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Solar panels empower consumer

Harnessing the sun's energy makes 'cents'

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Wayne Smith is feeling pretty powerful these days. With the help of Burlington Hydro, contracted engineers and electricians, the local resident has enthusiastically jumped on board the 'green' train by installing 21 solar panels on the roof of his unassuming side-split home on Penn Drive. The panels, laid in three rows of seven, harness the sun's blistering heat and convert it into precious electricity.

Solar panels are also quiet, clean and basically hidden from view.

And the Smith household is getting a big thumbs up from Mother Nature as it does its part to cut down on harmful greenhouse gas emissions while sparing Ontario's often overburdened electrical grid.

In addition to helping the environment, what has made the move for Smith to install solar panels even more worthwhile is the government's desire to pay him to generate hydro.

Smith has signed a 20-year contract with the Ontario Power Authority (OPA), under what's called the standard offer program. It allows him to sell power the house generates at 42 cents per kilowatt hour -- money in his pocket.

PROGRAM GAINING INTEREST

Installation of the solar panels has not come without a cost, and Smith doesn't shy away from discussing the expensive investment he has made. He said it has cost him a total of \$49,000 (including a provincial sales tax rebate from the province for the panels) to have the panels put in, plus the inverter box that converts the sun's rays into electricity.

The standard offer program, launched in November 2006, is gaining steam. In May this year, the OPA signed 13 standard offer contracts, bringing the total to 78. And there are another 85 applications in the hopper.

Smith figures in 12 years' time he will have paid off the investment of the solar panels thanks to the OPA payments and not having to rely on paying for the use of traditional hydro-electricity from the grid (kilowatt per hour prices that rise every year).

All of which factors into the huge savings the IBM employee has found throughout June and July with the addition of solar panels. He has no hydro bill to pay.



LET THE SUNSHINE IN
 Burlington resident Wayne Smith oversees the installation of solar panels on his roof. Smith has signed a 20-year contract with the Ontario Power Authority, under what's called the standard offer program. It allows him to sell power the house generates at 42 cents per kilowatt hour -- money in his pocket.

Between the little amount of regular electricity he needs to buy from the grid and the OPA payments, Smith said he ends up making money. So far he's earned around \$150.

Payment options include Smith receiving a cheque from Burlington Hydro -- which is reimbursed from the OPA -- or a credit to his hydro account.

Facing south/southwest and angled at 22 degrees -- to optimize the sun's summer power -- 10 one-inch, 52-inch by 35-inch Sanyo panels were installed on Smith's house in October; the remaining 11 were laid down last month.

The beauty of the panels -- which use the converted energy to power two-thirds of Smith's house to help fire up TVs, the outdoor pool's motor and central air conditioning -- is they work even on rainy days.

"It doesn't need to have direct sunlight," the 47 year old said during a recent tour of his solar system; he might lay down another seven panels in three or four years. "It's very unobtrusive."

Essentially, the Smith household has become a generating station. Any extra power he produces and doesn't use is sent out on the typical hydro grid for regular user consumption. Talk about being a good neighbour.

Smith gave his 'station' a name, as required under the OPA contract -- Hone Heke Hydro. Smith is a New Zealander Hone Heke was a rebel Maori chief and war leader in New Zealand.

Ontario is the country's first province to pay people for the development of solar electricity generation projects. It enables small, local, renewable energy producers to get into the energy market.

Over the next 10 years, the province is hoping these kinds of initiatives will help add up to 1,000 megawatts of renewable energy to Ontario's electricity supply - enough to power 250,000 homes and helping ease the strain on Ontario's hydro system.

The march toward cleaner hydro generation, especially through solar panel installation, seems worth it.

According to the OPA, the benefits of solar power are many. It is abundant, renewable and a basically free sustainable energy source.

It decreases the amount of local air pollution, doesn't interfere with the natural environment; emits no carbon dioxide thus reducing global greenhouse gases; provides quiet, clean, low-maintenance generation; contributes to local energy self-reliance and diversifies the province's energy supply.

It can also protect from power outages -- something many residents can relate to given the massive blackout along the North American eastern seaboard in August 2003.

Sunlight converted directly to electricity through solar cells is known as photovoltaic (PV) energy, the kind of panel Smith installed.

HOME IN VERMONT

He got the idea to use solar panels after a visit to Larry Hamilton, the uncle of his wife, Teresa Seaton, last summer. He couldn't believe the money Hamilton was saving after he installed 20 solar panels on his Vermont home.

On the way home, the couple stopped at a hotel to rest and Smith plugged in his laptop computer and quickly began searching information about solar panels. He was hooked immediately.

With the installation of their solar panels, Smith and Seaton enter a marketplace that is seeing a rising global demand to harness the sun's power for energy, according to the Canadian Solar Industries Association's website.

In 2004, the solar industry saw a 40 per cent growth rate driven primarily by booming markets in Japan and Germany.

What differentiates solar panels from other generating systems is the control the user has making it an attractive way to make clean hydro, according to the association.

Solar power empowers individuals to make their own contribution to climate changes.

Burlington Hydro is ecstatic about Smith's move to install solar panels. The company said Smith is among Ontario's first residential solar panel customers under the OPA standard offer program. He is the local utility's first customer under such a program.

The OPA contract made the investment attractive, said Kevin Boggs, manager of metering and energy services for Burlington Hydro.

"Wayne has done a lot work," he said. "Everything he is producing he is being paid. I think it's awesome."

It conserves energy and takes pressure off the grid, Boggs stressed.

Burlington Hydro is looking at launching a media blitz to highlight what Smith has done.

"He is really extreme and that is why you don't see so many of these popping up," said Boggs. "Apparently there are a few in the queue."

Governments have been getting behind environmentally-sensitive and sustainable ways of creating electricity including payment incentive programs and targets for establishing green power sources.

PROVINCE TO CREATE A TASK FORCE

Recently the Liberal provincial government announced a target of establishing 100,000 installed solar panel systems across Ontario and creating a task force of industry experts and market specialists on how best to achieve this target

In addition, the government is working with the Clean Air Foundation to establish a one-stop shop where consumers can get all the information they need on solar energy including solar thermal and panel technologies, cost, payback period, plus installation tips like roof orientation.

For Smith to proceed with the ambitious project, there was a really important piece -- his wife's support. He convinced her to postpone -- not cancel -- much-anticipated kitchen renovations to use the money to help finance the solar panels.

Seaton is proud of what her husband has done to research and ensure the family is making the right decision and investment.

"I give him all the credit in the world," she said. "He had paperwork coming out of his ears."

When asked how her kitchen will look when it's completed in around 18 months time, she said with a smile:

"It's going to be stunning."

To learn more about solar power and the OPA's standard offer program, visit www.powerauthority.on.ca/sop.

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Solar energy is plentiful, essentially free and very environmentally-friendly.

It has been mainly used for heating water and air in homes or small buildings. However its capacity for electricity generation using photovoltaic panels is currently a virtually untapped market in Ontario.

Photovoltaic cells are small semiconductor devices made of silicon, usually 10-centimetre-square in size. Each cell will produce roughly 0.5 volts of electricity. There are usually 36 grouped together in a module or panel. Modules can be linked together in an array, the number of which is dependent upon the amount of power needed.

Solar energy is measured in watts per square metre (W/m²). On a clear day approximately 1000 W/m² of solar energy is available at the Earth's surface when facing the sun.

The amount of available solar energy is also dependent upon the sun's height in the sky throughout the day.

This light and heat energy from the sun is absorbed into the cell and knocks electrons loose. The electron flow creates a current within the cell, and metal contacts on the top and bottom of the cell draw the current out as electricity.

The panels require very little upkeep once the initial installation is completed.

-- Source: Ontario Power Authority

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