

# CASE STUDY: MOUNT SINAI HOSPITAL

## BETTER BUILDINGS PARTNERSHIP



### MOUNT SINAI HOSPITAL

Joseph and Wolf Lebovic Health Complex



**Mount Sinai Hospital**  
Joseph and Wolf Lebovic  
Health Complex  
600 University Avenue  
Toronto, Ontario

Altaf Stationwala  
Senior Vice President,  
Operations and Redevelopment  
Mount Sinai Hospital

#### Project Snapshot

Project cost: \$6,077,431  
Annual electricity savings:  
2,400,000 kWh  
Annual CO<sub>2</sub> savings:  
2,309 tonnes  
BBP Incentives: \$722,693

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



Mount Sinai Hospital (MSH) is one of Canada's leading academic health science centres affiliated with the University of Toronto. It is recognized internationally for its excellence in the provision of compassionate patient care, innovative teaching and research. MSH has taken a leadership role in environmental sustainability, and has made a commitment to reduce its environmental footprint through energy conservation and a reduction of energy use.

#### Desired Outcomes

After almost 35 years, the Hospital's conventional chiller was due to be replaced. When MSH looked at the cost and environmental impact of a new conventional system versus Enwave's deep-lake cooling system, the business case was clear. A 20-year forecast revealed that energy costs using chillers would reach \$13.5 million; whereas the cost of using Enwave is \$10 million – an accumulated cost savings of \$3.5 million.



By converting to DLWC, MSH is helping to free up over 61 megawatts of electricity from the city's electrical grid, equal to the energy needed for 6,800 homes annually.

### Solution and Results

To achieve the goal of energy conservation and reduction, MSH converted to the Enwave Deep Lake Water Cooling (DLWC) program, providing participants with chilled water through an underground piping distribution network, instead of cooling their buildings with in-house chillers.

The primary challenge with this project was the installation of the revised chilled water piping that was required for the system changeover. MSH's chillers and cooling towers are located on the top of the building, while the Enwave heat exchanger had to be installed in the base of the building. It was not possible to create an interior piping route from the top of the building to the basement. As a result, Mount Sinai installed a new exterior shaft along the south face of the building in order to run the piping from the chillers and cooling towers down to the heat exchanger.

By removing the chillers and converting to DLWC, MSH will achieve significant economic and environmental savings. The costs of purchasing new transformers and the replacement costs of chillers will now be avoided, resulting in savings of about \$600,000. By converting to DLWC, MSH is helping to free up over 61 megawatts of electricity from the city's electrical grid, equal to the energy needed for 6,800 homes annually. Over the next 20 years, the conversion will result in \$3.5 million in energy cost savings

Removing the chillers from the facility has created additional space for infrastructure upgrades, now being used to house energy power diesel generators; a critical upgrade that would not have been possible without removing the chillers. Removing the chillers also reduces the amount of waste produced by MSH, with no need to dispose of the unit at the end of its useful life. BBP provided an added incentive to Mount Sinai Hospital's Enwave project, helping to ease the initial investment in the Enwave technology, giving the Hospital a one-time grant of over \$722,000.

*"After one summer season using deep lake water cooling, the new system has proven to be tremendously energy and cost- efficient. We have a duty to our patients, their families, our stakeholders and community to be environmentally and fiscally responsible."*

Altaf Stationwala  
Senior Vice President, Operations and  
Redevelopment, Mount Sinai Hospital

### 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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