

Solar Hot Water System



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

Solar hot water (SHW) systems use sunlight instead of conventional fuel sources to heat water. SHW systems consist of a solar collector (typically glazed or evacuated tube) which converts solar radiation into heat, a heat exchanger and pump to transfer the heat from the collector to the water (by means of a heat transfer liquid – water or glycol), and storage tanks to store the heated water. In the context of logistics buildings, SHW can be used to heat domestic hot water (DHW), much like typical residential applications. The flat-plate, glazed collector systems consist of shallow rectangular boxes covered with transparent plastic or glass and black backing, which absorbs solar radiation and heats the transfer liquid contained in a series of tubes. Evacuated tube systems – more common in process water applications – consist of metal absorbers contained in vacuum-tubes, thereby minimizing heat losses and generating higher temperatures. In both cases, the heat transfer liquid is pumped through the collector, heated by sunlight and carried to the heat exchanger. For flat-roofed logistics buildings located in northern latitudes, the solar collectors need to be south-facing and mounted on an angled support system to maximize sunlight exposure. SHW systems do not eliminate the need for a conventional hot water heater, but reduce the energy required to heat DHW.

Advantages

- Reduced energy use to heat water
- Relies on clean, renewable energy

Savings

Based on the ecoEnergy incentive of 25% of total system cost and assuming annual inflation and natural gas escalation rates of 3% and 5% respectively, the SHW system could have a payback period between 10 and 15 years. Smaller systems designed to provide only a portion of the DHW demand will naturally cost less, but the payback periods are roughly the same.

Industrial applications requiring large volumes of heated process water on a continuous basis are extremely well suited for solar water heating. For processes requiring very high water temperatures, evacuated tube collectors should be used. Since storage tanks are not required and economies of scale and improved efficiencies from a larger system can be relied upon, potential energy savings are expected to be higher and payback periods lower.

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

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Suppliers | Contacts

Canadian Solar Industries Association |

www.cansia.ca/CanadianDirectoryOfSolarHotWaterProducts.asp

Products qualifying for the ecoENERGY for Renewable Heat incentive program |

<http://ecoaction.gc.ca/ecoenergy-ecoenergie/heat-chauffage/collectors-captteurs-eng.cfm>

Case Studies | Examples of Technology in Use

Landmark Condominium, Kingston, ON

This apartment building of about 150 units installed a solar hot water system on the roof to offset DHW demand. The system – consisting of 63 m² of collectors and a 1365 L storage tank – cost \$32,000 and returns annual energy savings of roughly \$3,600/year (9 year simple payback).

Government Incentives

ecoEnergy for Renewable Heat

<http://ecoaction.gc.ca/ecoenergy-ecoenergie/heat-chauffage/index-eng.cfm>

This federal program, which runs from April 1, 2007 to March 31, 2011, offers incentives to the industrial/commercial/institutional sector to install active energy-efficient solar air and/or water heating systems. The incentive will rebate 25% of the purchase, installation and certain other costs of qualifying systems, up to a maximum of \$80,000 per installation.

