

Enbridge Gas

Cara-Lynne Wade, Director, Energy Transition and Planning

What we do

We deliver the energy that enhances people's quality of life



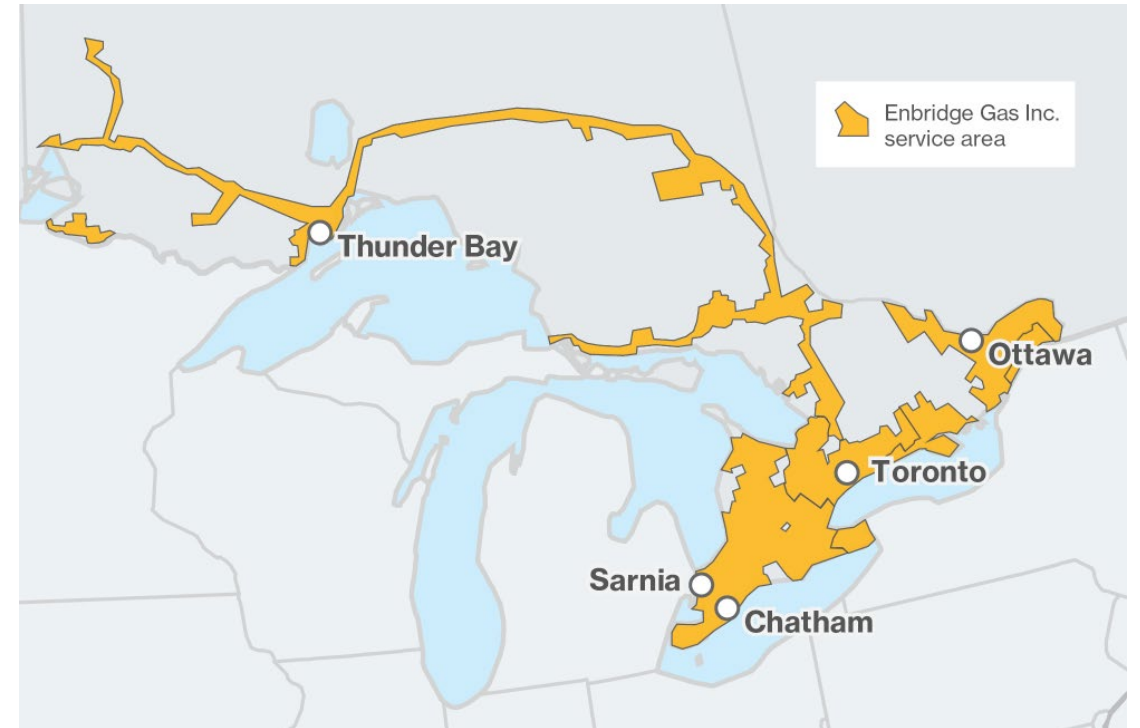
Gas utility

- 3.8 million retail customers
- 75% of Ontario homes
- 30% of Ontario's energy needs delivered
- 99.9% reliability



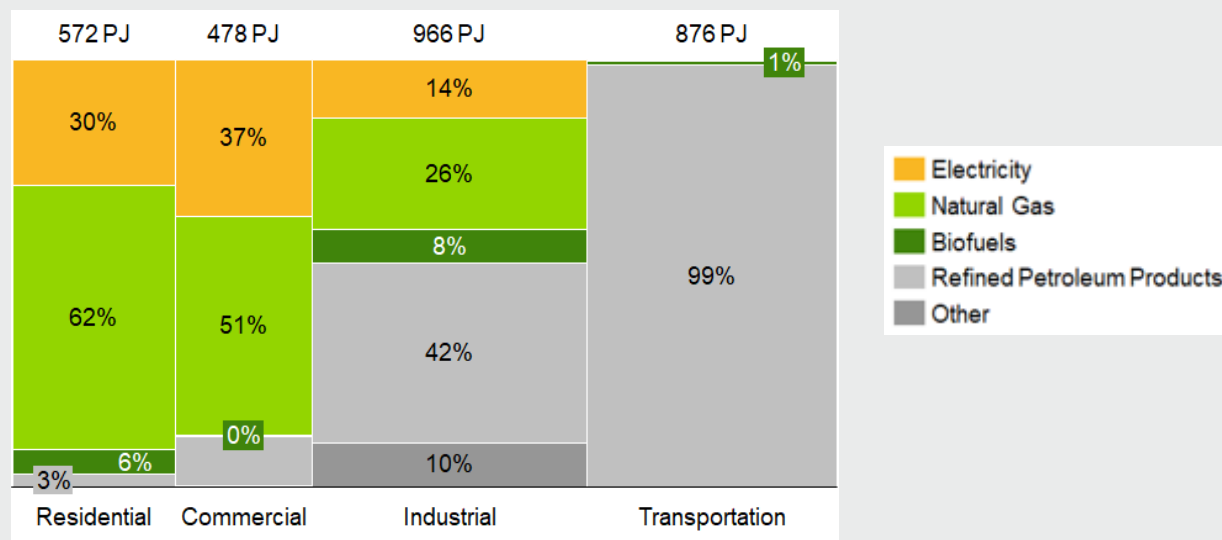
Sustainable energy provider

- Advancing sustainable energy solutions for Ontario
 - Conservation, renewable gases, green technologies
- Net-zero emissions in Enbridge operations by 2050



The energy landscape in Ontario

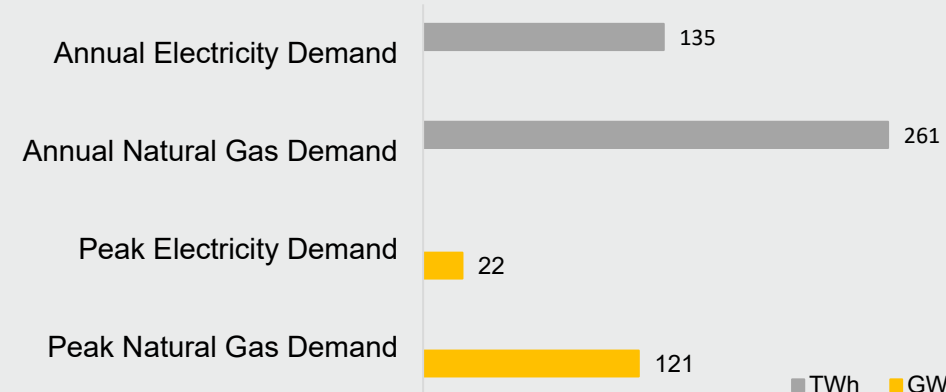
Critical Ontario's Energy Mix



Ontario's Energy System Reality

Displacing natural gas home heating with electricity will cost Ontario \$27B investment in electric distribution infrastructure.**

Reliable Ontario Energy by Fuel Type



Notes:

1. Ontario peak natural gas demand is 390 TJ/hour (108 GW).
2. Avg. natural gas demand includes refill of storage.
3. 2019 peak electricity demand recorded (IESO).

Natural gas provides low cost, critical and reliable energy

Enbridge is advancing reliable and cost-effective solutions for Ontario's net-zero energy future

Conservation



- Helping homes, business and industry use less energy through conservation programs

Renewable gases



- Advancing the transition to renewable gases:
 - Hydrogen
 - Renewable natural gas
 - Opt Up, hydrogen blending

Clean energy technologies



- For fleets and heavy transport that can't be practically electrified:
 - CNG
 - RNG
 - Hydrogen



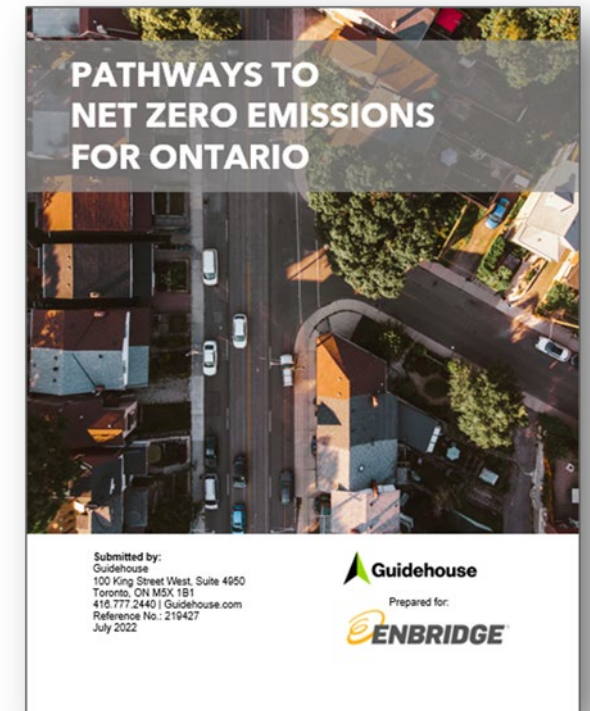
- For reliable, cost-effective and sustainable heat:
- Hybrid heating
 - Geothermal
 - CHP
 - Solar PV
 - Waste heat recovery



- For energy-intensive processes that can't be electrified:
 - Clean and low-emission gases
 - Carbon capture and storage

Pathways To Net Zero

- Approximately 30 percent of Ontario's emissions come from the use of natural gas.
- Enbridge understands that we have an important role in the energy transition.
- Enbridge commissioned a third-party report to look at two pathways Ontario could take to meet net zero (electrification and diversification).
- The study found that a diversified pathway is the most practical method to achieve net-zero emissions in Ontario.



A diversified pathway that leverages both Ontario's gas and electric systems can achieve net zero, with greater:



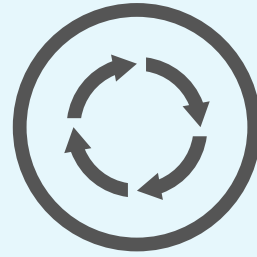
Affordability

Achieves the same outcome as the electrification pathway at \$202 billion less cost



Reliability

Meets the energy needs of Ontario homes and businesses, even on the hottest and coldest days of the year



Resiliency

Protects against impacts from extreme events, such as weather and cybersecurity incidents



Consumer choice

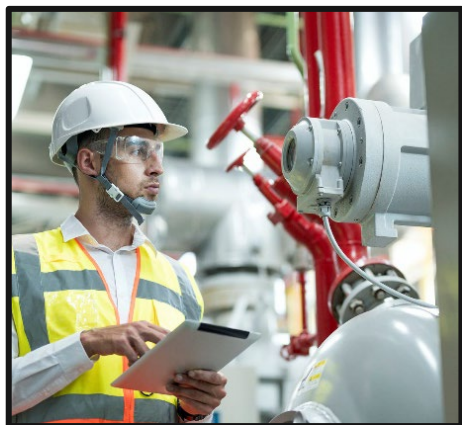
Allows Ontario energy consumers the flexibility to make choices on the path to net zero



Competitiveness

Provides more affordable energy to help businesses stay competitive and thrive.

“Safe Bet” Actions to Achieve Net Zero



Maximize energy efficiency

Reduce energy use.



Optimize and integrate energy system planning

Coordinate electric and gas system planning.



Invest in low-carbon gases

Transition to increasing amounts of RNG and hydrogen over time.

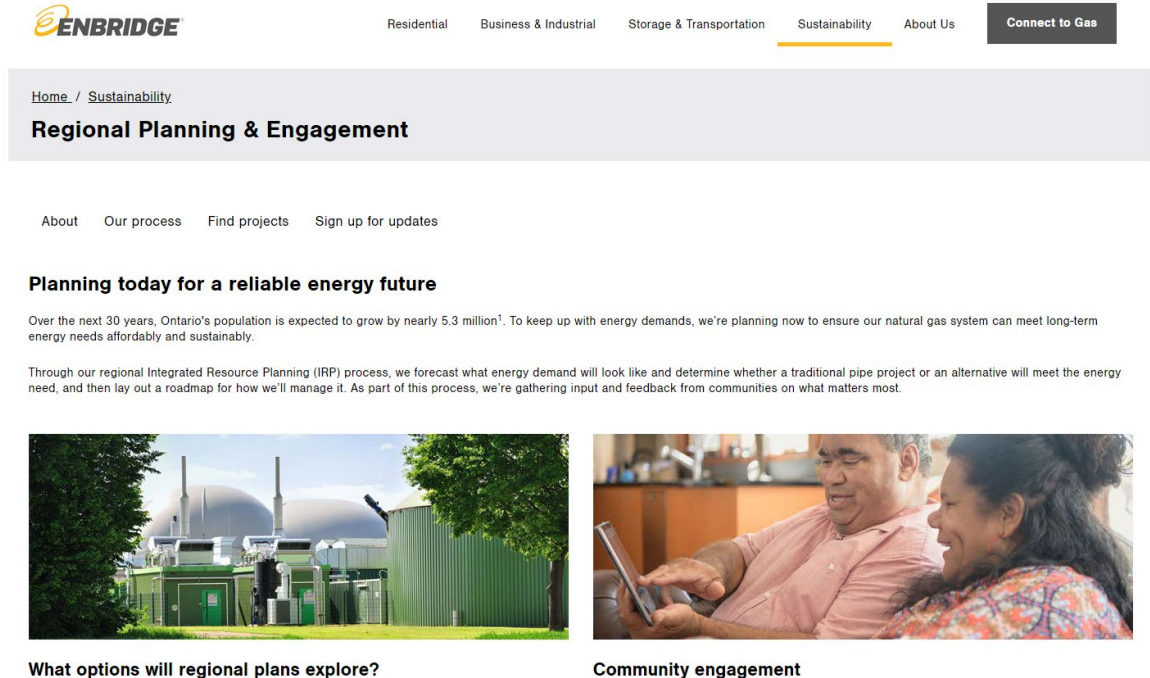


Use carbon capture and storage

Invest in CCS for heavy industry and blue hydrogen production.

Working together

- Reach out – we are here to work with you through our municipal advisors, and municipal energy solutions and energy efficiency consultants
- Visit our regional planning webpage
- Sign-up for email updates to receive information for upcoming stakeholder events and webinars
- Register for events
- Provide your feedback and have your say
- Visit us at enbridgegas.com/sustainability



The screenshot shows the ENBRIDGE website's 'Regional Planning & Engagement' page. The top navigation bar includes links for Residential, Business & Industrial, Storage & Transportation, Sustainability (which is highlighted), and About Us, along with a 'Connect to Gas' button. Below the navigation bar, the page title 'Regional Planning & Engagement' is displayed. A secondary navigation bar contains links for 'About', 'Our process', 'Find projects', and 'Sign up for updates'. The main content area features the heading 'Planning today for a reliable energy future' followed by two paragraphs of text. The first paragraph discusses Ontario's population growth and the need for long-term energy planning. The second paragraph describes the Integrated Resource Planning (IRP) process. Below the text are two images: one of a power plant and another of a man and a woman looking at a tablet.

ENBRIDGE

Residential Business & Industrial Storage & Transportation **Sustainability** About Us [Connect to Gas](#)

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Regional Planning & Engagement

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Planning today for a reliable energy future

Over the next 30 years, Ontario's population is expected to grow by nearly 5.3 million¹. To keep up with energy demands, we're planning now to ensure our natural gas system can meet long-term energy needs affordably and sustainably.

Through our regional Integrated Resource Planning (IRP) process, we forecast what energy demand will look like and determine whether a traditional pipe project or an alternative will meet the energy need, and then lay out a roadmap for how we'll manage it. As part of this process, we're gathering input and feedback from communities on what matters most.



What options will regional plans explore?

Community engagement

We look forward to working with you

JANUARY 23, 2023

IESO's Pathways to Decarbonization – Rural Ontario Municipal Association

Julia McNally, Director, Planning Projects & Sustainability

About the IESO



Operate Ontario's province-wide electricity system on a 24/7 basis



Oversee the electricity market, driving competition to maintain affordability



Plan for Ontario's future energy needs



Support innovation and emerging technologies



Work closely with communities to explore sustainable options



Enable province-wide energy conservation

Ontario's Electricity Sector



We work with:

Generators



Transmitters



Local Distribution Companies



Energy Consumers

Key Electricity Trends in Ontario Today

- Demand for electricity is on the rise, driven by economic growth and electrification
- Existing and new resources will be required to maintain reliability
- Technological evolution can support the energy goals of municipalities
- Local energy solutions are helping to meet local needs (e.g., DERs)
- Decarbonization is a high priority for municipalities

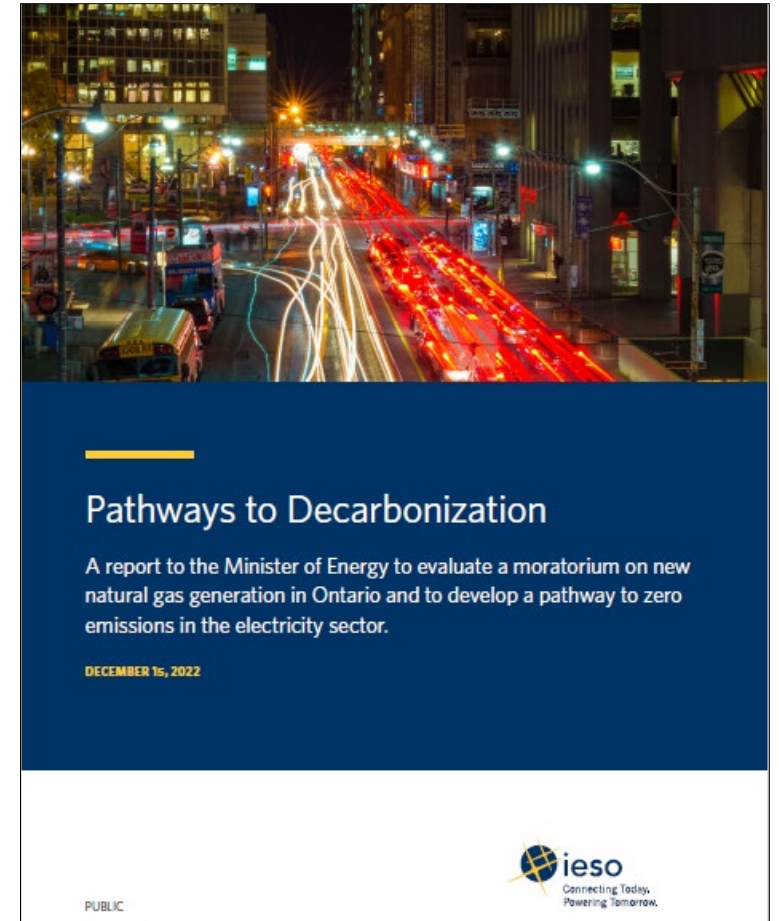


The IESO's Role: Driving and Guiding Electricity Sector Developments

1. Procure resources to meet **growing electricity needs**
2. Inform **decarbonization discussions**
3. Integrate **emerging technologies** and facilitate **customer choice**
4. Proactively **engage** with a wide range of audiences

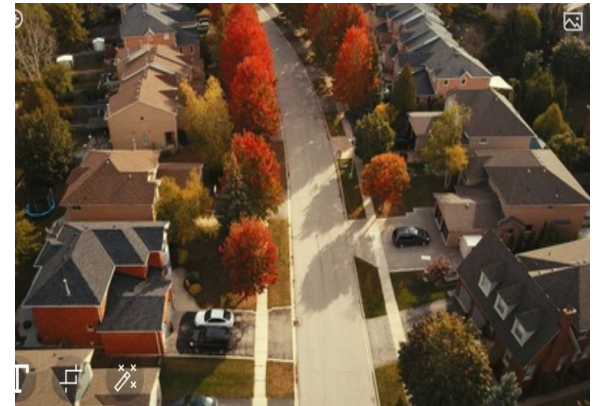
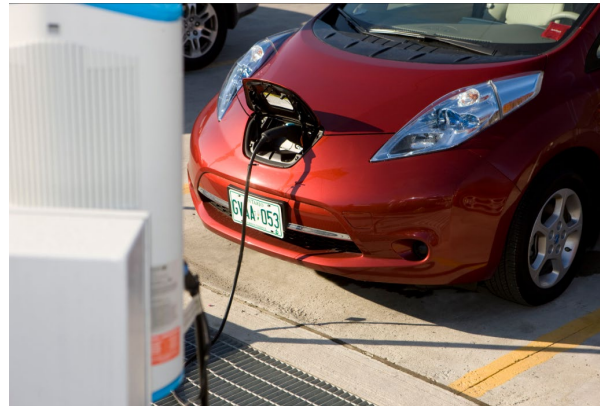
IESO Pathways to Decarbonization Report

- Ontario's electricity sector can support broad, economy-wide decarbonization
- A moratorium on new gas generation is possible by 2027 if new resources are in place
- Decarbonization by 2050 would require a system twice its current size with a diverse zero-emissions supply mix
- Will require significant investments in capital, resources and labour. Estimated costs are ~\$400B over 23 years



Municipalities Have a Key Role

- Inform electricity planning decisions
- Leverage energy efficiency
- Integrate local energy solutions
- Host new generation, transmission and storage
- Support local electrification, e.g., transportation
- Keep constituents engaged and informed on key decisions



Thank You

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DECARBONIZING THE ONTARIO ENERGY SYSTEM

Energy Conservation Initiatives in Middlesex Centre

Presented by Michael Di Lullo, CAO, Municipality of Middlesex Centre

January 23, 2023

Rural Ontario Municipal Association Conference, Toronto



Agenda

- IESO Pathways to Decarbonization (P2D) Report
- Background of Middlesex Centre
- Municipal Green Initiatives
- Local RNG Agricultural Initiative
- Q/A

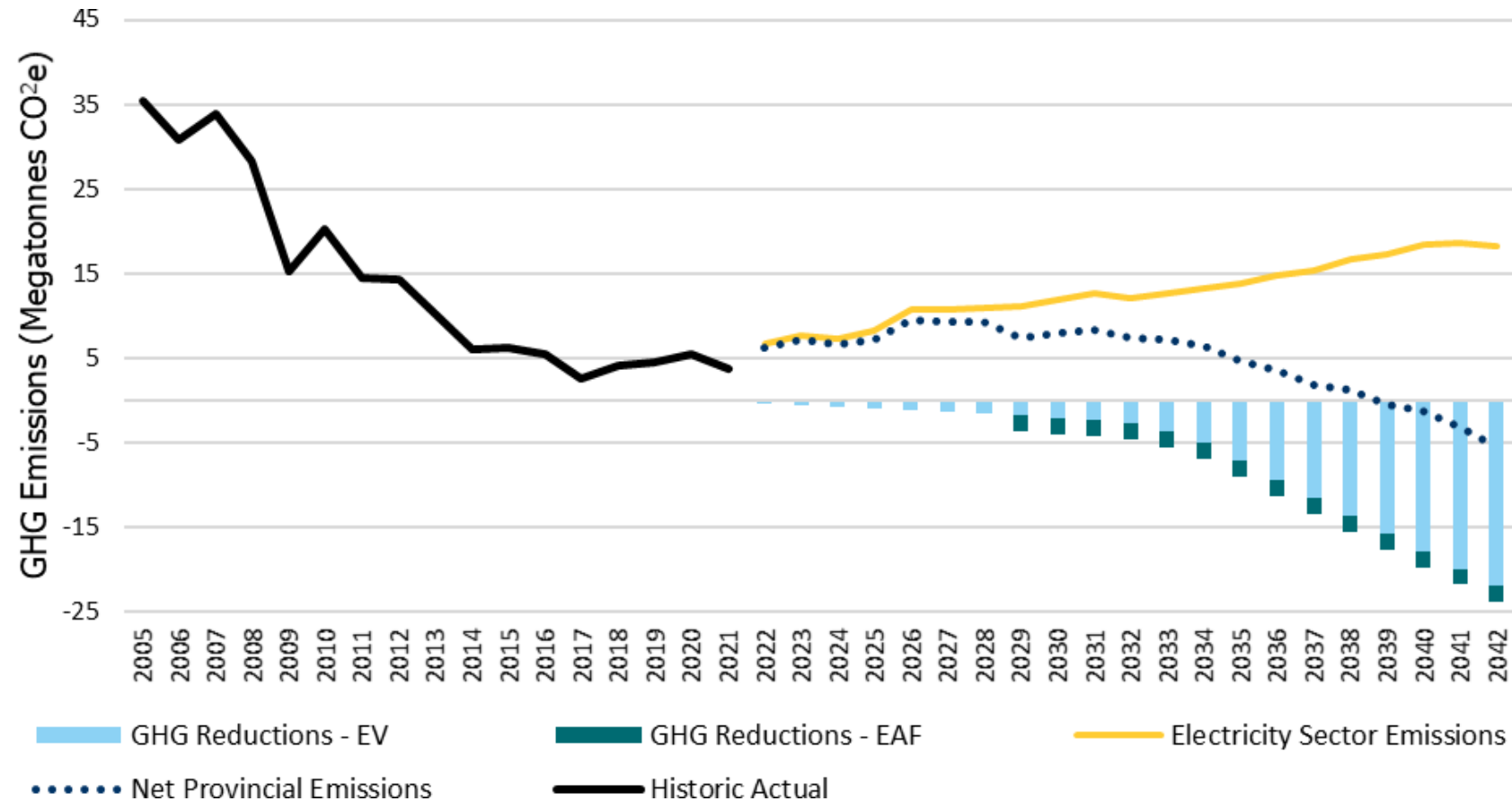


IESO P2D Report

- IESO released the Pathways to Decarbonization Report on December 15, 2022
- Report is a two-fold analysis:
 - Evaluate a moratorium on new natural gas generation in Ontario
 - Develop a pathway to zero emissions in the electricity sector
- With rapid economic growth and electrification, and increased energy demands, municipalities can play a part to meeting emissions reduction targets



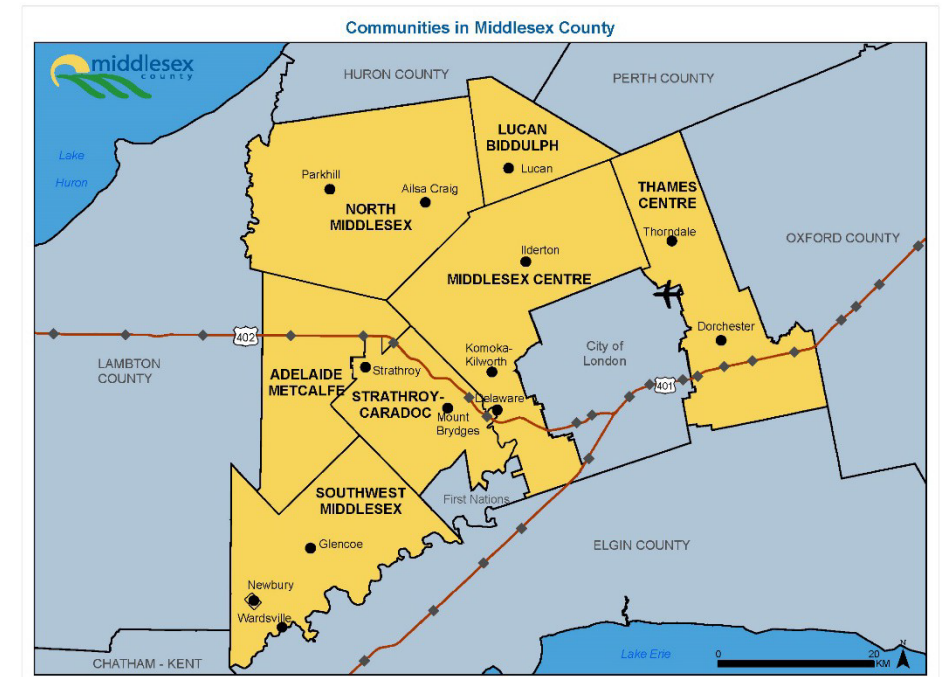
Decarbonizing Ontario's Economy





Municipality of Middlesex Centre

- Rapidly growing, mainly rural, municipality with a population of 20,000
- Located in Middlesex County surrounding the western and northern edges of the City of London, with an area of 588 km²
- Total staffing complement is about 275 (including paid-on-call fire services)
- Municipal budget 2023 - \$70.3 million
- Learn More: middlesexcentre.ca





Middlesex Centre Green Initiatives

- Sustainability initiatives
 - Energy Conservation and Demand Management Plan
 - Green Builder Program
 - Clean and Green Community Clean-Up
 - Green Fleet
 - Electric Vehicle Charging Stations
 - Net-Zero Emissions Coldstream Fire Station
 - Mayor's Monarch Pledge
 - University of Western Ontario Study on Net-Zero Arena for Ilderton
- Always seeking energy efficiency and improved sustainability in all aspects of operations





Net Zero Emissions – Coldstream Fire Station



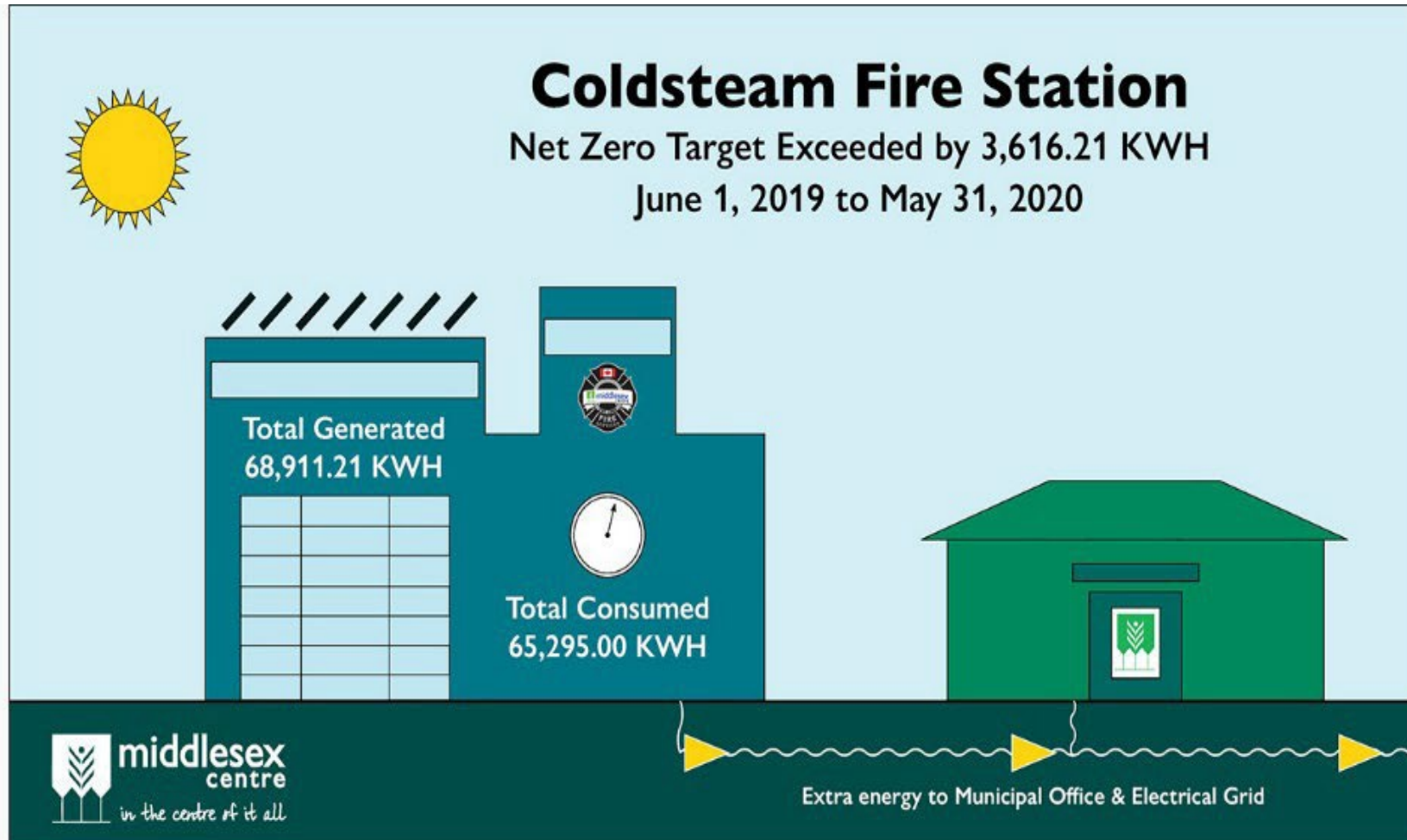


Coldstream Fire Station – First Net-Zero Station in Canada

- Coldstream is a small hamlet in Middlesex Centre
- The Coldstream Fire Station is one of five fire stations in Middlesex Centre, with 24 paid on-call firefighters
- Opened in 2017, the station is situated on the same property as the municipal administration office
- The build was approximately \$2.8 million. The municipality secured a grant from FCM for \$387,000 to cover costs for sustainable features over and above the Ontario Building Code requirements.
- Ameresco, in conjunction with Quest Energy Group, was selected to perform a detailed feasibility study associated with the construction as a net zero energy building.



Coldstream Fire Station – Powering the Municipal Office





Coldstream Fire Station – Energy Conservation Results

- The facility is not only meeting its net-zero target, but is exceeding expectations
- The total solar energy generated from June 1, 2019, to May 31, 2020, was 68,911.21 KWH. Total consumed during the same period was 65,295.00 KWH, exceeding our target by 3,616.21 KWH.
- The design allows for any solar energy that is harnessed but not used at the fire station be sent to the municipal office. Any energy remaining after the office is sent back to the grid for a credit.



Local RNG Initiative – Stanton Farms: A Commitment to Sustainability



Image: Stanton Farm from Enbridge Website: An “ag-citing” advancement on Ontario’s RNG scene
Stanton Farms, Ilderton – Middlesex Centre, ON



Innovation in Rural Ontario – Stanton Farms

- Stanton Farms is a 3,000 dairy-cow farm, incorporating state-of-the-art farming practices and sustainable family farming through innovation.
- The farm was relocated in 2006 to its current location in Ilderton, a community in Middlesex Centre, from its former site in Hyde Park (London) because of urban sprawl encroaching on the old farm.
- The farm practice is a full-circle energy conservation operation. Stanton Farms installed one of Canada's first on-farm anaerobic digestion systems for biogas production and renewable energy generation from organic waste.
- A dairy industry first: The milk Stanton Farms produces comes from a 100% renewable energy dairy farm!



Stanton Farms new RNG Facility Impact

- Stanton Farms will provide over 3 million cubic metres per year of RNG to the Ontario natural gas network, enough renewable energy for the heating needs of over 1,300 homes
- Stanton Farms is helping make neighbouring Ilderton, with a population of 4,500, Canada's most renewable community by supplying renewable energy for both its heating and electricity needs 24/7/365
- Stanton Farms RNG facility will divert 60,000 tonnes of community-based organic waste from landfill per year. This will eliminate 11,000 tonnes per year of GHG emissions

“By helping to divert community-based organic waste from landfill, Stanton Farms is also helping to make Ilderton one of Canada's most renewable communities by supplying renewable energy for both its heating and electricity needs.”

Laurie Stanton,
President of Stanton Farms



On-Farm Biogas Advantages

1. Reliable Renewable Energy Generation

- Generate power virtually 24/7

2. Numerous Environmental Benefits

- Decreased odor upwards of 90%
- Landfill diversion using organic waste as a fuel – 6,0000 tonnes

3. Creating a Rural Green Economy

- Provides alternative on-farm income sources
- Develops value-added by-products



For more information

- Coldstream Fire Station
 - Canada's First Net-Zero Fire Station, LAS/AMO
<https://www.las.on.ca/learning/blog/canadas-first-net-zero-fire-station>
- Stanton Farms
 - An 'ag-citing' advancement on Ontario's RNG scene, Enbridge
<https://www.enbridge.com/Stories/2022/October/Stanton-Farms-first-Ontario-agriculture-based-RNG-supplier-connecting-with-Enbridge-Gas-network>
 - Stanton Farms becomes first agricultural-based renewable natural gas supplier, CTV News London
<https://london.ctvnews.ca/stanton-farms-becomes-first-agricultural-based-renewable-natural-gas-supplier-1.6109575>
 - Area dairy farm first in Ontario to produce renewable natural gas, London Free Press
<https://lfpress.com/news/local-news/area-dairy-farm-first-in-the-province-to-produce-renewable-natural-gas>

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