

Low-Carbon Building Series: University of Toronto Project Leap

February 12, 2026

[Webinar Recording](#)

In this webinar, Scott Hendershot, Senior Manager, Sustainability, University of Toronto shared insights on campus-wide sustainability initiatives - including expanding the campus's ability to capture and store heat through a new geoexchange system beneath Front Campus, phasing out natural gas in favour of electrification for heating, upgrading to energy-efficient LED lighting in 38 buildings, and optimizing energy used for air distribution systems in key research laboratories. Together, these efforts will reduce nearly 50,000 metric tonnes of greenhouse gas emissions each year, equivalent to the energy use of more than 10,000 homes. We explored the drivers that made this project feasible and how similar approaches could be applied in other communities.

Presenters

Scott Hendershot, Senior Manager, Sustainability, University of Toronto

Presentation Overview

Project Background

- The university aims to go beyond carbon neutrality to become "climate positive" by 2050. This involves reducing Scope 1 and 2 emissions to zero and then offering renewable energy back to the grid (e.g., through solar projects) to help achieve their goals
- U of T utilizes four basic principles to guide its strategy:
 - Focusing on energy efficiency and the "ISO 50001" approach—the least emitting energy is the energy not used in the first place.
 - Navigating the challenge that electricity in Ontario is currently cleaner but significantly more expensive than natural gas.
 - Partnering with neighboring institutions (like the Royal Ontario Museum) and various levels of government.
 - Using the campus as a test case for new technologies and as a laboratory for students.

Key technical components

- Replacing massive 1960s-era natural gas boilers with high-efficiency electric boilers.
- Utilizing Canada's largest urban geo-exchange system located beneath the campus to store and retrieve heat.
- Targeting lab-intensive buildings (e.g., Medical Sciences, Pharmacy) to achieve over 40% energy reduction by recovering waste heat from exhaust systems.
- Transitioning the 6.2-megawatt cogeneration turbine from a 24/7 baseload runner to a "peaker" used primarily during high-demand periods to save costs and support the grid

Financing and Procurement

- Implementation Partner (SPV-like role): U of T used an integrated engineering and construction firm, as the primary partner responsible for designing, building, and delivering the project, acting in a capacity similar to a specialized purpose vehicle (SPV) contractor to manage the \$138 million project cost.
- Project Management: MGAC was contracted to provide project management services.
- Funding Sources: Financing included \$56 million from the Canada Infrastructure Bank (CIB), loans from RBC, and less than \$10 million in government grants.
- Outcomes-Based Procurement: U of T asked the market for the best technological solutions to hit a 50% reduction target, ensuring performance guarantees were baked into the contracts.

Lessons Learned and Tools for Success

- U of T developed a tool to map buildings based on Energy Intensity versus Deferred Maintenance. This allows them to prioritize projects that solve infrastructure age issues and carbon issues simultaneously.
- Scott emphasized that while construction is disruptive, people are generally supportive when they understand the "why". The campus now offers guided tours of the geo-exchange and steam plant to maintain public engagement.
- A major lesson was the need for flexibility; unforeseen shifts in Ontario's electricity pricing and the "global adjustment" structure impacted the original financial business case, though the project remains a sustainability success.

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Contact Information

Please reach out to us at any time with questions, input, or for additional information.

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