Solar Photovoltaic System

TOWN OF CALEDON

Green Development Program

Creating solid partnerships with the development community is part of the natural course of business. The Town of Caledon's **Green Development Program** strengthens that link. By providing development charge discounts for new green commercial and industrial buildings, the Town of Caledon enables developers to create more sustainable projects in our community.

Overview

Photovoltaic (PV) systems convert sunlight into electricity (DC current). The generated current can be stored in a battery for future use, or converted to AC using an inverter (most common building scenario). The PV system consists of solar panels, structural support elements (if necessary), electrical components and controls (known as the "balance of system" or BOS). Small PV systems can be used to directly power site elements such as entry gates. Larger grid-connected rooftop systems, can offset part of the electricity requirements of logistics buildings and reduce peak load demand. Grid-connected systems enable buildings to "exchange" electricity with the local utility grid, selling excess generated electricity during peak periods and buying from the grid when production does not meet building demand. Roof-mounted PV systems can either be thin-film cells integrated into the roofing, or standard modules (fixed-angle or capable of tracking the sun). Thin-film roof systems are part of a category of Building Integrated Photovoltaic (BIPV) systems that integrate PV into building elements such as cladding or roofing. Both efficiency and capital costs increase from thin-film systems to fixed module arrays to tracking module arrays. Thin-film systems double as roofing membranes and can be installed without structural modifications. Module-based systems require a structural support system, which can be achieved by extending the columns through the roof.

Advantages

- Clean, renewable energy source
- Low maintenance

Savings

For a proposed 100 kW installation using standard modules and a double axis tracking system considered above, and assuming that the energy consumption of the building matches the energy production of the PV system, the estimated annual output would be roughly 150 MWh. The simple payback is approximately 20 years, based on an energy cost of $0.1/kW, Standard Offer Incentive of $0.42/kWh, energy cost escalation of 5%/year and an inflation rate of 3%/year.

Suppliers | Contacts

Canadian Solar Industries Association | www.cansia.ca/directory/index.asp

GREEN TECHNOLOGY FACT SHEET

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CALEDON
the natural course of business

To learn more about our Green Development Program, contact the Economic Development & Communications Department

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Case Studies | Examples of Technology in Use

Horse Palace, Exhibition Place, Toronto

This 100 kW operational demonstration project is installed on the historic Horse Palace building at Toronto's Exhibition Place. The system uses different combinations of panels, inverters and mounting angles and generates an estimated 120 MWh of electricity per year. Although the project's $1.1 million cost was funded by grants and interest-free loans, the simple payback through the Standard Offer Program would be 22 years.

Government Incentives

Ontario Standard Offer Contract (OSOC)
www.powerauthority.on.ca/SOP
Offers 42¢ per kWh of electricity production.

Eco Energy Program for Renewable Power
www.ecoaction.gc.ca/ecoenergy-ecoenergie/power-electricite/index-eng.cfm
Pays 1¢ per kWh for installations not under OSOC, for up to 10 years of eligible projects constructed between April 1, 2007 to March 31, 2011.

Canadian Renewable & Conservation Expenses
www.canren.gc.ca/app/filerepository/General-tax_incentives.pdf
Investors can deduct 100% of expenses incurred during early development (e.g. feasibility and resource assessment studies).

Accelerated Capital Cost Allowance (Class 43.1 ACCA)
www.canren.gc.ca/app/filerepository/General-tax_incentives.pdf
Write-off to 30% per year for equipment generating electricity from solar electric systems >3 kW.

www.carbonfreetechnology.com/index.html
It is possible to finance PV projects through firms that pay for the installation of a PV system and sell the electricity to the owner/operator of the building at a fixed price for the duration of the contract, but retain ownership of the system.