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Halton Hills Generating Station Expansion

Presentation to the Town of Halto Hills Council

Dec. 11, 2023

Halton Hills Generating Station Expansion Benefits

The Halton Hills Generating Station plays an important role by providing reliable and affordable electricity to the Town of Halton Hills today and helping us transition to the carbon-free economy of tomorrow.

Your support for our proposed generating station expansion will help:

§Meet the Town’s growing energy needs as our population and economy expand and we decarbonize by electrification

§Ensure grid reliability during peak demand periods, and

§Enable additional renewable generation sources on the grid, by supplying needed electricity when the wind isn't blowing, and the sun isn't shining.

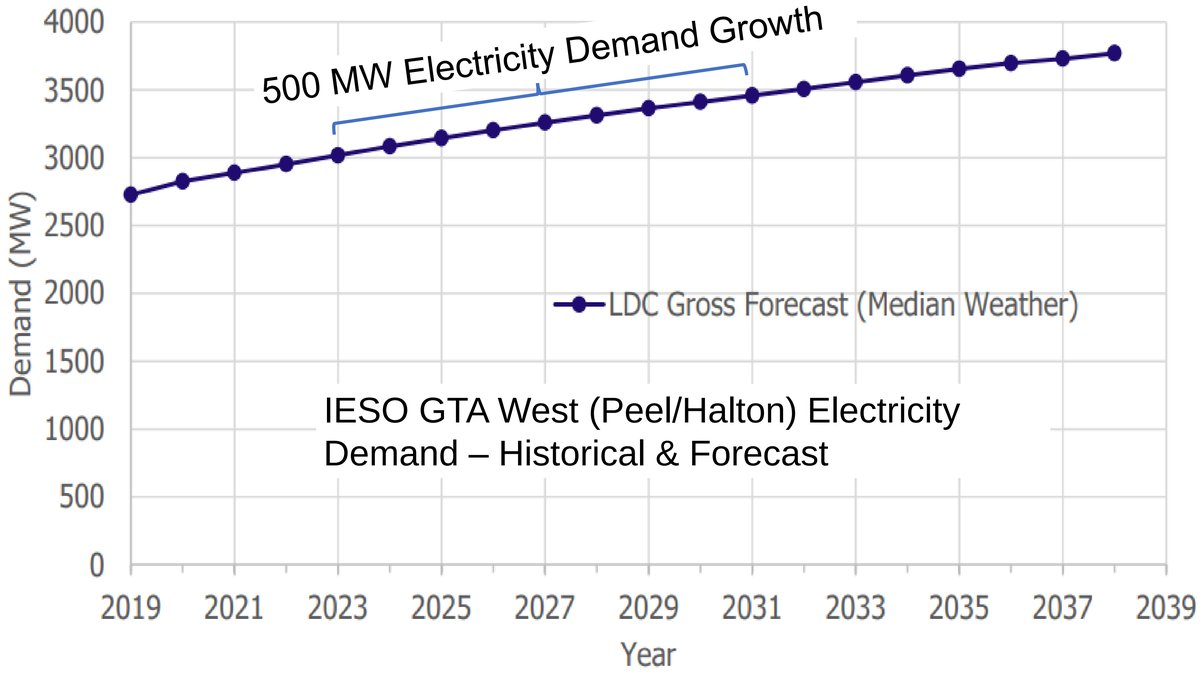
Decarbonization and Ontario’s Electricity System: https://www.ieso.ca//en/Learn/The-Evolving-Grid/Natural-Gas-Phase-Out-Study

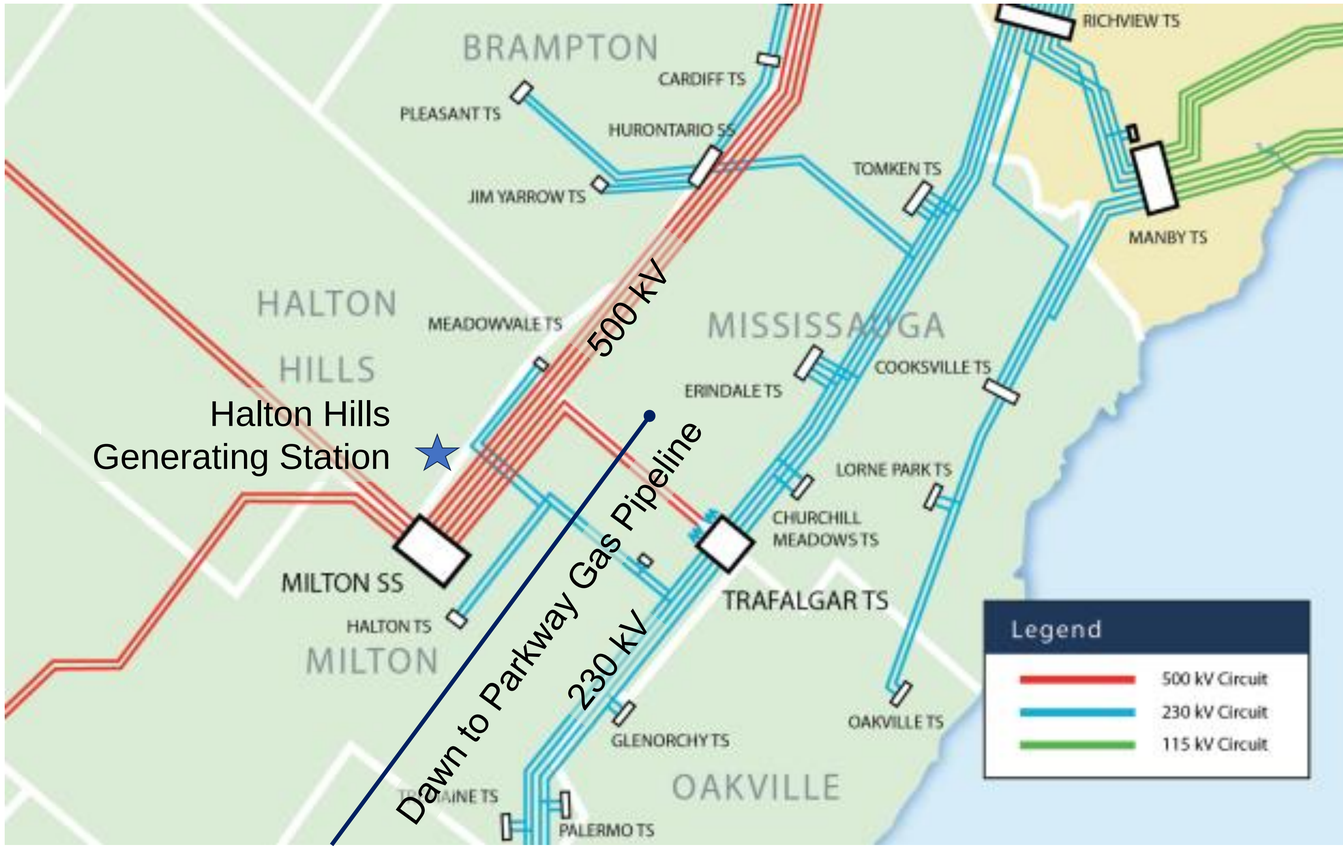
Halton Hills Electricity Demand is Growing

Halton Hills Generating Station Provides Local Electricity Supply

GTA West (Peel/Halton) electricity demand is forecasted to grow to 3,500 MW by 2031 from 3,000 MW today due to expanding urban boundaries and intensifying urban areas[1].

The Halton Hills Generating Station Expansion will supply electricity where it's needed without the cost and land expropriation required for transmission system reinforcements.





1. IESO Greater Toronto Area West (Peel/Halton) Integrated Regional Resource Plan, July 2021

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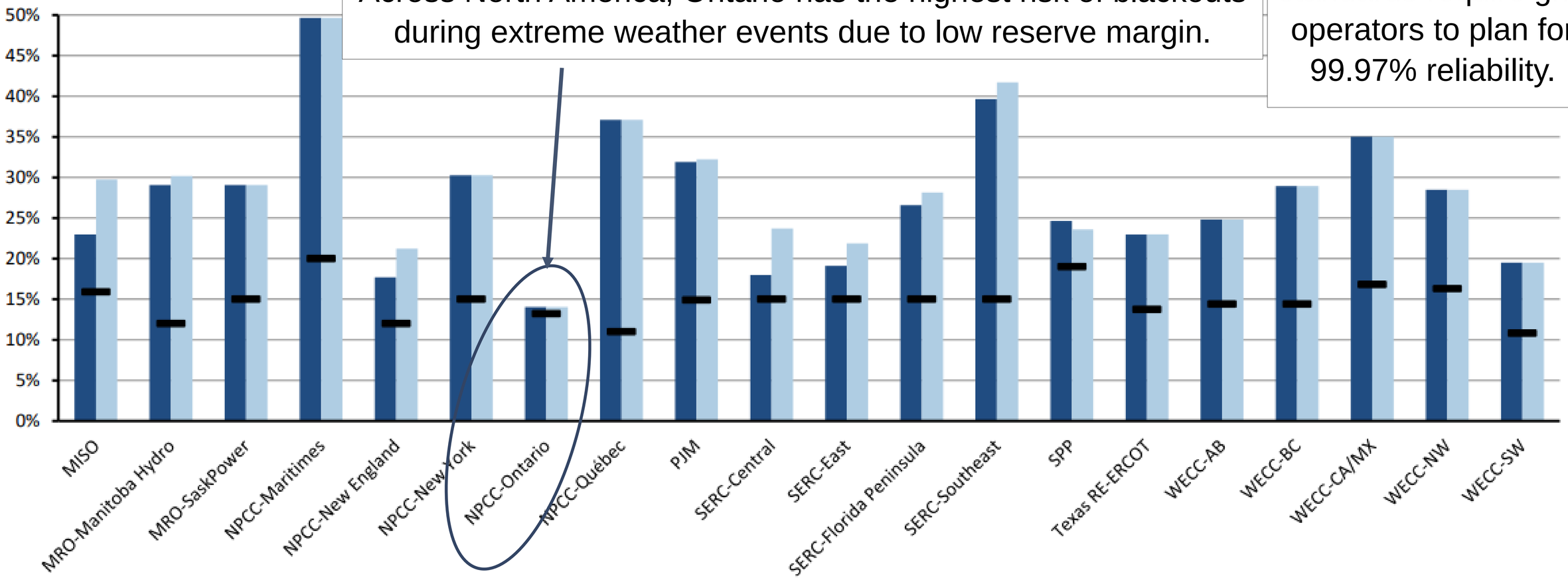
Ontario Electricity Reliability at Risk

Across North America, Ontario has the highest risk of blackouts during extreme weather events due to low reserve margin.

North American standards require grid operators to plan for 99.97% reliability.



Existing resources available to meet peak demand.

Existing and planned resources available to meet peak demand.

Minimum requirement to maintain acceptable reliability.

Source - NERC 2023 Summer Reliability Assessment:
https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2023.pdf

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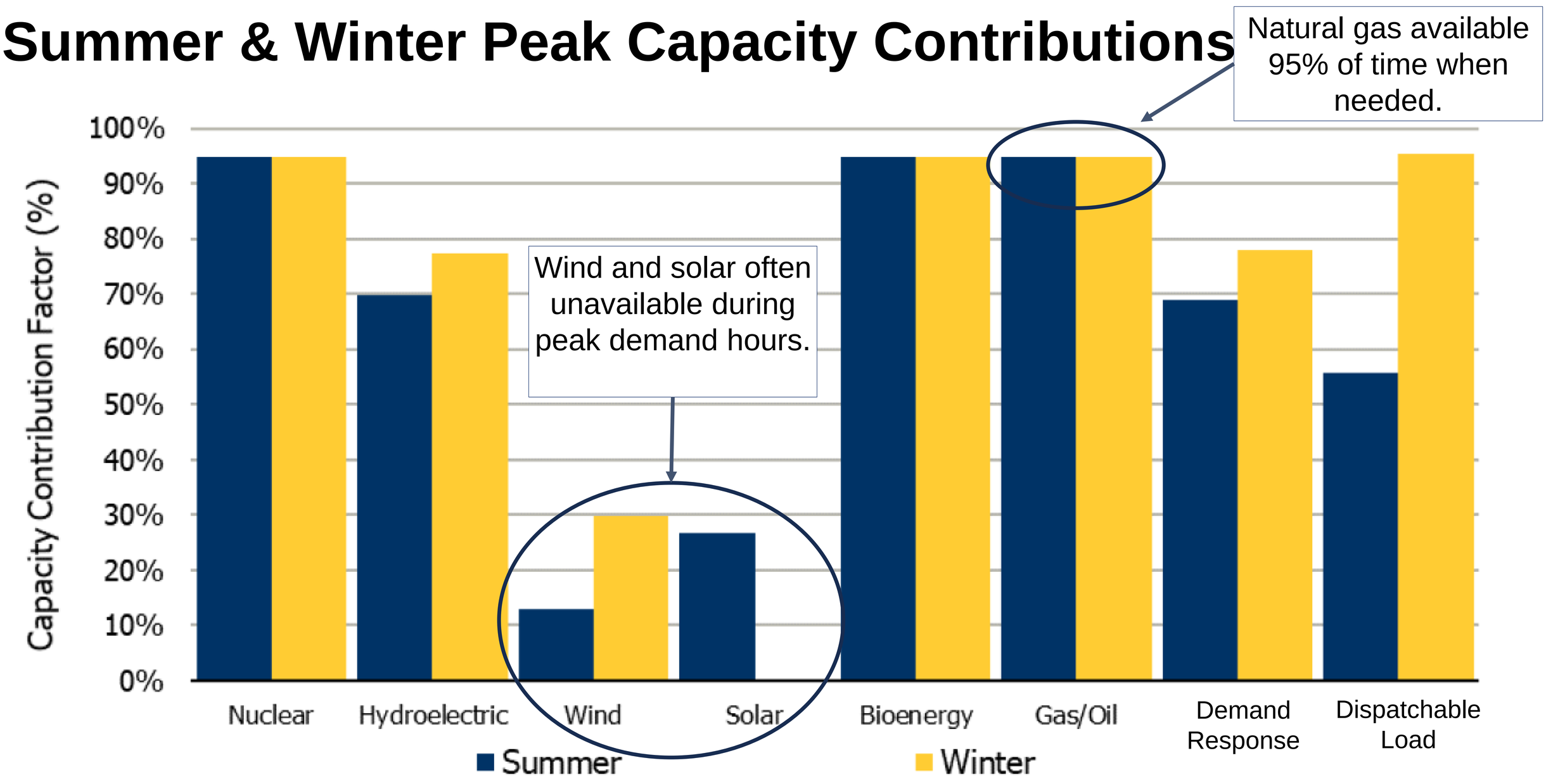
Electricity Supply During Peak Demand Periods

Summer & Winter Peak Capacity Contributions



Source - IESO 2022 Supply, Adequacy and Energy Outlook Module: https://www.ieso.ca/-/media/Files/IESO/Document-Library/planning-forecasts/apo/Dec2022/Supply-Adequacy-and-Energy-Outlook-Module.ashx

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Natural Gas Electricity Generation Needed Post 2035

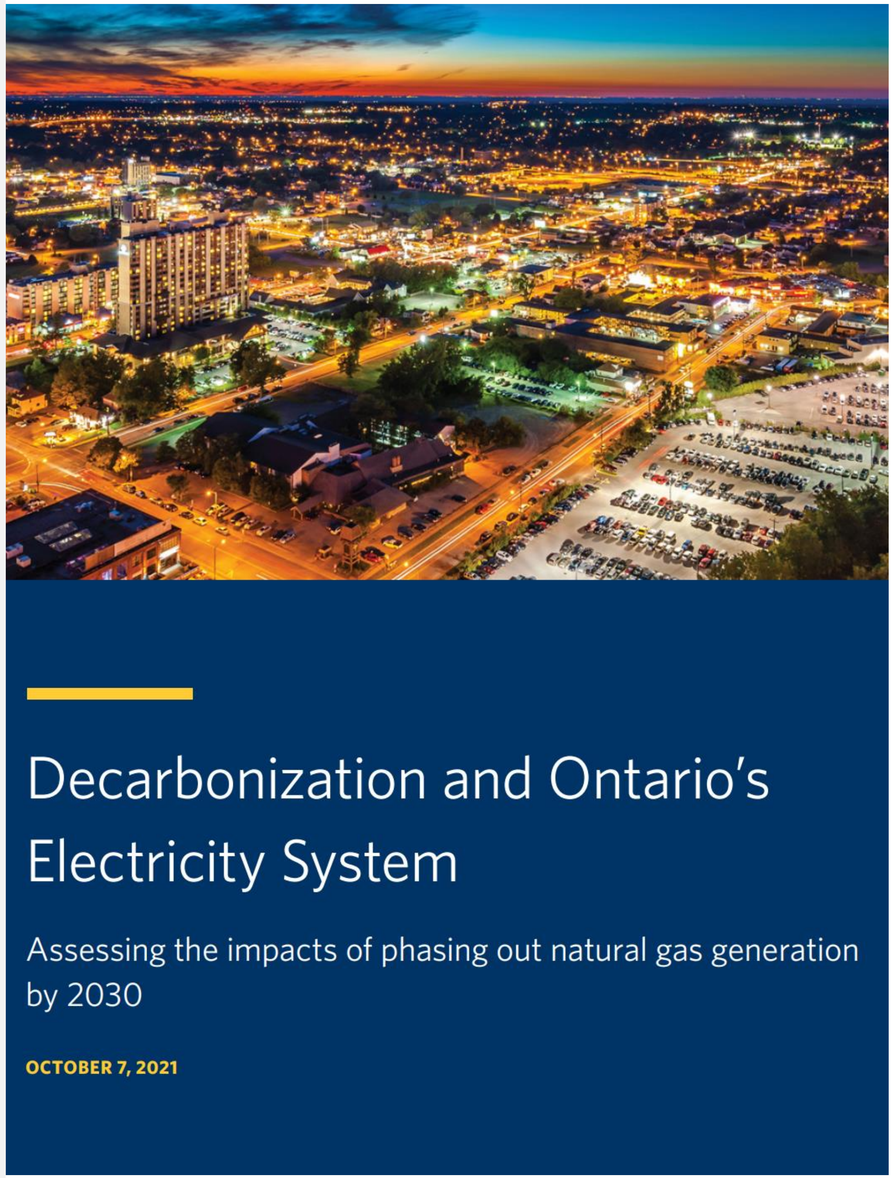
The immediate phase-out of natural gas electricity generation is not possible without risking blackouts.

The proposed federal Clean Electricity Regulations were revised to recognize the need for gas generators operating up to 450 hours per year after 2035 for grid reliability.

There are no current like-for-like replacements of supply that offer similar characteristics of gas generation.

Electrification of high-emitting sectors such as transport and buildings offers a far more effective pathway to decarbonization and net-zero.

Year-round supply from Quebec is unrealistic because Quebec relies on electricity imported from Ontario and other jurisdictions during the winter and is also facing a future supply shortage.



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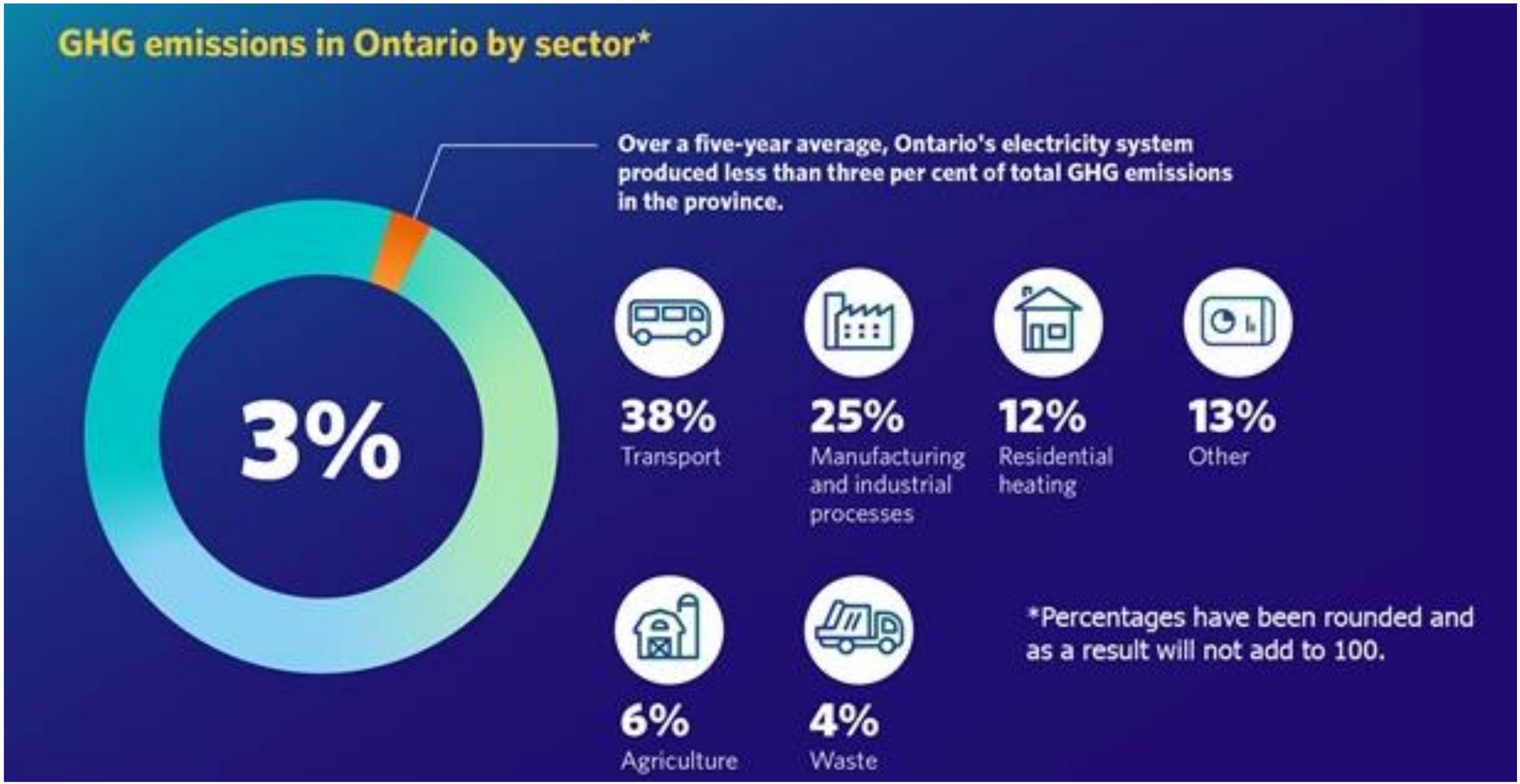
Decarbonization and Ontario's Electricity System: https://www.ieso.ca//en/Learn/The-Evolving-Grid/Natural-Gas-Phase-Out-Study

Ontario GHG Emissions by Sector



Source - https://www.ieso.ca/en/Powering-Tomorrow/2021/Six-things-to-know-about-the-IESOs-study-on-phasing-out-gas-fired-generation-by-2030

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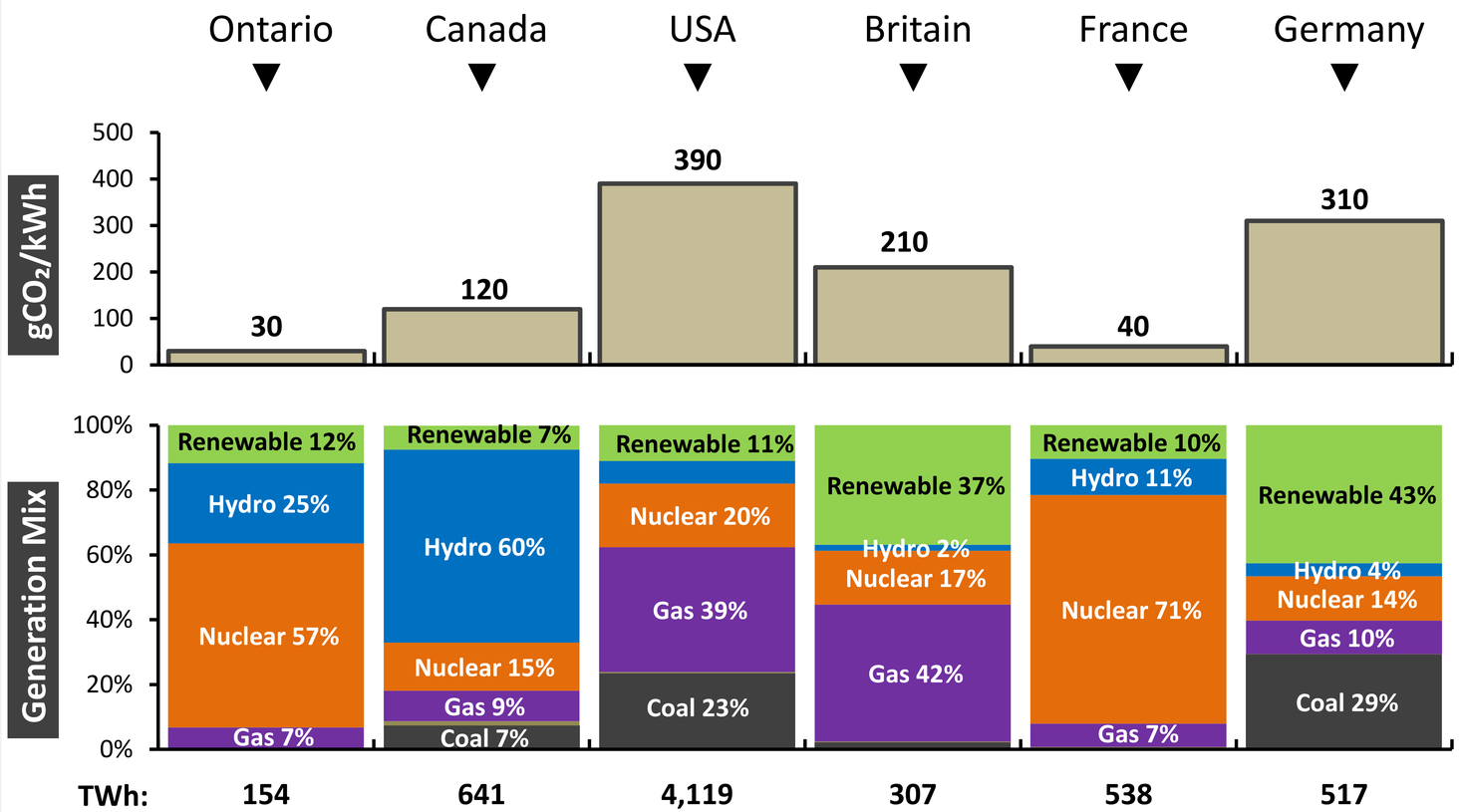
Ontario Electricity in a Global Context

World Leader in Clean Electricity Supply

Ontario has one of the cleanest electricity systems in the world.

Ontario's electricity system was 90 per cent emissions-free in 2022.

CO_2 Emissions Intensity – Ontario vs. World



NOTES:

- Based on 2020 actual generation for Ontario, 2018 for Canada, and 2019 for USA, Britain, France and Germany.
- CO_2 emissions intensity estimates for in-region generation only; CO_2 from imports and life-cycle emissions not included.
- Renewable excludes hydro and includes wind, solar, biofuels and geothermal; small brown portion is oil.
- CO_2 emissions intensity estimates calculated assuming emissions of 450 gCO2e/kWh for gas, 800 gCO2/kWh for oil and 900 g/KWh for coal.

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Not a Choice Between Gas vs Renewable Generation

Natural gas generation provides reliable, all-weather electricity, while wind and solar provide intermittent electricity.

More natural gas generation is needed to maintain supply reliability.

Ontario has plans for major investments in additional nuclear, hydroelectric, wind and solar generation sources.

2024–2025

- New commitments to small hydro facilities
- New capacity exchange agreement with Hydro Quebec
- First large battery facility comes online
- New market opportunities for local energy projects
- Launch expanded energy efficiency programs
- New transmission lines bring power to Southern and Northeast Ontario (2025 – 2030)

2026–2028

- Battery fleet grows, contributing to Ontario's system needs

2029

- First small modular reactor powers up

2030–2034

- Proposed Pickering refurbishment
- Non-emitting generation fleet continues to grow

2032

- Darlington and Bruce nuclear refurbishments largely complete

2040

- Most Ontario natural gas generation reach end of life

https://ieso.ca/-/media/Files/IESO/Document-Library/cer/IESO-CER-Backgrounder.ashx

Halton Hills Generating Station Expansion Benefits

By supporting the Halton Hills Generating Station Expansion, the Town of Halton Hills will become part of the solution to meet the increased electricity demand needed for the broader decarbonization of our economy.

The Halton Hills Generating Station and its proposed expansion are critical infrastructure needed to maintain the reliable and cost-effective operation of Ontario's electricity system during our transition to a net-zero economy.

Thank you.

Decarbonization and Ontario's Electricity System: https://www.ieso.ca//en/Learn/The-Evolving-Grid/Natural-Gas-Phase-Out-Study