

Low-Carbon Building Series: Carville Community Centre and Library

January 20, 2026

[Webinar Recording](#)

In this webinar, Jon Loewen from Perkins & Will, Tom Jones and Lamya Baraam from City of Vaughan provided details on the development, design, and performance of the Carville Community Centre and Library, which is the City of Vaughan's first net-zero carbon building. The session included detailed insights into energy efficiency, emissions reductions, operational challenges, and lessons learned.

Presenters

- Jon Loewen | Design Principal | Perkins & Will
- Tom Jones | Facility Supervisor | City of Vaughan
- Lamya Baraam | Energy Project Manager | City of Vaughan

Presentation Overview

- **Project Background**
 - The 92,000-square-foot facility and 17-acre site include a 25m pool, gymnasium, indoor track, library, childcare, and various outdoor courts and trails
 - The facility was designed with three core goals: high performance/low energy, integrated renewables, and community resilience
 - The building is certified zero-carbon in design, with operational certification expected next year as performance data is finalized
- **Design & Energy Concept**
 - Perkins & Will utilized passive strategies, such as a "thick roof" to conceal mechanicals and support solar panels
 - There is a modest window-to-wall ratio (below 40%) to maximize insulation while maintaining abundant light in user zones
 - The building is anchored into a slope, using the ground as natural insulation for the pool and change rooms
- **Operational Systems**
 - Key technologies include a geothermal loop drawing from an aquifer 150 feet deep and an innovative CO₂ refrigeration system for the outdoor skate trail, which is safer and more efficient than traditional ammonia systems
 - The City of Vaughan owns and operates the geothermal system
 - Solar Panels cover approximately 60% of the roof and are expected to supply 7% of the building's electricity, offsetting daytime loads
- **Performance Comparison and Key Findings**
 - Carville was compared to two similar Vaughan facilities (North Thornhill and Velour Village)
 - Total energy consumption is roughly **30-35% lower** than the comparison centers

- GHG emissions intensity is **85-90% lower** due to the elimination of on-site fossil fuels
- High-efficiency fixtures have resulted in **35-40% less water usage**

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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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