



News Release

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Background on PV and Standard Offer Contracts

General Information

What is Photovoltaics?

Photovoltaics (PV), solar electricity or solar PV, is the generation of electricity using the direct conversion of light (photons) into electricity (electrons). This property is inherent in certain materials (such as silicon) and can be enhanced using technology. Solar “modules” are primarily made of crystalline silicon that produces electricity at between 10-20% efficiency (about 150 watts per square meter). An energy efficient house would require about 3 kW of PV (about 20 square metres) to meet all its electricity needs.

What is a Standard Offer Contract?

The Ontario government uses the term “Standard Offer Contract” (SOC) for the mechanism to purchase electricity from renewable energy suppliers at a rate that will stimulate greater use of these technologies. Elsewhere this program is referred to as an Advanced Renewable Energy Tariff or Feed-in Tariff. The SOC is not a government subsidy and it is funded through the ratepayer base. As the cost is spread over all electrical users and the amount of renewable energy purchased is small (compared to the total energy demand in Ontario) it has a negligible cost on the individual’s utility bill. It is estimated that for solar this is about \$0.000035 per kWh.

Are Standard Offer Contracts used elsewhere?

Yes. This is the most popular mechanism in most nations in Europe and the rest of the world to stimulate growth of electricity generation from renewable energy sources. Countries that have SOC’s include Germany, Spain and South Korea.

What is happening in PV around the world?

Solar and wind energy are the fastest growing energy sources in the world. Internationally, solar PV has been growing by an average of 35% annually for the last 10 years. In 2003 (the last year of internationally published data) 1,800 MW was in operation globally. In 2005 Germany installed 600-800 MW according to Photon magazine.

Various nations have set aggressive targets to increase the use of solar PV nationally. South Korea’s target is 1,300 MW by 2012, California has recently announced a target of 3,000 MW by 2017, while Japan’s target is 100,000

MW by 2030. Canada has not set a target for PV sales – recently the Ontario Power Authority projected that there will be 40 MW installed in Ontario by 2025.

What is the current state of the Canadian PV Industry?

Canada lags badly its major trading partners (such as the US, Europe, and Japan) in the use solar energy.

- **Installed Capacity:** Canada has approximately 13 MW of PV installed (as of 2004) – primarily in off-grid applications such as remote cottages and at telecommunication sites. In 2003, Canada had only 26% of the average installed PV capacity per capita of twenty IEA (International Energy Agency) reporting nations.
- **Annual Sales:** Sales of PV in Canada are less than 1 MW per year (as of 2004). In 2003, Canada had only 17% of the average annual sale per capita of twenty IEA reporting nations.

The small size of the Canadian PV market is primarily due to the lack of support offered by governments in Canada for the use of solar electricity. Canada is the only IEA reporting nation that has no support programs for PV (prior to the Ontario SOC announcement).

Does Ontario have an adequate solar resource?

Yes. Ontario has a better solar resource than the solar leading countries such as Germany and Japan. Toronto actually receives more solar energy in the summer than Miami.

Standard Offer Contracts and PV in Ontario

How will the SOC work for Ontario homeowners?

SOCs are contracts to sell electricity into the electrical grid. A homeowner with a Standard Offer Contract will have a separate meter (similar to the meter used to measure consumption) to measure how much PV electricity is produced. All this energy will be fed into the grid and the homeowner will be paid \$0.42 per kWh for it. In its basic form a payment will be made to the homeowner on a regular basis (i.e. monthly, quarterly or yearly) for this electricity.

CanSIA is recommending that the payment process be integrated with the homeowner's utility bill. This will stimulate energy conservation and will simplify the process for local utilities. This is called "net billing."

How much does a PV system cost?

PV systems in Canada currently cost \$10 - \$15 per watt (\$10,000 - \$15,000 per kW) installed. Grid-connected PV systems as small as 500 watts (0.5 kW) are possible however most homes generally require a system in the range of 2,000 – 3,000 watts (2-3 kW) to reduce their electrical bill to zero. One of the advantages of solar is that it is modular – allowing homeowners to increase their system over time.

The SOC program will stimulate price reductions for solar PV systems in Ontario – CanSIA projects that solar PV will be competitive to the retail delivered price of electricity in Ontario by 2015-2020.

How much will a homeowner make with a PV SOC?

In Ontario one watt of PV will generate about 1 kWh per year. Thus a 1 kW (1,000 watt) PV system will produce about 1,000 kWh per year – or about \$420 at the \$0.42 per kWh SOC rate for PV.

Will homeowner's "make money" on a SOC contract?

The support offered under the SOC program covers approximately 50% of the cost of a PV system. The SOC program in this initial phase is designed to stimulate the market leaders or "early adopters" to purchase PV systems. This will allow the industry to build capacity and prepare for the greater use of PV in Ontario within 5 years.

How long does a PV system last?

Ontario's SOC program has 20-year contract lengths – homeowners will have a guaranteed income from their PV system for 20 years.

However PV modules have a much longer life expectancy. Most modules on the market today have warranties of 25 years. Current PV modules can be expected to last 35-40 years (some experts predict that new modules will last greater than 50 years). PV modules were first produced in the 1950s and there are examples of modules of this era still generating electricity today.

The purchase of a PV system is the purchase of an asset. Similar to installing a second bathroom – the installation of a PV system will increase the value of the house. PV on a homeowner's roof is now considered a status symbol in Japan.

The Big Picture

How can solar PV help Ontario's energy supply?

Currently PV's contribution to Ontario's electrical supply is tiny – less than 0.5 MW. However CanSIA estimates that the SOC program will stimulate the sales of upwards of 15,000 PV systems in Ontario – about 40 MW – within 5 years. While this is huge compared to current sales in Canada it is still small in the international context - Germany now installs 40 MW of PV every 4 weeks.

Following this initial capacity building phase CanSIA projects that sales of solar PV will grow by 35% annually so that by 2025 PV will be providing over 3,000 MW of power to Ontario's energy grid with an additional 1,000 MW being installed annually.

What does this program mean for the PV industry in Canada?

The price of \$0.42 per kWh is an important first step and will attract early adopters of solar energy. It is the key to building industry capacity and in attracting investment into the Canadian solar industry with Ontario possibly becoming the economic centre of the solar industry in North America.

CanSIA will be working with other governments in Canada to encourage them to follow Ontario's lead and to enhance this support to allow wider participation from all Canadians. Support from governments will help stimulate cost reductions so that solar PV becomes a competitive source of clean, renewable electricity by 2015-2020.

What does this mean for the Ontario economy?

The SOC program will help accelerate the development of a competitive and innovative solar economy and the transition towards a sustainable based Ontario energy supply. Ontario is now investing in building a world leading solar industry based in Ontario while insuring that Ontario's future energy dollars remain in Ontario.

Currently there are less than 300 people employed in the solar PV industry in Ontario. CanSIA predicts that there will be upwards of 40,000 jobs in Ontario's solar industry by 2025. Currently there are over 30,000 workers in the German solar industry and solar is the fastest growing sector of the German economy. There are now an estimated 100,000 jobs in the Chinese solar industry.

How will this help Ontario's towns and cities?

Solar's main economic impact is at the community level. It benefits the local community in two ways:

- It creates jobs locally – solar creates more jobs than any other energy source – and these jobs are distributed across communities.

- It keeps energy dollars at home – solar energy is the only energy source that is created in the community that it is used in. The money homeowners get paid for their PV produced electricity will be money brought into the community and spent on locally made products and services.

How does this program compare to PV programs in other countries?

Ontario is now the leader in North America in its support of solar PV. Support in California's "Buy Down" program is equivalent to \$0.21/kWh, New Jersey's RPS is \$0.22/kWh, and Washington state's feed-in tariff is \$0.32/kWh. In the US however there is further support offered by the federal government - there is no support offered yet by the Canadian government.

Ontario's program is comparable to the feed-in tariffs in France and Spain but is about half of the prices offered in Germany, Austria and Italy.

For Further Information

CanSIA reports on Ontario's SOC program can be found at www.cansia.ca/reports.asp

1. The Potential of Solar PV in Ontario – January 2006
2. Setting the Price for On-Grid PV in Ontario – January 2006
3. CanSIA's Review of the OPA Supply Mix Report – January 2006
4. Valuing Grid Connected PV in Ontario – May 2005
5. The Job Creation Potential of Solar – January 2005
6. International Sales & Budgets for Solar Technologies – May 2005

Further Information

1. US database on government programs for renewable energy in the US - www.dsireusa.org/
2. Position Paper on Feed-In Tariffs for PV (European PV Association) - www.wind-works.org/FeedLaws/EuropeFeedInTariffEPIA.pdf

About CanSIA

The Canadian Solar Industries Association's mission is to develop a strong, efficient, ethical and professional Canadian solar industry, able to service an expanding domestic energy market, to provide innovative solar solutions to world energy problems, and to play a major role in promoting the transition to a solar energy future worldwide.

www.cansia.ca