



Canadian Solar Industries Association  
L'Association des Industries Solaires du Canada

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## INTRODUCTION

The Canadian Solar Industries Association (“CanSIA”) is a national trade association that represents more than 500 solar energy companies throughout Canada. Currently we have approximately 20 solar company members based in Nova Scotia. CanSIA’s mission is to develop a strong, efficient, ethical and professional Canadian solar industry that is able to provide innovative solar energy solutions and play a major role as the world transitions to renewable energy and a sustainable future. CanSIA have been an effective partner working with federal and provincial government, utilities and other energy stakeholders throughout Canada to develop financial incentive and capacity development programs and have strong links to many Canadian and international solar organizations and associations.

CanSIA recognizes the Government of Nova Scotia’s commitment to supporting the deployment of renewable energy technologies to date through programs such as ecoENERGY, the Renewable Energy Standard and now the Renewable Electricity Plan.

The Renewable Electricity Plan is truly visionary and is exemplary of how positive change can be achieved in a short period of time given strong leadership. CanSIA applauds the Government of Nova Scotia’s 25% target for renewable electricity consumption by 2015 and the further aspiration for 40% of electricity consumption to come from renewable sources by 2020.

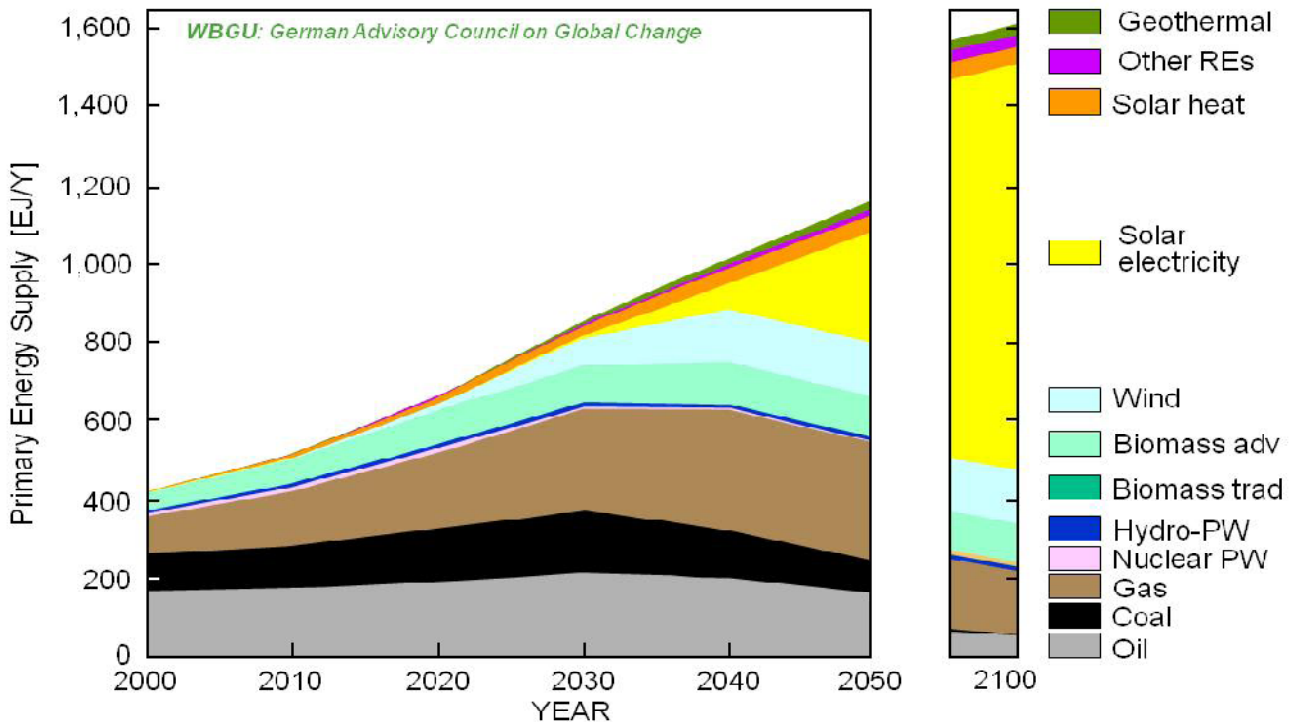
Although there are many positive aspects to the Nova Scotia strategy, one key component is clearly missing in order to make it a truly comprehensive renewable energy plan – the adequate inclusion of solar energy to the overall energy mix. Solar energy is the most abundant energy source in the world – and it’s renewable! Solar is also scalable meaning it can be quickly installed as required and at the point of use. It is CanSIA’s view that solar energy technologies have not been adequately recognized in the Renewable Electricity Plan and we feel that solar energy can play a more significant role in Nova Scotia’s energy mix. Not only does solar create clean energy but it can also creates clean economy jobs.

In this submission CanSIA will provide input regarding the following:

1. An overview of the solar energy technologies currently available in Canada and a description of their market status.
2. A description of why solar energy is applicable to Nova Scotia and how the benefits of adopting solar energy technologies correspond to the principles of the Renewable Electricity Plan.
3. Recommendations for next steps to the Government of Nova Scotia to develop the future of solar energy in Nova Scotia.

## SOLAR AS A LEADING ENERGY SOURCE

As conventional energy sources continue to be exhausted, renewable energy, particularly solar energy, are providing new solutions to local and international energy challenges. According to the WBGU – The German Advisory Council on Global Change, solar electricity and solar heat will play a major role in the energy mix in the next number of years. Even more significantly, solar energy will be the key energy source by the end of the century as shown by the following chart.



In order to achieve this transition to solar energy, steps must be taken today for momentum to be built and capacity to be developed. Even at the beginning stages of this shift to solar power, global solar energy deployment is growing at a 20% - 30% annual growth rate. CanSIA feels that it is instrumental for the Province of Nova Scotia's future economic viability that the Renewable Electricity Plan makes solar energy a greater element of the current energy mix as it is clearly going to become the key energy source.

## SOLAR AS A JOB CREATOR

Solar energy not only provides the benefit of creating clean energy but it also can play a significant economic development function in creating local jobs. According to a Navigant Consulting<sup>1</sup> study, solar energy creates approximately 28 person jobs per MW, 14 being direct jobs and 14 being indirect jobs. The additional job creation benefit of solar energy is that the jobs tend to be local jobs particularly involving trades people.

<sup>1</sup> Navigant Consulting. *Economic Impacts of Extending Federal Tax Credits*. Sept. 15, 2008. [www.navigantconsulting.com](http://www.navigantconsulting.com)

## SOLAR PHOTOVOLTAICS (PV)

Solar Photovoltaics (PV) are a renewable energy technology that harness the electrochemical properties of semi-conductors to convert sunlight directly into electricity. They can be used to provide power at a range of scales from a single household or commercial building to entire communities. The adoption of Solar PV in Canada has risen gradually over the past two decades, growing at an average annual rate of 20 – 25% to the year 2008.



In 2009, Canada took a leap toward the top of the North American Solar PV chart by almost tripling the total installed capacity with the addition of our first solar park and a number of other large projects in Ontario. With over 300 MW expected to be installed in Canada in 2010 and 2011, (bringing the total installed capacity to 400 MW, a 15-fold increase in 5 years), Solar PV technology is becoming well founded and market activity and revenues are growing.

## SOLAR THERMAL AIR AND WATER

Solar Thermal Air and Water are a category of renewable energy technologies that capture sunlight and transfer its energy as heat to either air or water respectively.

Solar Thermal Air technologies are most commonly employed in buildings to provide heated air for space-heating whereas Solar Thermal Water technologies are most commonly employed to provide heated water for domestic purposes such as washing and cleaning, for swimming pools or less commonly for industrial processes and space heating and cooling.



The Canadian Solar Air industry is the most developed in the world and the vast majority of innovative building integrated Solar Air systems are already located in Canada. Canada is also well advanced for the deployment of solar technologies for swimming pool heating, being ranked 5<sup>th</sup> in the world for the technology (in terms of area) per capita.

The use of Solar Thermal technologies for heating water for domestic purposes in Canada lags behind that of our industrial trading partners however the industry has experienced significant growth in the past 5 years and much momentum and capacity has been developed.

It is estimated that at the end of 2009, there were over 1,000,000 m<sup>2</sup> of Solar Thermal collectors in operation in Canada and as with Solar Photovoltaics, the demand for Solar Thermal technologies is rapidly increasing. Given the suitable market conditions, these technologies have major potential to elevate Canada up the renewable energy charts

## EXEMPLARY CANADIAN SOLAR ENERGY PROJECTS



**Solar PV in Nova Scotia:** The Joggins Fossil Centre incorporates the key elements of solar architecture – advanced use of solar resource and solar energy generation technologies – with conservation and efficiency to reduce energy consumption by 64.5%, compared to the baseline, and provide over 50% of the energy demand by on-site renewable energy generation.



**Solar Thermal Air:** The Greater Toronto Airport Authority is one of many large Solar Air projects located in Canada. It comprises 240 m<sup>2</sup> of Canadian-made Solar Air Collectors integrated into the building envelope. The collectors can deliver 6,500 – 11,500 m<sup>3</sup> of pre-heated ventilation air per hour and generates major energy and financial savings.



**Solar Hot Water in Nova Scotia:** In 2009, the Université Ste.-Anne installed a 118 flat-panel solar thermal hot water system at their Church Point campus as part of an initiative to become one of Canada's greenest university campuses. The system provides hot water for all the university residences and the administration building and achieves great emissions reductions.



**Solar Hot Water in Nova Scotia:** The newly built Alderwood Manor long-term care facility in Baddeck, uses solar energy to preheat water for its domestic hot water system. Heat exchange fluid circulates through 27 collectors, transferring energy to six tanks in the mechanical room. The system provides 44MWh of energy annually and is monitored remotely.

## WHY SOLAR ENERGY IN NOVA SCOTIA?

Nova Scotia receives an average of over 1,000 kWh of solar irradiation per metre squared per year. This is an excellent resource that if harnessed could contribute significantly to the energy mix of Nova Scotia. This point is illustrated in the following table with data from Natural Resources Canada (NRCan) that shows that Solar Photovoltaics will perform better in Nova Scotia than in a number of other cities worldwide where Solar Photovoltaics are more widely deployed.

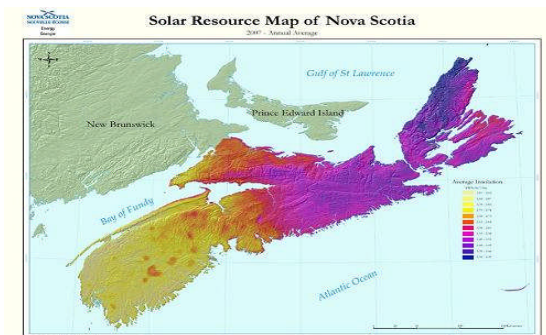
**Ranking of Solar Photovoltaic Potential in Nova Scotia and major cities worldwide**

City	Annual PV Potential (kWh/kW)
Los Angeles, USA	1,485
Ottawa, Canada	1,198
Amherst, Nova Scotia	1,125
Halifax, Nova Scotia	1,074
Paris, France	938
Tokyo, Japan	885
Berlin, Germany	848
London, England	728

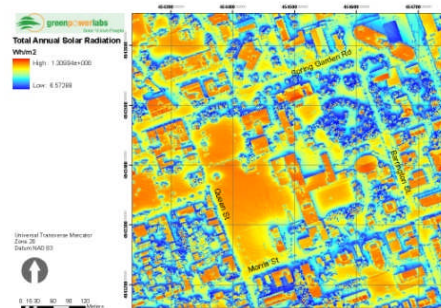
Of particular note in this table, is that output would be higher in Amherst and Halifax than in both Tokyo, Japan and Berlin, Germany; the capitals of the two countries that currently account for approximately 50% of the world’s Solar Photovoltaic installed capacity.

As is the case for Solar Photovoltaics, Solar Thermal has equally good potential for deployment in Nova Scotia. In addition to the excellent solar resource, Nova Scotia’s energy consumption for space- and water-heating is currently largely provided by electricity from coal-fired electricity plants and imported heating oil.

By targeting the space-and water-heating demands of the residential, commercial and institutional sectors with solar thermal technologies, massive reductions in GHG emissions and fossil-fuel consumption, contributions to energy security and price stability stand to be made for the households, businesses and communities of Nova Scotia.



Solar resource map of Nova Scotia



Solar map of Dalhousie University campus

On a whole, solar energy technologies support the goals of the Renewable Electricity Plan (energy security and efficiency, environmental protection and sustainable economic development) in a number of ways:

<b>Issue</b>	<b>Long Term Goal</b>	<b>Solar Energy Contribution</b>
<b>Energy Security</b>	Reduce reliance on imported fuels.	Solar energy is a native resource that is ubiquitous across Nova Scotia.
	Diversify energy-mix.	Solar energy is predictable, reliable and complimentary to a diverse generation mix.
<b>Energy Efficiency</b>	Reduce primary energy consumption.	Solar energy technologies are amongst the most efficient sources of primary energy.
	Reduce peak load.	Solar energy generates electricity during the day when demand is greatest.
<b>Environmental Stewardship</b>	Minimize lifetime environmental impact.	Solar energy has an extremely low environmental impact over its lifetime in comparison to both conventional and other renewable energy sources.
	Reduce GHG Emissions.	Solar energy results in minimal GHG emissions and when used to displace fossil fuels results in major displacement of emissions.
<b>Sustainable Economic Development</b>	Reduce energy revenues leaving the province.	Much of the revenue from the employment of solar energy systems will remain in the province.
	Job Creation	If current growth rates are maintained, the solar labour force in Canada is expected to rise from less than 1,000 in 2010 to 20,000 in 2025.

## RECOMMENDATIONS

Solar energy is poised to become the most important energy source over the next number of years and throughout the 21<sup>st</sup> century and will have important energy security and economic development implications.

### Recommendation # 1

***CanSIA's key recommendation to the Province of Nova Scotia is to more significantly recognize solar energy in the Renewable Electricity Plan and to ensure that both solar PV and solar thermal technologies play a more important role in the future energy mix.***

### Recommendation # 2

***To implement the previous recommendation, the Province of Nova Scotia should create a Solar Energy Task Force to create a path forward to ensure solar plays a significant part in Nova Scotia's future energy mix. This Task Force should include relevant stakeholder involvement including the Nova Scotia Department of Energy, CanSIA and its Nova Scotia members, along with other relevant stakeholders.***

***Some of the matters this Solar Energy Task Force could address may include;***

- ***Developing a solar roadmap for Nova Scotia.***
- ***Continuing provincial government support for Solar Thermal technologies.***
- ***Residential/Commercial Feed-in-tariffs for Solar Photovoltaics,***
- ***Industry capacity development.***
- ***Labour force development.***
- ***Eliminating regulatory barriers surrounding permitting.***
- ***Building Code modifications for energy efficiency.***

## CLOSING

The current Renewable Electricity Plan provides only a small opportunity for solar energy to contribute to Nova Scotia's economic development and renewable energy potential. It is CanSIA's view solar energy, both solar PV and solar thermal technologies must be more highly recognized in the Nova Scotia's Renewable Electricity Plan in order to play a more significant role in the Province's energy mix. CanSIA would like to discuss our recommendations with the Province of Nova Scotia to ensure that solar energy reaches its full potential. Wesley Johnston, CanSIA's Director of Policy and Research, can be reached at 1-866-522-6742 ext. 224 or [wjohnston@cansia.ca](mailto:wjohnston@cansia.ca).

CanSIA would like to thank the Government of Nova Scotia for this opportunity to be involved with the public consultation process for the Renewable Electricity Plan. We applaud your leadership and look forward to our further involvement and co-operation in the overall process of reducing Nova Scotia's reliance on fossil fuels and transitioning to a sustainable energy future.