

Renewable Energy Case Study

Jimmie Simpson Recreation Centre – Solar Heating Systems



Photos courtesy of SolarOntario.com Ltd

Facility Profile

The Jimmie Simpson Recreation centre has two indoor pools with an area of 360 m².and 70 m² respectively. Before solar heating was added, the large pool water was heated solely by a natural gas fired boiler, and water for small pool was heated solely by an electrical boiler. The boilers maintained the pool water at a temperature of 28°C.

Implementation of New Systems

- An unglazed solar collector technology was installed to supplement natural gas for pool water heating.
- The two solar systems consist of total 91 unglazed solar collector panels covering 400 m² of the flat roof of the swimming pool area. These collectors weigh only 20 kg each when full.
- The piping system has a dedicated pump and is piped as a secondary water system to the swimming pool water circulation system.
- The system is controlled by the building’s computerized control system. A temperature sensor mounted adjacent to the solar panels measures ambient conditions (solar and wind temperature) and determines whether solar heating is available. The controls also prevent losses when heat is not available

Benefits of New Systems

- The main advantage of an unglazed system over other solar systems is lower capital cost.
- When the solar systems are operating, between April and November, they will provide over 50% of the swimming pools heating load.
- The solar systems will together provide 530 GJ of energy which will provide annual savings of \$12,095 in avoided natural gas and electricity use.
- It will also avoid creating 51 tonnes of CO₂ gas emissions.
- The expected useful life of the unglazed collectors is 20 years.

Project Summary	
Project commencement:	October 2006
Total project cost:	\$198,612
Estimated cost avoidance:	\$12,095/yr
Estimated electricity savings (small pool):	32,750 kWh/yr
Estimated natural gas savings (large pool):	20,230 m ³ /yr
Estimated renewable energy delivered:	157 MWh/yr (thermal)
Estimated CO ₂ emission reduction:	51 tonnes/yr
Project Funding: City of Toronto	