



Fire Station #424

1.2 kW Photovoltaic System

BACKGROUND

The City of Toronto chose to install a 1.2 kW photovoltaic system at Fire Hall 424 to evaluate the performance of the technology and to showcase the City's environmental leadership. Installed in December 2006, the project is taking advantage of the Ontario Power Authority's micro Feed-in Tariff program.

MONITORING

Installed on site is a WattNote LonWorks AC power measurer. Monitored parameters include AC current (A) and AC power (W) produced by the inverter.

FINANCIAL

The project was entirely by City of Toronto from the Capital Budget. The system will pay for itself in approximately 21 years and continue generating electricity for years after.

STATUS

Poor system performance and inconsistent data logging were observed throughout the monitoring period, mostly during the winter months. A ground fault, chewed wires, poor power cord connection to the inverter, and shading were all issues that contributed to the poor performance.

The issues are currently being remedied. *Thermal Heating Systems in the City of Toronto* for more in depth analysis.

For more information, contact:

Joel Arthurs, Energy Management Analyst, Energy and Waste Management Office, City of Toronto
416-392-5177; jarthurs@toronto.ca



Project Overview

Project Owner: City of Toronto
Location: 462 Runnymede Road, Toronto, ON
Building type and use: Fire Station
System type: Grid connected PV
System power rating: 1.2 kW
Installation date: December 2006

System Configuration

System surface area: 7 m²
Total number of Modules: 6
Module Manufacturer: Sanyo
Module Wattage: 200 W
Module Model: HIP-200BA3
Inverter Manufacturer: Xantrex
Inverter Model: GT2.5-NA-DS-240
Number of Inverters: 1 (2.5 kW)
Array Angle: 40 degrees from horizontal
Azimuth: 10 degrees West of South
String Configuration: 6 modules per string, 1 string

Annual Performance

3 year average actual performance: 831 kWh/kW

Financial

System Cost (including tax): \$16,056
Grants: None
Annual Income: \$761*
Cost per kW: \$13,380
Simple Payback: 21.1 years

Environmental Benefits

Estimated emission reduction: 0.186 tonnes CO₂e /yr**

* based on FIT rate of 71.3 ¢/kWh
** based on 0.187 kg CO₂e/kWh

© 2012, [City of Toronto, Toronto Atmospheric Fund, Toronto and Region Conservation Authority]. All Rights Reserved. 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.

