

Geothermal 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.

Alberta's Geothermal Potential

Renewable energy sources are essential in meeting the needs of today's society and reducing the pollution associated with the use of conventional fossil fuels.

As of 2008, geothermal power supplies less than 1% of the world's energy and less than 1 Megawatt is produced in Canada. However, the Canadian Geothermal Energy Association is looking to change this with a target of producing 5,000 Megawatts by 2015.



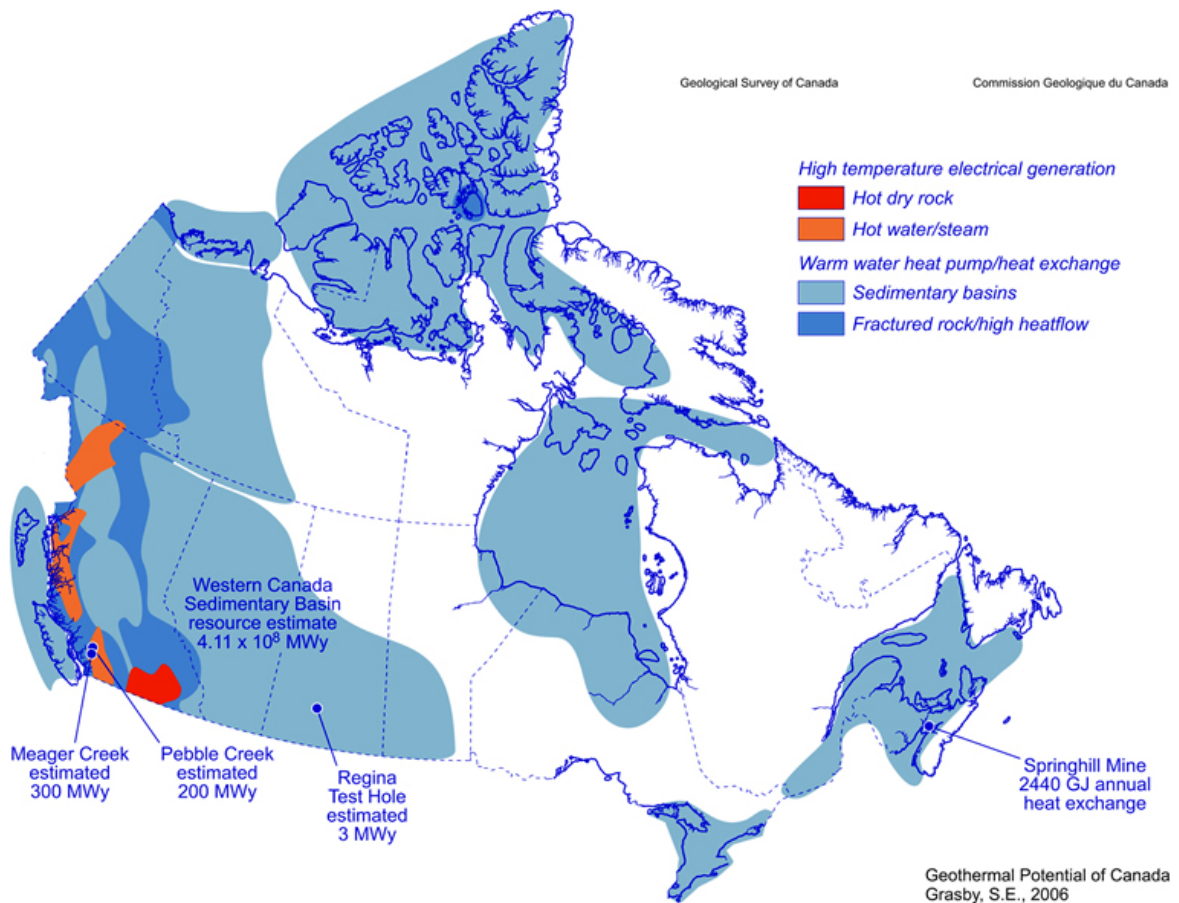
Geothermal energy can be utilized in two different ways. The first involves using the ground as either a heat source or heat sink (air conditioning). The second involves using the energy held in the ground to produce electricity.

In Alberta, very little geothermal energy has been accessed. This can be considered advantageous to any company interested in tapping into the market given the limited amount of competition. There are only two geothermal electricity projects in Canada. The first is the South Meager Geothermal Project in BC. The project will create electricity on a level of 100 MW, which would be enough to power 80,000 homes. The second is the Cape Breton Coal Mine project which plans to utilize flooded old mines to heat and cool communities in the area. In addition, the Crowsnest Pass region in southern Alberta has abandoned coal mines where geothermal technology may be possible.

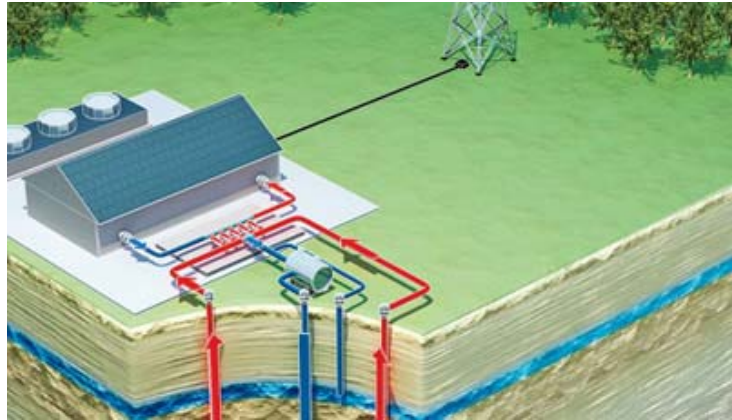
Southern Alberta's Geothermal Potential

Several opportunities exist for developing the geothermal industry in Southern Alberta. This includes the installation of heating systems for residential, commercial, and industrial buildings. As well, the use of current oil wells and mines offer the potential to develop a vast resource. Expanding the geothermal industry will require a geothermal equipment supplier or manufacturer. Refer to figure 1 for a map of geothermal potential in Canada.

Figure 1:



A significant opportunity within Southern Alberta is the potential to convert oil and gas wells to create geothermal energy. This practice would provide an opportunity to acquire carbon credits for the oil and gas industry. It is estimated that there are 120,000 non-producing oil and gas wells in Alberta. This figure illustrates an example of converted oil and gas wells for geothermal production.



A geothermal project's success is highly dependent on the ground material available. In southern Alberta, shale is quite common which is advantageous for geothermal drilling due to its excellent ability to exchange heat. The Milk River region also has a soil profile that is advantageous for geothermal heat exchange. Presently, the geothermal opportunities in Southern Alberta relate to heating and cooling and not with electricity production.

- Southern Alberta residents have shown interest in geothermal energy. There is only one company in Southern Alberta to own a geothermal drilling rig. However, the company is currently working solely in Calgary leaving many residents outside of this community unable to install geothermal systems.
- The Crowsnest Pass may have geothermal energy potential by retrofitting abandoned coal mines into geothermal energy producers. Coal mines are used to produce geothermal energy around the world. With an abundant supply of coal mines, geothermal sources offer a significant opportunity to the Southern Alberta region.

Research and Development (R and D) for Geothermal Energy

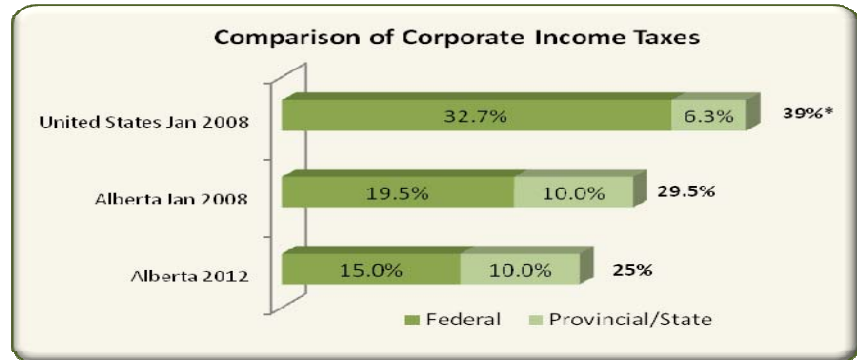
Alberta has shown an interest in supporting research and development by recently announcing an incentive program. The program offers a tax credit worth 10 per cent of a company's eligible expenditures up to \$4 million, for a maximum credit of \$400,000. In addition to the tax credit, the plan includes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

Geothermal Incentives

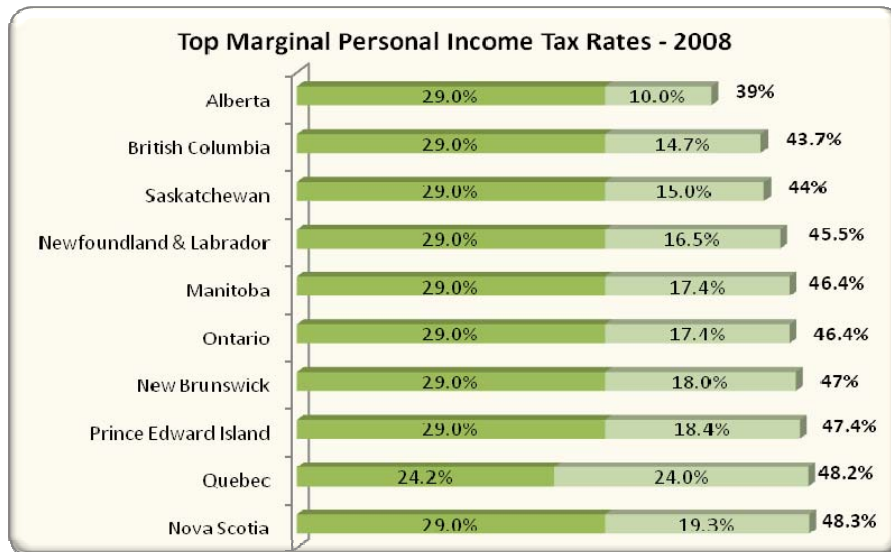
- EcoEnergy Incentive is in place in Canada providing \$10/Megawatt hour for all green electricity projects and is not indexed to inflation.
- Under the EcoEnergy Retrofit program, new geothermal installations will receive \$4,375 or \$1,750 for the replacement of an established system. To qualify, home-owners will need to be evaluated by a certified energy advisor.

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

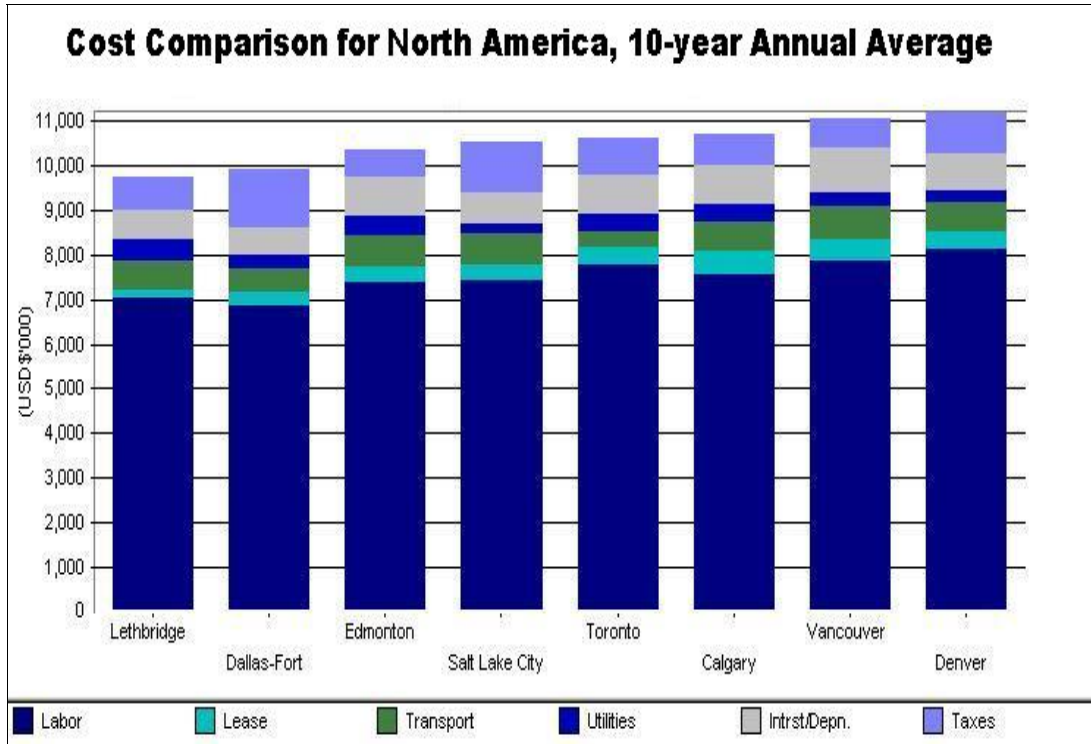


Note: Includes Surtaxes
 Source: PWC Tax News Network, April 25, 2008

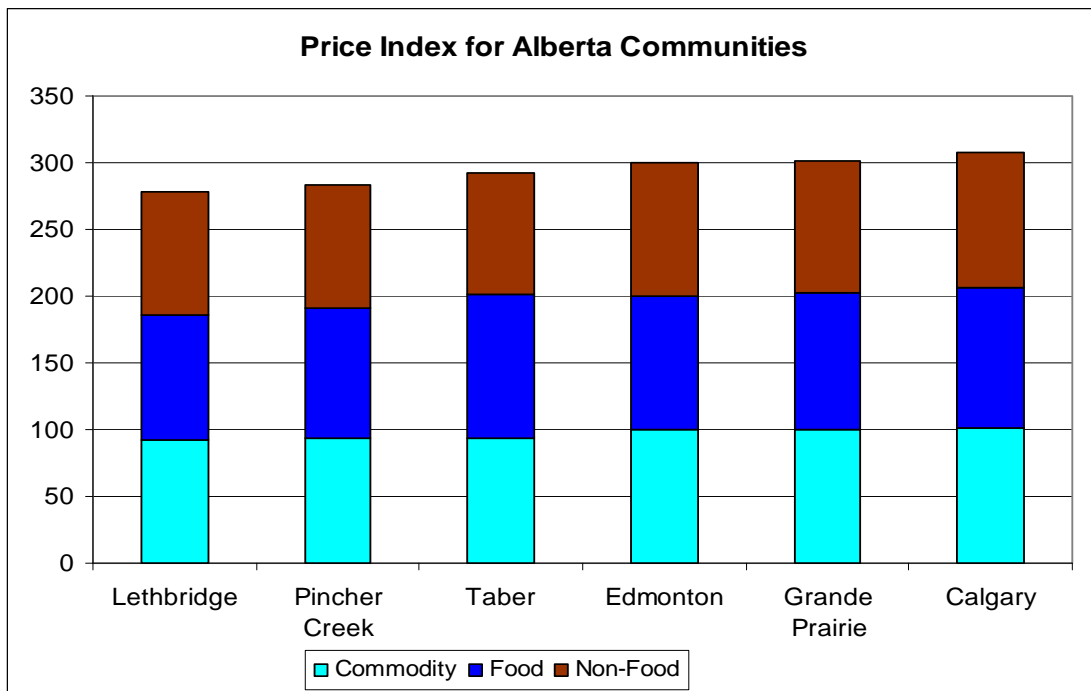
- Along with a low corporate tax rate, Alberta is the only province to omit a provincial sales tax and exclude provincial capital or payroll taxes (quite common in other provinces and U.S. states).
- Personal tax levels in Alberta are the lowest in Canada as indicated by the figure to the left

- 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.

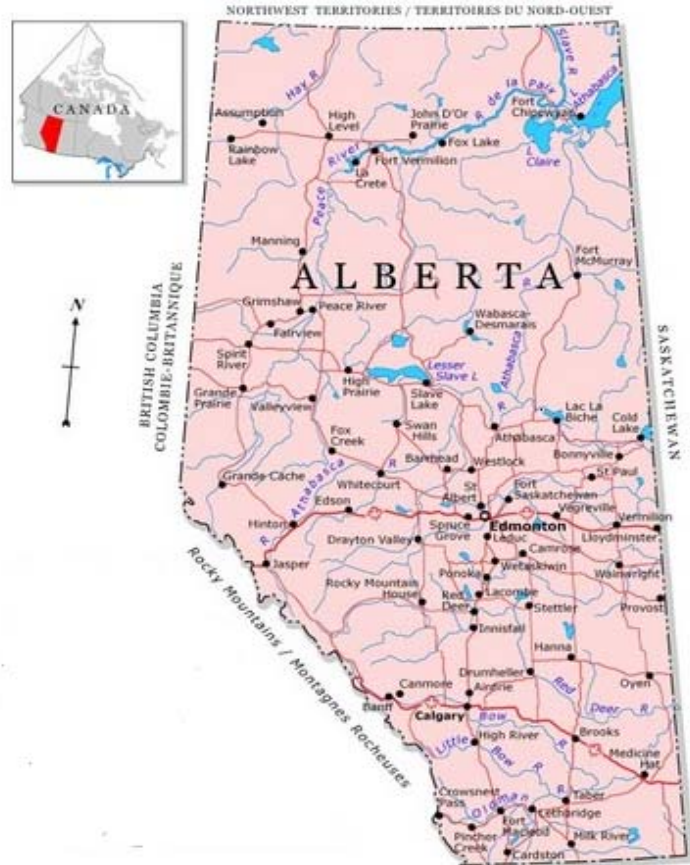


Southern Alberta has a very low cost of living index for commodities, food and non-food products as represented in the chart below.



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

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| SAAEP leads the development of alternative energies in southern Alberta | www.saaep.ca |
| Canadian Geothermal Energy Association works to facilitate and promote the responsible and sustainable growth of geothermal energy in Canada | www.cangea.ca |
| Geothermal Directory is being developed and designed to bring information about geothermal technology to the attention of the public | www.geoexchangezine.com |
| Ground Source Energy installs ground source heating in Calgary, AB | www.groundsourceenergy.com/ |
| Canadian Geo-exchange Coalition facilitates the development of ground source heat pump industry in Canada | www.geo-exchange.ca |
| Natural Resources Canada is the Canadian ministry responsible for the development of Canada’s natural resources | www.nrcan.gc.ca |