



Delivering Low Carbon Solutions
Since 1992



DELIVERING LOW CARBON SOLUTIONS SINCE 1992

DISTRICT ENERGY IN ONTARIO

Clean Air Partnership

November 2, 2023

AGENDA

- 1 Introduction to FVB & District Energy
- 2 Evolution of District Energy Systems
- 3 District Energy in Ontario
- 4 Upcoming District Energy Projects

WHO IS FVB?



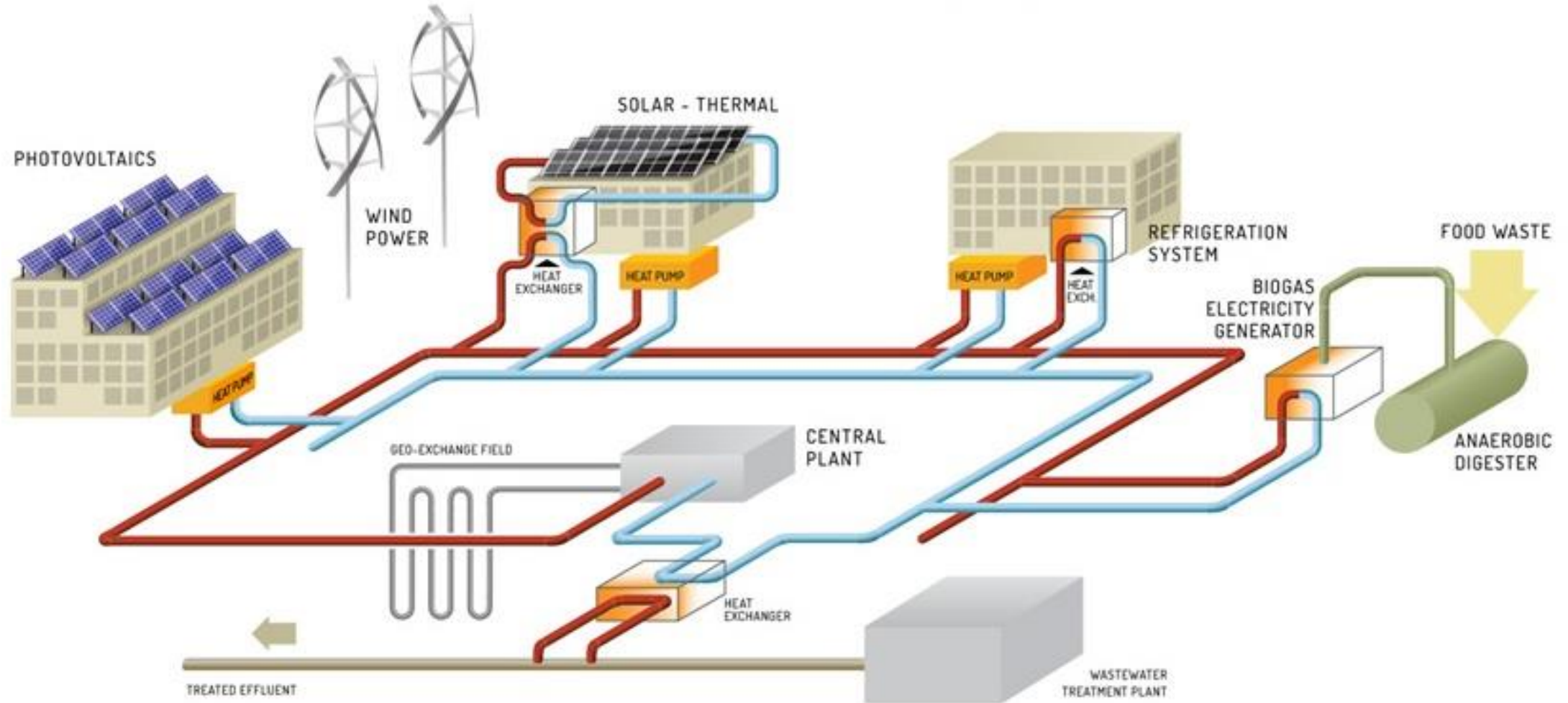
FVB Energy is a leading **engineering consulting firm** providing innovative solutions specialized in District Energy.

We bring a **+50-year depth of experience** to client projects around the world.

Our purpose is focused on creating **sustainable energy solutions** that provide Clients with tangible results.

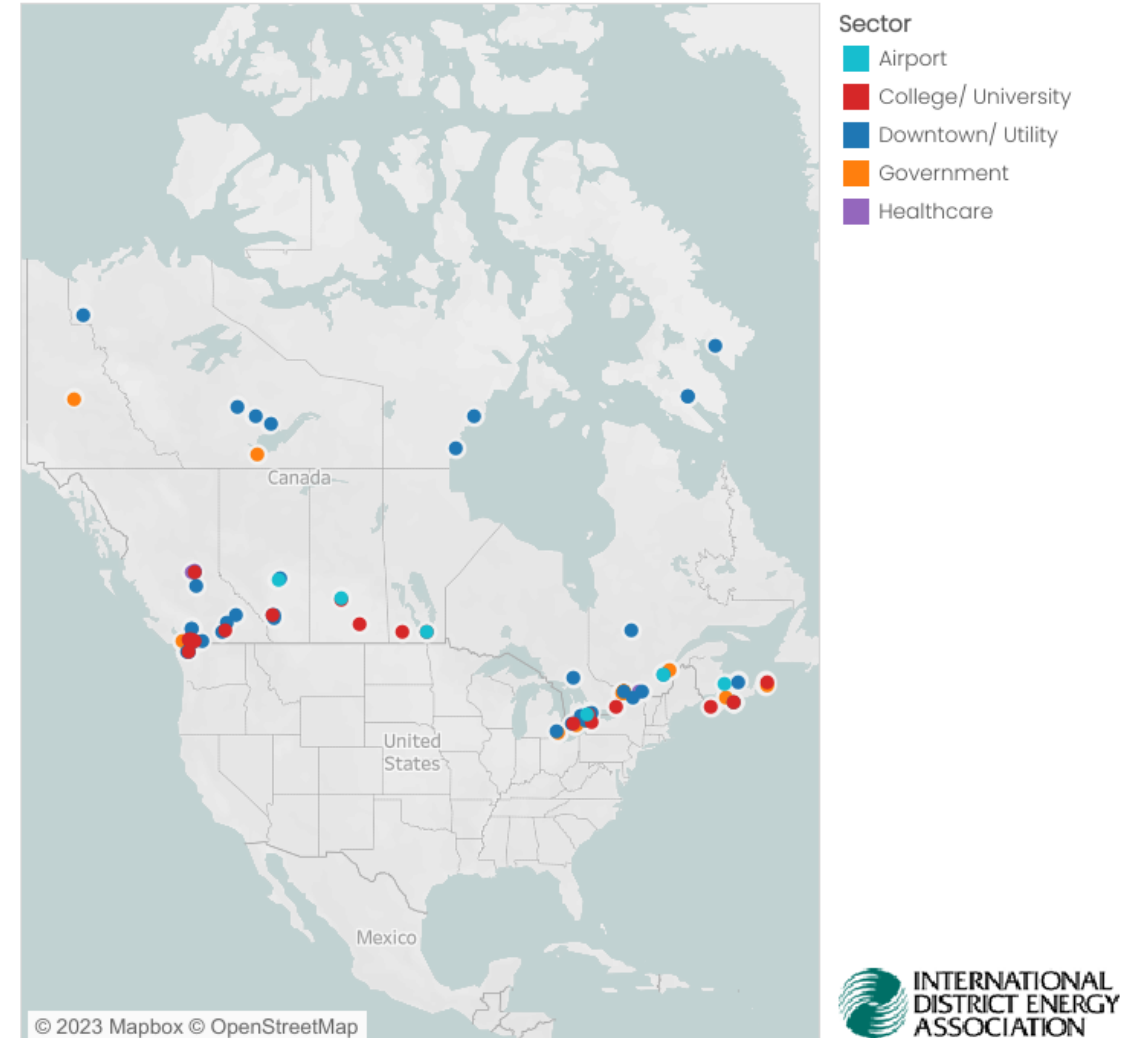


DISTRICT ENERGY



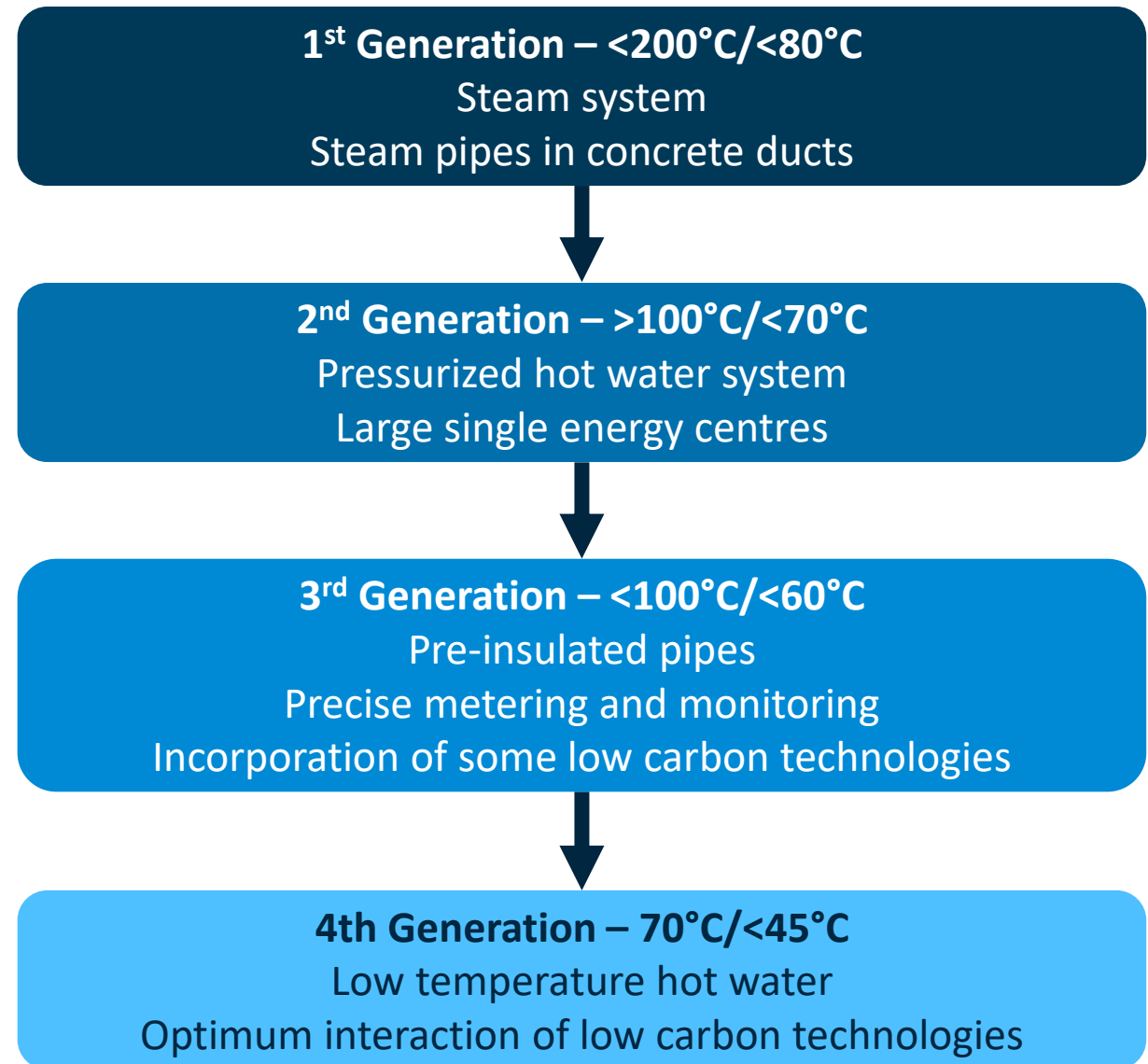
DISTRICT ENERGY IN CANADA

- One of the oldest District Energy System in Canada was constructed in 1880 in London, ON
- The most common application of district heating and cooling in North America is in university, military, government, and industrial campuses.
- Since 1990, there has been significant growth in commercially operated systems, including in Toronto, Montreal, Ottawa, Markham, and Vancouver.



THE EVOLUTION OF DISTRICT ENERGY

- Many legacy district steam systems are currently undergoing steam-to-hot water conversion
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- District Energy Systems enable the adoption of low carbon technologies



DE IN ONTARIO

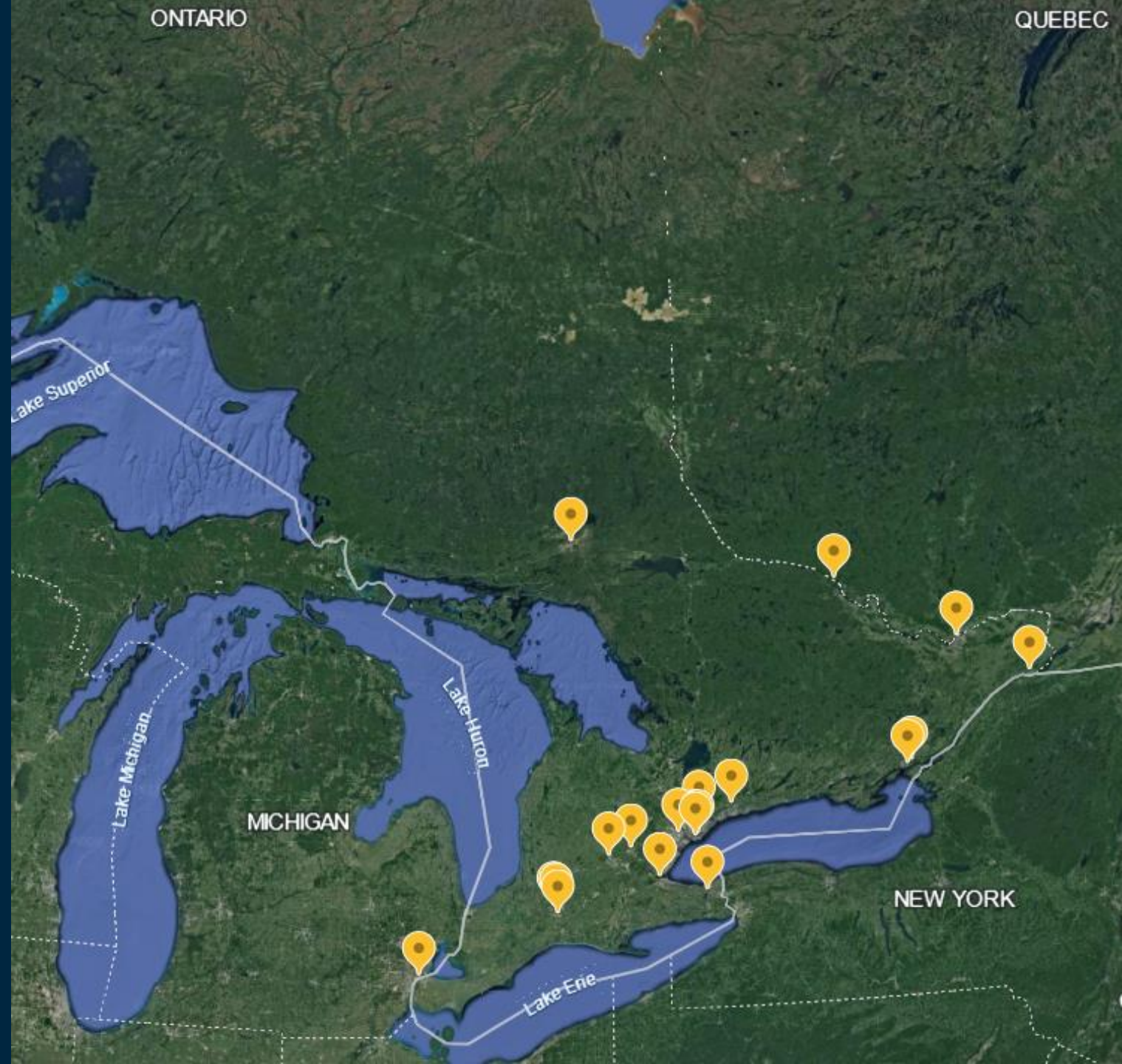
District Energy Systems are operational throughout Ontario.

- Municipalities
- Universities
- Airports
- Government Institutions

Currently, systems are split between using steam and hot water for district heating.

Existing steam systems are converting to hot water.

New DES are trending to lower hot water temperatures.



DE SPOTLIGHT – MARKHAM DISTRICT ENERGY (MDE)

- Two District Energy Systems provide heating and cooling to ~13 million ft² of connected buildings
- Over 50km of buried district energy pipe
- Won IDEA System of the Year in 2013
- Rapid expansion is planned in Markham in the coming years, and MDE has a target of net-zero by 2050.
 - 4 MW Heat Recovery Heat Pump
 - 0.5 MW Pellet Boiler
 - 18.5 MW Wastewater Energy Transfer

Net Zero will be achieved without any impact to the customer buildings.



DE SPOTLIGHT – NATIONAL CAPITAL REGION OTTAWA

- Serves 21 million ft² (~80 buildings) with four (4) Energy Centres, ~17km of hot water and ~15km of chilled water pipe infrastructure.
- System is being modernized to increase system efficiency and incorporate low carbon technologies.
- Conversion from steam to low temperature hot water (LTHW)
 - River water cooling
 - 30 MW Electric Boilers
 - Next phase will be carbon neutral
- System in construction by Innovate Energy



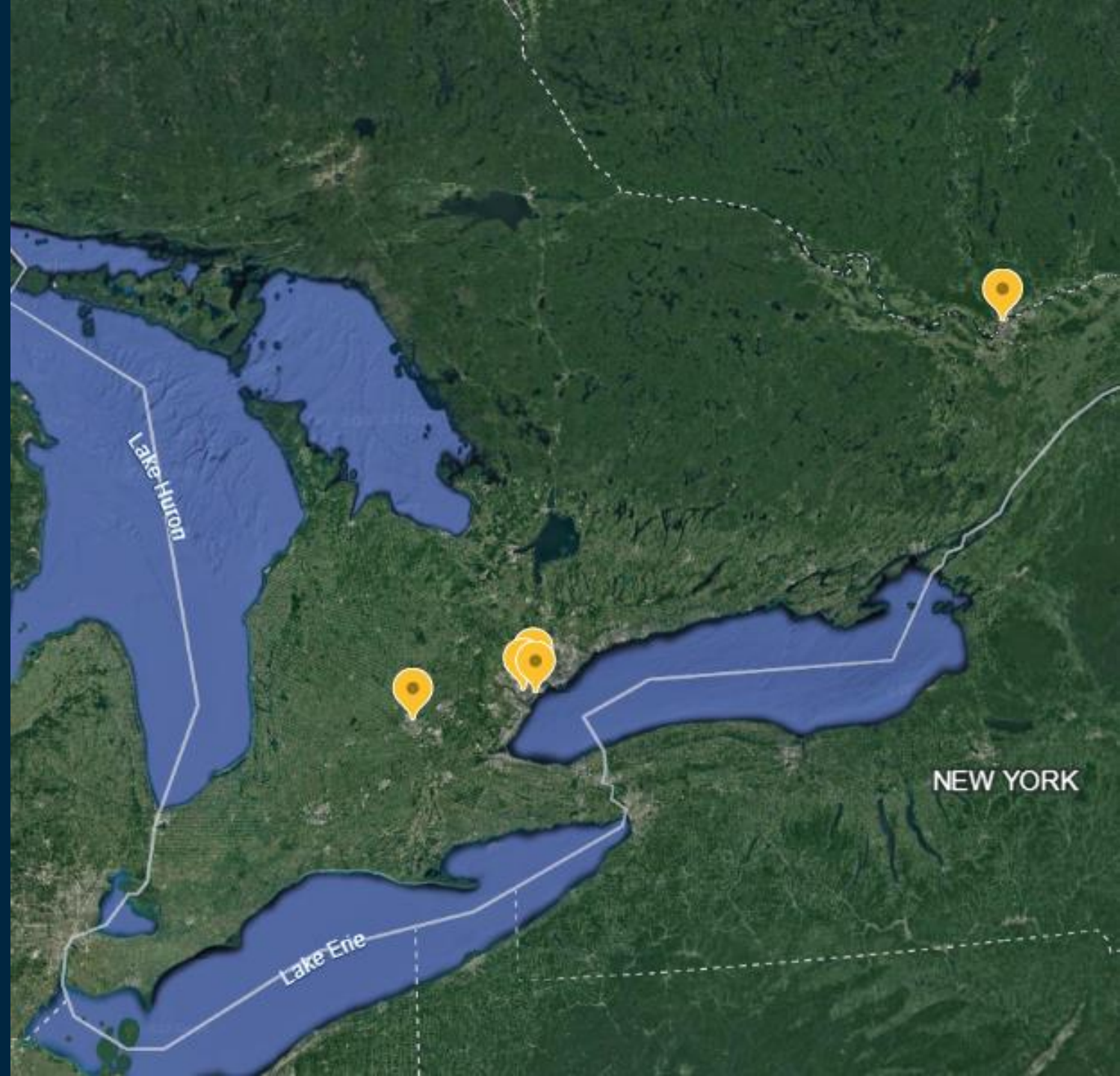
UPCOMING DISTRICT ENERGY PROJECTS

Several District Energy Systems are currently in design, implementation and construction stages.

These include:

- Lakeview DES (Mississauga)
- Etobicoke Civic Centre (Toronto)
- Kitchener DES
- Mississauga Downtown Core

Many others are in the process of performing feasibility studies to assess the viability of DE for their communities.



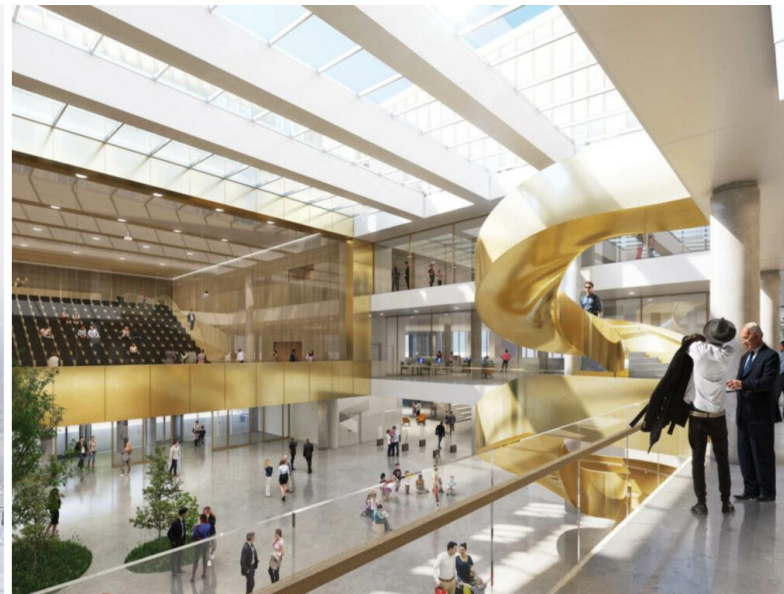
UPCOMING DE - LAKEVIEW

- New development on Mississauga's Lakefront to be constructed over 12 years.
- Mix of office space, retail, restaurants, and residential space from townhouses to mid-rise & taller
 - All buildings in the development are planned for connection to the DES
- The low carbon energy source is effluent water from the GE Booth Wastewater Treatment Plant (WWTP).
- District Energy System in development by Enwave.



UPCOMING DE - ETOBICOKE CIVIC CENTRE (ECC)

- The new Etobicoke Civic Centre will be the cornerstone of a new community
- ECC will be the anchor customer and Energy Centre host.
- ECC + 5 additional blocks: Gross Floor Area ~2.8 million ft²
- Development constructed to Toronto Green Standards v3 Tier 4.
- Incorporates closed loop geoexchange.
- In development by Enwave.



UPCOMING DE - DOWNTOWN KITCHENER

- FVB conducted a feasibility study showing that a low carbon District Energy System was technically and financially feasible.
- Projected Gross Floor Area: ~11.5 million ft²
- ~36 MW of heating & ~11,400 tons of cooling demand potential at full build-out.
- Kitchener is uniquely situated on an aquifer that can be used for open loop geoexchange.





Thank You



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