

Biofuel Production in Kentucky - Business Considerations and Resources -

Business Plan	Feedstocks	Fuel Quality	Permits	Tax Credits
Financing	Technology	Distributors	Customers	

Rising energy costs, environmental awareness, and concerns about our nation's energy security have generated a renewed interest in fuels made from domestic, renewable sources. Kentucky's climate and geographic location make it well suited to become a major player in the U.S. biofuels industry. This document is intended to give prospective business owners a first look at some of the issues that should be considered before entering this competitive industry and to provide contact resources for additional information.

Biofuels can be produced from a variety of feedstock materials (e.g. agriculture crops, forest residues and restaurant grease) using a variety of process technologies. Therefore, an early consideration for any successful business plan is the proximity of the production plant in relation to its feedstock(s). The economics of this relationship are not only important to the plant's future, but they quickly establish boundaries regarding the size of the plant and identify potential partnerships for funding, distributing and selling the end product.

The profitability and competitiveness of a plant is often tied to the size of the production facility and its inherent economy of scale. As is common in the chemical industry, economy of scale generally favors larger plants. Currently, the average size of operating biodiesel plants is 6.7 million gallons per year whereas virtually all new ethanol plants have a capacity greater than 50 million gallons per year.

Having a sound business plan will greatly facilitate the permitting process and locating sources of funding. The production of biofuels often involves the handling and storage of potentially dangerous chemicals. Pollution permits and authorization to use hazardous materials require knowledge of the size and process technology that will be used by the plant. In addition, state and federal programs that provide cost share to private companies are generally limited to specific entities such as rural small businesses and/or measurable outcomes like job creation.

The Kentucky Department for Energy Development and Independence is committed to promoting a strong and diversified biofuels industry in Kentucky. A list of contact resources relating to the biofuels industry is provided on the following pages. If you have questions about a particular area or need additional assistance, please don't hesitate to contact our office.

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Many resources are available to help write a sound business plan. Some of the key ingredients, common to any biofuels business venture, are given below. The list is by no means exhaustive, but it highlights the primary considerations that need to be addressed in order to develop a successful biofuels company.

- Site location – zoning permits, easement rights, transportation access
- Feedstock – type, availability, suppliers, long term agreements, storage and transportation issues
- Process equipment – pre-processing, conversion, post-processing and recycling technologies
- Primary market analysis – suppliers, distribution, customers, and competition
- Co-product market analyses – financial opportunities selling byproducts such as grain meal, glycerol, lecithin, and carbon dioxide
- Feasibility study – identify economy of scale “tipping points” that relate feedstock costs and process expenses against product selling prices
- Facility – design and construction, operations and maintenance, energy and waste management
- Employment – operations, technical, marketing and sales staff
- Transportation – rail, barge and trucking agreements
- Financing – equity and debt arrangements, grants and tax incentives
- Environmental permits – air, water, hazardous chemicals, and pollution prevention plans
- Producer and product registration – requirements for alcohol producers and producers of fuel and fuel additives
- Taxes – the biofuels industry is heavily regulated. Contact state and federal revenue agencies for producer requirements
- Safety – handling, storage and reactivity of industrial chemicals, OSHA requirements
- Product quality – laboratory equipment, technicians and testing capabilities

A comprehensive report describing many of these considerations is given in the *2003 Mississippi Biodiesel Feasibility Study*. The objective of the feasibility study was to determine the factors that would be involved in the successful implementation of a biodiesel industry in the state of Mississippi.

2003 Mississippi Biodiesel Feasibility Study
<http://www.mda.state.ms.us/content.aspx?url=/page/3092>

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Resources

- Market Overview -

Kentucky Clean Fuels Coalition, <http://www.kentuckycleanfuels.org> (502) 452-9152
The goal of KCFC is to improve air quality and support economic development across Kentucky by promoting the use of clean fuels. KCFC manages the DOE's Clean Cities Program for the Commonwealth and maintains national recognition in the biofuels industry.

- Marketing & Promotion -

National Biodiesel Board, <http://www.nbb.org> (800) 841-5849
NBB is the national trade association representing the biodiesel industry as the coordinating body for research and development in the United States.

Renewable Fuels Association, <http://www.ethanolrfa.org> (202) 289-3835
As the national trade association for the U.S. ethanol industry, the Renewable Fuels Association (RFA) promotes policies, regulations and research and development initiatives that will lead to the increased production and use of fuel ethanol.

KY Dept of Agriculture, http://www.kyagr.com/mkt_promo/index.htm (502) 564-4983
The Office of Agricultural Marketing & Product Promotion assists farmers, agricultural businesses, and commodity groups to promote and market their products by expanding existing markets, as well as by developing domestic and international markets.

Distillers Grains Technology Council, <http://www.distillersgrains.org> (800) 759-3448
DGTC encourages, administers and supports research and promotion into new and existing market opportunities for distiller grains, thereby advancing the awareness of its value.

KY Corn Growers Association, <http://www.kycorn.org> (800) 326-0906
KyCGA has been working to improve producer profitability by enhancing and expanding potential uses and markets for corn, providing a voice for producers in influencing beneficial legislation, and educating farmers about new technology which will help them achieve greater production yields.

KY Soybean Board & Association, <http://www.kysoy.org> (270) 365-7214
KSB and KSA promote and support new uses for soybeans in addition to continued research for plant development. Applied science has been responsible for transforming the amazing soybean into a multitude of helpful, environmentally friendly products.

KY Petroleum Marketers Association, <http://www.kpma.net> (502) 875-3738
KPMA is a statewide, nonprofit trade association. It is made up of representatives of all segments of the petroleum industry to promote the interest and goodwill of everyone engaged in the marketing and distribution of petroleum products in the State of Kentucky.

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- Environmental Permitting & Fuel Quality -

KY Dept of Environmental Protection, <http://www.dca.ky.gov> (800) 926-8111

The Division of Compliance Assistance (DCA) is one of six divisions located within the Department for Environmental Protection (DEP). It was created in 2004 to provide a nonregulatory approach to environmental protection. A primary objective of the division is to help regulated entities understand and comply with the environmental programs administered by the Department for Environmental Protection.

KY Business Environmental Assistance Program, <http://www.kbeap.org> (800) 562-2327

The Kentucky Business Environmental Assistance Program is the leading source of environmental technical and compliance assistance for Kentucky small businesses, business assistance providers, and the University community. In addition to providing quality assistance, the program strives to foster environmental stewardship.

KY Dept of Agriculture,

http://www.kyagr.com/cons_ps/ri/programs/motorfuel/index.htm (502) 564-4696

The Division of Regulation & Inspection maintains the Motor Fuel Quality Program which is responsible for the testing of gasoline and diesel fuel to ensure that the quality of the fuel meets Kentucky law and the American Society of Testing and Materials (ASTM) standards.

- Potential Funding Opportunities -

KY Office of Agriculture Policy,

<http://agpolicy.ky.gov/board/index.shtml> (502) 564-4627

Kentucky Center for Agricultural Development and Entrepreneurship (KCADE) grants are available for proposals that support farm diversification, cooperative development, research on value-added products & new product development, and marketing.

KY Cabinet for Economic Development, <http://www.thinkkentucky.com> (800) 626-2930

This website provides extensive information on the programs and services available to businesses including existing businesses, newly locating companies, start-ups, small and minority businesses, and many others.

USDA Rural Development, <http://www.rurdev.usda.gov/rbs/> (859) 224-7300

USDA Rural Development programs can assist with a wide range of rural community needs, including affordable housing, business and industry loans, water and wastewater projects, and community facility needs.

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- Federal Legislation/Incentives -

IRS Fuel Tax Credits & Refunds,

<http://www.irs.gov/publications/p378/index.html>

(800) 829-4933

Publication 378 covers federal fuel tax credits you may be able to claim on your income tax return. It also covers fuel tax refunds you may be able to claim during the year.

Alternative Fuels Data Center,

http://www.eere.energy.gov/afdc/laws/incen_laws.html

(877) 337-3463

The AFDC database captures state and federal laws and incentives related to alternative fuels and vehicles, air quality, fuel efficiency, and other transportation-related topics. State-level information is updated annually after each state's legislative session ends.

Energy Policy Act of 1992,

<http://www1.eere.energy.gov/vehiclesandfuels/epact/index.html>

NA

The Energy Policy Act of 1992 (EPAct) was passed by Congress to reduce our nation's dependence on imported petroleum by requiring certain fleets to acquire alternative fuel vehicles, which are capable of operating on nonpetroleum fuels.

- State Legislation/Incentives -

KY Farm Bureau, <http://www.kyfb.com>

(502) 495-5000

Farm Bureau is a voluntary organization of farm families and their allies dedicated to serving as the voice of agriculture by identifying problems, developing solutions and taking actions which will improve net farm income, achieve better economic opportunities and enhance the quality of life for all.

KY Dept of Revenue, <http://revenue.ky.gov>

(502) 564-4581

As a part of the newly reorganized Finance and Administration Cabinet, the Department is now positioned to provide greater services through increased organizational flexibility as well as the development of knowledge/functional expertise centers. These organizational changes along with changes to operational mentalities represent the first steps in developing a more effective and efficient agency.

KY Alternative Fuel Producer Tax Credits,

<http://www.energy.ky.gov/dre3/renewable/biofuels.htm>

(502) 564-7192

Biodiesel producers, biodiesel blenders and ethanol producers are eligible for a nonrefundable tax credit against taxes imposed by KRS 141.020, 141.040 and 141.0401 (individual, corporation and limited liability entity taxes). As a reminder, the credit cannot be applied against motor fuels tax.

KY Incentives for Energy Independence Act,

<http://www.thinkkentucky.com/kyedc/pdfs/IEIA.pdf>

(502) 564-4554

The construction, retrofit or upgrade of facilities that increase the production and sale of alternative transportation fuels are eligible for funding from the Kentucky Economic Development Finance Authority. The minimum capital investment is \$25,000,000.

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- Research & Development -

Kentucky Rural Energy Consortium, <http://louisville.edu/kppc/krec> (502) 852-0965
KREC supports, coordinates, promotes and advances research, development and deployment of renewable energy and energy efficiency technologies, practices and outreach activities of importance to Kentucky agriculture, rural communities and related industries.

National Renewable Energy Laboratory,
<http://www.nrel.gov/vehiclesandfuels/> (877) 337-3463
The Advanced Vehicles & Fuels Research program at NREL works in partnership with public and private organizations to research, develop, and demonstrate innovative vehicle and fuel technologies that reduce the nation's dependence on imported oil, and improve our energy security and air quality.

National Corn-to-Ethanol Research Center,
<http://www.ethanolresearch.com> (618) 659-6737
The National Corn-to-Ethanol Research Center (NCERC) conducts its own research, and research on behalf of private clients to improve the benefits of fuel ethanol production and use.

University of Kentucky, College of Agriculture,
<http://www.bae.uky.edu/energy/> (859) 257-3000
This site is dedicated to energy activities in the College of Agriculture that seek the development of technologies, markets, and codes & standards relating to renewable energy and energy efficiency.

- Biofuels Information -

Industry Resources: Fuel Guidelines, Specifications & Procedures,
<http://www.ethanolrfa.org/industry/resources/guidelines/> (202) 289-3835
This document is a compilation of the key technical aspects of fuel grade ethanol and its traditional application as a fuel component, based on the collective experience and expertise of RFA member companies. It is designed to serve as a condensed technical reference for ethanol producers, blenders, and other interested parties.

Industry Resources: Quality Assurance, Quality Control Program,
<http://www.ethanolrfa.org/industry/resources/qaqc/> (202) 289-3835
This document focuses on the product quality and integrity of "Fuel Ethanol" (E-95), which is of the utmost importance to the Renewable Fuels Association and its members. This information is provided to ensure quality laboratory data for fuel ethanol products, and includes a discussion of methods for analyses, sampling, general laboratory equipment and techniques and instruction on quality assurance and quality control practices.

Biodiesel Handling and Use Guidelines,
http://www.nrel.gov/vehiclesandfuels/npcf/feature_guidelines.html (877) 337-3463
The second edition of the Biodiesel Handling and Use Guidelines features biodiesel basics information, a frequently asked questions section, and the most current biodiesel blending information. This new edition also features updated taxes and incentives information.

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- Biofuels Information (continued) -

- Alternative Fuels Data Center, <http://www.eere.energy.gov/afdc/> NA
The Alternative Fuels Data Center is a vast collection of information on alternative fuels and the vehicles that use them. Alternative fuels described here are those defined by the Energy Policy Act of 1992, including biodiesel, electricity, ethanol, hydrogen, natural gas, and propane.
- DOE Biomass Program, <http://www1.eere.energy.gov/biomass/> NA
The U.S. Department of Energy (DOE) Biomass Program develops technology for conversion of biomass (plant-derived material) to valuable fuels, chemicals, materials and power, so as to reduce dependence on foreign oil and foster growth of biorefineries.
- Energy Information Administration,
<http://www.eia.doe.gov/fuelrenewable.html> (202) 586-8959
Official energy statistics from the U.S. government on renewable energy and alternative fuels.
- EPA Fuels and Fuel Additives, <http://www.epa.gov/otaq/fuels.htm> NA
In accordance with the federal Clean Air Act (CAA), EPA establishes fuel quality standards to help protect public health and the environment from harmful gas and particulate matter emissions from motor vehicles and engines.
- University of Kentucky, Department of Biosystems and Agricultural Engineering,
<http://www.bae.uky.edu/biofuels/> (859) 257-3000
This site features information about Biodiesel and Ethanol production, use, and research in Kentucky as well as educational modules to engage middle and high school students in renewable energy issues.