

November, 2010:

Economic Impacts of Solar Energy in Ontario

Executive Summary

Authors:

Brennan Louw

Jon E. Worren

Tim Wohlgemut

© 2010 ClearSky Advisors Inc.



Other Titles in the Ontario Photovoltaic Market Access Service:

- PV Market Forecast
- Insights Into Silicon in Ontario: Opportunities and Threats
- Understanding Ontario's Transmission and Distribution Grid
- Grid Expansion Scenario Analysis
- Connecting Renewable Energy to Ontario's Grid
- Renewable Energy Financing Market
- Renewable Energy Policy Development
- Ontario PV Energy Players and Positions

Disclaimer:

The materials ClearSky Advisors Inc (CSA) provides to client will reflect CSA's judgment based upon the information available to CSA. CSA disclaims any other representations or warranties, express or implied, including without limitation any implied warranties of merchantability, fitness for a particular purpose or non-infringement. This report is based on sources believed to be reliable, but no independent verification has been made nor is its accuracy or completeness guaranteed. CSA is an independent research firm that does and seeks to do business with all stakeholders within the industries covered in CSA research. Investors and decision-makers should consider CSA research as only a single factor in making their key decisions.

Executive Summary

Over the next twenty years, Ontario will need to replace as much as 80% of its electricity generating capacity. The investments the province makes now will impact Ontarians' quality of life for decades to come. As such, the energy mix that Ontario chooses to pursue should be based on both economic outcomes and the values of Ontarians.

This report examines the impact of including solar PV in Ontario's energy mix – with a primary focus on economic impacts. Though more expensive than other forms of power generation, there are strong reasons to support solar PV as an important part of Ontario's energy future.

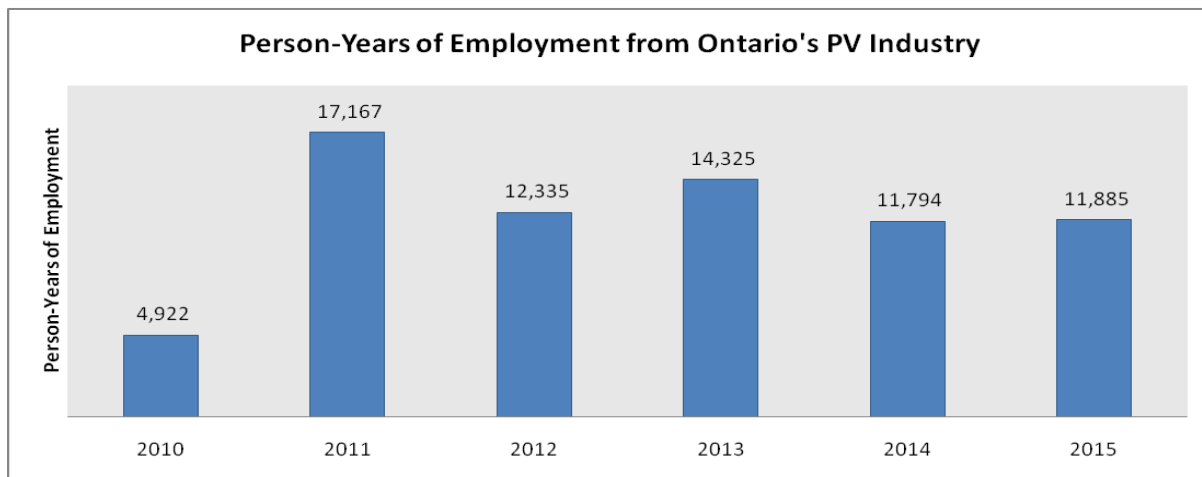
- Installing 3 GW¹ of solar PV in Ontario from 2010-2015 will create over 70,000 person-years of employment while increasing costs to the average Ontario household by the equivalent of less than one percent of their electricity bill per year
- Further benefits include cleaner energy and the opportunity to establish Ontario as a leading jurisdiction for the PV industry in North America

Assessing the Characteristics of Good Energy Policy

While it is vital to have competitively priced electricity, it must also be acknowledged that investments in energy infrastructure have wide reaching outcomes (i.e. economic, health, environmental, community). All these impacts should be considered in charting Ontario's energy future. ClearSky Advisors' research indicates that while stakeholders have a wide range of concerns, there are a number of themes that are of primary importance in the province. This paper analyses solar PV as an energy option along four criteria.

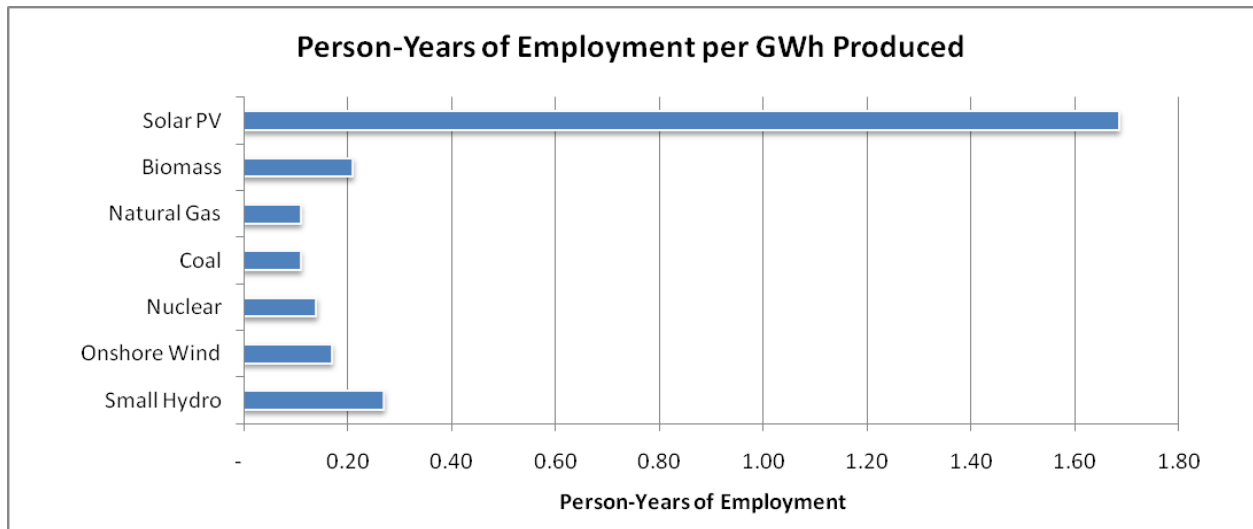
- Job creation
- Other economic outcomes
- Suitability as a replacement for coal
- Cost

Job Creation



Source: ClearSky Advisors, NREL, Statistics Canada

¹ ClearSky Advisors' PV Market Forecast 2010-2015 notes that at the current pace of solar PV approvals (after taking into account grid capacity and other market issues), there would be 3GW of solar PV capacity connected to the Ontario electricity system by 2015.



Source: ClearSky Advisors, Energy Policy Journal, OPA, NREL

- Installing 3 GW of solar PV capacity in Ontario from 2010-2015 will result in 72,429 person-years of employment in the province
- Solar PV in Ontario creates 12 times more jobs than nuclear and 15 times more jobs than natural gas or coal per unit of energy produced
- Jobs created by solar PV cost 4 - 6 times less than jobs created by nuclear, natural gas, or coal

Other Economic Outcomes

- Ontario is poised to become the second largest solar PV market in North America (after California) in 2011; as an early mover, the province has a unique opportunity to develop a robust local PV industry that can serve markets in the rest of Canada and the United States
- Solar PV will result in \$7.9 billion of spending in Ontario between 2010-2015
- Solar PV will create hundreds of millions of dollars in tax revenue for both Ontario and Canada

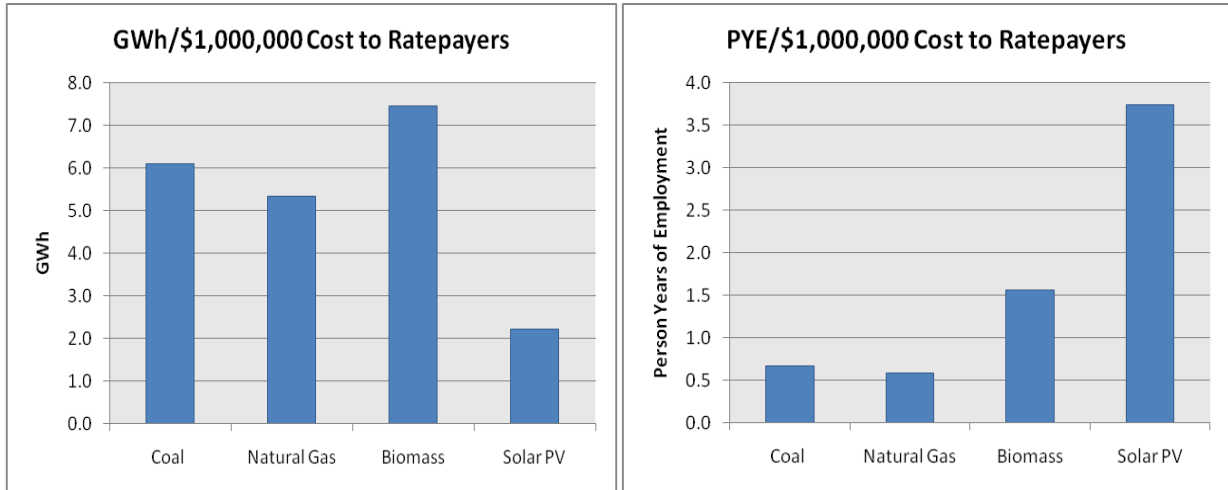
Coal Phase-Out

- Solar PV can be a strong replacement for a significant portion of coal-fired generation in Ontario
- Solar PV is a form of peaking power but it is not dispatchable; it must be used in conjunction with other dispatchable forms of peaking power
- Solar PV imposes minimal externalized health and environmental costs relative to other forms of peaking power including coal

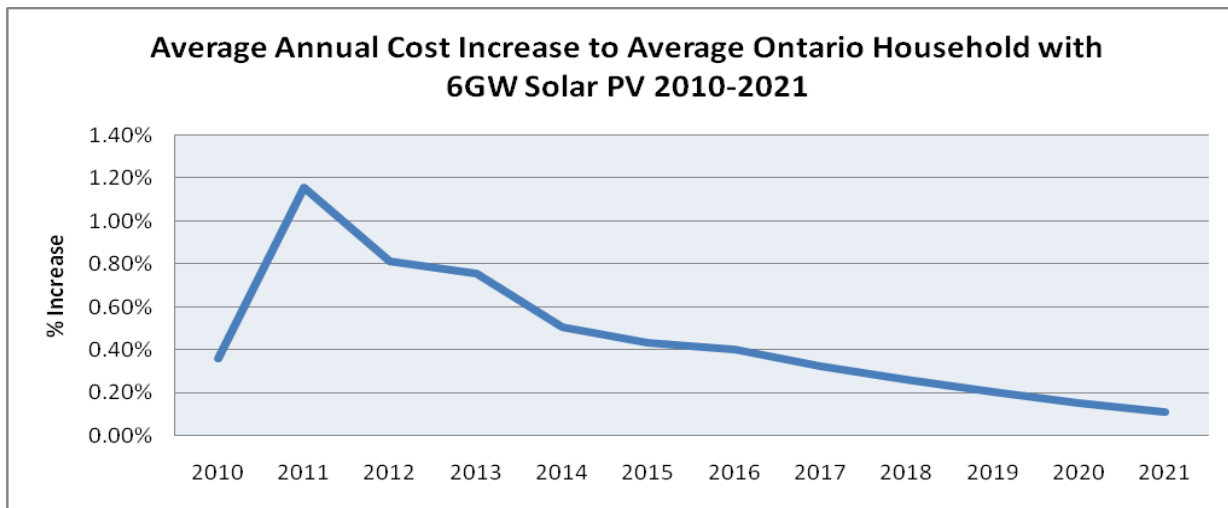
Cost

- A \$1,000,000 investment in solar PV will create 30% - 42% as much energy as other forms of peaking power but 2.4 – 6.4 times more jobs
- 3 GW of solar PV will increase costs to the average Ontario household by the equivalent of 0.7% of their electricity bill annually from 2010-2015
- By developing local experience from 2010-2015, future solar PV capacity can be installed at a much lower cost to Ontarians²

² The Average Annual Cost Increase graph is based on 6 GW of solar PV by 2021. This number is only used to illustrate one of the outcomes of investing now in PV, ClearSky Advisors has not forecast 6 GW of solar PV by 2021.



Source: ClearSky Advisors, OPA, Ontario Ministry of Energy, Energy Policy Journal



Source: ClearSky Advisors, IESO, OEB, OPA, National Resources

Methodology

Forecasts for job creation and ratepayer impact were generated through a ClearSky Advisors model that incorporates established and recognized 3rd party tools with in-house modelling. Inputs for the model were taken from ClearSky Advisors’ Ontario PV Market Forecast 2010-2015 as well as trusted 3rd party sources. In particular, economic multipliers specific to Ontario were obtained from Statistics Canada, job creation data was taken from peer reviewed publications, and price data was taken from sources such as the Ontario Power Authority and Ontario’s Ministry of Energy. Cost data for fossil fuels includes environmental and health externalities. Additional costs for nuclear (including waste management and insurance) are not included.

Ratepayer impact and job creation outcomes are tailored to reflect domestic content requirements in the province and other characteristics of Ontario’s Feed-in Tariff program. Person-years of employment (PYE) include only direct and indirect jobs (induced jobs would be additional to figures reported here).

ClearSky Advisor’s Ontario PV Market Forecast 2010-2015 is based on both secondary research and primary research. The primary research was done through in-depth interviews (more than 150 conducted since May 2010) with renewable energy stakeholders throughout the province.

Contents

Executive Summary

Introduction

Why This Topic

Chapter I - Job Creation

Photovoltaic Job Creation in Ontario: 2010-2015

Job Creation from Solar PV vs. Job Creation from Other Energy Sources

The Cost of Creating Solar Jobs

Photovoltaic Job Type and Salaries in Ontario: 2010-2015

Chapter II – Other Economic Activity

Local Expertise

Local Spending

Tax Revenue

Chapter III – Phasing Out Coal

Chapter IV – The Cost of Power Generation

Cost Premium vs. Job Creation

Cost to Ratepayers

The Decreasing Cost of Solar

For more information about this study or to purchase access to ClearSky Advisors services, please contact:

Tim Wohlgemut
+1-(647)-297-0045
tim@clearskyadvisors.com

Jon E. Worren
+1-(416)-670-6780
jon@clearskyadvisors.com

