

CASE STUDY: UPPER CANADA COLLEGE

BETTER BUILDINGS PARTNERSHIP



Upper Canada College
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Toronto, ON M4V 1W6

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Project results have been verified by a third party project evaluator according to industry references and the International Performance Measurement and Verification Protocol (IPMVP)

Project Background

Located in the heart of Toronto, Upper Canada College (UCC) is a 181 year-old independent boys school. The UCC campus is set on 38.5 acres, comprising more than 500,000 sq feet of mixed-use space in 16 buildings, built between 1898 and 2008. The campus includes a twin-pad arena, swimming pool, three gyms and seven sports fields. UCC has a student population of 1,156 with 86 boarders and 16 families living on-campus. The 16 buildings are a challenge to upgrade and retrofit for increased energy efficiency due to the wide range in age and various construction types.



Project Snapshot

New Construction and Geothermal heating

Project cost: \$300,000

Annual electricity savings:
946,809 kWh

Annual cost savings: \$123,241

Annual CO₂ savings: 555.13
tonnes CO₂

Estimated BBP Ground Source
Heat Pump Incentive: \$50,560

Estimated BBP New Construction
Incentive: \$44,040.50

Total Estimated New Construction
Incentives: \$94,600.50

Project Snapshot

Domestic Hot Water Conversion (Electric to Gas), Variable Frequency Drives, Occupancy Sensors, Energy Efficient Roof Top Replacement and Lighting Retrofit

Project cost: \$306,600

Annual electricity savings:
1,322,999 kWh

Annual cost savings: \$132,299

Annual CO₂ savings:
1,273 tonnes CO₂

Estimated BBP Incentives:
\$113,542

Desired Outcomes

To assist in addressing these challenges, UCC launched its Green School Master Plan in 2001, to renew its facilities while improving energy performance and reducing its environmental footprint as well as integrating sustainability and environmental stewardship into the school's culture and curriculum. During the first two years of UCC's Green School program, many small energy efficiency projects were completed, but it became necessary to focus on larger projects requiring outside sources of funding.



To reduce energy consumption from heating in the arena and sports complex, UCC installed geothermal heating beneath a nearby playing field, which provides the heat supply for the arena and sports complex.

Solution and Results

UCC sought the assistance of the Better Buildings Partnership's (BBP) MASH program for its larger projects. BBP was a valuable resource for UCC in both quantifying a project's immediate impact on energy consumption and providing financial support to enable the various projects. UCC has worked with BBP to complete numerous energy efficiency projects, to assist with its commitment to its Green School Master Plan. UCC's hockey arena and sports complex was designed to be sustainable, and is working towards gold-level LEED certification. To reduce energy consumption from heating in the arena and sports complex, UCC installed geothermal heating beneath a nearby playing field, which provides the heat supply for the arena and sports complex. Geothermal heating assists in reducing the complex's energy use by 35 to 40 per cent annually. BBP also assisted UCC in completing a number of energy efficiency projects, including the replacement of the 1000-watt metal halide lights with 400-watt metal halide lights for three of the school's gymnasiums. This resulted in reducing energy use by more than 50 per cent. UCC has also undertaken other energy efficient projects, such as the installation of compact fluorescents, LED Lighting, occupancy sensors, and has converted its

electric hot water heaters to natural gas hot water heaters. As well, the school installed variable frequency drives and implemented energy efficient rooftop heating and cooling units.

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Stephen Thuringer
Director of Facilities, UCC

potential projects, clarifies the scope of the work, assists in filing the applications, verifies the outcome and provides resources to offset costs," said Stephen Thuringer, Director of Facilities, UCC. "They are truly a unique enabler for environmental projects that benefit our entire community and beyond." With its ongoing commitment to the Green School Master Plan, UCC looks forward to completing further green projects with BBP.

About the City of Toronto

Toronto is Canada's largest city and sixth largest government, and home to a diverse population of about 2.6 million people. It is the economic engine of Canada and one of the greenest and most creative cities in North America. Toronto has won numerous awards for quality, innovation and efficiency in delivering public services. Toronto's government is dedicated to prosperity, opportunity and liveability for all its residents.



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