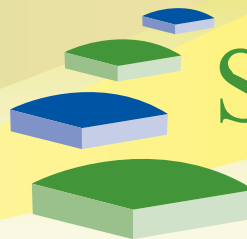




BIO ENERGY OPPORTUNITY PROFILE



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

Bio energy refers to all forms of renewable energy derived directly or indirectly from organic material. Often referred to as feedstock, biomass or plant and animal waste can be harvested to create bio energy in the form of electricity, heat, steam and fuels. Biomass can be used in a variety of energy conversion processes in order to yield power, heat, steam and fuel. Bio energy consists of:

- **Biogas** – converting carbon in materials like food processing wastes into various gases, mostly methane and carbon dioxide which can be used to replace natural gas or produce electricity.
- **Bio diesel** – mixing vegetable oils or animal fats with methanol and a catalyst and is blended with petroleum diesel.
- **Ethanol** – using a fermentation-distillation process to produce carbohydrates such as starch from grain or sugar from sugar cane and blended with gasoline.

An Overview

Bio energy is emerging as the foundation of key value-added bio-refining industries. In December 2006, the Canadian government announced it would regulate the use of renewable fuels in Canada and deliver \$345 million to assist farmers and rural communities seize new market opportunities in the agricultural bio products sector. This announcement exhibits the government's commitment to achieving the objective of 5% renewable content in transportation fuels by 2010. A recent study by Agriculture and Agri-Food Canada indicated that a 1% per annum increase in bio fuel utilization over 6 years across OECD countries could increase the net cash income of Canadian farmers by \$2 billion. Major international corporations are already investing in Canada's bio-based projects, with companies such as Shell, Jungbunlauer and Broe Industries investing in bio-ethanol, citric acid and ethanol plants across the country.

It is clear that the bio energy sector in Alberta would have a direct impact on rural communities. At the end of 2006, the Government of Alberta committed \$239 million over five years to strengthen and expand the province's bio energy sector by encouraging manufacturers to bring more bio energy products to the marketplace in order to diversify Alberta's economy and complement the energy reserves.

The Opportunity

Biomass projects have the potential to transform waste into a valuable resource – generating economic, social and environmental benefits in the SouthGrow Region. Specific opportunities include:

- Generating combined heat and power from the high temperature incineration of wood, agricultural wastes and municipal wastes.
- Creating ethanol from grain and straw.
- Generating bio diesel from fats and oils.
- Connecting food processors or greenhouse operators with bio gas projects.
- Partnering feedlots with market ad distribution networks, already in the business of fertilizers or ethanol products.
- Utilizing a bio-digester to take advantage of municipal waste or waste from food processing plants, encourage investment and immigration for those who wish to build a business in Alberta.

The Potential

There is a growing market for alternate energy due to rising process of natural gas and electricity, the need for security of supply and the desire for 'green power'.

Biodiesel and Ethanol:

The Government of Canada's desire to move towards renewable content in gasoline and diesel fuels by 2010 will create a projected demand for more than 2 billion litres of ethanol and 500 litres per year of bio diesel. Today, we can produce 425 million of ethanol and another 500 million is under construction; and we can produce 100 million litres of bio diesel, creating significant potential.

Biogas:

Biogas is used to produce power and heat. The electric power demand is actually growing slightly faster than gasoline and diesel fuel demand in Canada. Alberta has five anaerobic digestion systems in operation, three utilizing manure and two using food processing wastes.



Fast Facts:

Alberta's Integrated Energy Vision involves building world-class knowledge, expertise and leadership to responsibly develop the vast energy resources for the benefit of current and future generations.

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Biomass can be used in a variety of energy conversion processes in order to yield power, heat, steam and fuel.

A major benefit of bio-energy is that it enhances rural economic development and sustainability by creating new income sources for the region's agricultural producers and processors.

Sector Supports:

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

Inventory of Canadian Bioproducts Funding Sources (ICBFS)
www.bio-productsCanada.org/bpp

Climate Change Central
www.climatechangeCentral.com

Agriculture and Agri-Food Canada
www.agr.gc.ca

Alberta Research Council
– www.arc.ab.ca

Southern Alberta Alternative Energy Partnership (SAAEP)
www.saaep.ca



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The Benefits of Bio Energy

Rising energy costs make it imperative to look for less expensive ways to heat and power our businesses, industries and homes. Other benefits include:

- Improving competitiveness and growth of energy, forestry and agriculture.
- Increasing economic growth through value-added strategies.
- Advancing agriculture innovation.
- Enhancing rural economic development and sustainability by creating new income sources for the region's agricultural producers and processors.
- Spinning off numerous value-added/recycled products such as biofertilizers, reusable water and recycled chemicals and minerals.
- Countering the rising price of petroleum and other energy sources.
- Addressing concerns for the environment, climate change and waste management.

The SouthGrowN Advantage

- **Biomass Resources** The region has an abundance of feedstock such as manure, plant material and municipal waste.

SouthGrow has many large ranching operations and over half the feedlot capacity in the province. The need to deal effectively and economically with manure disposal, the increasing costs of transporting manure, and growing concerns with nutri-loading the land and possible water contamination by simply disposing manure on fields provides incentive to use this biomass resource. SouthGrow has a strong agricultural economy and farming base that has led to a substantive export-oriented food processing industry, which provides feedstock for bio energy initiatives.

- **Logistics** 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.
- **Knowledge & Expertise** The region has a strong research cluster, including the University of Lethbridge, Agriculture and Agri-Food Canada (AAFC) Research Centre, Alberta Agriculture, Food and Rural Development, and Lethbridge College.
- **Skilled Workers** Local engineering and construction firms are capable of design, engineering and construction of plans and bio-digestors.
- **Training Availability** Education institutions are capable of meeting training needs.
- **Municipal Champions** Not only are individual municipalities involved in alternative energy initiatives, but collectively, 39 municipalities have formed the Southern Alberta Alternative Energy Partnership in order to advance alternate energy generation.
- **Private Successes** Lamb-Weston (Division of ADM) utilizes potato renderings from potato processing which produces methane that replaces some of the natural gas used to operate the facility.
- **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.
- **Investment Climate** SouthGrow Region has a business friendly investment climate.

Funding Availability:

The Alberta Government supports rural development and there is growing momentum in the departments responsible for Agriculture and for the Environment to actively encourage alternate energy projects. In fact, the provincial government announced:

- the \$24 million Biorefining Commercialization and Market Development Program that provides cost sharing funding for such things as feasibility studies, equipment costs, worker training, and marketing.
- the \$6 million Bioenergy Infrastructure Development Program that provides cost-shared funding for capital projects.

Both programs run from 2006 to 2009. In addition, \$209 million was announced as part of a credit program for Alberta manufacturer's of bioenergy.