

Solar Energy

Southern Alberta

Alberta's Energy Vision

A global energy leader, recognized as a responsible world-class energy supplier, an energy technology champion, a sophisticated energy consumer, and a solid global environmental citizen.

Solar Energy – Alberta's Latest Resource

Solar power is one of the most efficient and affordable energy alternatives available today.

Alberta has the potential to be a world leader in the supply of solar energy. The province has strengths in all three facets of solar energy; photovoltaic (PV), thermal and space heating. These strengths provide various opportunities for potential investors including the expansion of a manufacturing industry for solar equipment, developing solar farms to supply electricity to the power grid, or partnering with a research group to commercialize a break-through technology.



Solar energy could become a main supplier of a significantly expanding energy market. From 1987 to 2007, energy demand increased from 33 million Megawatts/hour to 69 million Megawatts/hour. Additionally, in the past two years the Alberta power grid has set several records for peak electricity consumption in both summer and winter. Solar energy on a large scale would significantly help a market shortage on power reserves.

Southern Alberta – The best place to produce solar energy

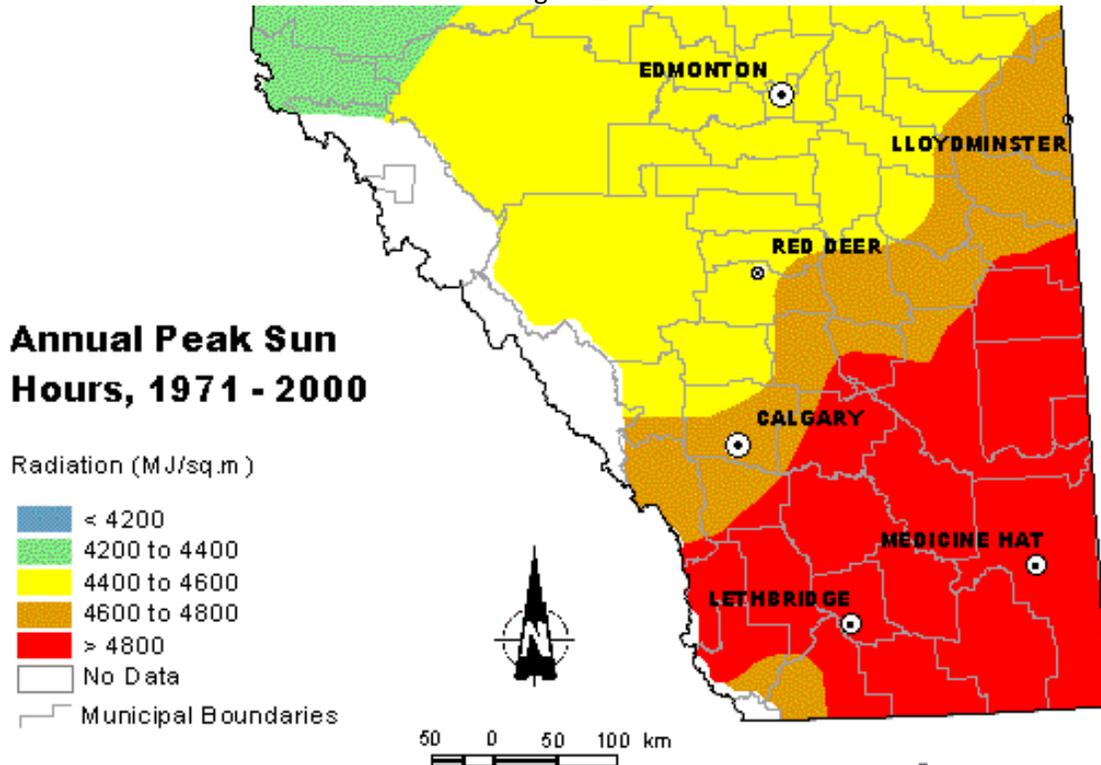
Southern Alberta has the perfect climate for using solar technology largely due to a mean winter temperature of approximately -10°C. At below freezing temperatures, solar technology works at a much higher efficiency.

Growth in solar thermal sales has shown strength. From 2004-2005 sales in the Prairies grew from \$463,000 to \$1,864,000; an increase of 300%.

In southern Alberta, untapped opportunities such as installing PV systems on schools exist. This is a common practice in many other countries.

The southern Alberta region is a very advantageous location for solar panels. The region exhibits the highest amounts of sun in all of Canada. Refer to Figure 1 for “Peak Sun Hours” experienced in Southern Alberta.

Figure 1:



Based on 1971 to 2000 data from Environment Canada, Alberta Environment and the U.S. National Climate Data Center. Map displayed on Township generalization.



The Town of Pincher Creek is a member of the Alberta Solar Municipal Showcase. Pincher Creek installed a PV system on the town hall to demonstrate solar energy potential and to show the town’s support for alternative energy. This PV system has produced over 3 Megawatts.

Research and Development (R and D) for Solar Energy

Alberta has shown an interest in supporting R and D by recently announcing an incentive program. The program offers a tax credit worth 10 per cent of a company's eligible expenditures up to \$4 million, for a maximum credit of \$400,000. In addition to the tax credit, the plan includes various measures such as a government-sponsored venture capital agency seeded with \$100M and a "technopreneurship" program aimed specifically at youth.

The U of A is working on nano-solar technology. In collaboration with the National Research Council's National Institute, the university has developed a higher efficiency (30 per cent improvement) plastic solar cell. This is a significant advancement in photovoltaic technology due to current solar cells being made of expensive ultra-high purity silicon.

Solar expertise exists within the province at the Alberta Research Council (ARC), the University of Alberta (U of A), and the University of Calgary (U of C). **The ARC is the only research lab in Canada that is developing space heating technology.** They have developed a thermal solar collector which has the ability for direct heat storage.

The Alberta Research Council is seeking licenses to further commercialize patented Direct Heat Storage (DHS) technology. DHS addresses large space heating loads characteristic of northern climates, and has the potential to reduce heating expenses for residential, commercial and industrial buildings. The picture to the right illustrates DHS panels on a shed.

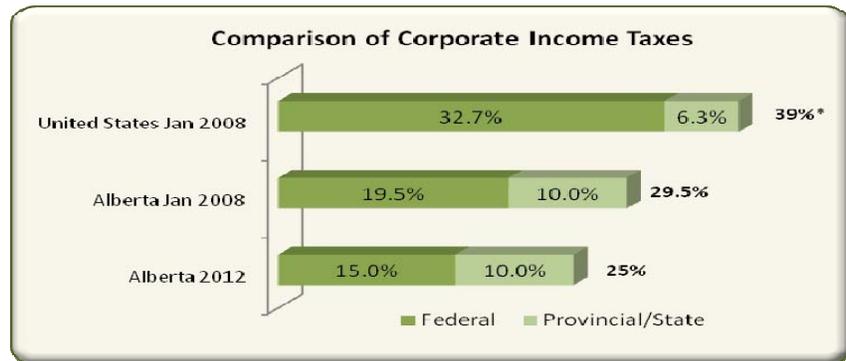


Solar Incentives

- ✦ The federal government provides a variety of investment incentives for solar energy. This includes a 1 cent/KWh for solar projects installed up to March 31, 2011. Incentives exist for solar projects for both residential and business. Applications to Natural Resources Canada determine the level of funding.
- ✦ The Alberta government recently passed the micro-generation regulation, which is intended to promote development of environmentally friendly energy by electricity customers. Any unused electricity can be sold back to the grid. To qualify as a micro-generator, the customer must use renewable or alternative energies, be sized to meet all or a portion of the customer's electricity needs, have a generating capacity smaller than 1 Mw, and produce electricity primarily for the customer's own use. For solar energy, this means installations of PV cells can mitigate a home/business owner's electricity expense. If the homeowner wants to produce power as income or a business, it is no longer classified as micro-generation. For businesses, there is a 25% tax credit on solar hot water installations. Additionally, homeowners who complete an eco-audit are eligible to receive a \$500 credit on the purchase of a solar hot water system.

Southern Alberta's Competitive Advantages

- The Alberta government is very open to investment and support of developing businesses. Support comes primarily through offering low level of taxes.



*6.3% represents the average effective top general state corporate income tax rate U.S. rates know as of January 2008
 Source: Alberta Finance and Enterprise & Federation of Tax Administrators

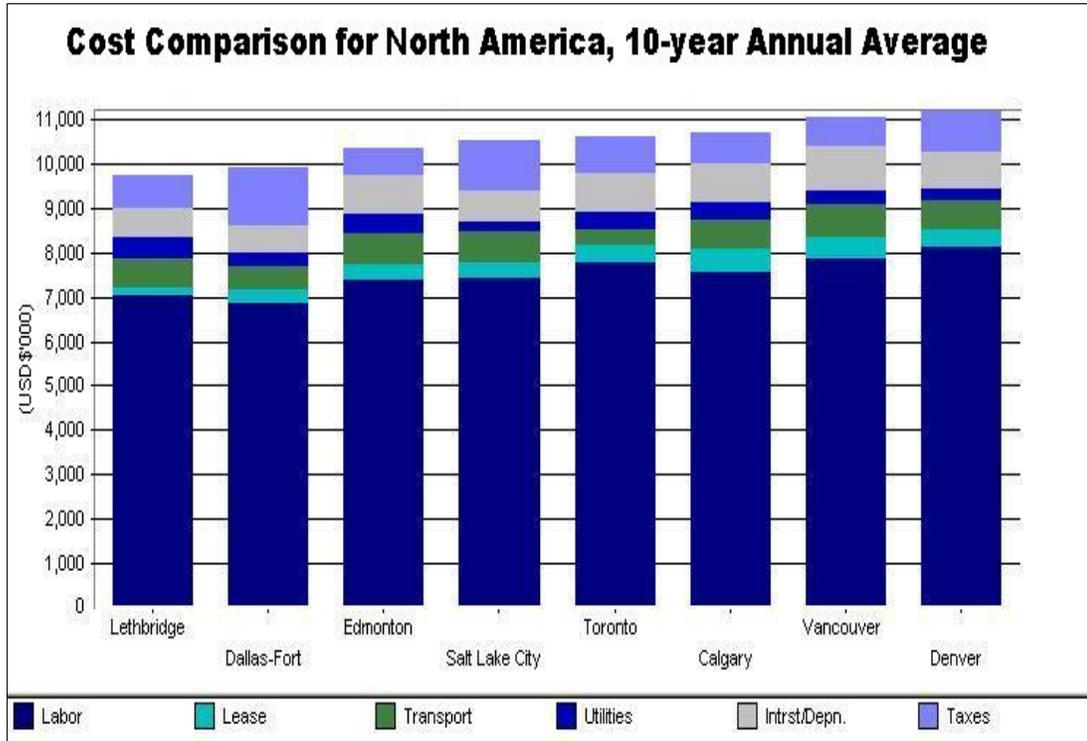


Note: Includes Surtaxes
 Source: PWC Tax News Network, April 25, 2008

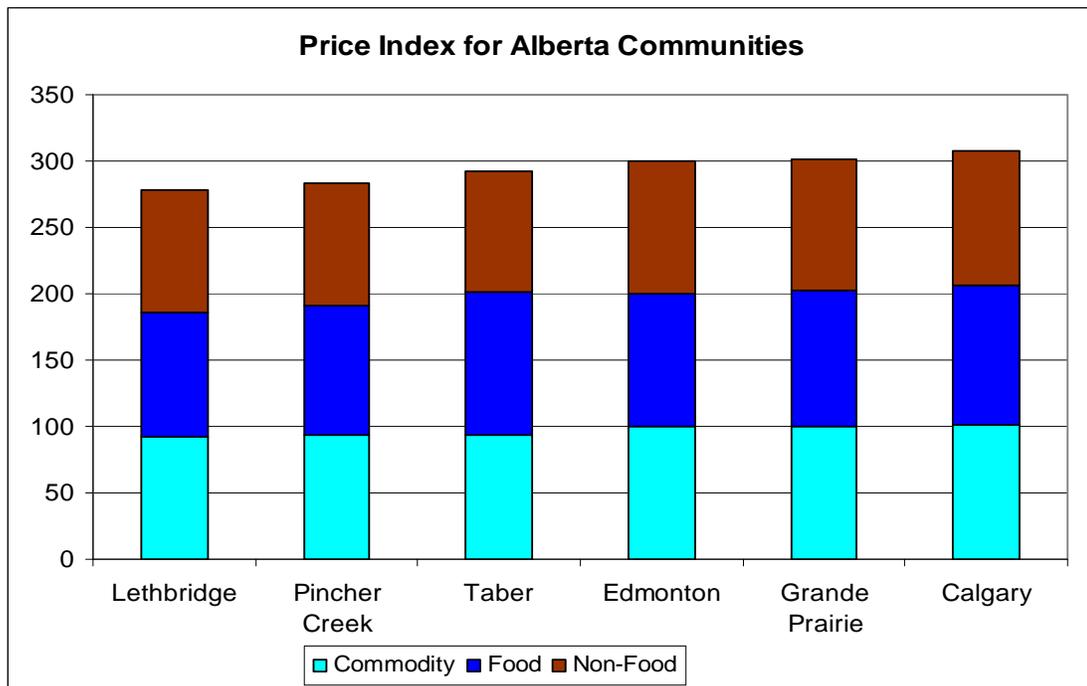
- Along with a low corporate tax rate, Alberta is the only province to omit a provincial sales tax and exclude provincial capital or payroll taxes (quite common in other provinces and U.S. states).
- Personal tax levels in Alberta are the lowest in Canada as indicated by the figure to the left

- Alberta has the most productive labour force in Canada with a productivity of \$66,636 GDP/capita.
- Alberta's health care system is second-to-none offering a wide range of services from emergency health-care to free health information. As of January 1, 2009, Albertans are no longer required to pay the Alberta Health Care Insurance Plan.

Southern Alberta's cost of conducting business is very low when compared to other regions in North America.

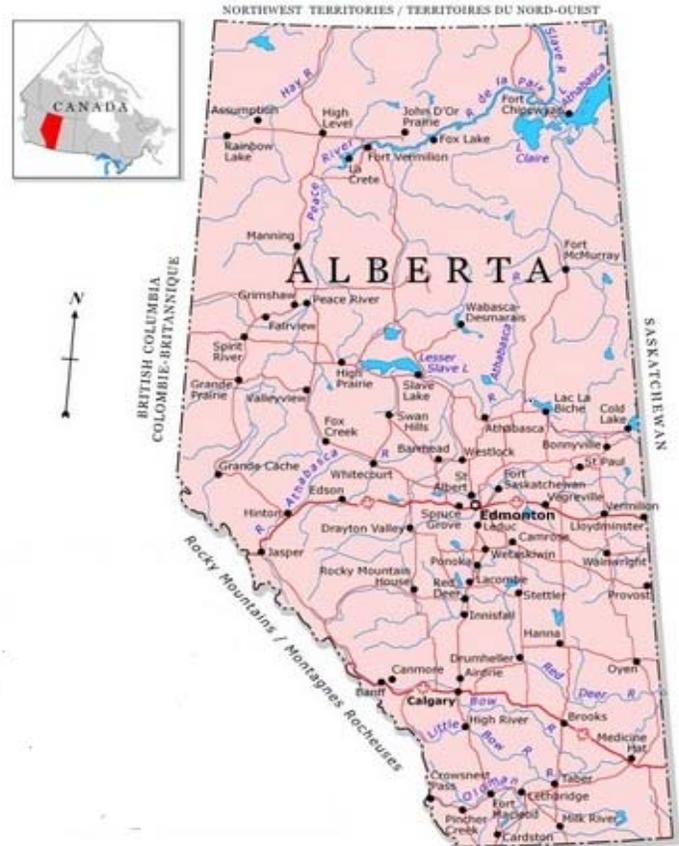


Southern Alberta has a very low cost of living index for commodities, food and non-food products as represented in the chart below.



Southern Alberta has some of the best transportation networks in North America. It is a part of the Canamex corridor, which links together Canada, the United States, and Mexico. Additionally, rail and air access is excellent.

Close proximity to the north-western US provides great access to over 10 million people. Along with the nearly 10 million people that live in Western Canada, southern Alberta provides excellent market access.



SAAEP

SAAEP consists of three partner organizations:

- Economic Development Lethbridge
- SouthGrow Regional Initiative
- Alberta SouthWest Regional Alliance

Working in collaboration to develop an alternative energy industry in the region, SAAEP’s primary focus is to make southern Alberta the renewable energy hub for Alberta, and possibly western Canada.

Key Links and Contacts

SAAEP leads development of alternative energies in southern Alberta	www.saaep.ca
The Alberta Research Council is in the business of innovation by helping take technologies from the laboratory to the field, including a solar technology for heating	www.arc.ab.ca
Alberta Solar Showcase is a group of 20 Alberta communities that is demonstrating the use of PV energy on highly-visible public buildings	www.lassothesun.ca/index.htm
Canadian Solar Industries Association is a non-profit organization with goals of expanding Canada’s solar industry	www.cansia.ca
Canadian Solar Technologies is a provider of evacuated tube solar collectors that are manufactured in China	www.canadiansolartechnologies.ca
Natural Resources Canada is the Canadian ministry responsible for the development of Canada’s natural resources	www.nrcan.gc.ca
Solar Energy Society of Canada Inc. promotes the increased use of solar and other renewable energies in Canada	www.sesci.ca