Reliability in Toronto

Backgrounder

Demand

- Peak demand in Toronto is 4,700 megawatts, which is approximately 20% of peak demand for all of Ontario. Toronto's peak is expected to roughly double by 2050.
- As the most populous city in the country with nearly three million residents, it has the highest demand for electricity in Ontario. Toronto is also home to thousands of businesses and organizations that operate in the city, drawing employees and visitors from surrounding communities and beyond.
- Toronto Hydro has developed a demand growth forecast that considers a variety of factors that will determine the amount of energy the IESO will need to deliver from the grid. As part of the engagement, the IESO will hold a webinar to walk people through this demand forecast so they can see how we expect to plan for and use energy in the future.
- For Toronto, the demand forecast takes into account:
    - **Transit expansion and electrification.** GO Transit Electrification and the new Ontario Line are anticipated to add an additional 100 megawatts of energy demand to Toronto's system, which is equivalent of adding a city the size of Kingston.
    - **Consumer choice.** Consumer adoption of electric vehicles and heating could have a significant impact on future power needs. For example, the regional plan will assess what would be needed to support the City of Toronto's TransformTO Strategy including increasing EV adoption and electrified heating
    - **Economic growth.** Toronto is an attractive investment destination. For example, there are a number of proposed data centres for the area which typically use large amounts of energy.
    - **Community growth.** For example:
        - Downsview: With Bombardier relocating to Pearson Airport, plans are underway to reimagine the airport lands and the surrounding community by focusing on transit, job creation, open spaces and local services.

- Portlands: Through investments from Waterfront Toronto, residential projects in the Portlands area will develop more than 700 acres (about the same size as Central Park in New York City) surrounding the Portlands generating station and Cherry Beach.
- Golden Mile: Work is underway to create a vision for the redevelopment of the residential and industrial lands along the Golden Mile, to create jobs, investment and a more attractive community for residents and workers.

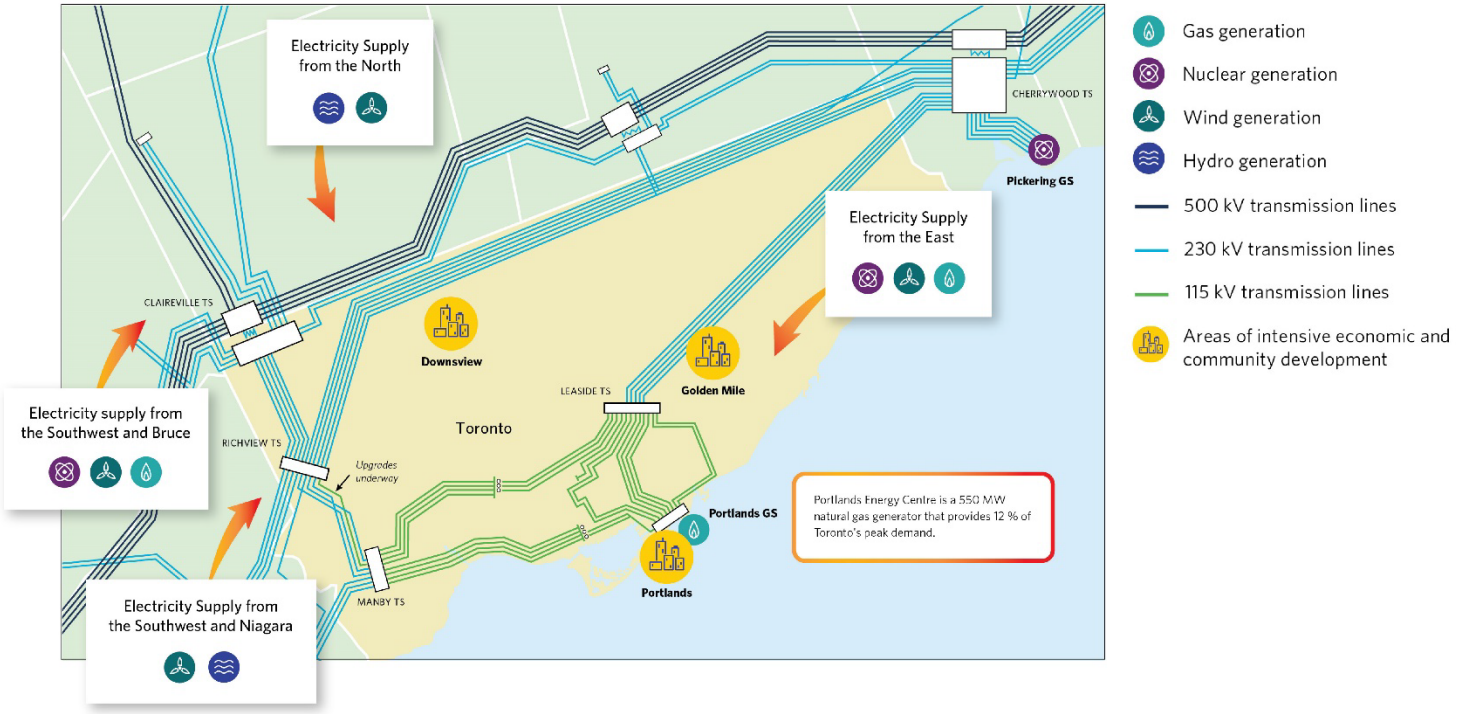
- **Conservation:** Future participation in conservation programs offered by Save on Energy and demand response programs. For example, many large office towers in Toronto participate in the Industrial Conservation Initiative that provides incentives to reduce energy use during the highest demand peaks of the year.
- **Local Generation:** Anticipated amount of small-scale generation located within the city. For example, solar panels on residential roofs or businesses using onsite batteries to offset their peak energy use.

Toronto's Energy Infrastructure

- Within the City of Toronto, the provincial grid consists of 230 kV and 115 kV transmission lines and transformer stations. The higher voltage 500 kV lines that you can see along the 407 do not enter to the city itself. There are limited opportunities to build new transmission lines in Toronto given space constraints.
- Most Torontonians will be familiar with the large transformer stations, such as Manby TS just outside the Kipling TTC station. These facilities are connected to the transmission lines that bring in power from nuclear, hydro, wind and natural gas generators outside the city. These stations reduce voltage levels so that electricity can be sent along Toronto Hydro's network for distribution to local homes and businesses.
- There is only one main source of supply in Toronto itself: the Portlands Generating Station, a 550 MW generator located in the heart of the city that ramps production up and down to meet changes in energy consumption.
- It is a combined cycle facility, which means it has two turbines, but only one uses natural gas as fuel. The first turbine, similar to a jet engine, uses gas to produce electricity. The heat from that turbine creates steam that drives another turbine to produce 50 per cent more energy. Combined cycle turbines are more efficient and cost-effective than peaker plants such as the York Energy Centre.
- Most of the city's power comes in from the transmission system, but Portlands represents a vital source of supply as a single station – roughly 12 per cent of Toronto's peak demand. It also serves as a reliable "black start" unit for jumpstarting the city's electricity supply in the event of a wide scale power outage.
- To reduce reliance on Portlands, the planning process will need to look at a variety of options that would work for the city given the lack of space to build new infrastructure. For example, an ideal entry point into the city is where Portlands is located today - whether it could be connecting underwater cables to existing transmission lines or developing other projects at that location.

- Since 2015, Save on Energy programs have supported more than 115,000 homes and businesses, with $527 million in energy efficiency incentives such as upgrades to industrial equipment or home furnace replacements. These measures have reduced summer peak demand in Toronto by 260 MW and 3 Terawatt hours of total energy consumption. This is equivalent to removing more than 320,000 homes from the electricity grid.
- Aging infrastructure: Hydro One, with the support of regional planning, has been replacing aging transmission infrastructure throughout the city. One of the projects underway is the replacement of underground cables from downtown Toronto to the Distillery District. The regional plan will continue to recommend replacing and/or upgrading of aging infrastructure when necessary.

Toronto Electricity Supply Overview



Planning Considerations

- Toronto is its own planning region – one of 21 in the province. This allows the IESO to work with its utility partners (Hydro One, Toronto Hydro) to develop recommendations that address the unique needs of the area. It will provide recommendations for building new transmission infrastructure, replacing aging infrastructure, and targeted funding for energy efficiency and local supply projects.
- This is the third Integrated Regional Resource Plan (IRRP) for Toronto. It will outline electricity needs and recommended solutions to ensure a reliable supply of electricity over the next 20 years. Previous plans have results in area upgrades such as the Etobicoke Greenway project which will increase capacity to serve increasing electricity needs in the area.
- The planning process is well underway, with needs assessments and scoping work complete. We are in the development and engagement phase and adding the specific requirements of how to

reduce reliance on the Portlands generating station. This work will contribute to the IESO's broader efforts to move forward with an orderly and thoughtful decarbonization of the grid.

- Note this effort is separate from local distribution planning. Toronto Hydro conducts its own assessment for what is needed to get supply from the high voltage system to Toronto's homes and businesses. The IESO's assessment focuses on ensuring that there is enough supply to meet Toronto's needs and how much of that supply should be produced within the city and how much should be delivered from the transmission grid.
- Community engagement will begin with a public webinar on April 16, where the IESO will provide information about Toronto's demand forecast and begin seeking input. Additional public webinars will follow, including to discuss potential solutions. The IESO will keep Torontonians informed on the issues and up-to-date on progress through its web site and through social media and email updates. In spring 2025, the IESO will release its recommendations for what's needed to meet Toronto's energy needs.