



## Earth Rangers Aviary

### 28 kW Photovoltaic Installation

#### BACKGROUND

The Earth Rangers Centre for Sustainable Technology is a showcase of green building technologies and is certified Gold under LEED for New Construction. In 2008, Earth Rangers chose to install a 28 kW photovoltaic system on the roof of their aviary. The project is generating revenue through the Ontario Power Authority's Feed-in Tariff program, and demonstrates the Earth Rangers commitment to sustainability and technological innovation.

#### MONITORING

Energy yield data is collected from the system's inverters and displayed online through Sunny Portal. This data is available at hourly, daily, and monthly intervals.

#### FINANCIAL

The project was funded entirely by the Earth Rangers organization. The PV system will pay for itself in approximately 16 years and continue generating clean electricity for years after.

#### STATUS

The FIT contract for this project became active in January 2011, and should provide a reliable revenue stream for the Earth Rangers Centre for the next 20 years. To date, the system has performed slightly below expectations based on local irradiance and temperature data. Since the array is situated within close proximity to tall trees, shading is currently being investigated as a possible cause of the low system yield.

#### For more information, contact:

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#### Project Overview

Project Owner: Earth Rangers Centre for Sustainable Technology  
 Location: 9520 Pine Valley Drive, Woodbridge, ON  
 Building Type and Use: Aviary  
 System Type: Grid connected PV  
 System Power Rating: 28 kW  
 Installation Date: July 2008  
 Installer: Enviro-Energy Technologies Inc.

#### System Configuration

System Surface Area: 170 m<sup>2</sup>  
 Number of Modules: 144  
 Module Manufacturer: Sanyo  
 Module Wattage: 195 W  
 Module Model: HIP-195BA3  
 Inverter Manufacturer: SMA  
 Inverter Model: Sunny Boy 5000 US  
 Number of Inverters: 6  
 Array Slope: 22.62 degrees from horizontal  
 Azimuth: Due South  
 String Configuration: Each inverter is wired to 4 strings, with 6 modules per string. Total of 6 inverters.

#### Annual Performance

3 year average actual performance: 1,130 kWh/kW/yr

#### Financial

System Cost (including tax): \$344,274  
 Grants: None  
 Annual Income: \$21,886\*  
 Cost per kW (excluding external funding): \$12,260  
 Simple Payback (excluding external funding): 15.7 years

#### Environmental Benefits

Estimated emission reduction: 5.9 tonnes eCO<sub>2</sub>/yr\*\*

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\*based on FIT rate of 71.3 ¢/kWh

\*\*based on 0.187 kg eCO<sub>2</sub>/kWh

