

Atura Power

Halton Hills Generating Station Expansion

Town of Halton Hills Council
Meeting

Monday, Oct. 30, 2023



About Atura Power

Atura Power's Fleet of Generation Assets

A subsidiary of Ontario Power Generation, Atura Power owns and operates Ontario's largest fleet of combined-cycle gas turbine power plants.



1. Brighton Beach Generating Station (570 MW)



2. Halton Hills Generating Station (683 MW)



3. Portlands Energy Centre Capacity (550 MW)



4. Napanee Generating Station (900 MW)



5. Napanee BESS Phase 1 (250 MW)



6. Oakville Head Office



Comments or questions can be sent to: haltonexpansion@aturapower.com

Atura Power Community Outreach and Support

Committed to Supporting the Halton Hills Community

Atura Power annually donates thousands of dollars to local charities and organizations including:

- Georgetown Hospital Foundation
- Trees for Halton Hills
- Halton Learning Foundation – trades & engineering scholarships
- Over 800 healthy food packages to schools via Food4Kids
- Youth Leadership Program
- Lions Club Santa Clause Parade
- Free public skating at local arenas



Comments or questions can be sent to: haltonexpansion@aturapower.com

Procurement for Electricity Reliability Services

New Electricity Resources Required for System Reliability

The Independent Electricity System Operator (IESO) is the Crown corporation that operates the province's electricity system.



Ontario is entering a period of emerging electricity system needs and additional electricity resources are needed to maintain system reliability.

The IESO Long-Term 1 Procurement is underway to secure a combination of 1,600 MW of electricity storage and 918 MW of natural gas generation resources.

Atura Power is a qualified proponent and proposing to add an additional generating unit to the Halton Hills Generating Station to help meet the Town's and Ontario's emerging energy needs.



Role of Natural Gas Generation

Local Supply to Maintain Reliability

While natural gas accounts for 28 per cent of Ontario's total installed capacity, it only accounts for about seven per cent of all electricity generated in the province. That's because natural gas is primarily used during peak demand periods.

Especially useful in balancing the ups and downs of wind and solar generation, gas generation can increase and decrease output within minutes to follow sudden or expected changes in supply and demand.

Gas plants are generally located near large population centres to meet local power needs, avoiding the need for potentially expensive or disruptive transmission projects.



Natural Gas + Wind and Solar

Natural Gas Backs Up Wind and Solar Generation

Wind and solar generation are important resources and will continue to play an increasing role in supplying clean electricity. However, other resources are needed to maintain electricity system reliability.

It's common to have a week or more of low wind or overcast conditions, and back-up resources are needed during those periods.

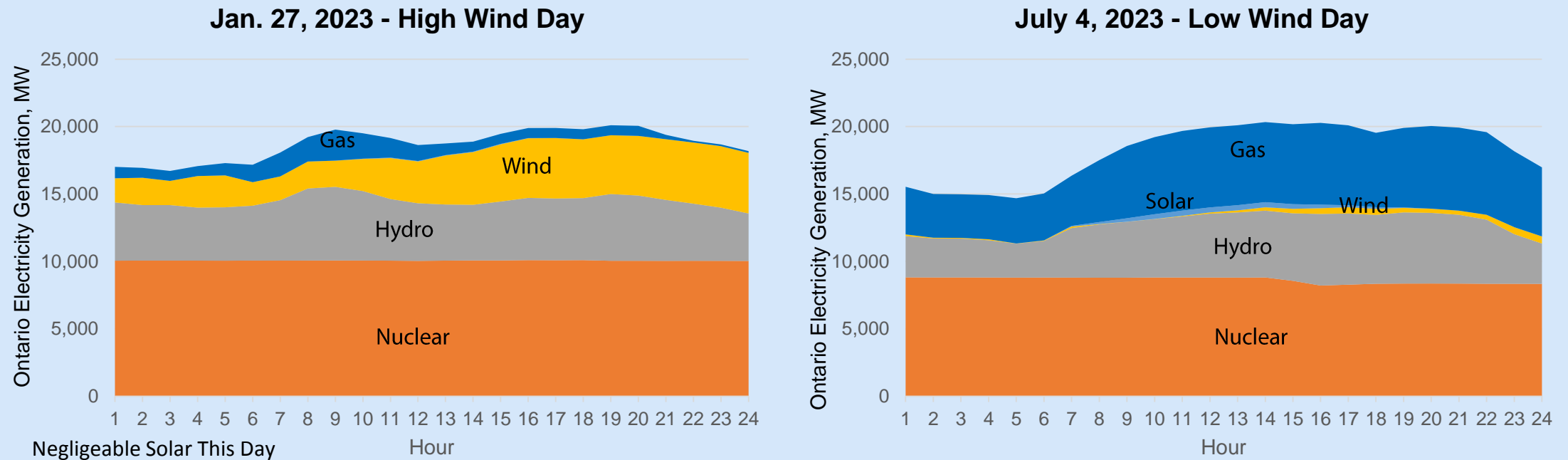
July 1 to 10, 2023, was a period of consistently low wind and Ontario's ~4,900 MW of wind generation operated at an average of 426 MW - roughly nine per cent of capacity – during three of the top six electricity demand hours of 2023.

Natural gas generation operates regardless of weather conditions to ensure system reliability and supports wind and solar generation in the system.



How Natural Gas Generation is Operated

Natural Gas Backs Up Wind and Solar Generation



Two high demand days with different weather conditions:

- January 27th - high wind generation with limited gas generation
- July 4th - low wind generation with high gas generation
- July 4th - sixth-highest peak hourly load of 2023 - gas prevented blackouts
- Battery energy storage not feasible option for extended low wind event



IESO 2030 Gas Generation Phase-Out Study

www.ieso.ca/en/Learn/Ontario-Supply-Mix/Natural-Gas-Phase-Out-Study

Phase-out of natural gas electricity generation by 2030 is not possible without a risk of blackouts.

Currently there's no like-for-like replacement supply that offers similar operating characteristics of gas generation.

Electrification of other sectors offers a far more cost-effective pathway to decarbonization than rushing to removing natural gas from the grid by 2030.

Year-round electricity supply would need to be available from Quebec, which is unrealistic given that it is reliant on electricity imported from Ontario and other jurisdictions during the winter



Decarbonization and Ontario's Electricity System

Assessing the impacts of phasing out natural gas generation by 2030

OCTOBER 7, 2021



Ontario's First Step Towards Full Decarbonization

Halton Hills Generating Station H₂ Blending and Cofiring Project



Atura H₂

Niagara Hydrogen
Centre electrolysis
green hydrogen
production



Atura Power

Green H₂ is blended
with natural gas,
reducing emissions

IESO's Pathways to Decarbonization study identified hydrogen as the key fuel to replace natural gas while maintaining reliability.

Atura Power is leading Ontario's hydrogen development with the production and blending of green hydrogen into the Halton Hills Generating Station starting early 2025.

The initial phase will blend up to 15 per cent hydrogen with natural gas, resulting in GHG reductions of up to 23,000 tonnes per year.

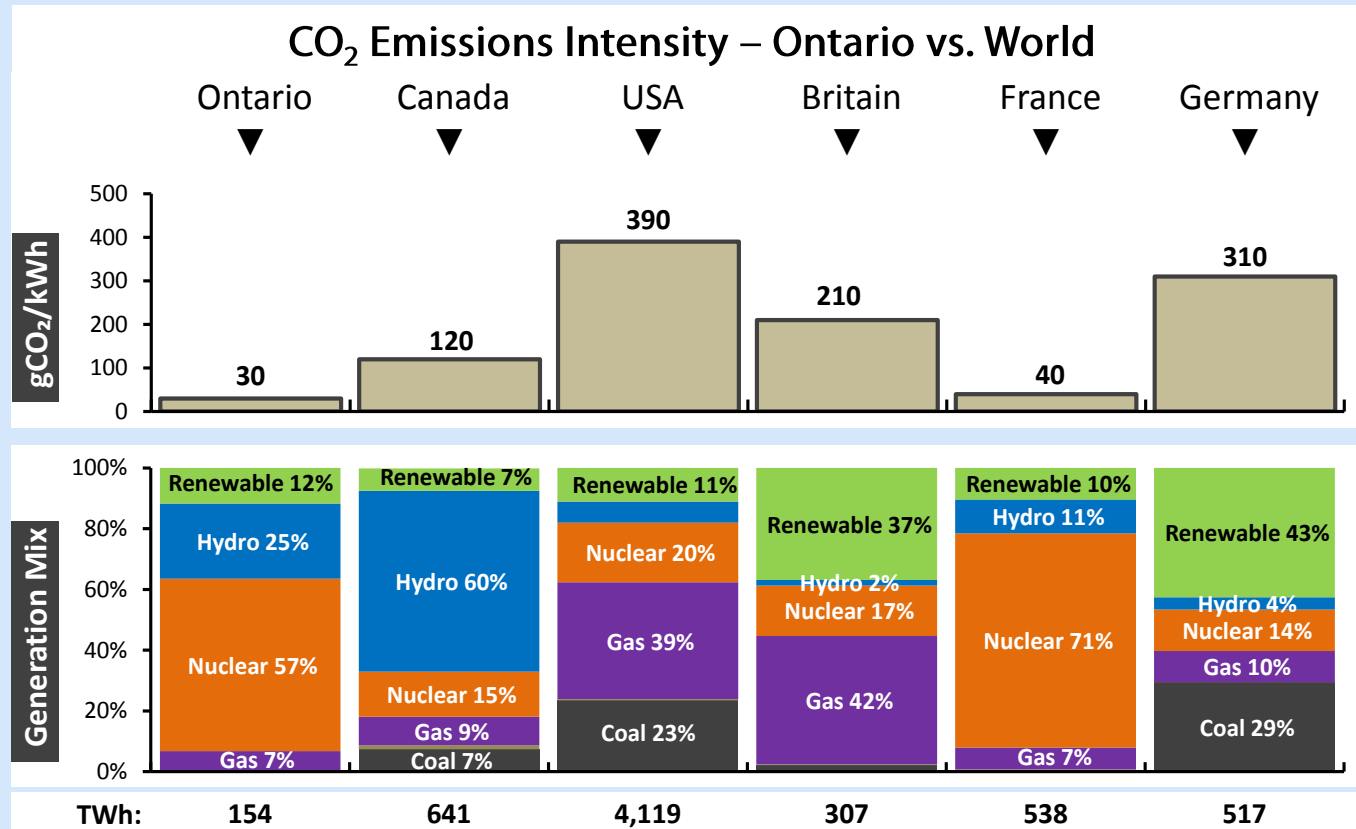


Ontario Electricity in a Global Context

World Leader in Clean Electricity Supply

Ontario has one of the cleanest electricity systems in the world after eliminating coal-fired generation in 2014.

Ontario's electricity system is about 90 per cent emissions-free (2022).



Notes:

Based on actual 2019 generation for Ontario, USA, UK, France & Germany, and 2018 generation for Canada.

CO₂ emission intensity estimates for in-region generation only; CO₂ from imports and life-cycle emissions not included.

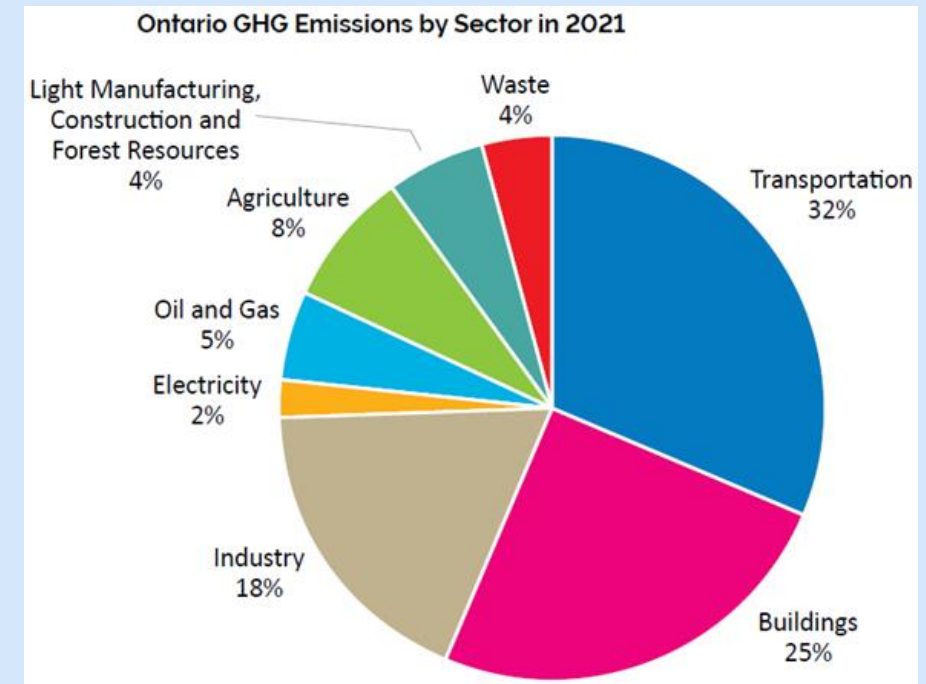
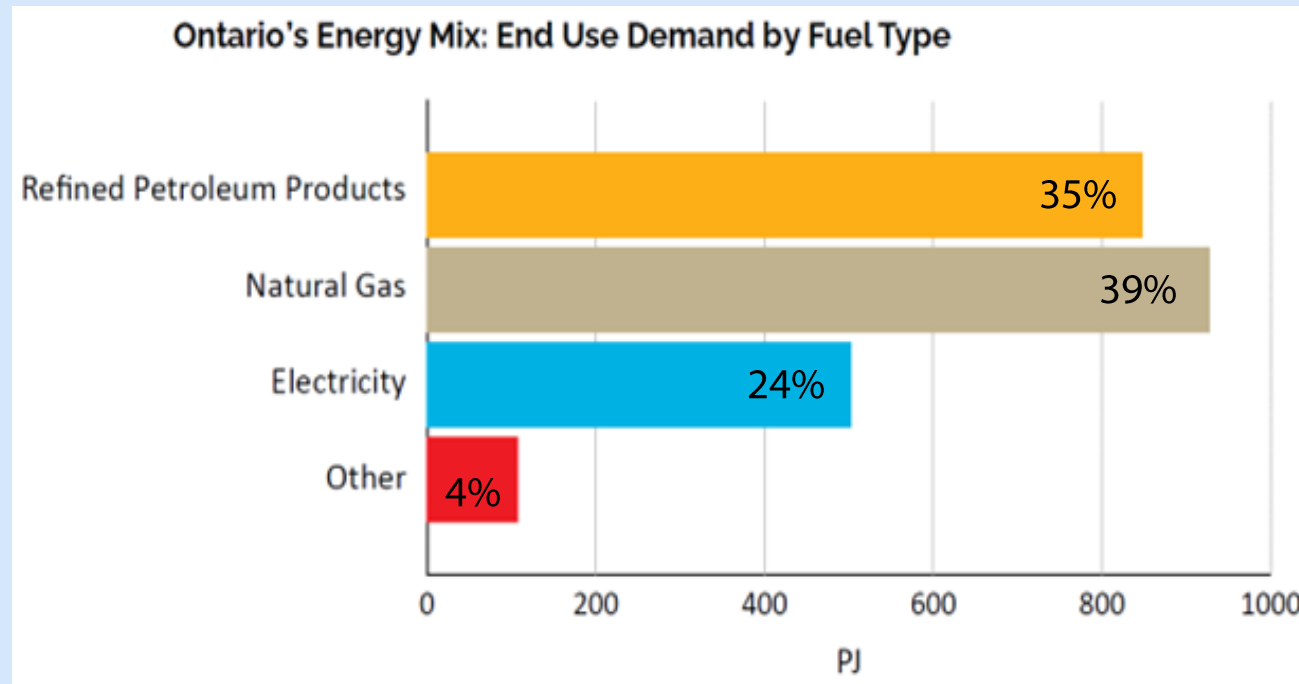
Renewable excludes hydro and included wind, solar, biofuels and geothermal; small brown portion is oil.

CO₂ emissions intensity estimates calculated assuming emissions of 450 gCO₂e/kWh for gas, 800 gCO₂/kWh for oil and 900 g/kWh for coal.



Electricity is Ontario's Lowest Carbon Energy Source

Provides 24 Per Cent of Ontario's Energy but Only Two Per Cent of GHGs



Electricity supplies 24 per cent of end-use energy in Ontario but only contributes two per cent of overall greenhouse gas (GHG) emissions.

Converting other sectors to electricity ('electrification') reduces overall emissions.

Source: Powering Ontario's Growth, Ontario's Plan for a Clean Energy Future



Comments or questions can be sent to: haltonexpansion@aturapower.com

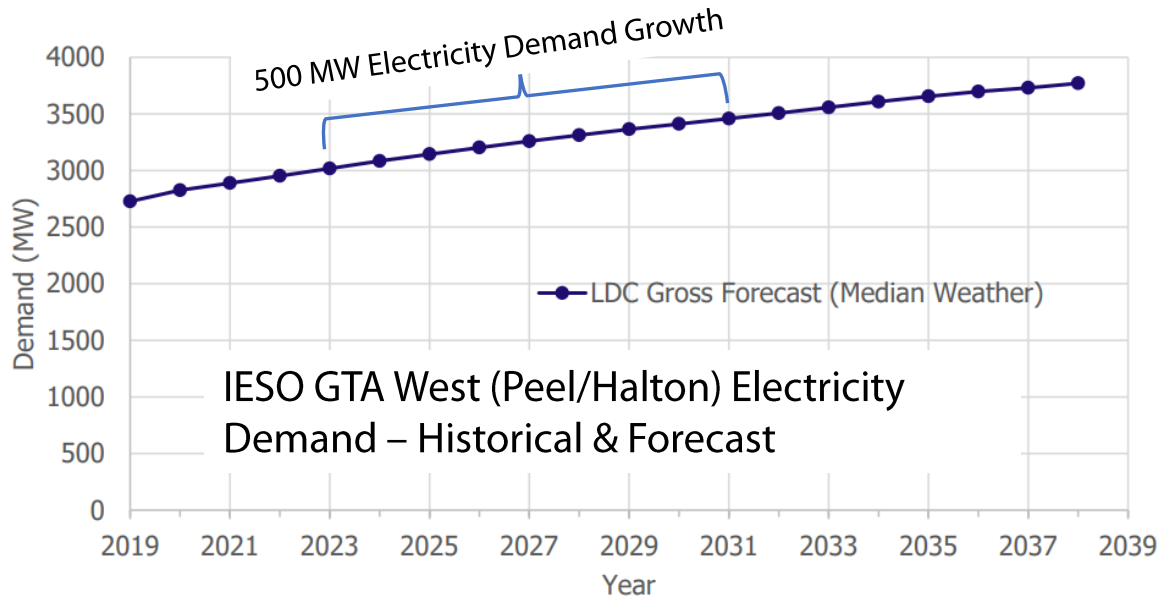
Halton Hills Electricity Demand is Growing

Halton Hills Generating Station Provides Local Electricity Supply

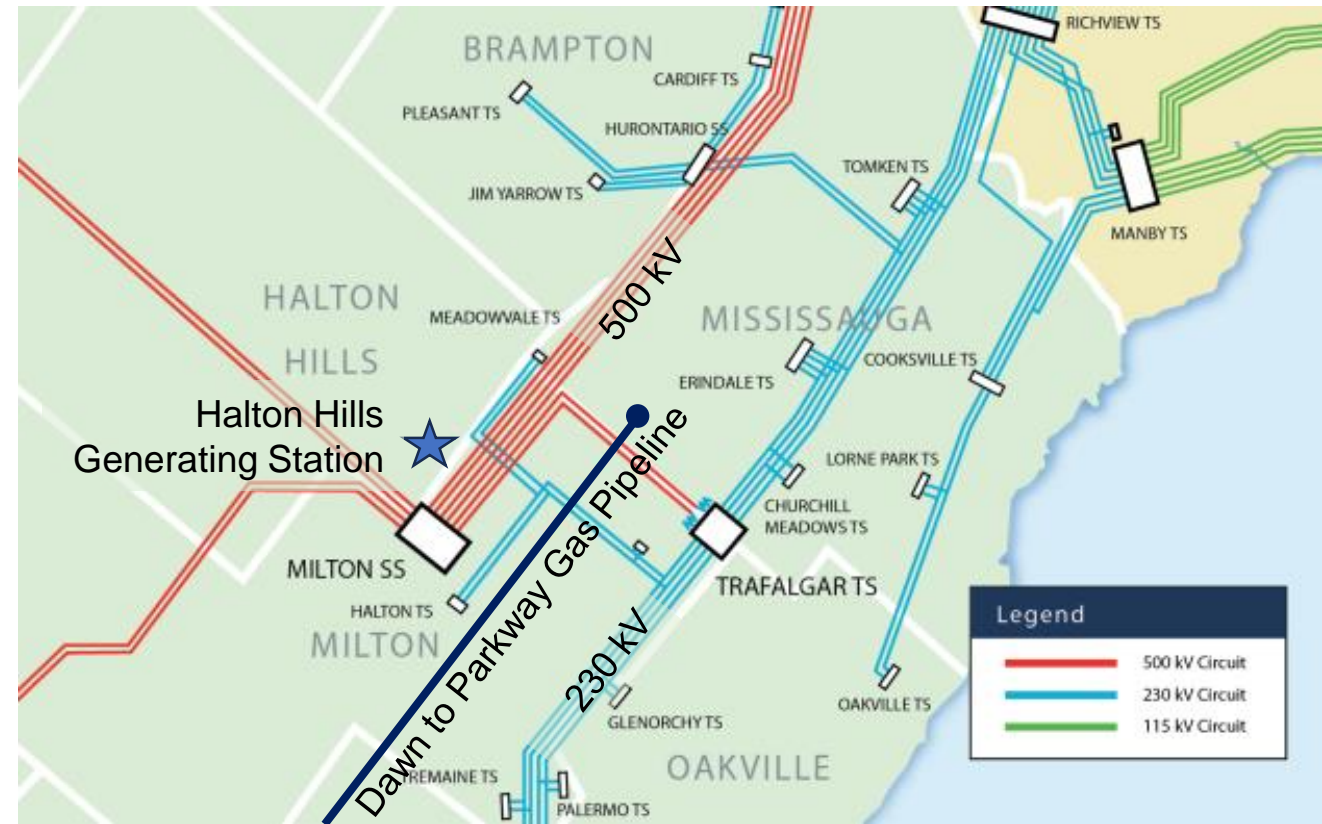
Electricity demand growth within the GTA West region (Peel/Halton) is steady over the last five years, largely driven by expanding urban boundaries and intensifying urban areas¹.

Local electricity demand is forecasted to grow to 3,500 MW by 2031 from 3,000 MW today, an increase of 500 MW, or 16 per cent¹.

The Halton Hills Generating Station Expansion will supply electricity where it is needed without driving future transmission system reinforcement.



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



Proposed Halton Hills Generating Station Expansion

Incremental Expansion Within Existing Footprint

Project Benefits

Provides local supply to growing area to reduce need for transmission upgrades.
Hydrogen-ready turbine facilitates future energy transformation.

Project Description

One additional turbine added to provide 265 MW of electricity output.

Project Location

Located within the existing Halton Hills Generating Station boundary.
No expansion outside of zoned area.



Project Timeline

In-Service By 2028 to Meet Emerging System Needs

| Activity | Timeline |
|----------------------------------|---------------|
| LT1 Proposal Submission | December 2023 |
| IESO Contract Offer Announcement | May 2024 |
| Target Construction Start | 2025 |
| Operations | 2028 |

Atura Power will complete a project-specific Environmental Assessment process and obtain necessary permits and approvals prior to construction.

Indigenous and public engagement will remain a priority and continue during the next phase of the project.



Project Importance

Enable Further Wind & Solar By Maintaining Grid Reliability

The Halton Hills Generating Station has an important role to play in powering the Town of Halton Hills today and helping us transition to tomorrow's carbon-free economy.

- Ontario has significant energy needs that are growing as we move towards electrification
- Electricity generated at Halton Hills Generating Station is critical to ensure grid reliability during peak demand periods by backing up wind and solar
- Maintaining a reliable electricity grid is the first step towards enabling additional renewable generation sources in the future



Thank You

Email the project contact or visit the project webpage for more information.



Email: haltonexpansion@aturapower.com



Webpage: aturapower.com/haltonexpansion