



# Central Maintenance Garage

## 369 kWt Solar Wall Air Heating System

### BACKGROUND

The City of Toronto installed a Solar Wall on the Central Maintenance Garage to provide better insulation, preheat the incoming air, reduce energy costs, provide adequate ventilation, improve the building façade, and relieve the negative pressure situation.

Prior to installation the building, which is over 40 years old perimeter walls consisting of 66% single-pane glass that allowed a large quantity of cold air infiltration. The combination of poor insulation and a south-facing glass wall caused the interior of the building to be chronically hot in the summer and cold in the winter.

### MONITORING

A reasonable approximation of solar wall performance can be achieved by using the manufacturer’s specified airflow combined with temperature sensor data and damper status readings from the BAS.

### PERFORMANCE ISSUES

The Central Maintenance Garage experienced a number of issues such as problems with integration with the conventional heating system that caused the Solar Wall system to significantly underperform relative to estimated performance. Please see the final report for a discussion of performance issues.



### For more information, contact:

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### Project Overview

Address: 843 Eastern Avenue  
 Building type and use: City of Toronto Vehicle Maintenance Garage  
 Owner: City of Toronto  
 System type: Solar Air Heating  
 Collector Manufacturer: SOLARWALL  
 System Size (kW): 369  
 System Size (sq. meters): 610  
 Installation Date: September 2002

### Performance

Estimated Performance: 878,390 kWh

### Financial

Installed Cost (taxes included): \$277,000  
 External Funding: \$102,000  
 Annual Savings\*: \$29,750  
 Simple Payback (excluding external funding): 9.3 years

\*Assuming the offset of 85,000 cubic metres of natural gas at \$0.35/cubic metres

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This feasibility study was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

