



Neighbourhood Unitarian Universalist Congregation

25 kW Photovoltaic Installation

BACKGROUND

The Neighbourhood Unitarian Universalist Congregation (NUUC) chose to install a 25 kW roof-mounted photovoltaic system on site. The objectives of this project included reducing the church's ecological footprint, educating the public about renewable energy, and generating revenue through the Ontario Power Authority's Feed-in Tariff program. The PV system has been producing clean energy since September 2010, and showcases the NUUC's commitment to sustainability and environmental leadership.

MONITORING

Energy yield data is collected from each of the system's micro inverters. Solar radiation and ambient temperature are not monitored on site.

FINANCIAL

The system was installed at a cost of \$220,000, and was funded by a combination of government grants and community support. Half of the cost was obtained through an interest-free loan from the City of Toronto's Green Energy Fund, while the other half was raised through donations and the issuing of debentures to friends and supporters of the NUUC. The system will pay for itself in approximately 13 years and continue operating for years after.

STATUS

The PV system is connected to the grid and has been generating FIT revenue since September 30, 2010. However, payments have not yet been received due to delays at the Ontario Power Authority. Over the one year monitoring period, the system performed approximately 10% below expectations based on local irradiance and temperature data. The array is situated within close proximity to tall trees, so shading is the likely cause of the lower than expected yield.

For more information, contact:

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Project Overview

Owner: NUUC
Location: 79 Hiawatha Road, Toronto
Building Type and Use: Church
System Type: Grid connected PV
System Power Rating: 24.6 kW
Installation Date: September 2010 (Go live date)
Installer: Solargrid/Intervolt Electric Inc.

System Configuration

System Surface Area: 191 m²
Number of Modules: 112
Module Manufacturer: Canadian Solar Inc.
Module Wattage: 220 W
Module Model: CS5P 220 watt
Inverter Manufacturer: Enphase
Inverter Model: M190 Micro Inverter
Number of Inverters: 56
Array Slope: 52 degrees from horizontal
Azimuth: 15 degrees East of South
String Configuration: Each micro inverter manages two panels and is independent of the others.

Annual Performance

2010-11 Actual: 997 kWh/kW

Financial

System Cost (including tax): \$220,000
Grants: None
Annual Income: \$17,334*
Cost per kW (excluding external funding): \$8,943
Simple Payback (excluding external funding): 12.7 years

Environmental Benefits

Estimated Emission Reduction: 4.6 tonnes eCO₂/yr**

*based on FIT rate of 71.3 ¢/kWh

**based on 0.187 kg eCO₂/kWh