

## Renewable Energy Case Study

# Police Garage - Solar Air Heating



### Facility Profile

The Police Garage serves as a vehicle maintenance workshop and garage. The Police Garage is a 5,805 m<sup>2</sup> (62,462 ft<sup>2</sup>) mixed-use space. A small office space on the south side of the building leads to two garages. The east side of the building is occupied by the Police Garage and the west side by the telecommunications department.

Prior to the retrofit in 2006, heating was provided by the ventilation systems, which had natural gas fired burners. Electric baseboard heaters provided supplementary heating if required. The garage areas had gas-fired unit heaters. Three make-up air units supplied fresh air for the garage areas; two units served the police garages and the third served the telecommunications garage.

### Solar Air Heating System Implementation

- Approximately 69 m<sup>2</sup> (742.5 ft<sup>2</sup>) of perforated dark metal cladding was installed on the highly visible south-facing wall of the facility to provide solar heated ventilation air.
- The system supplements the existing natural gas-fired heating system. Ventilation fans draw in outside air, which then circulates through the cladding and is heated by the metal panels. The warm air passes through ducts to fans and warm, fresh air is distributed throughout the garage.

### Benefits of Solar Energy Wall

- The solar energy wall captures as much as 80 per cent of the available solar energy

Project Summary	
Project completion:	2007
Total project cost (before grants):	\$91,326
Grants	\$39,608
Estimated cost avoidance:	\$1,424/yr
Estimated natural gas savings:	3,885 m <sup>3</sup> /yr
Estimated renewable energy delivered:	40,000 kWh/yr
Estimated CO <sub>2</sub> emission reduction:	7.3 tonnes/yr
Project Funding: City of Toronto, NRCAN, TAF	

- It reduces natural gas consumption, leading to cost savings and green house gas reductions
- Introducing more fresh air improves indoor air quality, worker comfort and productivity

- The solar wall reduces building heat loss during winter. Even at night, a solar wall acts to reduce building heat loss.
- The SOLARWALL™ serves as new cladding and improves the building façade.