talk about bioenergy

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Facts on bioenergy

Bioenergy is derived from biomass, which is material made from living organisms. There are two main forms of biomass:

- Raw biomass consists of forestry products, grasses, crops, animal manure, and aquatic products, such as kelp and seaweed.
- Secondary biomass is material that comes from raw biomass, but has undergone significant changes. These would include items such as paper, cardboard, cotton, natural rubber products and used cooking oils.

With our canola, grains, livestock and forestry base, Alberta has the opportunity to provide a consistent feedstock supply to bioenergy processing facilities.

The expansion of our bioenergy industry will also offer an opportunity for agricultural producers to sell their crops and materials. Several development opportunities have been proposed throughout the province to make use of municipal, farm and forestry infrastructure with emerging bioenergy technologies.

Modern forms of bioenergy include converting biomass to motor fuels and electricity. There are three main types of biofuels are derived from bioenergy: ethanol, biodiesel and biogas.

Alberta has adopted a Renewable Fuels Standard that will require an average of five per cent ethanol in gasoline and two per cent renewable content in diesel by 2010.

Ethanol

Fuel ethanol is a form of alcohol, fermented and distilled from a wide range of plant life such as wheat, corn or woody material.

Through a process called hydrolysis of grain starch, starches found in plants are converted to sugars that are fermented to produce ethanol. This ethanol is then distilled and dried to produce anhydrous ethanol.

Ethanol can be mixed with gasoline for use in motor vehicles, typically varying from five to ten per cent ethanol blend.

Biodiesel

Biodiesel is manufactured from vegetable oils, recycled cooking greases or oils or animal fats. It can be used either as a blended fuel with petroleum diesel or as a pure fuel. Blended biodiesel can often be used without any engine modification.

Biodiesel reduces the level of several diesel pollutants including sulphur dioxide, carbon monoxide and carbon dioxide.

Biogas

Biogas may be referred to as “renewable natural gas” or “green methane,” containing approximately 70 per cent methane. Biogas is created through fermentation of organic feedstock, including manure, food processing waste or various plant life.

Biodigestors heat the organic feedstock, causing anaerobic bacteria to multiply and feed on solids within the feedstock. The byproduct of this is biogas. As the gas is produced, it rises to the top of the digester and is collected into a piping system.

Biogas is often used in the generation of electricity. In this application, biogas is used to generate heat and steam to drive turbines.

Frequently Asked Questions: Biofuels

What impact will biofuels have on food prices?

A number of factors contribute to the increased price of food. Alberta currently only consumes about 1.2 per cent of available grains and oilseeds in the manufacturing of biofuel in the province. As a result, grain for fuel use in Alberta is not expected to have any impact on the price of food.

In addition, the vast majority of bioenergy in Alberta is produced from either waste or forestry biomass. This trend is expected to continue with future growth and adoption of emerging technologies, such as gasification of municipal solid waste or ethanol production from woody biomass.

It is generally understood that the price of oil, and not corn prices or ethanol production, have the greatest impact on consumer food prices. Energy is integral to virtually every phase of food production from processing to packaging to transportation.

What are the environmental advantages to biofuels?

The most significant advantage is that biofuels are a renewable feedstock, part of the carbon cycle. The production of plant material pulls carbon from the atmosphere and then this carbon is returned when the fuel is burned.

Why develop bioenergy?

The Government of Alberta believes renewable energy sources will play a growing role in Alberta's energy future.

Expanding the development of bioenergy will diversify our energy basket with clean alternatives. Bioenergy clusters that facilitate waste to energy conversion will provide significant carbon reduction, a positive energy balance, community development and environmental sustainability.

Other benefits of bioenergy include: job creation, research and development of new technologies, value-added opportunities and markets for primary industries and improved municipal, farm and forestry infrastructure.

Consumers are also asking for a diversified and sustainable approach to our energy supplies. Bioenergy is one option. Our major trading partners (particularly the United States) are also mandating the use of alternative energy products.

What programs are available to encourage the development of bioenergy in Alberta?

Alberta's Nine Point Bioenergy Plan includes the Bioenergy Producer Credit Program to develop bioenergy in Alberta.

Since 2006, Alberta has provided approximately $195 million in grants to support development of bioenergy capacity and markets. This investment has the potential to leverage approximately 15 times that amount in private investment.

How much electricity is generated from bioenergy sources?

Alberta has more than 300 megawatts of biomass generating capacity. Additional capacity can be supported by forest, agricultural and municipal waste biomass as 20 million tonnes of waste are generated annually from these sectors.