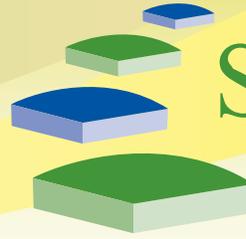




SOLAR ENERGY OPPORTUNITY PROFILE



SouthGrow

Regional Initiative

Creating Opportunities...

We Are...

- City of Lethbridge
- Town of Cardston
- Town of Claresholm
- Town of Coaldale
- Town of Coalhurst
- Town of Magrath
- Town of Milk River
- Town of Picture Butte
- Town of Raymond
- Town of Taber
- Town of Vauxhall
- Town of Vulcan
- Village of Barons
- Village of Carmangay
- Village of Coutts
- Village of Champion
- Village of Milo
- Village of Nobleford
- Village of Stirling
- Village of Warner
- Cardston County
- County of Lethbridge
- MD of Taber
- Vulcan County
- County of Warner
- Blood Tribe

Globally, solar energy is a rapidly growing energy technology. In 2003 alone, solar electric industry grew by 36% internationally. Solar power is the only energy technology that allows grassroots ownership of power generation. Solar power “on the roof” empowers an individual to make their own contribution to climate change. With these advantages, the goal of the Canadian Solar Industries Association is for a “minimum of 25 million megawatt hours per year of renewable solar electrical and thermal energy by 2025.”



The Potential

In 2003 alone, the solar electric industry grew by 36 percent internationally. The growth potential is enormous with annual solar energy supply of 5,400,000 EJ/a, and annual world solar energy consumption of just 500EJ/a. The majority of homes in North America are dependent on natural gas for heating. Natural gas and oil prices have increased at such a rate that alternate energy sources are being sought.

The **Canadian photovoltaic (PV)** market has grown at an average rate of 13% per year between 1999 and 2004. PV applications at the consumer level are in almost every home and office with calculators, watches and garden lights run off small PV cells. Off-grid and near grid applications include buoys and lighthouses, telecommunications centres, PV railroad track monitors and railway crossing lights as well as solar power that power work trailers and parking meters in some communities.

Solar thermal technologies are cost competitive in Canada due to their high efficiencies and high demand for heat energy. Applications include heating swimming pools, heating water for residential and commercial needs and heating buildings by preheating outside air before it is brought into the building.

Passive solar design relies on smart building design and conceptualization, allowing the natural capture of the sun’s rays by south facing windows during the winter, window shading during the summer, using natural daylighting and thermal mass such as concrete and brick to hold heat and moderate a building’s temperature.

The **photovoltaic industry** which generates revenues of \$30 million and employs over 500 people, consists of installers, retailers, distributors, system designers and engineers researchers and manufacturers. Products include solar modules, inverters, controls, batteries, specialized water pumps, high efficiency solar refrigerators and solar lighting systems.

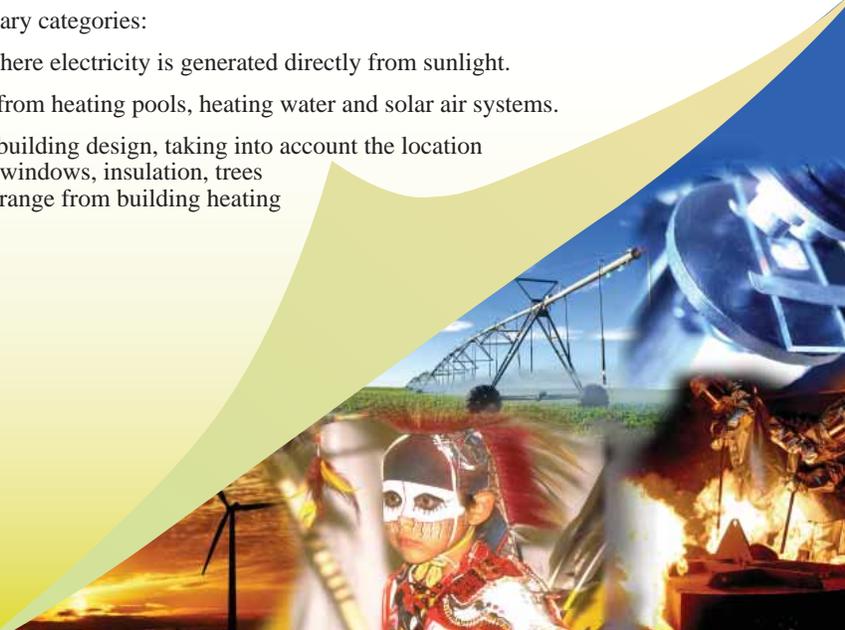
Manufacturers in the **solar thermal** sector produce solar water, air and pool heating systems, many of which are exported to meet the growing international demand. Smaller firms focus on installation and integration of solar systems, offering high employment opportunities projected to be as many as 28 jobs per \$1 million invested compared to 7 jobs for conventional energy sources, if the market were to develop more.

An Overview

The solar industry in Canada consists of over 400 companies and employs more than 1,000 people. The Canadian Solar Industries Association (CanSIA) projects that if Canada’s solar industry were to follow growth rates in other leading nations, then Canada’s high skilled employment in the sector could be over 60,000 by 2020.

Solar energy can be grouped into three primary categories:

- Solar electricity or photovoltaics (PV), where electricity is generated directly from sunlight.
- Solar thermal, with applications ranging from heating pools, heating water and solar air systems.
- Passive solar, which relies on intelligent building design, taking into account the location of the sun in relation to the placement of windows, insulation, trees and shade. Applications in this category range from building heating to daylighting.



Fast Facts:

Solar power is the only energy technology that allows grassroots ownership of power generation.

Insolation is the amount of solar energy as expressed in units of megajoules per square metre (MJ/m²). One Kwh/m² equals 1 peak hour, which equals 3.6 MJ/m.

Average insolation (amount of solar energy received on a surface over a period of time) in southern Alberta is 15 to 18 MJ/m² /day.

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Alberta has the only research lab for solar heating in Canada, located at the Alberta Research Council (ARC) in Edmonton.

Sector Supports:

The following are organizations and agencies that can provide support for those wishing to seize the opportunity:

Canadian Solar Industry Association
www.cansia.ca

Climate Change Central
www.climatechangecentral.com

Natural Resources Canada
– www.nr-can-rncan.gc.ca
Solar Energy Society of Canada
www.solarenergysociety.ca

Energy Solutions Alberta
– www.energysolutionsalberta.com

Southern Alberta Alternative Energy Partnership
www.saaep.ca



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The Opportunity

Insolation is the amount of solar energy as expressed in units of megajoules per square metre (MJ/m²). One Kwh/m² equals 1 peak hour, which equals 3.6 MJ/m. On an annual basis, the amount of solar energy is dependent upon location and how high the sun is in the sky and cloud conditions at any particular time. Average insolation (amount of solar energy received on a surface over a period of time) in southern Alberta is 15 to 18 MJ/m² /day. With such a concentration of insolation, the SouthGrow region is ideal for opportunity and investment in the Solar Energy sector. SouthGrow is ready to:

- Attract business investment and research and development in the Solar Energy Sector.
- Entice foreign and Canadian manufacturers and suppliers to Western Canada, especially those from places like Denmark and Germany that have been in the business for many years and have the critical mass to supply the North American market.
- Provide ideal relocation for Canadian companies that are located in the East, and may want to move west or branch out into this market.

The SouthGrowN Advantage

- **Expertise** Alberta has the only research lab for solar heating in Canada, located at the Alberta Research Council (ARC) in Edmonton. ARC has developed a thermal solar collector with the ability for direct heat storage. This system would be used for space heating. Estimates show it would be less costly than hot water heating systems.
- **Location** The SouthGrow region is situated in a very advantageous location for solar installations. It is estimated that this area of solar insolation is in the 5 to 6 GJ/m²a range as compared to countries like Germany and Denmark that are in the 3 to 4 GJ/m²a range.
- **Municipal Buy In** SouthGrow communities are receptive to the idea of alternative energy and its industries and public institutions are actively looking at ways to reduce energy costs. For example, the Town of Vulcan is already participating in a solar energy initiative whereby all structures in the Town of 1,800 people is being heated using a central solar heating system. This participation enables the region to provide leadership in establishing the expertise for solar heating in Alberta and the Western Provinces.
- **Logistics/Accessibility** SouthGrow is located on the major Canadian transportation routes for both east/west and north/south highway routes. It is located on the Canamex corridor with close proximity to the United States border, allowing for easy connection to the interstate system to all major US cities.
- **Low Cost** Real estate costs in the region are less than those in other major centres in Western Canada, and the province has a competitive corporate tax rate for manufacturers and processors. There are no capital or payroll taxes, and no provincial sales tax. Albertans also benefit from the lowest overall taxes in Canada.
- **Population** Growth due to in migration from both domestic and international sources is expected to continue.

