination of wire and non-wire options may be needed to address the needs, and over the course of the planning process, the Technical Working Group will:

- **Screen various options** to address the region's near, medium and long-term electricity needs for the reference forecast, including:



Traditional wires options to supply the local area







Non-wires alternatives (NWAs), such as transmission-connected generation or energy storage, conservation and demand management, distributed generation or demand response

- **Complete a detailed analysis** of screened-in options to recommend solutions to meet needs.

The IESO will share the outcomes and seek community feedback at key milestones to enhance development and evaluation of options before making a final recommendation. The Technical Working Group will recommend options that address needs from the reference forecast and also consider options to address potential growth as part of the high electrification forecast to act quickly if/when higher growth materializes.

Key Considerations for Determining Options

Consideration	Key Details
 Technical Feasibility	The Technical Working Group will screen all options, including wires and non-wires alternatives, with respect to established criteria and guidelines (e.g., ORTAC , Guide to Assessing Non-Wires Alternatives , etc.). Only options that can meet technical criteria will be considered further.
 Economics	All technically feasible options are assessed for their cost-effectiveness. Typically, the options with the lowest net present value of annual net consumer costs are usually selected as the preferred recommendations in IRRPs. Preferred options that have similar economic performance would be subject to other considerations before arriving at a recommendation.
 Timing	The IRRP recommendations will depend on timing of need and lead time of most appropriate solution. E.g., energy efficiency programs can be implemented quickly, while transmission reinforcement projects require 7-10 years.
 Community Considerations	Community preferences and feedback regarding potential options, for example resiliency.

Local Opportunities to Reduce Demand: Portlands

- The Technical Working Group have been engaging with the City of Toronto on the regional plan.
- The City of Toronto is conducting an electricity needs assessment of the redevelopment of the Port Lands. This study will include developing a demand model that will evaluate the potential of integrating thermal energy networks and Distributed Energy Resources at both behind-the-meter and community-scale to ensure a low-carbon and resilient energy system.
- The Technical Working Group has had discussions with the City and their partner organization, Enwave, on how to better align assumptions in the Portlands to include impacts of district energy systems on the forecast.
- Findings from these discussions and the study will be considered in the IRRP when developing options to address the local electricity needs driven by the Portlands redevelopment.



Local Achievable Potential Study

Local Achievable Potential Study (APS)

To further enhance and supplement the regional planning work underway for Toronto, the IESO is conducting a local achievable potential study in the City to identify potential for behind-the-meter distributed energy resources (DERs) and energy efficiency programs. **The results from the APS will be used to inform Toronto's IRRP recommendations regarding using energy efficiency and DER programs to address planning needs.**

Key details:



The study will identify and quantify electricity energy savings potential, electricity demand savings potential and associated costs attainable through energy efficiency and behind-the-meter distributed energy resources in two regions of the province – Ottawa and Toronto – over a 20-year period of 2025 to 2045.



As part of the regional planning public engagement for the two regions, the IESO will present on the study's scope, objectives, methodology and timeline and solicit community and stakeholder feedback. Preliminary results will be presented at the next regional planning public engagement.



Study results are expected to be published in late Q1/early Q2 2025.



The IESO is working in collaboration with Toronto Hydro to help leverage the local insights and relationships.

Local Achievable Potential Study – Potential Scenarios

The APS will use two local load forecasts that are aligned with the Toronto IRRP forecasts: reference and high electrification. For each scenario, the study will determine the electricity savings potential from a technical, economic and achievable perspective:

- **Technical Potential** is the electricity savings resulting from the implementation of all technically feasible measures.
- **Economic Potential** is the electricity savings resulting from the implementation of all technically feasible measures that pass the cost-effectiveness test.
- **Achievable Potential** is the final electricity savings remaining after adoption rates over the period of the study are applied. Adoption rates are calculated considering market barriers, customer payback acceptance, perception of non-energy impacts and customer awareness of measures.

Local Achievable Potential Study – Scope

The APS includes the quantification of electricity energy savings and demand savings potential, and the associated costs of energy efficiency and behind the meter distributed energy resources in Toronto from years 2025-2045. Measures in scope include:



Behind the Meter Distributed Energy Resources (DERs) including battery storage and solar.



Energy efficiency measures including heat pumps, HVAC, lighting, appliances, weatherization, and hot water.



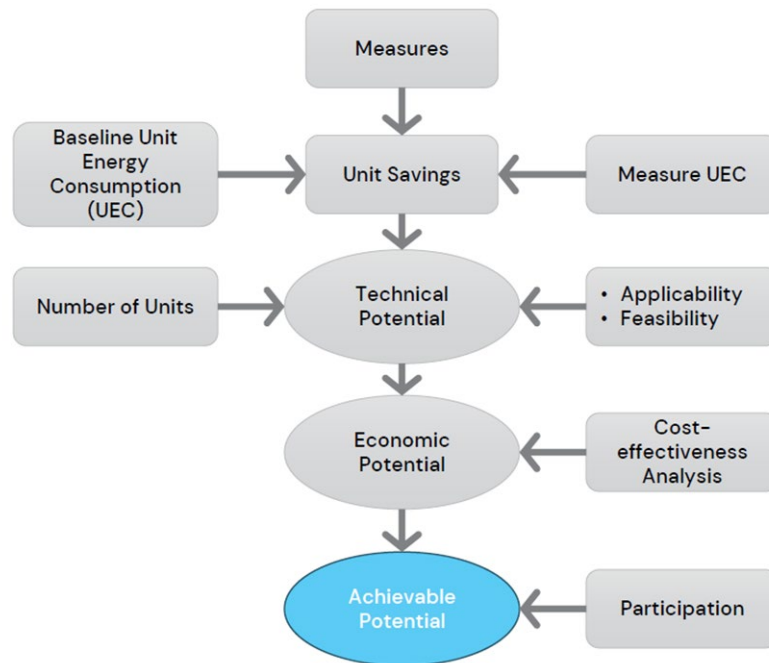
Demand Response including EV charging, HVAC equipment, and water heaters.

The final APS will include a presentation of the technical, economic and achievable savings, and the associated costs over the 20-year period for both the reference and high electrification forecasts. A detailed description of the methods, data sources, input assumptions, and data tables will be published.

Local Achievable Potential Study – Methodology

Methodology:

1. As shown on the graph, the APS will use a bottom-up approach to estimate the total electricity savings at the station level.
2. A “digital twin” of Toronto building stock is created and calibrated using utility and building characteristic data.
3. Conservation demand management (CDM) and distributed energy resources (DERs) measures are applied to the digital twins.
4. The resulting savings are simulated at the building level and aggregated to the transformer station/municipal transformer station levels for each scenario.



Local Achievable Potential Study – Data Inputs/Sources

The following is a list of key inputs and sources identified for the APS.

Technical Potential

- Forecasted energy demand
- Historical energy consumption data
- IESO 2024 MAL Technical Supplement
- Building data (MPAC, Dunn & Bradstreet)
- Aggregated customer data
- Toronto Green Standard
- Energy Efficient Measure Database
 - ResStock
 - ComStock

Economic Potential

- Avoided Generation (Capacity & Energy) & Transmission Costs
- Forecasted Retail Rates

Achievable Potential

- Historical CDM program results
- Adoption Curves
- End-Use Surveys
- Network distributed energy resources hosting capacity



Next Steps & Discussion

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 Toronto Region



Follow the Toronto regional planning activities [online](#)

Next Steps

The IESO will continue to engage and inform. Participants can expect to hear from the IESO at these milestones:

	IRRP	Local Achievable Potential Study (APS)
Q4 2024	<ul style="list-style-type: none">Needs presented in a public engagement webinar, with an opportunity to provide feedback.	<ul style="list-style-type: none">Scope and methodology presented in a public engagement, with an opportunity to seek feedback.
Q1 2025	<ul style="list-style-type: none">Share part of the preliminary options evaluation in a public engagement webinar, with an opportunity to provide feedback¹.	<ul style="list-style-type: none">Preliminary findings presented in a public webinar, with an opportunity to provide feedback.Final APS study results will be completed and published.
2025	<ul style="list-style-type: none">Share the remaining option evaluation, analysis and draft recommendations¹ in public engagement webinars with an opportunity to provide feedback.IRRP report will be completed and published on the webpage.	

¹Presented information will be in line with [Guide to Assessing Non-Wires Alternatives](#) and [Regional Planning Information and Data Guideline](#)

Key Takeaways from Today's Session

- Regional electricity demand in Toronto is expected to grow between 70% to 100%, which is faster than the Provincial rate. At this phase of the plan, several technical electricity system needs have been identified:
 - Several stations and transmission lines are projected to reach their limits due to electricity demand growth. Reducing reliance on Portlands Energy Center will lead to larger supply needs in Eastern Toronto.
 - Work is underway to address near-term needs found at the start of the regional planning process. Alternatives for addressing the medium and long-term needs in the rest of Toronto will be assessed in the IRRP.
- The Technical Working Group will evaluate a mix of wires and non-wires solutions with the goal of ensuring a reliable supply of electricity and understanding the opportunities of a local decarbonized grid.
- A mix of options will be considered and refined over the course of the planning process, including after this plan is developed.
- Feedback and community perspectives are important. Engagement opportunities will be offered at key milestones and subsequent engagements.

We Want to Hear From You

Regional Planning:

- Preliminary draft electricity needs
- Perspectives regarding how to meet the electricity needs to inform upcoming milestones
- Additional information that should be provided in future engagements to help understand perspectives and insights

Local Achievable Potential Study (APS):

- Feedback on scope, methodology, and potential uses for the APS that the IESO should consider
- Additional data sources or regional policies/trends that should be considered

The IESO welcomes written feedback until January 3, 2025.

Please submit feedback to engagement@ieso.ca using the feedback form.



Appendix

Toronto Regional Planning Working Group

Team Lead,
System
Operator

- Independent Electricity System Operator

Lead
Transmitter

- Hydro One Networks Inc.
(Transmission)

Local
Distribution
Company

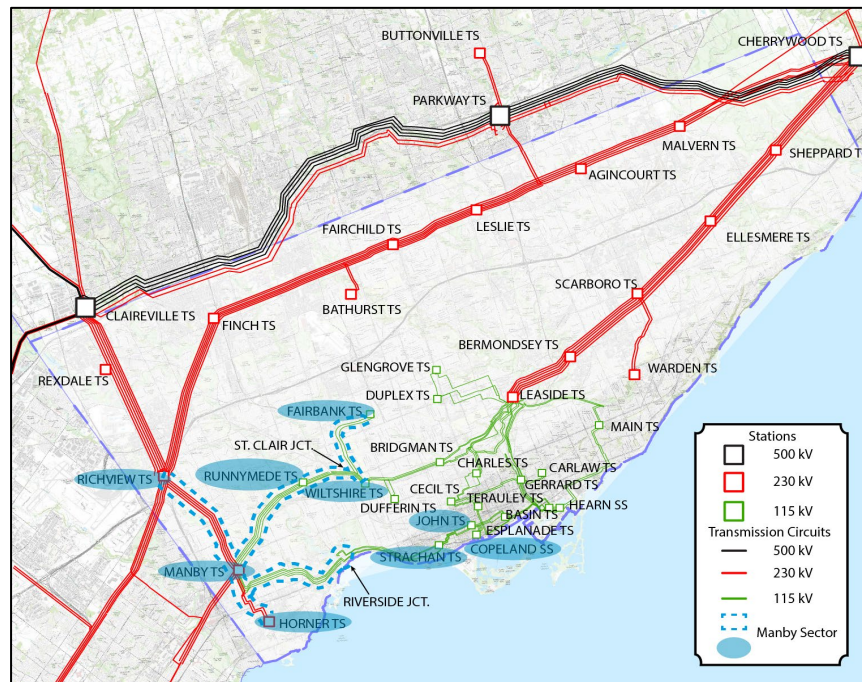
- Toronto Hydro Electric Systems Limited



Detailed Needs by Area

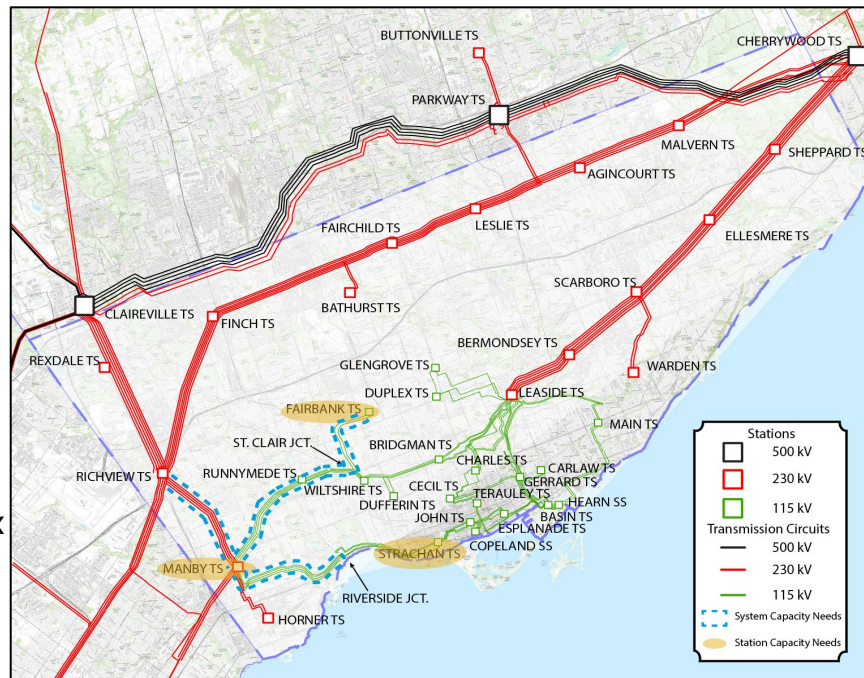
Western Toronto (Manby Sector) Background

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- Area is serviced by a combination of 230 kV and 115 kV lines and nine stations, which provides power to southern Etobicoke and portions of the downtown core.
- The electricity consumed in the area is supplied by the transmission infrastructure at Manby TS.
- To meet growing needs in 2021, rebuilding an existing idle 115 kV line from Richview TS to Manby TS to 230 kV standard was recommended. This work is in progress now.



Western Toronto Area Summary

- Based on forecasted growth, the following needs have been identified: **three station capacity needs** (highlighted in yellow) and **supply capacity needs in most corridors** (highlighted in blue) in this sector.
- As part of the reference forecast, station and capacity **needs start to occur in the short-term** in key areas, and the needs are advanced by the high electrification forecast.
- There is work underway by Hydro One that will support the near-term needs and targeted energy efficiency programs to reduce demand.
- Some of these needs are significant and will require a mix of wire and non-wire options to meet the growing demand.

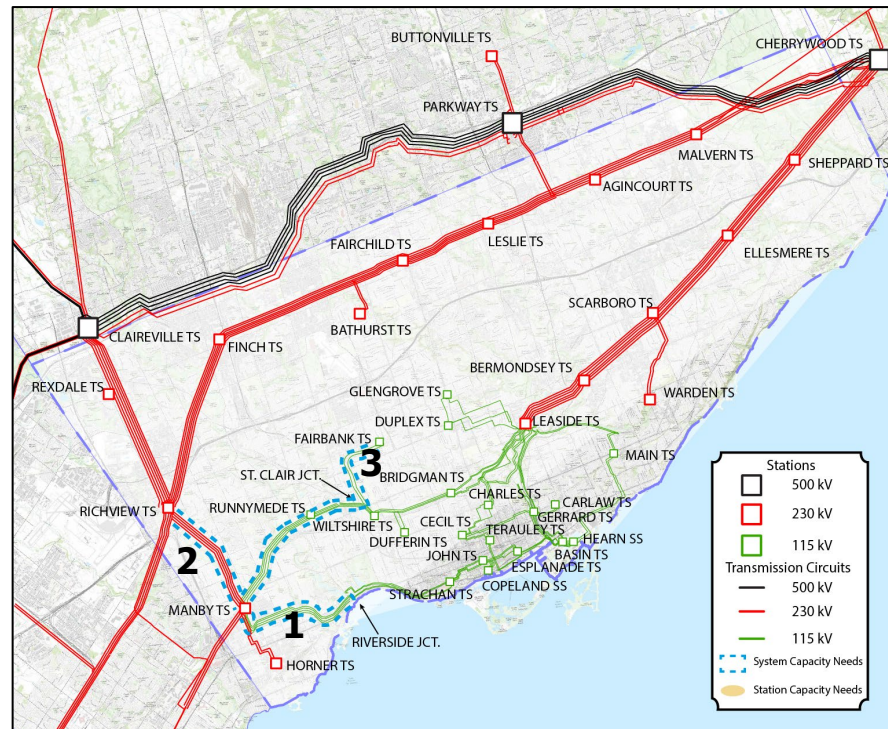


Western Toronto Supply Needs - Reference Forecast

Chart shows the need date and size for each impacted corridor:

	Impacted Equipment	Need Date	Need Size	
			5 Years from Need Date	10 Years from Need Date
1	Manby TS x Riverside Jct. *	Short-term	30 MW	60 MW
1	Manby TS x Riverside Jct. *	Short-term	70 MW	100 MW
2	Richview TS to Manby TS	Medium-term	20 MW	170 MW
3	St. Clair Jct. x Fairbank TS	Long-term	20 MW	40 MW

*Different circuits within the same corridor.

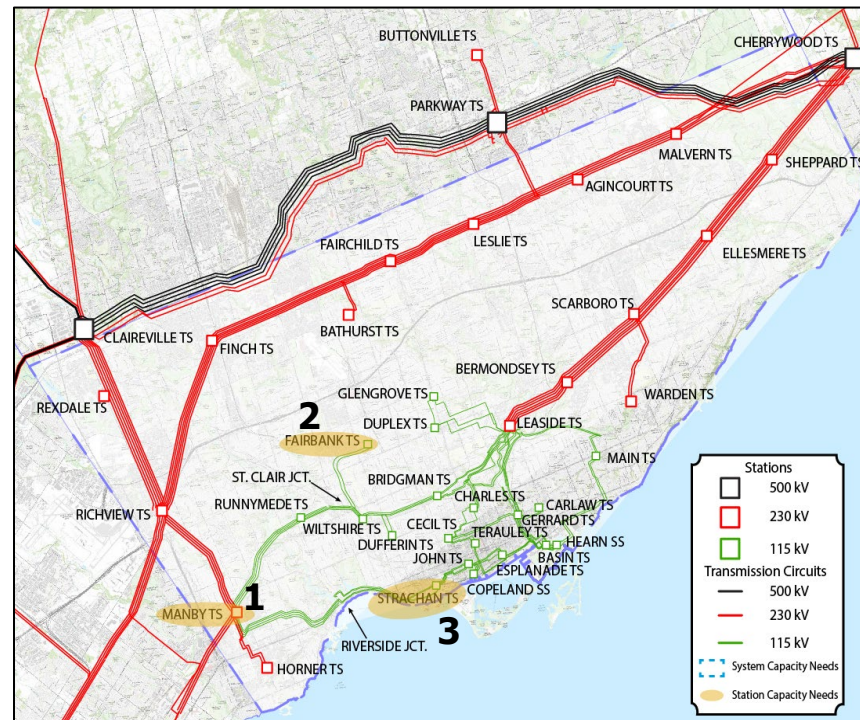


Western Toronto Station Needs – Reference Forecast

Chart shows the need date and size for each impacted station:

Impacted Equipment	Need Date	Need Size	
		5 Years from Need Date	10 Years from Need Date
1 Manby West TS*	Short-term	30 MW	60 MW
2 Fairbank TS	Medium-term	10 MW	30 MW
3 Strachan TS	Long-term	10 MW	N/A
1 Manby East TS*	Long-term	N/A	N/A

*Different equipment within the same station.



Western Toronto Needs – High Electrification Forecast

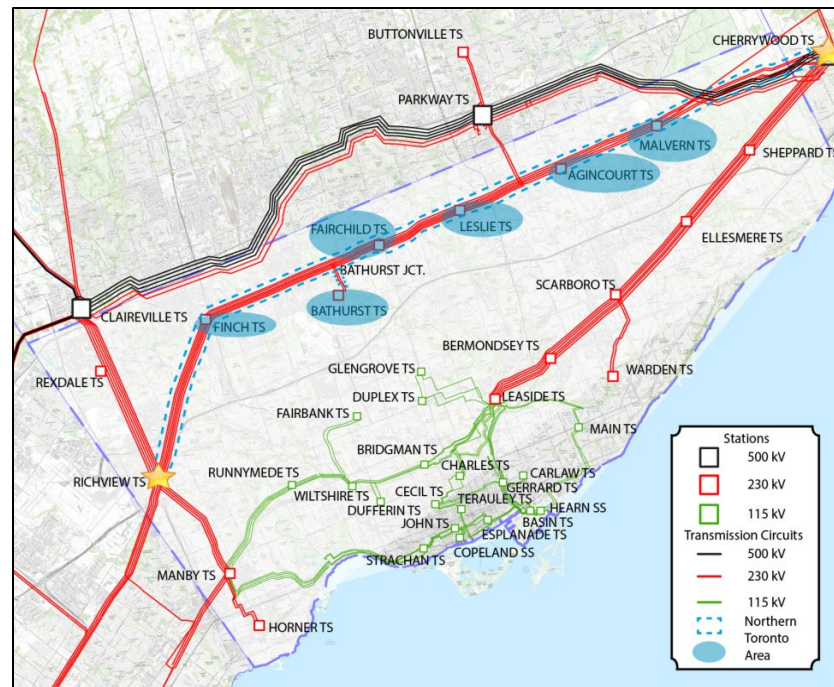
Chart shows the impact of the high electrification forecast on the need date and size for each impacted equipment:

Need Type	Impacted Equipment*	Reference Forecast	High Electrification Forecast		
		Need Date	Need Date	Need Size	
				5 Years from Need Date	10 Years from Need Date
Supply Capacity Ability of the system to supply power through the transmission lines to a local area.	Richview TS X Manby TS	Medium-term	Short-term	80 MW	280 MW
	St. Clair Jct. x Fairbank TS	Long-term	Medium-term	40 MW	80 MW
	Runnymede TS x Manby TS	Long-term	Long-term	30 MW	N/A
Station Capacity Ability of a station to deliver power from the grid down to the distribution system.	Manby East TS	Long-term	Medium-term	70 MW	90 MW
	Strachan TS	Long-term	Medium-term	20 MW	40 MW

*Only needs with an accelerated Need Timing are listed, more details can be found in the appendix.

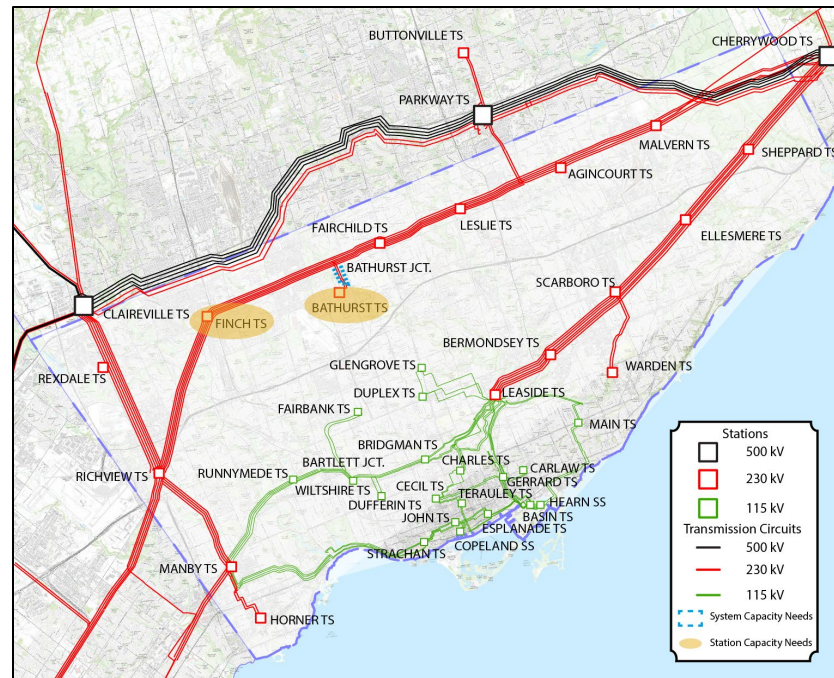
Northern Toronto Area (Finch Corridor) Background

- Northern Toronto or Finch Corridor is highlighted on the map in blue.
- Area is serviced by 230 kV lines and stations, which provide power to North York, part of Etobicoke and Scarborough.
- All the electricity consumed in the area is supplied through transmission infrastructure between Cherrywood TS and Richview TS.



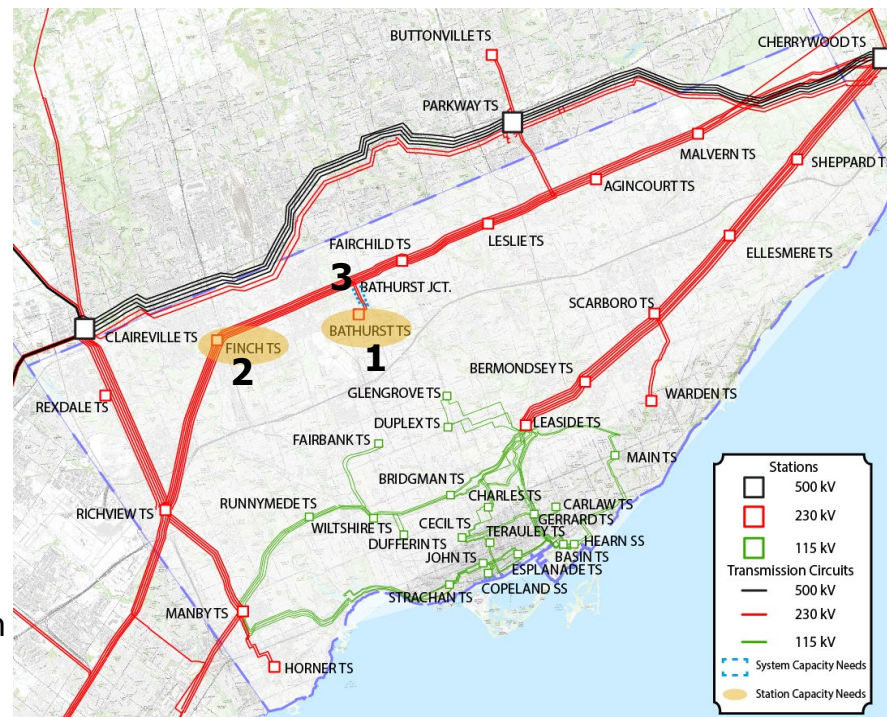
Northern Toronto Area Need Summary

- Needs in this area are being driven by the Update Downsview secondary plan.
- Based on forecasted growth, the following needs have been identified: **two station capacity needs** (highlighted in yellow) and **one system capacity need** (highlighted in blue) in this sector.
- As part of the reference forecast, needs in the Northern Toronto Area start to occur in the medium to long-term, and the high electrification forecast advances the timing and magnitude of need at one station.
- Given the significant needs, a mix of larger scale, wire and/or non-wire options will be required.
- Given the timing, options can be determined during this cycle and further refined over the next planning cycles as growth materializes.



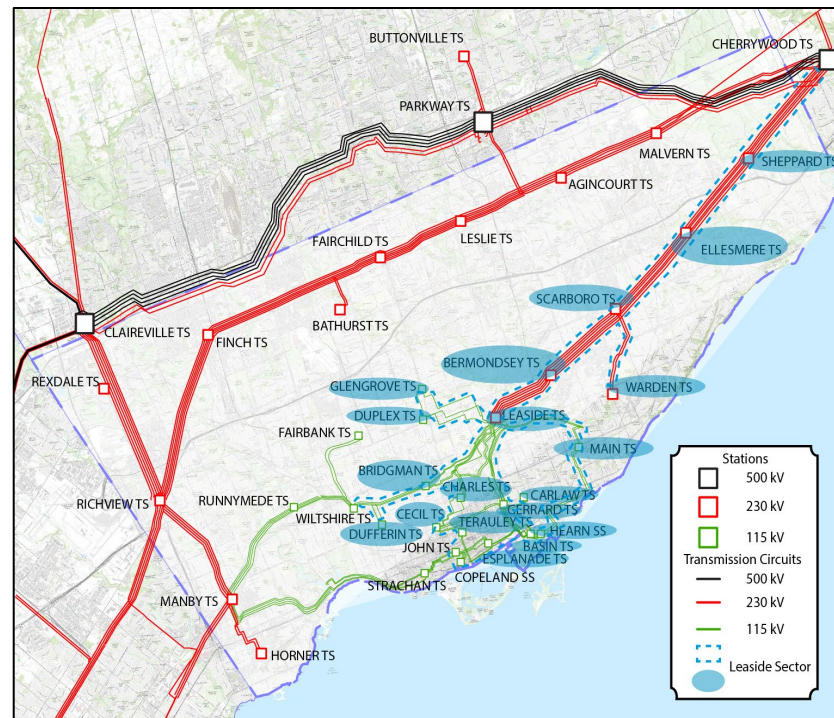
- 1
- 2
- 3

The high electrification forecast accelerates the needs at Finch TS to the medium-term and increase the need size, while the rest of the need timing remains unchanged.



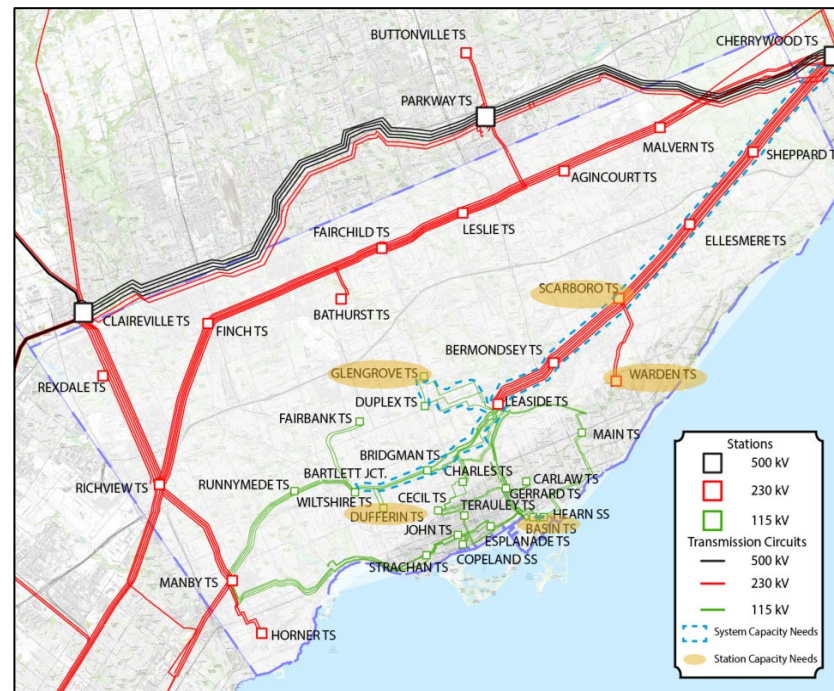
Eastern Toronto (Leaside Sector) Background

- Eastern Toronto area or Leaside Sector is highlighted on the map in blue.
- Area is serviced by 230 kV and 115 kV lines and stations, which provide power to parts of eastern, midtown Toronto and portions of the downtown core.
- Majority of the electricity consumed in the area is supplied through transmission infrastructure at Leaside TS from Cherrywood TS.
- Portlands Energy Centre also provides local capacity - crucial to meeting local reliability during periods of peak demand, or transmission outages.



Eastern Toronto Area Summary

- Needs in this area are being driven by local growth, especially from two key secondary plans (Golden Mile and Port Lands).
- Based on forecasted growth, the following needs have been identified: **five station capacity needs** (highlighted in yellow) and **seven supply capacity needs** (highlighted in blue) in this sector.
- As part of the reference forecast*, **needs occur predominantly in the long-term**, and the high electrification forecast* advances the timing to medium-term, and magnitude of need in key areas.
- Given the size of need, a mix of wire and non-wire options will be required.
- Given the timing, options can be determined during this cycle and further refined over the next planning cycles as growth materializes.

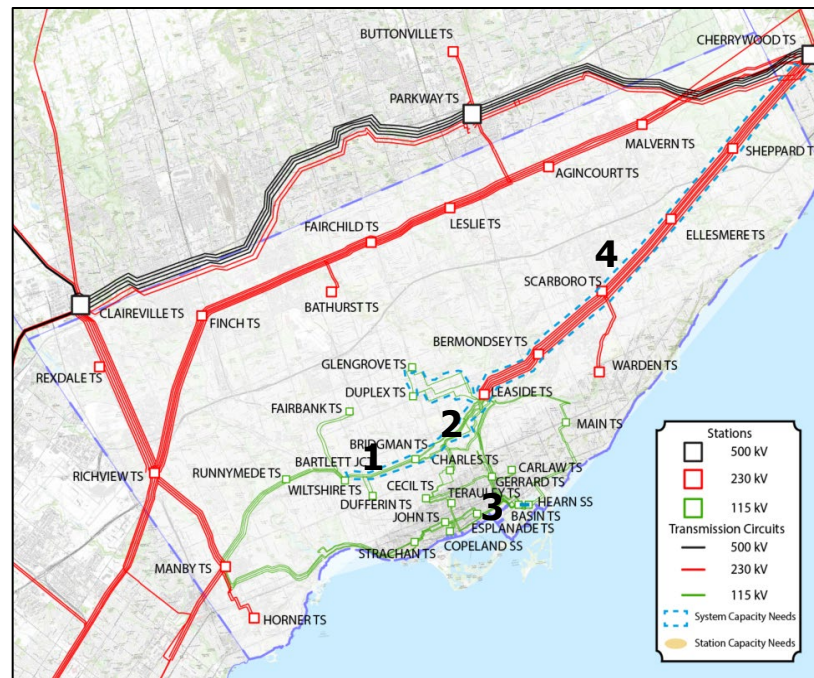


Eastern Toronto Supply Needs – Reference Forecast

Chart shows the need date and size for each impacted corridor:

Impacted Equipment	Need Date	Need Size	
		5 Years from Need Date	10 Years from Need Date
1 Bridgman TS x Barlett JCT	Long-term	20 MW	N/A
2 Leaside TS x Bridgman TS*	Long-term	20 MW	40 MW
2 Leaside TS x Bridgman TS*	Long-term	50 MW	N/A
3 Hearn SS x Basin TS	Long-term	80 MW	N/A
4 Leaside TS x Cherrywood TS	Long-term	190 MW	330 MW

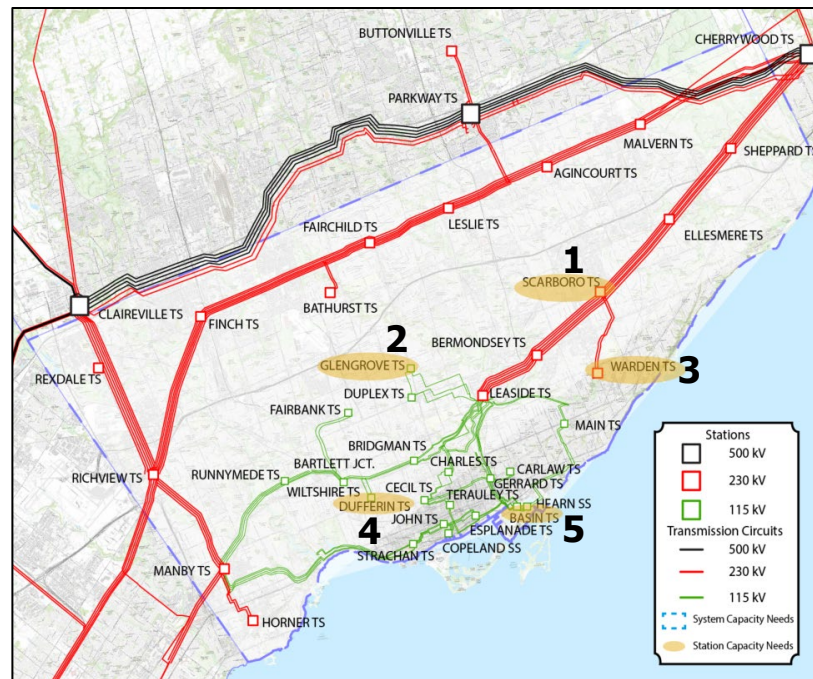
*Different circuits within the same corridor.



Eastern Toronto Station Needs – Reference Forecast

Chart shows the need date and size for each impacted station:

Impacted Equipment	Need Date	Need Size	
		5 Years from Need Date	10 Years from Need Date
1 Scarboro TS	Medium-term	130 MW	150 MW
2 Glengrove TS	Long-term	20 MW	N/A
3 Warden TS	Long-term	20 MW	40 MW
4 Dufferin TS	Long-term	30 MW	N/A
5 Basin TS	Long-term	50 MW	100 MW



Eastern Toronto Supply Needs – High Electrification Forecast

Chart shows the impact of the high electrification forecast on the need date and size for each impacted equipment:

Impacted Equipment	Reference Forecast	High Electrification Forecast		
	Need Date	Need Date	Need Size	
			5 Years from Need Date	10 Years from Need Date
Leaside TS x Bridgman TS*	Long-term	Short-term	70 MW	70 MW
Leaside TS x Bridgman TS*	Long-term	Medium-term	70 MW	100 MW
Birch JCT x Bridgman TS	N/A	Long-term	20 MW	20 MW
Leaside TS x Duplex TS	N/A	Long-term	50 MW	N/A
Leaside TS x Cherrywood TS	Long-term	Long-term (1 year)	260 MW	430 MW
Bridgman TS x Barlett JCT	Long-term	Long-term (3 years)	30 MW	30 MW
Hearn SS x Basin TS	Long-term	Long-term (4 years)	50 MW	100 MW

Eastern Toronto Station Needs – High Electrification Forecast

Chart shows the impact of the high electrification forecast on the need date and size for each impacted equipment:

Impacted Equipment	Reference Forecast	High Electrification Forecast		
	Need Date	Need Date	Need Size	
			5 Years from Need Date	10 Years from Need Date
Dufferin TS	Long-term	Medium-term	40 MW	60 MW
Warden TS	Long-term	Medium-term	30 MW	70 MW
Glengrove TS	Long-term	Medium-term	30 MW	30 MW



South & Central Bulk Study

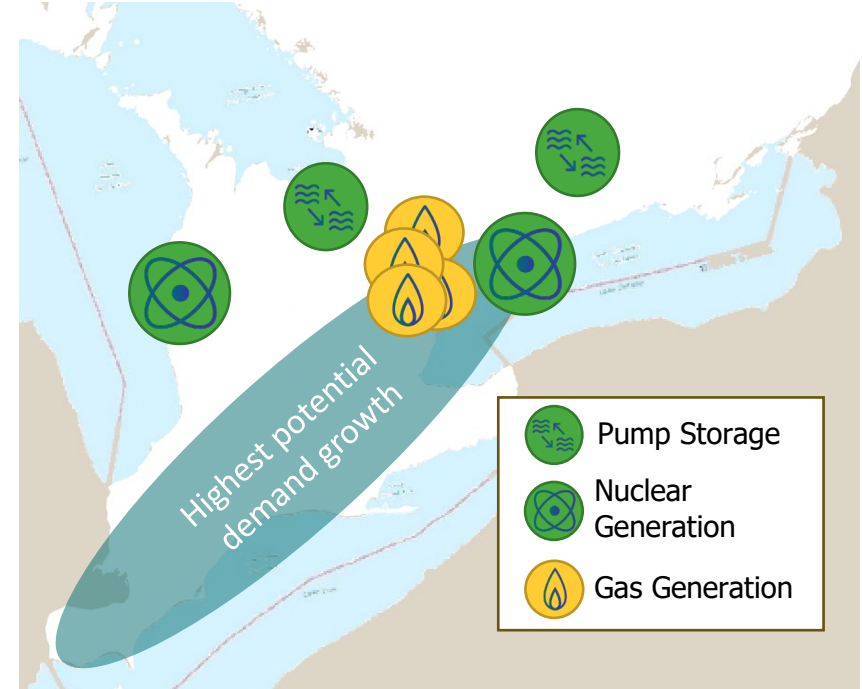
South and Central Bulk Study

IESO initiated a South and Central Bulk Study to enable:

- Growth in demand, particularly along Windsor to Hamilton corridor, and within GTA
- Electrification and fuel switching, data centres, and other large load centres
- Future generation connections
- Opportunities to preserve new or expanded corridors

The plan will be released in 2025, with recommendations focused on early, “no regrets” actions, as well as longer term direction to preserve options, if needed in the future.

Engaging with Indigenous communities, municipalities and stakeholders is key. The IESO will provide quarterly updates through public sessions, and offer targeted engagements, as needed, to understand feedback.

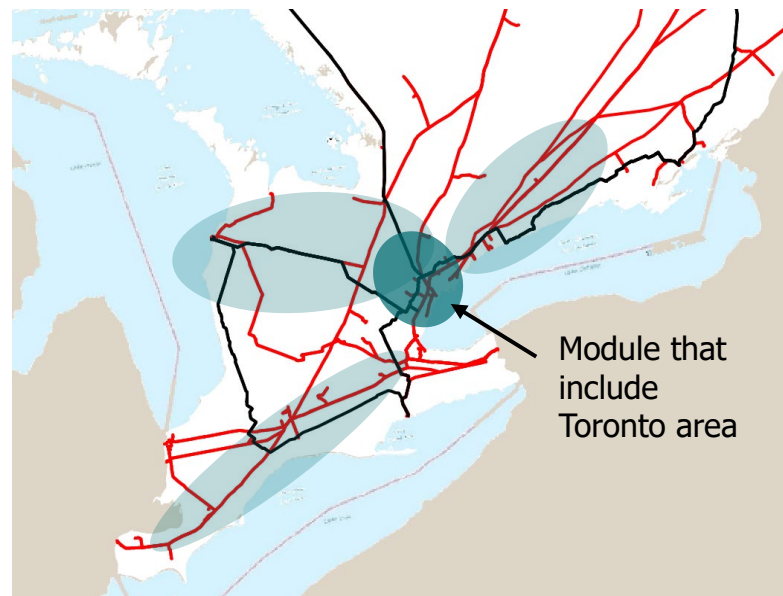


Study Drivers

South and Central Bulk Study – Toronto Objectives

The bulk study is studying multiple modules, ranging from the eastern GTA to southwest Ontario. The module that includes Toronto will understand the ability of the bulk transmission system to:

- **Meet future growth in electrical demand,**
- **Enable new large-scale generation connections,** including understanding the scope of 500 kV transmission reinforcement and network expansion needed into the GTA to connect the new Small Modular Reactors.
- **Understand the timing and options to decrease reliance on local natural gas-fired generation,** including PEC from a provincial perspective.



Study Area