

CASE STUDY: UNIVERSITY OF TORONTO

BETTER BUILDINGS PARTNERSHIP



University of Toronto

64 facilities at the St. George Campus: Simcoe Hall (27 King's College Circle)
Three additional facilities: Ontario Institute for Studies in Education, Medical Science Building and the Dentistry Building

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Project Snapshot

Annual electricity savings: 12 GWh
Annual cost savings: \$1.3 million
Annual CO2 reduction: 11,544 tonnes
Annual peak electrical demand reduction: 4.2 megawatts (MW) (10 - 15% of campus load)
Incentives received: BBP (\$467,745.60); Natural Resources Canada (\$250,000); Toronto Sustainable Energy Funds (\$1.8 million as zero interest loan)

Project Background

Comprising approximately 11 million square feet, University of Toronto's 180 year-old campus encompasses over 120 buildings averaging 77 years of age. When a chiller failure led to the closure of the Ontario Institute for Studies in Education (OISE) at the University of Toronto one hot summer day in 2004, capital constraints could no longer justify deferring the replacement of the 36-year-old-unit. Recognizing that the breakdown at OISE was a symptom of a much bigger problem, a comprehensive campus-wide retrofit plan was developed.

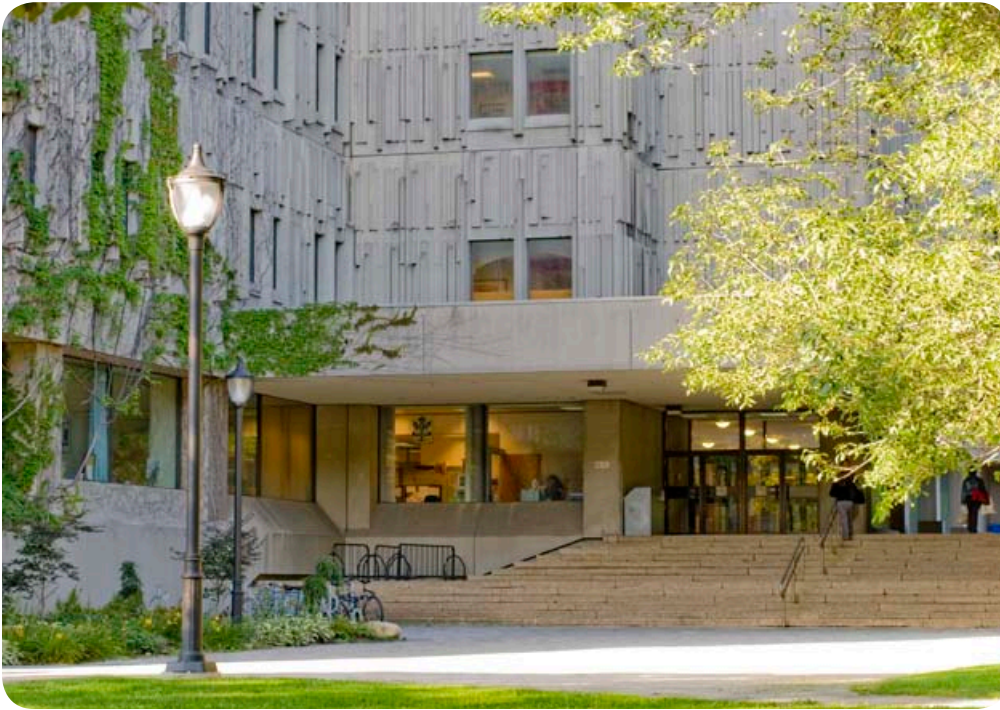


Challenges

The project strategically paired an essential cooling system upgrade with a major lighting retrofit. Environmental concerns were at issue as some of the existing light fixtures had the original electromagnetic ballasts, possibly containing polychlorinated biphenyls (PCBs).

18 chillers on campus exceeded their rated service life by 10 to 20 years and had become increasingly expensive to maintain and repair. Moreover, all of the units used a substance containing ozone-layer-damaging chlorofluorocarbons, which posed an environmental liability.

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



The lighting upgrade translated into annual cost savings of approximately \$970,000 and a reduction in greenhouse gas emissions by 11,544 tonnes of CO₂ per year.

Solution and Results

The University accomplished two major deferred maintenance projects valued at nearly \$20 million, while providing a continuing positive cash flow to the operating budget through energy savings and savings on maintenance. When incentives from City of Toronto's Better Buildings Partnership (\$467,745.60) and Natural Resources Canada (\$250,000), along with a \$1.8 million zero interest loan from the City of Toronto's Sustainable Energy Funds (also through Better Buildings Partnership) were factored in, the

combined projects carried an overall payback of 14 years.

The chiller retrofits resulted in annual cost savings of \$330,000 and a reduction in greenhouse gas emissions of approximately 800 tonnes of carbon dioxide (CO₂) per year.

The lighting upgrade translated into annual cost savings of approximately \$970,000 and a reduction in greenhouse gas emissions by 11,544 tonnes of CO₂ per year.

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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