



City of Toronto

52 kW Photovoltaic Installation

BACKGROUND

The City of Toronto chose to install a 52 kW photovoltaic system at its 9 Hanna Police Services Garage to reduce electricity costs and to showcase the City's environmental leadership. Installed in November 2009, the project was designed to take advantage of the Ontario Power Authority's Feed-in Tariff (FIT) program.

MONITORING

Monitoring includes production data from inverter (AC in kWh), solar radiation (on-site pyranometer), and ambient and cell temperature. The monitoring system is linked into the building automation system with alarms set as appropriate.

FINANCIAL

The project was funded primarily by the City of Toronto with the Toronto Atmospheric Fund contributing to monitoring and reporting expenses. The system will pay for itself in approximately 15 years and continue generating electricity for years after. The existing mounting structure need to be reinforced which significantly increased the project cost.

STATUS

The project experienced significant delays in securing a Feed-in Tariff contract due to changes in the contract's grid connection rules. After the system was installed, the City of Toronto was informed that in order to qualify for a FIT contract, the system had to be connected to the grid in parallel – a significant change from the previous in series connection requirement. The grid connection change added unexpected costs and delayed the start date of the Feed-in Tariff contract and associated revenue.

For more information, contact:

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*based on FIT rate of 71.3 ¢/kWh

**based on 0.187 kg eCO₂/kWh



Project Overview

Project Owner: City of Toronto
Location: 9 Hanna Avenue, Toronto
Building Type and Use: Parking Garage for Toronto Police Services and Traffic Services
System Type: Grid connected
System Power Rating: 52 kW
Installation Date: November 2009
Installer: Carmanah

System Configuration

System Surface Area: 322 m²
Number of Modules: 273
Module Manufacturer: Sanyo
Module Wattage: 190 W
Module Model: HIP-190BA3
Inverter Manufacturer: Satcon
Inverter Model: PowerGate Plus 50 kW
Number of Inverters: 1
Array Slope: 30 degrees from horizontal
Azimuth: 15 degrees East of South
String Configuration: 39 strings of 7 panels (4 of the five inverter inputs have 8 strings, 1 of the inputs has 7 strings)

Annual Performance

2010 Actual Performance: 62,543 kWh

Financial

System Cost: \$657,705
Grants: \$20,000
Cost Per kW: \$12,680
Annual Cost Savings: \$44,319*
Simple Payback: 14.8 years

Environmental Benefits

Estimated emission reduction: 10.5 tonnes eCO₂/yr**

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