



The American Petroleum Institute has been a staunch supporter of ethanol in recent years as a means of eliminating boutique fuels and expanding the nation's fuel supplies.

Although the chemical makeup of ethanol results in an affinity for water and thus limits its ability to be transported in pipelines, many other oil companies will attest to the fact that ethanol presents no particularly unique problems. The transition, therefore, to large quantities of ethanol can be achieved with much greater ease than any of the other alternative fuels. Furthermore, the multiple use options make it a much more attractive investment.

The transportation network of tomorrow will utilize many resources, both conventional and renewable. New fuel efficient vehicles and smart highways will improve the efficiency of conventional fuels. Almost any type of current and future vehicle can be fueled from biomass. The flexibility of this important, domestic and renewable resource could provide liquid "bio-fuels" for internal combustion engines, electric and hybrid vehicles, and fuel cell vehicles.

Biofuels are alcohols, ethers, and other chemicals made from cellulosic biomass—renewable resources

"One additional development has been that pipeline operators are now examining the feasibility of shipping ethanol from its port of entry to California terminals via pipeline. This would dramatically reduce or eliminate transport truck delivery of ethanol to terminals and reduce transportation expense." — Ethanol Supply/Demand and Logistics, May 2000 Review and Update, Downstream Alternatives, Inc.

such as fast growing trees, grasses, aquatic plants (microalgae), and waste products such as agricultural and forestry residues, and municipal and industrial wastes.

With further advances in technology, these domestically produced, biomass resources could provide up to 50% of future U.S. light duty vehicles' fuel requirements. Some of the biofuels used to fuel cars and trucks include ethanol and biodiesel. Other alcohol fuels such as methanol, which is currently produced from fossil fuels, also could be produced from renewable biomass and classified as biofuels.

● Facts for The Records

According to the Energy Information Administration's Energy Outlook 2003, petroleum will continue to be the primary area of demand for the next two decades, far outpacing stationary power fuels.

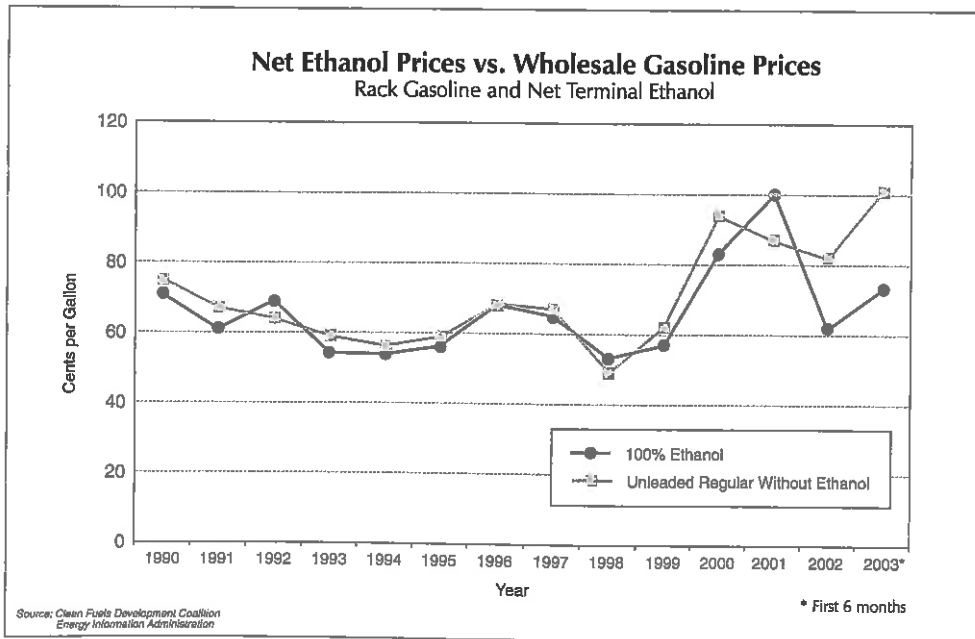
Ethanol cost and outlook

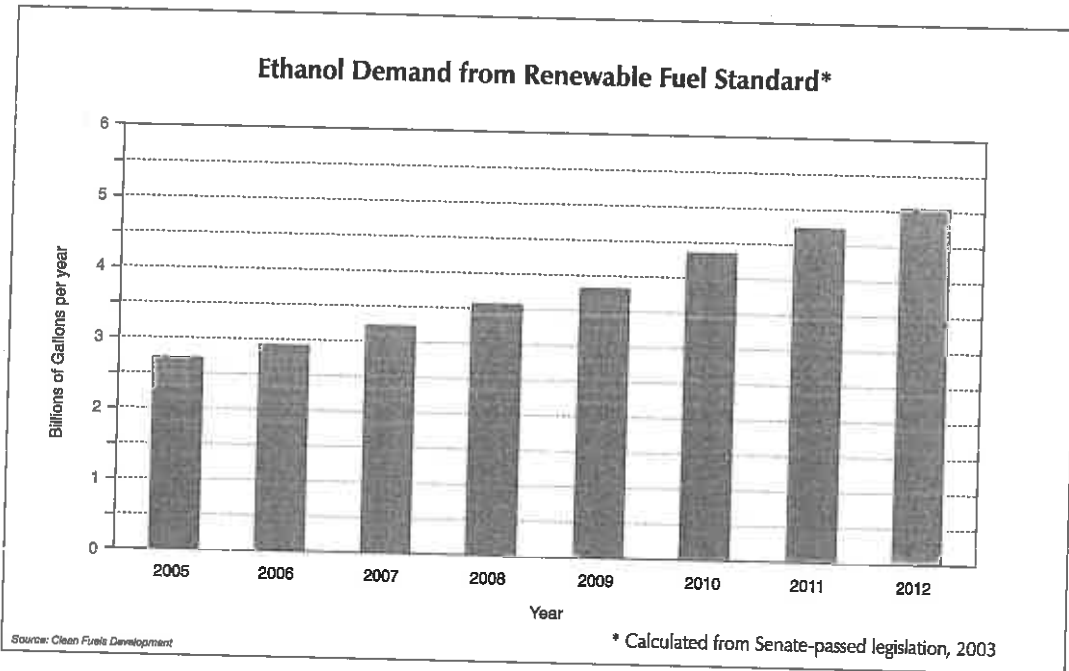
Ethanol generally costs more to produce than gasoline. Those higher costs are offset by benefits associated with its production as discussed throughout this book. In recognition of those benefits, Congress taxes ethanol at a lower rate in an effort to make it competitive with wholesale gasoline. That tax incentive has been effective in that net ethanol has been less expensive than gasoline to purchasers. Since those purchasers are petroleum companies that blend it with their gasoline, the ultimate price to consumers varies. The finished ethanol gasoline blend is a premium product so marketers will often charge more for this higher-octane fuel. At the same time, ethanol blends can often be found at a selling price lower than conventional gasoline. There are too many variables in the motor fuel market to definitively state that ethanol blends are more or less expensive than unblended gasoline but it has always been competitive. Constantly improving efficiencies of ethanol facilities

"Scientists today are researching more efficient ways of making ethanol and other biomass fuels. I have always supported that." – President Bill Clinton, December 2000

has resulted in lower ethanol production costs. Exciting research being conducted by the Department of Energy as well as a number of private companies could dramatically impact the cost of ethanol production and open up an entirely new generation of feedstocks.

Under the current regulatory structure ethanol is an economical fuel. With advances in agriculture and biomass technologies it will become even more so.





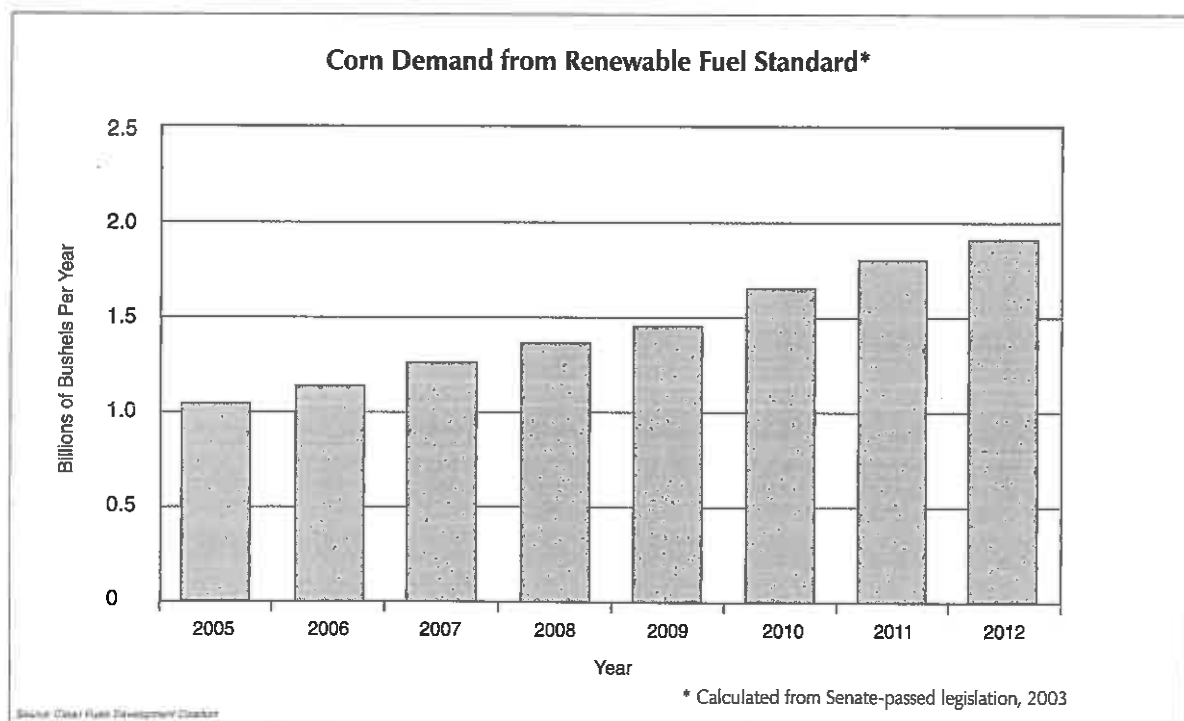
Despite ethanol's many wonderful attributes, competing against an established and heavily subsidized petroleum industry presents a great challenge. For that reason Congress recognized the need to provide incentives both in terms of the reduced tax rate and by linking ethanol with important environmental programs, such as reformulated gasoline and carbon monoxide control.

Many people now believe that today's environmental, agricultural, and energy security challenges call for a new and expanded approach to help address all of these public policy issues. Such an approach would be based on a flexible requirement spread across the entire gasoline pool that would require a small percent of fuels to be renewably derived. Stimulating ethanol demand in this manner would be similar to the renewable portfolio concept being considered for the electric utility industry whereby a certain percentage of

the power generated must come from renewable resources. Proponents of this approach believe that establishing such a baseline requirement solidifies alternative energy programs and insulates them against the ups and downs of the market. A credits and trading program allows these fuels to be used where they make the most sense and does not force their usage in places where compliance may be difficult. This approach appears to have a broad bipartisan appeal as well. Legislation introduced by Senate Democratic Leader Tom Daschle of South Dakota and Republican Agriculture Committee Chairman Richard Lugar of Indiana embraces this approach. In fact, analysis of this legislation by the U.S. Department of Agriculture (USDA) confirms the effectiveness of the "demand-pull" approach. The USDA study finds that such a program would result in additional corn demand of 2 billion bushels resulting in the production

of 4.6 billion gallons of ethanol. An expansion of the ethanol industry of that magnitude would result in millions upon millions of dollars in additional economic benefits and thousands of jobs across the country. Supporters of the renewable fuels standard also point to the continuing improvements in conventional fuels in automobiles which may lessen the need for clean burning additives in the future. Some of the private sector analysis also illustrate that even if the entire reformulated gasoline program were to remain intact and ethanol were the sole oxygenate available to refiners, the ethanol demand would still be significantly less than the modest renewable fuels standard proposal being advocated by many in industry and agriculture.

According to a 1999 analysis by the U.S. Department of Energy's Office of Transportation Technologies, "Increasing the market share of alternative and replacement transportation fuels would have significant energy security and oil market benefits for the United States. Some of these benefits will occur even if use of the fuels is induced by regulations, subsidies, or demonstration programs. Additional energy security benefits would be generated if the fuels are competitive with petroleum fuels in at least some market segments."



Questions and answers about ethanol

WHAT IS FUEL ETHANOL?

- Ethanol, otherwise known as ethyl alcohol, alcohol, grain-spirit, or neutral spirit, is a clear, colorless, flammable oxygenated fuel.
- Ethanol is mixed with gasoline to create ethanol/gasoline blends at volume levels of 5.7%, 7.7%, or 10%. These fuel formulations are approved by all automakers.
- Ethanol is used to increase octane and improve the emissions quality of gasoline as required by the *Clean Air Act Amendments of 1990*.
- Ethanol is used as an alternative fuel to replace gasoline. In this application, a 85% ethanol and 15% gasoline mixture is used in flexible fuel vehicles to meet *Clean Air Act* and *Energy Policy Act* crude oil displacement goals.
- Ethanol is used in the manufacture of ethyl tertiary butyl ether (ETBE). ETBE is used to increase octane and improve emissions from gasoline as required by the CAAA.
- In the future, ethanol can be used as a fuel to power fuel cells.

HOW DOES ETHANOL PERFORM IN MY VEHICLE?

All automobile manufacturers approve the use of ethanol/gasoline blends. Approval of ethanol blends is found in the owners manual under references to refueling or gasoline. General Motors Corporation states in its owners manual they recommend the use of fuel oxygenates, such as ethanol, when and where available.

Fuel ethanol blends are sold in nearly every state from Alaska to Florida.⁹⁴ Fuel ethanol blended gasoline has

"GM (Saturn) recommends that you use gasolenes with these blending materials, such as ethanol." — GM Owners Manual

"We are satisfied that the blend will make a satisfactory motor fuel. A blend of 10% alcohol and 90% gasoline makes a better motor fuel than an all-gasoline fuel, it produces an anti-knock fuel, quicker starting, more pep, less carbon deposits and in all probability some greater mileage. A blend of 15% alcohol and 85% gasoline makes still a better fuel and a blend of 20% alcohol and 80% gasoline is still better."
— Results of research by the Iowa State College chemistry department in 1932 as reported to the Iowa Legislature

achieved nearly 100% marketshare of all gasoline sold in certain carbon monoxide (oxygenated gasoline) and ozone nonattainment areas (reformulated gasoline, RFC). Minnesota has adopted a statewide oxygenated fuel program that has resulted in ethanol being blended in over 95% of the State's gasoline. Therefore, fuel ethanol is successfully used in all types of vehicles and engines that require gasoline.

Questions and answers about ethanol

IS ETHANOL-BLENDED FUEL BAD FOR FUEL INJECTORS? NO!

Ethanol or ethanol-blends have never contributed to burning or fouling of port fuel injectors. Some components in gasoline, such as olefins, have been identified as causing deposits that can foul injectors. But since ethanol burns 100% and leaves no residue,

it cannot contribute to the formation of deposits. Ethanol blends actually keeps fuel injectors cleaner – helping improve engine performance. It does not increase corrosion, nor will it harm any seals or valves.

WILL ETHANOL-BLENDED FUEL CAUSE VAPOR LOCK? NO!

Vapor pressure specifications of gasoline continue to be lowered by state and federal statute, virtually eliminating the vapor lock problems that were reported

in the past. Additionally, all major auto manufacturers now have in-tank fuel pumps, which are not subject to vapor lock like the older in-line fuel pumps.

WILL ETHANOL BLENDS MAKE ENGINES RUN HOTTER? NO!

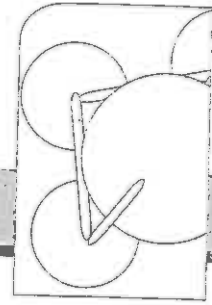
Ethanol actually helps keep your engine cooler, since the ethanol in the fuel combusts at a lower

temperature. In fact, many high-powered racing engines use pure alcohol for that very reason.

WILL ETHANOL-BLENDED FUEL PLUG UP FUEL LINES? NO!

Occurrences of plugged fuel filters are virtually non-existent now. The “cleansing” nature of ethanol blended fuels can actually keep your fuel system cleaner – and lead to improved performance. In the case of dirty fuel systems, contaminants and residues that have been deposited by previous gasoline fill can be loosened. That

residue can get caught in the fuel filter. In older cars, especially those made prior to 1975, replacing the filter solves the problem from that point on – and once your car’s fuel system is clean, your car’s performance should improve as well.



CAN ETHANOL BLENDS BE USED IN OLDER CARS? YES!

The formulation of gasoline has changed dramatically over the past few years without affecting the performance of older cars. Many older cars were designed to run on leaded gasoline, with the lead providing necessary octane performance – and the lead oxides that were formed during combustion provided a cushion that reduced wear on non-case-hardened valve seats.

When lead was phased out of gasoline, oil companies added toxic chemicals to raise the octane rating – and other additives to replace the “lubrication” value of lead. Ethanol added to gasoline increases the octane level of the final fuel by three points – and it does so using a natural, renewable additive that works well in older engines.

CAN ETHANOL BLENDED FUELS BE USED IN SMALL ENGINES? YES!

Ethanol blended fuel is perfectly acceptable in lawn mowers, snowmobiles, and other small engines. Manufacturers of this equipment know that more than 40% of the gasoline sold across the U.S. contains oxygenates, such as ethanol, so they’ve made certain that their engines perform on these clean-burning fuels.

Ethanol blends may be used anywhere that unleaded gasoline is used – from ATVs to chainsaws, from lawn mowers to personal watercraft. Virtually every small engine manufacturer, including Briggs & Stratton, Honda, Toro/Lawnboy, Kohler, and Snapper, approves the use of ethanol blended fuel in its equipment.

RFG with Fuel Oxygenates, Like Ethanol, Works in all Engine Types	
Passenger Vehicles	Approved
Motorcycles	Approved
Small Engines	Approved
Boats	Approved
Portable Power Equipment Manufacturing Association	Approved
Yamaha	Approved
Mercury Marine	Approved
Harley Davidson	Approved
Briggs & Stratton	Approved
Sears	Approved
Honda	Approved
Kawasaki	Approved

Questions and answers about ethanol

HOW MUCH DOES ETHANOL COST COMPARED TO GASOLINE?

The cost of producing ethanol is generally higher when compared to the market price of gasoline. The majority of production costs are the result of the cost of the feedstock (i.e., grain). The average cost of producing ethanol ranges from \$0.90 to \$1.25 per gallon. The \$0.52 per gallon of ethanol excise tax exemption

provides the price differential between the wholesale price of gasoline (e.g., \$0.60 per gallon) and the higher cost of producing ethanol (\$1.10). Therefore, the ethanol incentive allows ethanol to be competitive with gasoline (e.g., \$1.10 ethanol - \$0.52 tax incentive = \$0.58 per gallon). (See page 38)

DOES ETHANOL PRODUCTION AFFECT OUR NATION'S FOOD SUPPLIES? NO!

The production of ethanol does not translate into less grain available for food. Farmers do not grow more or less grain based on ethanol production. Approximately 90% of the corn produced in the U.S. is fed directly to animals. Ethanol production helps farmers remain profitable, thereby ensuring adequate food supplies in the future. The processes of producing ethanol for fuel and beverage alcohol utilize only the starch portion of the grain, leaving intact the high-value, high-protein, high-vitamin content feed products called distillers grains or corn gluten feed.

Ethanol production yields many valuable human and animal feed co-products. A bushel of corn used in the fuel ethanol process produces 1.6 pounds of corn oil, 10.9 pounds of high protein feed (distillers dried grains, or DDG), 2.6 pounds of corn meal, and 31.5 pounds of starch that can be converted to beverages or sweeteners, or used to produce 2.5 gallons of ethanol.⁹⁵ Co-products from the milling of corn have important nutritional properties that add value to feed rations and livestock feeding programs.⁹⁶ The use of corn co-products provides a cost-competitive feed on a per-head basis. Corn co-products compete with other feed ingredients, helping to reduce overall costs to the producer.⁹⁷

DOES ETHANOL HAVE A POSITIVE ENERGY BALANCE, EVEN CONSIDERING THE FUEL AND ENERGY USED TO GROW, HARVEST, AND PROCESS CORN? YES!

Corn ethanol production is energy efficient, as indicated by an energy ratio of 1:24, that is for every Btu dedicated to producing ethanol, there is a 24% energy gain.⁹⁸

If farmers and industry were to use all the best technologies and practices, the net energy ratio would be 2.21:1.⁹⁹

Moreover, producing ethanol from domestic corn stocks achieves a net gain in a more diverse form of energy. Ethanol production utilizes abundant domestic energy supplies like coal and natural gas to convert corn into a premium liquid fuel that can replace petroleum imports by a factor of 7 to 1.¹⁰⁰

FOR MORE INFORMATION

Federal

Alternative Fuels Data Center	www.afdc.nrel.gov
Department of Commerce	www.doc.gov
Department of Energy	www.doe.gov
Argonne National Laboratory	www.anl.gov
Bartlesville Project Office National Oil Program	oil.bpo.gov/bpo-oil.html
Brookhaven National Laboratory	suntid.bnl.gov
Clean Cities	www.ccitites.doe.gov
Energy Efficiency & Renewable Energy Network	www.eren.doe.gov
Fossil Energy Worldwide Web Network	www.fe.doe.gov
Lawrence Berkeley Laboratory	www.lbl.gov
Lawrence Livermore Laboratory	www.llnl.gov
Los Alamos National Laboratory	www.lanl.gov
Morgantown Energy Technology Center	www.metc.doe.gov
National Renewable Energy Laboratory	www.nrel.gov
Office of Science and Technical Information	apollo.osti.gov
Sandia National Laboratories	www.sandia.gov
Department of Treasury	www.ustreas.gov
Energy Information Administration (EIA)	www.eia.doe.gov
Energy-Related Web Servers	www.fe.doe.gov/moweb.html
EPA	www.epa.gov
Office of Mobile Sources	www.epa.gov/OMSWWW/omshome.htm
Federal Register-Searchable Env't Subsets	www.epa.gov/epahome/EPAFR-Search.shtml
General Accounting Office (GAO)	www.gao.gov
General Printing Office	www.access.gpo.gov
US House of Representatives-Internet Law Library	www.pls.com
Links to House members	www.house.gov/memberWWW.html
Gopher	gopher.house.gov
Internal Revenue Service	www.irsustreas.gov
Library of Congress	Lcweb.loc.gov
Office of Technology Assessment	www.ota.gov
US Senate	www.senate.gov/index.html
Thomas - Congressional Web Site	thomas.loc.gov
White House	www.whitehouse.gov

To receive a list of all House e-mail addresses, send a message to: congress@hr.house.gov
To receive a list of all Senate e-mail addresses, send a message to: webmaster@scc.senate.gov
This book is intended to be a broad source of information on a range of different ethanol issues. For more specific information on ethanol and the policies and programs that drive its use, check out the Clean Fuels Development Coalition's web site at www.CleanFuelsDC.org, or check out some of the other online resources for information on ethanol.

FOR MORE INFORMATION

Related organizations

Ethanol Across America	www.ethanolcrossamerica.net
American Coalition for Ethanol	www.ethanol.org
Clean Fuels Development Coalition	www.cleanfuelsdc.org
Citizen Action	www.essential.org/CMEP
Clean Air Network	www.naturalgas.com
Clean Fuels Foundation	www.cleanfuels.org
CONEG Policy Research Center Inc.	www.coneg.org
E-10 Unleaded	www.e10unleaded.com
Environmental Education on the Internet	www.nceet.snre.umich
Ethanol Producers and Consumers	www.ethanolmt.org
Global Climate Coalition	www.worldcorp.com/dc-online/gcc/index.html
Governors' Ethanol Coalition	www.ethanol-gec.org/
Interstate Oil and Gas Compact Commission	www.iogcc.oklaosf.state.ok.us
Let's Get With It, Nebraska! E-10 Unleaded with Ethanol	www.e10unleaded.com
National Conference of State Legislatures	www.ncsl.org/index.htm
National Ethanol Vehicle Coalition	www.e85fuel.com
National Technology Transfer Center	www.nttc.edu
National Renewable Energy Laboratory	www.nrel.gov
Natural Resources Defense Council	www.nrdc.org
Nebraska Ethanol Board	www.NE-Ethanol.org
New England Instate Water Pollution Control Commission	www.neiwpsc.org
New York State Technology Enterprise Corp.	www.nystec.com
Northeast Regional Biomass Program	www.nrbp.org
Northeast States for Coordinated Air Use Management	www.nescaum.org
Petroleum Internet Resources	www.slb.com/petr.dir/guthrey.html
Press Release Center	ino.com
Public Citizen-Critical Mass Energy Project	www.essential.org/CMEP/
Renewable Fuels Association	www.EthanolRFA.org
Search the Federal Register	ssdc.ucsd.edu/gpo/fedfld.html
Society of Automotive Engineers	www.sae.org
State and Local Government on the Net	www.piperinfo.com/piper/state/states.html
State Search	www.state.ky.us/nasire/NASIREhome.html
USA CityLink	usacitylink.com//default.html
Government Web Servers	www.eit.com/web/www.servers/government.html

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- ⁹⁵National Corn Growers Association.
- ⁹⁶Renewable Fuels Association, <http://www.ethanolrfa.org/pr020397.html>, Jerry Weigel, Director of Nutrition and Regulatory Affairs at ExSeed Genetics, L.L.C.
- ⁹⁷Ibid, Lucy Norton, Domestic Market Development Director, Iowa Corn Promotion Board.
- ⁹⁸Hosein Shapouri, James Duffield, Michael Graboski, U.S. Department of Agriculture, "Estimating Net Energy Balance of Corn Ethanol", Agricultural Economic Report Number 721, July 1995, Revised 2002.
- ⁹⁹"How Much Energy Does it Take to Make a Gallon of Ethanol?" Institute for Local Self-Reliance. December 1992.
- ¹⁰⁰Hosein Shapouri, James Duffield, Michael Graboski, U.S. Department of Agriculture, "Estimating Net Energy Balance of Corn Ethanol", Agricultural Economic Report Number 721, July 1995.

APPENDIX A: About Our Sponsors

AG PROCESSING INC.

Ag Processing Inc (AGP) is a farmer-owned cooperative engaged in the procurement, processing, marketing, and transportation of grains and grain products. Since its formation in 1983, AGP has been committed to the success of its owners. Today, that is 243 local cooperatives and eight regional cooperatives, representing 250,000 farmers from 16 states throughout the United States and Canada. AGP operates nine soybean processing plants including six plants in Iowa, located at Eagle Grove, Emmetsburg, Manning, Mason City, Sergeant Bluff, and Sheldon. Other AGP processing plants are located at Dawson, Minnesota, St. Joseph, Missouri, and Hastings, Nebraska. The Hastings plant is the first farmer-owned soybean processing facility in that state.

For more information contact:

Ag Processing Inc.
PO Box 2047, Omaha, NE 68103-2047-7801
2700 West Dodge Road, Omaha, NE 681549
PHONE: 800-247-1345/402-496-7809
WEB: www.agp.com

AMERICAN COALITION FOR ETHANOL

The American Coalition for Ethanol works with a wide range of groups in support of ethanol, including commodity organizations, rural electric cooperatives, ethanol producers, grain cooperatives, businesses and individuals. ACE is organized to promote and expand the development of the ethanol industry, and to reduce America's dependence on foreign oil imports; to provide an alternative use for farm products; to create a public awareness of the uses and benefits of ethanol, at the same time dispelling fears and erroneous product information; to support legislative efforts to promote ethanol usage and to do all other things necessary or expedient for the promotion and increased usage of ethanol.

For more information contact:

American Coalition for Ethanol
PO Box 85102; 2500 S. Minnesota Ave.,
#200, Sioux Falls, SD 57105
PHONE: 605-334-3381
FAX: 605-334-3389
WEB: www.ethanol.org

BROIN COMPANIES

At the Broin Companies, we set the standards for the ethanol industry. Our companies provide turnkey development, design, engineering, construction, management and marketing services for our capital partners. The Broin Companies combine unparalleled experience and proven performance to create the most successful and profitable ethanol plants in the world.

For more information contact:

Broin Companies
Kenyon Gleason, Director of Communications,
2209 E. 57th St. North, Sioux Falls, SD 57104
PHONE: 605-965-2200
FAX: 605-965-2203
EMAIL: kenyongleason@broin.com
For information on ethanol marketing contact:
Ethanol Products, 316-303-1380
For information on DDGS marketing contact:
Dakota Gold Marketing, 1-888-327-8799
WEB: www.broin.com

CHIEF ETHANOL FUELS

Chief Ethanol Fuels is the largest and longest operating ethanol plant in Nebraska. A subsidiary of Chief Industries, Chief Ethanol Fuels began as a 10 million gallon per year facility in 1985 and has evolved into one of the most efficient ethanol facilities in the United States. The plant has increased capacity steadily over the last decade, currently producing more than 62 million gallons annually. Chief Ethanol has been an integral part of the Hastings, Nebraska community, providing a value added outlet for local grain and creating numerous direct and indirect jobs.

For more information contact:

Roger Burken, General Manager or
Mike Barwig, Director of Sales and Marketing
PHONE: 402-463-6885
EMAIL: burken@chiefind.com
WEB: www.chiefind.com

COBANK, ACB

CoBank offers a broad range of flexible loan programs and specially tailored financial services. The bank provides short, intermediate and long-term financing at variable and fixed interest rates. CoBank also offers cash investment services, letters of credit, leasing services and interest rate risk management services. With over \$30 billion in assets, CoBank has been the leading lender to some

of America's most successful businesses for over 50 years. We specialize in cooperatives, agribusinesses, rural utility and agricultural export financing. We are also one of the largest sources of funding for ethanol facilities, with over 10 years active participation in the industry. As a borrower-owned bank operating on a cooperative basis, a substantial portion of our earnings are annually returned to our customers in the form of patronage refunds.

For more information contact:

Tom Houser at 800-346-5717 Ext. #2013 or
Jeff Kistner at 800-346-5717 Ext. #2025
11837 Miracle Hills Drive, Suite 200,
Omaha, NE 68154
WEB: www.cobank.com

COLORADO CORN ADMINISTRATIVE COMMITTEE

In 1987 the Colorado Corn Growers Association (CCGA) worked to establish a marketing order for corn. By statewide referendum, corn growers passed a 1 cent per bushel assessment on corn produced in Colorado. Managed by the 11 farmer-member, farmer-elected board and alternates of the Colorado Corn Administrative Committee (CCAC), the funds are invested in programs to stimulate long-term marketing opportunities through education, research and development, and market promotion.

For more information contact:

Colorado Corn
127 22nd St., Greeley, CO 80631
PHONE: 970-351-8201
WEB: www.coloradocorn.com

ED&F MAN ALCOHOLS INC.

ED&F Man Alcohols Inc. is a US subsidiary of ED&F Man Holdings Ltd., a UK based, employee owned, international commodity trading firm established in 1783, specializing in the trade of sugar, molasses, alcohol, cocoa, nuts and spices, as well as liquid products storage and liquid feeds. ED&F Man Alcohols Inc. markets fuel ethanol in North America produced in the group's two ethanol plants in Jamaica as well as for other ethanol producers both internationally and domestically.

For more information contact:

PHONE: 805-965-1478
EMAIL: Wmaloney@aol.com or
alcohols@edfman.com
WEB: www.edfman.com

APPENDIX A: About Our Sponsors

ETHANOL PRODUCTS, LLC

Ethanol Products provides marketing, forward contracting, risk management and distribution capabilities for ethanol plants throughout the United States. We maintain a fleet of transportation equipment and have ethanol storage in key markets. Our proprietary scheduling and invoicing system provides our customers with an integrated means to manage their ethanol shipments. With these capabilities we create a strong marketing force and reliable supply source for ethanol producers and consumers.

For more information contact:
111 South Ellis, Wichita, KS 67211
PHONE: 316-303-1380
EMAIL: Wichita@EthanolProducts.com
2209 E 57th St. N; Sioux Falls, SD 57104
PHONE: 605-965-2206
EMAIL: BobScott@EthanolProducts.com
WEB: www.ethanolproducts.com

FAGEN, INC.

Fagen, Inc. is the leading design-build construction firm in ethanol plant construction. Since 1988, Fagen, Inc. has been involved in the development and construction of over 33 ethanol plants nationwide from grass roots construction through expansions. With the addition of Fagen Engineering LLC and Fagen Management LLC, Fagen offers total plant services. Fagen, Inc. has the experience and workforce necessary to take any size project from conception to operation. With the addition of Fagen Engineering, our customers have a single-source for every civil, structural, mechanical, and electrical aspect of their project's scope. In short, there is no project we can't perform with excellence.

For more information contact:
Fagen, Inc.
Ron Fagen, President & C.E.O.
PHONE: 320-564-3324
Wayne Mitchell, Vice President
PHONE: 320-564-3324
Walter Kittrell, Project Developer
PHONE: 402-564-6526
WEB: www.fageninc.com

GENENCOR INTERNATIONAL, INC.

For over two decades, Genencor has been a catalyst for the biobased economy and committed partner for ethanol producers seeking biotechnology solutions. As a leader in

the global ethanol market, we've developed enzymes to help convert grain starches into ethanol, lessening petroleum dependence, reducing emissions, and providing farmers with greater value. We're also working with the U.S. Department of Energy on a new generation of enzymes to convert cellulosic biomass to fermentable sugars.

For more information contact:
Genencor International, Inc.
200 Meridian Centre Blvd., Suite 300;
Rochester, NY 14618
PHONE: 800.847.5311
FAX: 585.256.5286
WEB: www.genencor.com.

ICM

For the ethanol industry, ICM provides professional engineering services, process guarantees, consultation, fabrication, installation, construction management, distillers grain marketing, ethanol marketing, ethanol plant management, permitting assistance, safety assurance and performance benchmarking services. ICM and its partner companies manufacture the industry's most energy efficient dryers, create environmentally beneficial water treatment systems for ethanol plants, and develop local synergies for energy and feed co-products.

For more information contact:
Jeff Roskam, Senior Vice-President
310 N. First Street; Colwich, KS 67030
PHONE: 316-796-0900
WEB: www.icminc.com

KANSAS CORN GROWERS ASSOCIATION

The Kansas Corn Growers Association is a membership-based organization that represents Kansas producers in legislative and regulatory issues in both Topeka and Washington. KCGA works with the Kansas Corn Commission to provide market development, promotion and education services including efforts to increase the production, usage and availability of ethanol within the state of Kansas.

For more information contact:
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PO Box 446, 109 W. 4th St.,
Garnett, KS 66032
PHONE: 785-448-6922
FAX: 785-448-6932

EMAIL: jwhite@ksgrains.com
WEB: www.ksgrains.com/corn

KANSAS GRAIN SORGHUM PRODUCERS

KGSPA represents its grower members in legislative and regulatory issues on the state and national levels. The association works with the Kansas Grain Sorghum Commission to provide market development, promotion and education services to growers. Because most of the ethanol produced in Kansas is made from grain sorghum, KGSPA is active in projects to increase the production and use of ethanol in the state.

For more information contact:
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WEB: www.ksgrains.com/sorghum

KATZEN INTERNATIONAL, INC.

KATZEN International, Inc. is a developer and designer of process technology for the ethanol and related industries, worldwide. For more than 5 decades, KATZEN has been the leader at the cutting edge of technology. The firm consists of highly experienced chemical, biochemical and mechanical engineering and design professionals. Their R&D and design-engineering efforts are continually developing the superior technology solutions that create ongoing improvement in the bottom-line performance of the industry.

For more information contact:
KATZEN International, Inc.
PHONE: 513-351-7500
EMAIL: projects@katzen.com
WEB: www.katzen.com

APPENDIX A: About Our Sponsors

MARYLAND GRAIN PRODUCERS UTILIZATION BOARD

The Maryland Grain Producers Utilization Board (MG PUB) was established by referendum in 1991 to administer the Maryland Grain Checkoff Program and distribute the annual revenue primarily to expand grain utilization and open up new markets for grain. MG PUB collects half of one percent of the net value of grain grown in Maryland. These funds are used to increase the profitability of Maryland grain production and to improve public understanding of agriculture using checkoff funds to support promotion, education, and research. Expanding the production and use of ethanol is a high priority of MG PUB.

For more information contact:

Lynne Hoot, Executive Director, Maryland Grain Producers Association (MGPA) and Maryland Grain Producers Utilization Board (MG PUB)
53 Slama Road, Edgewater, MD 21037
PHONE: 410-956-5771
FAX: 410-956-0161
WEB: www.marylandgrain.com

NATIONAL ETHANOL VEHICLE COALITION

The National Ethanol Vehicle Coalition is dedicated to the advancement of the use of 85 percent ethanol as a form of alternative transportation fuel. The use of renewable-domestic transportation fuels such as 85% ethanol provides economic opportunity, advances environmental stewardship, and promotes agricultural profitability. The NEVC is supported by the domestic automakers, the Governors' Ethanol Coalition, state and national commodity groups, farmer owned ethanol production facilities, and individual members.

For more information contact:

Phillip Lampert, Executive Director
3118 Emerald Lane, Suite 100
Jefferson City, MO 65109
PHONE: 573-635-8445
CELLULAR: 573-690-1229 cell
FAX: 573-635-5466 fax
WEB: www.e85fuel.com

NATIONAL FARMERS UNION

National Farmers Union was founded in 1902. National Farmers Union is a general farm organization with a membership of nearly

300,000 farm and ranch families throughout the United States. For more than 100 years, National Farmers Union's primary goal has been to sustain and strengthen family farm and ranch agriculture. The key to this goal has been Farmers Union's grassroots structure in which policy positions are initiated locally. The policy process includes the presentation of resolutions by individuals or a group of Farmers Union members, followed by possible adoption of the resolutions at the local, state and national levels. National Farmers Union believes that good opportunities in production agriculture are the foundation of strong farm and ranch families and that strong farm and ranch families are the basis for thriving rural communities. Vibrant rural communities, in turn, are vital to the health and economic wellbeing of the entire U.S. economy.

FOR MORE INFORMATION CONTACT:

NFU (Denver) - 11900 East Cornell Ave.,
Aurora, CO 80014-3194
PHONE: 303-337-5500
TOLL FREE: 800-347-1961
FAX: 303-368-1390
NFU (DC) - 400 North Capitol St. NW, Suite 790, Washington, DC 20001
PHONE: 202-554-1600/Fax: 202-554-1654
WEB: www.nfu.org

NEBRASKA CORN BOARD

The mission of the Nebraska Corn Board is to enhance the profitability of the corn producer by developing, carrying out and participating in programs of market promotion, research, and education. Our vision: Nebraska Corn - the first choice for a consistent supply of quality corn by global customers and by Nebraska value-added industries who process the equivalent of 100% of corn produced in Nebraska, with greater farmer participation in all related industries and through broad-based cooperation.

For more information contact:

Nebraska Corn Board
301 Centennial Mall South, 4th Floor,
P.O. Box 95107, Lincoln, NE 68509-5107
PHONE: 800-632-6761 (NECORN1) or
402-471-2676 (CORN)
FAX: 402-471-3345
EMAIL: d.hutchens@necorn.state.ne.us
WEB: www.nebraskacorn.org

NEBRASKA ETHANOL BOARD

The Nebraska Ethanol Board is a state agency established in 1971 to promote the development and utilization of ethanol fuels. The Nebraska Ethanol Board is an active participant in several national organizations including the Clean Fuels Development Coalition. The Board supports a variety of marketing programs and actively works with companies to develop ethanol plants in Nebraska.

For more information contact:

Nebraska Ethanol Board
PO Box 94922, Lincoln, NE 68509
PHONE: 402-471-2941
FAX: 402-471-2470
WEB: www.ne-ethanol.org

NEBRASKA PUBLIC POWER DISTRICT

Nebraska Public Power District (NPPD) is the largest producer and wholesaler of electrical power in the State of Nebraska. NPPD is committed to the growth and economic development of rural Nebraska. NPPD works to provide economic development assistance to value-added agricultural projects such as the ethanol production and support industries. NPPD's Economic Team includes five Certified Economic Developers with nearly 90 years of combined experience in helping companies with their site location process. Information about available industrial sites, Nebraska communities, and plant location assistance is available at: www.sites.nppd.com NPPD's Economic Development Team will also provide customized responses to specific requests.

For more information contact:

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E-MAIL: bkwilco@nppd.com
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FAX: 402-563-5466
CELLULAR: 402-562-0893
E-MAIL: dghall@nppd.com
WEB: www.nppd.com

APPENDIX A: About Our Sponsors

NOVOZYMES NORTH AMERICA INC.

Novozymes, the world leader in enzyme production, continues to prove that biological processes can lead to business success in a symbiosis between industrial efficiency and sustainable development. We craft biological solutions - sometimes as products, sometimes as services, sometimes simply as knowledge, but most often as a combination of them all. One of our primary focus areas is providing leading enzyme products and services for fuel ethanol. Novozymes is committed to developing specific and economical process solutions for liquefaction, saccharification (SSF), and fermentation. We are also devoted to developing the next generation of cellulases for economical glucose production from cellulosic feedstocks. Contact us to learn more about how we are helping to prepare the fuel ethanol industry of today for a better tomorrow.

For more information contact:
Novozymes North America, Inc.
77 Perry Chapel Church Road,
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PHONE: 1-800-879-6686
FAX: 919-494-3485
EMAIL: enzymesna@novozymes.com
WEB: www.novozymes.com

REEVE AGRI-ENERGY

Reeve Agri Energy of Garden City, Kansas is one of the longest running, and most innovative fuel ethanol production facilities in the United States. The Reeve facility has received numerous awards for being the first integrated facility in the U.S. to combine a cattle feedlot with an ethanol facility and a fish farm, utilizing waste heat from the ethanol fermenters. For years the Reeve facility has been a tourist site in Kansas due to the unique aspects of the facility. Reeve continues to sell high quality ethanol products today.

For more information contact:
Lee Reeve at Reeve Agri-Energy,
P. O. Box 1036, Garden City, KS 67846
PHONE: 620-275-7541
FAX: 620-275-8393

SOUTH DAKOTA CORN UTILIZATION COUNCIL

Agriculture is South Dakota's leading industry and corn production is an important component of South Dakota's agricultural economy. In fact, South Dakota corn growers produced

370.6 million bushels of corn in 2001. The (SDCGA) works to promote corn and improve corn profitability through influencing public policy and legislative efforts. Through SDCGA's efforts at the state legislature, we have lobbied state leaders for fully funding the state's ethanol producer incentive which supports the development of ethanol in our state and provides thousands of jobs in rural America. Market development, promotion and education, and research funded by the (SDCUC) have created new markets for South Dakota corn growers in the state. In fact, 1 out of every 3 rows of corn grown in South Dakota will be used for ethanol production in the state, as ethanol production will grow to over 340 million gallons of ethanol. SDCUC is also taking a leading role by helping to develop our livestock industry with our "It's About Time" advertising campaign.

For more information contact:
South Dakota Corn
3801 South Western Avenue, Suite 100,
Sioux Falls, SD 57105
PHONE: 605-334-0100
FAX: 605-334-0505
WEB: www.sdcorn.org

SOUTHERN STATES ENERGY BOARD

Southern States Energy Board (SSEB) is a non-profit interstate compact organization created in 1960. The Board's mission is to enhance economic development and the quality of life in the South through innovations in energy and environmental programs and technologies. SSEB endeavors to reach the goal of sustainable development by implementing strategies that support its mission. SSEB develops, promotes and recommends policies and programs that protect and enhance the environment without compromising the needs of future generations. SSEB's membership includes: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands, Virginia, and West Virginia.

For more information contact:
NORCROSS OFFICE:
Southern States Energy Board,
6325 Amherst Court, Norcross, Georgia 30092
PHONE: 770-242-7712
FAX: 770-242-0421
WASHINGTON, DC OFFICE: Southern States

Energy Board,
P.O. Box 34606, Washington, DC 20043
PHONE: 202-667-7303
FAX: 202-667-7313
WEB: www.sseb.org

UNION PACIFIC RAILROAD

Union Pacific is the largest railroad in North America, operating in the western two-thirds of the United States. The railroad serves 23 states, linking every major West Coast and Gulf Coast port and provides service to the east through its four major gateways in Chicago, St. Louis, Memphis and New Orleans. Additionally, Union Pacific operates key north/south corridors and is the only railroad to serve all six gateways to Mexico. UP also interchanges traffic with the Canadian rail systems. Union Pacific's Ethanol Pipeline offers customers access to the ethanol producers in the Midwest and the most direct rail route to the refineries and truck racks in the California market. Union Pacific is ideally positioned to provide the highest level of service and lowest cost structure. Producers will retain the freedom to control their own equipment and logistics while receivers will retain the independence to control their ethanol supply.

For more information contact:
Matt Pick, Business Manager
PHONE: 402-271-3390
Tina (Minino) Wehrbein
PHONE: 402-271-2058
WEB: www.uprr.com

WYOMING ETHANOL, LLC

Wyoming Ethanol, LLC
PO Box 8043, Boise, ID 83707
PHONE: 800-669-3607
FAX: 800-497-8280
EMAIL: jtglancey@spro.net

The Clean Fuels Development Coalition would like to acknowledge the assistance of the National Defense Council Foundation for their contribution of information drawn from their new report "Imported Oil: America's Achilles Heel".

For further information on the NDCF report, please contact Milton Copulos, 703-836-3443, or visit www.ndcf.org.

About this book

The *Fuel Ethanol Fact Book* is a compilation of hundreds of technical summaries and research reports from across the scientific, academic and technical community which offer support for the expansion of the ethanol industry through continuation and extension of the federal fuel ethanol tax incentive and establishment of a National Renewable Fuels Standard. This exhaustive research is representative of government, industry, and academic opinion on the benefits of fuel ethanol production to the nation, the environment and the public. We hope you find this information useful and informative.

If you have any questions, or need additional information, call us at the:
Clean Fuels Development Coalition in the Washington, DC area at (301) 718-0077,
or e-mail cfdcinc@aol.com.



THE CLEAN FUELS DEVELOPMENT COALITION IS A NON-PROFIT ORGANIZATION DEDICATED TO THE DEVELOPMENT OF ALTERNATIVE FUELS AND TECHNOLOGIES TO IMPROVE AIR QUALITY AND REDUCE U.S. DEPENDENCE ON IMPORTED OIL. THE BROAD CFDC MEMBERSHIP INCLUDES ETHANOL PRODUCERS, AGRICULTURAL INTERESTS, AUTOMOBILE MANUFACTURERS, STATE GOVERNMENT AGENCIES, AND ENGINEERING AND NEW TECHNOLOGY COMPANIES. SINCE ITS BEGINNING IN 1988, THE COALITION HAS BECOME A RESPECTED SOURCE OF INFORMATION FOR STATE, LOCAL AND FEDERAL POLICYMAKERS AS WELL AS PRIVATE INDUSTRY ON A RANGE OF TRANSPORTATION, ENERGY, AND ENVIRONMENTAL ISSUES.

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CFDC CLEAN
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