

Bio-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.

Bioenergy – The Renewable Fuel

Bioenergy is the first step in a much larger vision of creating high value products through a biorefining approach to agriculture and forestry biomass integrated with our energy sector.

Bioenergy is made up of several different products such as biodiesel, ethanol and biogas. In Canada, bio-mass is used to meet approximately 6 percent of demand for energy. Further developmental potential exists as Canada has access to more biomass resources per capita than any other country in the world.



The Alberta government recently announced a Renewable Fuels Standard (RFS). The RFS will require that 5 percent ethanol or 2 percent biodiesel be blended into fuels. The implementation date of this policy is July of 2010.

In southern Alberta, there are two biogas projects in place: Cargill Meat Solutions (High River), and Lamb Weston (Taber). Another three projects are operational in Alberta and twenty others are in various stages of development. This industry has potential to produce electricity similar to that of wind energy. At present, wind energy produces 540 Megawatts.

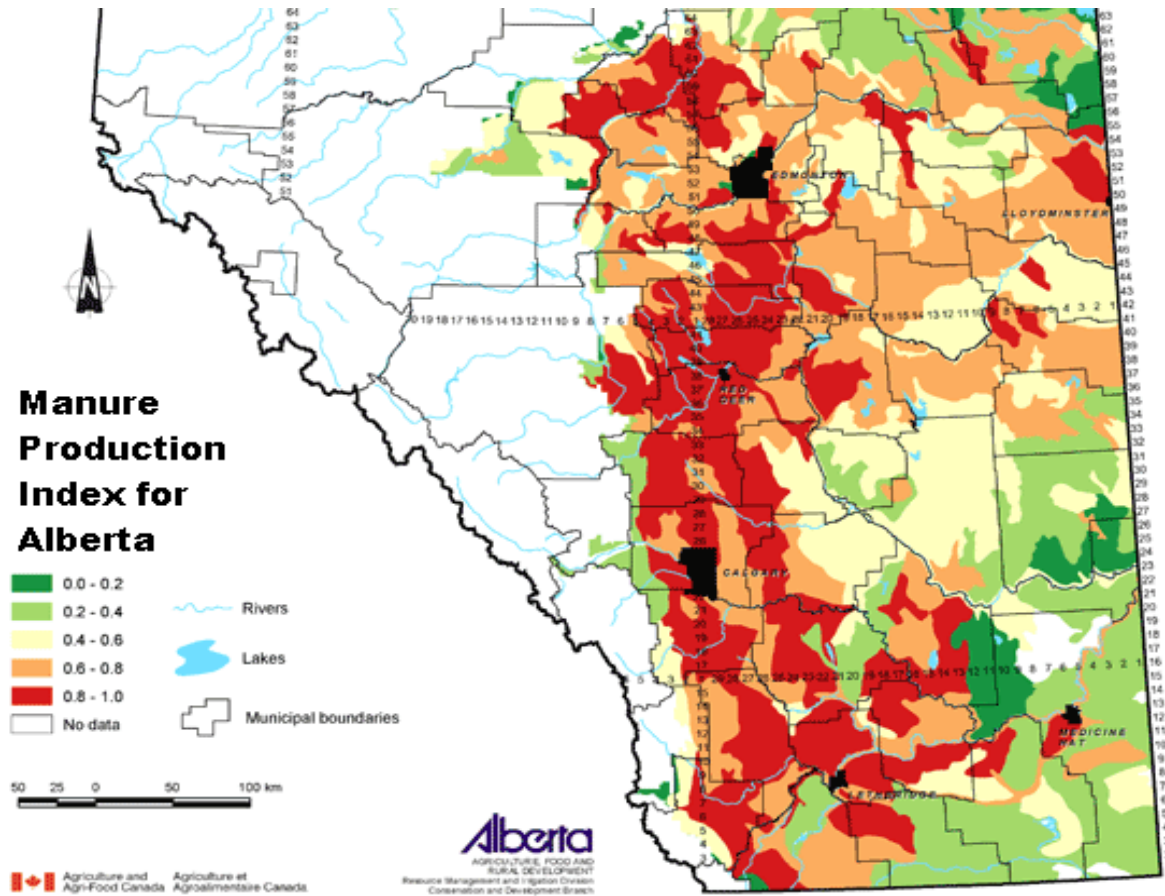
Southern Alberta's Bioenergy Opportunities

Size of Operation (MW _e)	0.1	0.3	0.5	1.5	5
Animal Requirement (head)					
Beef Feeder	2186	6558	10,930	32,791	109,302
Beef Finisher	1053	3158	5,263	15,790	52,633
Dairy Cows	421	1264	2,107	6,322	21,072
Hog Farrow to	3445	10336	17,226	51,678	172,261
Hog Farrow to Wean	364	1091	1,818	5,453	18,176
Layers	9541	28624	47,707	143,120	477,066
Broilers	37431	112294	187,157	561,470	1,871,568

To show the potential electricity generation from biomass, approximately 40,000 head of cattle produce enough manure to create 5 Megawatts. This table provides a more in-depth look at electricity production per head¹.

¹ A typical house consumes 8.9 Megawatt-hours annually.

Southern Alberta is considered the nexus for most of the cattle production that occurs in Alberta, which is very lucrative for any biogas company looking to become established. One can expect a steady supply of input at a highly competitive rate. In addition, ethanol producers would have a close proximity to sell distillers' grain. The following figure illustrates manure concentrations in southern Alberta.



Biofuel opportunities also exist in southern Alberta due to its readily available supply of grains and oilseeds. The following table summarizes crop production in Alberta.

	Alberta Crop Production 2004-08 ('000 tonnes)					
	2004	2005	2006	2007	2008	5-year avg
Wheat	7,571	8,371	7,503	6,076	8,736	7,651
Oats	828	830	706	627	541	706
Barely	5,428	5,232	4,405	5,114	5,448	5,125
Canola	2,926	3,651	3,425	3,402	4,323	3,545
Tame Hay	7,394	8,754	8,142	9,276	9,344	8,582

- ✦ Alberta leads western Canada in production of grains and oilseeds. Since the beginning of the twentieth century, farming has been an integral part of Alberta's economy. Within the past few decades, producers have refined their methods, thereby increasing grain and oilseed production. The grain transportation network has also become highly efficient.

Research and Development (R and D) for Bioenergy

- Alberta has shown an interest in supporting Research and Development (R & 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.

Government Incentives

- The Alberta government is heavily involved in supporting bioenergy development headlined by their Nine-Point Bioenergy Plan. The plan offers a total of \$239 million allocated as the following:
 - Renewable Producer Credit Program (\$209 million) will fund eligible biofuel plants between 9-14 cents/litre and biomass plants 2-6 cents kWh.
 - Commercialization/Market Development Program (\$24 million) will support a portion of feasibility studies, business plan development, worker training, and capital costs.²
 - Infrastructure Development Program (\$6 million) will fund capital projects to a maximum of 35% of eligible costs.

Additionally, the plan will look at policy development to support bioenergy.

- The Alberta government recently passed the micro-generation regulation, which is intended to promote development of environmentally friendly energy (including biomass) by electricity customers. Any unused electricity can be sold back to the power 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 Megawatt, and produce electricity primarily for the customer’s own use.
- The ecoENERGY for Biofuels program supports the production of renewable alternatives to gasoline and diesel and encourages the development of a competitive domestic industry for renewable fuels.

As of July 2007, the federal government announced the investment of up to \$1.5 billion over nine years towards the increased production of bio-fuels in Canada.

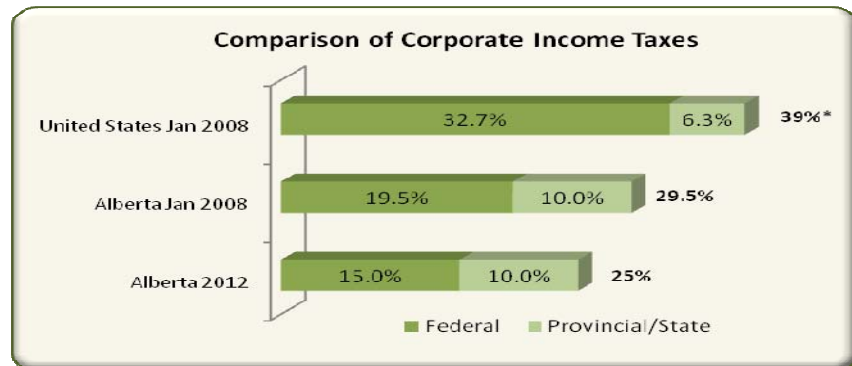
Maximum incentive rate payable (\$ per L)									
Fiscal Year *	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Renewable Alternatives to Gasoline	0.10	0.10	0.10	0.08	0.07	0.06	0.05	0.04	0.04
Renewable Alternatives to Diesel	0.20	0.20	0.20	0.16	0.14	0.12	0.10	0.08	0.06
* April 1 of a given year to March 31 of the following year.									

- The incentive will be dispersed based on applications made by industry; successful candidates will then be supported based on their production levels.

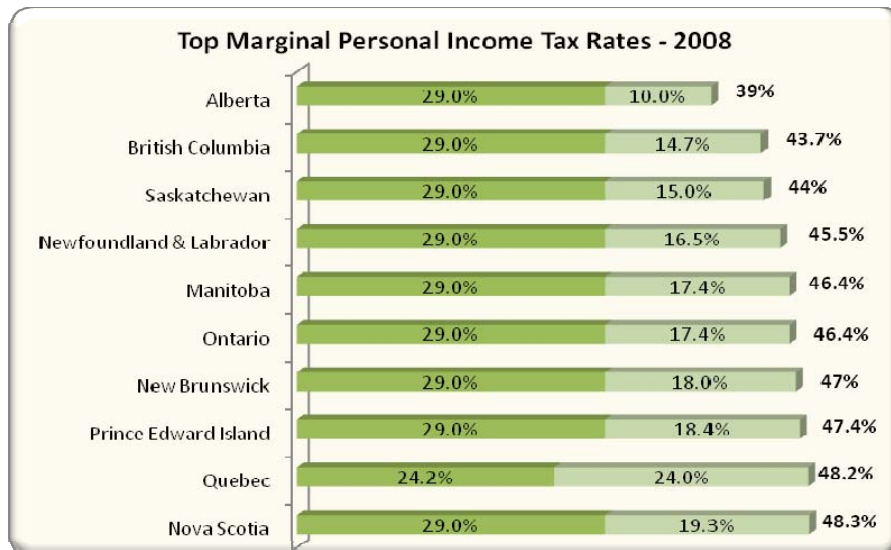
² Capital costs included are design, development, acquisition and installation of equipment for bio refining.

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

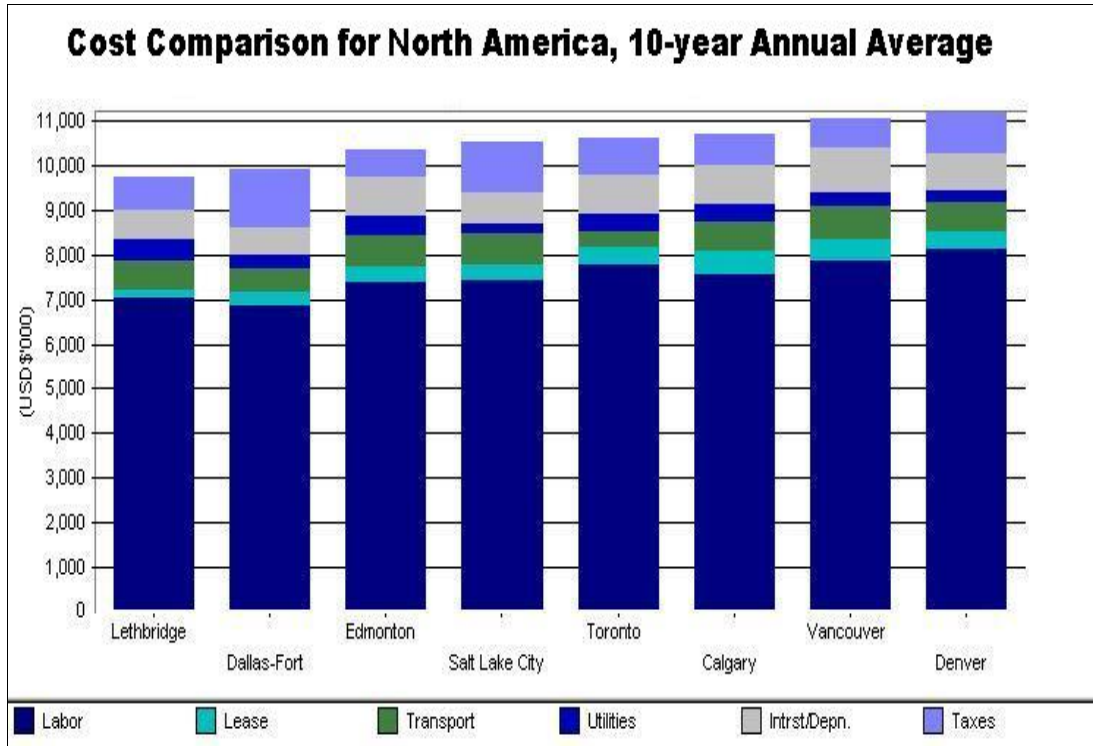


Note: Includes Surtaxes
 Source: PWC Tax News Network, April 25, 2008

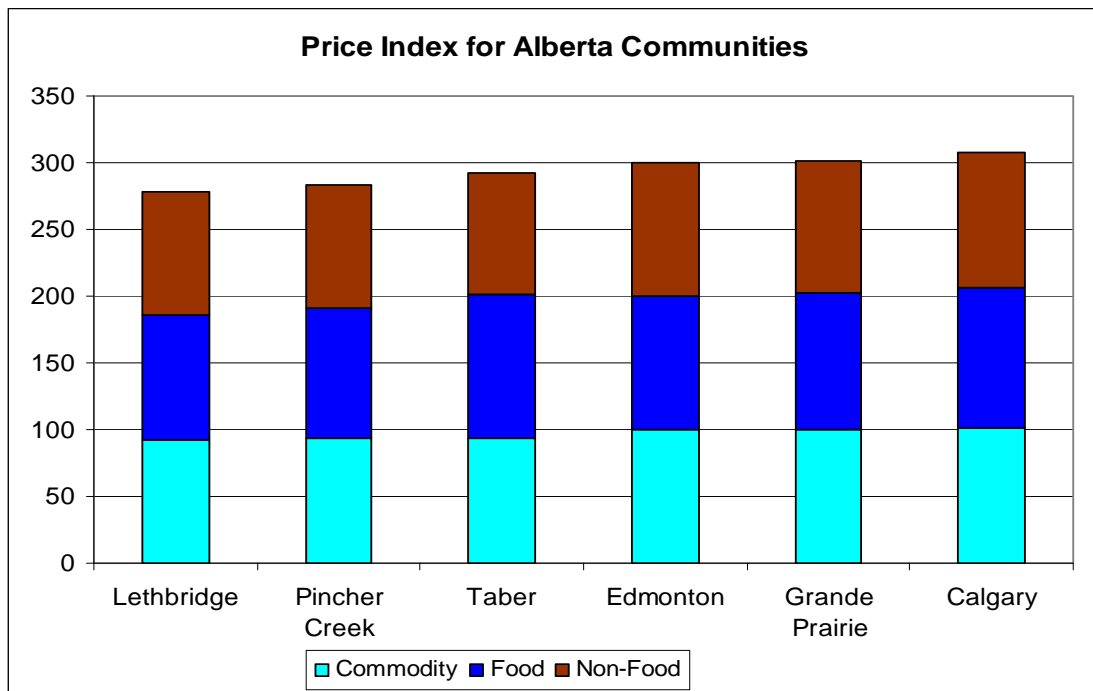
- Along with a low corporate tax rate, Alberta is the only province to omit a provincial sales tax and exclude provincial capital or payroll taxes (quite common in other provinces and U.S. states).
- Personal tax levels in Alberta are the lowest in Canada as indicated by the figure to the left

- 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.

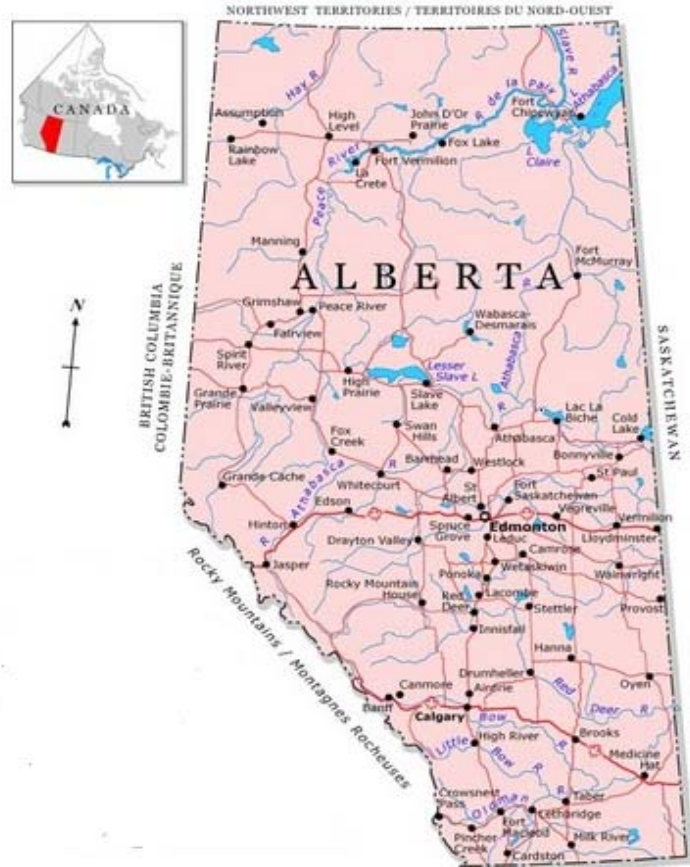


Southern Alberta has a very low cost of living index for commodities, food and non-food products as represented in the chart below.



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 the development of alternative energies in southern Alberta	www.saaep.ca
Alberta Biodiesel Association promotes the use of biodiesel in Alberta	www.albertabiodiesel.org
Biofuels Quality Registry/Alberta Research Council promotes increased biofuel use by conducting fuel quality tests and establishing a database to track fuel quality	www.biofuels.arc.ab.ca
Canadian Renewable Fuels Association promotes the use of renewable fuels through consumer awareness and government liaison activities	www.greenfuels.org
BioAlberta promotes the growth of biofuels in Alberta and other life sciences	www.bioalberta.com