

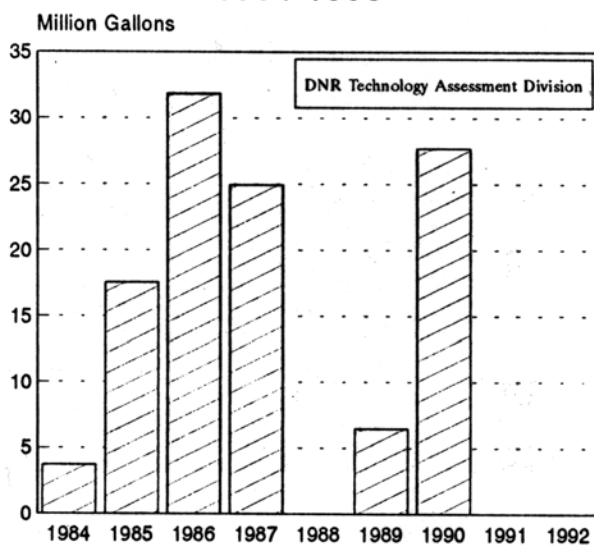
ETHANOL IN LOUISIANA 1993

by

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During the 1980's ethanol was Louisiana's preferred alternative motor vehicle fuel in the form of gasohol, a blend of gasoline containing 10% ethanol. Encouraged by federal and state subsidies enacted in the late 1970's and generously expanded through the mid-1980's in reaction to the energy crises of that era, ethanol production in Louisiana soared to a peak of 32 million gallons in 1986 (Figure 1). But after the state subsidy ran out in January 1988, production ceased. One plant did reopen in 1989, but it closed again in 1990.

Figure 1
LOUISIANA ETHANOL PRODUCTION
1984-1990



Source: 1984-1988 La. Dept. of Revenue and Taxation
1989-1990 Shepherd Oil Company

Although the total installed capacity of all the plants was 155 million gallons **per year** (MM GPY), actual total cumulative production over the entire seven year period from 1984 through 1990 that ethanol was produced in Louisiana was only 112 million gallons (Figure 1).

Present Status of the Industry

The two plants still capable of operating have a total capacity of about 77 MM GPY. They are the 35 MM GPY capacity Shepherd Oil Inc. plant near Jennings and the 42 MM GPY capacity Mississippi River Alcohol Corporation (Missalco) plant near Belle Chasse next to a grain terminal on the Mississippi River. The Shepherd plant is for sale and the Missalco plant has been in litigation over design performance since it was completed in 1986. It operated briefly in 1987. Reopening the plant is contingent on a satisfactory settlement.

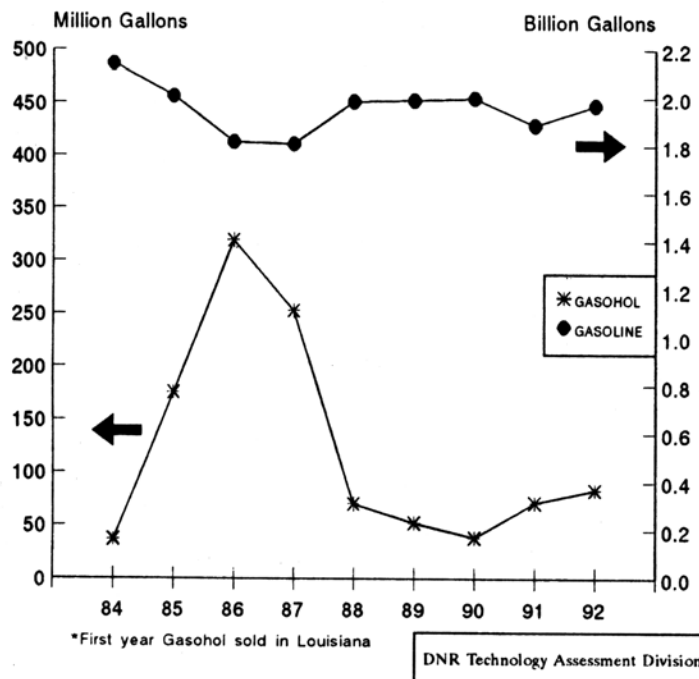
A third plant, the 35 MM GPY capacity Louisiana Agrifuels plant in New Iberia, was sold by the U.S. Department of Energy (DOE) on June 11, 1993, to High Plains Corporation of Colwich, Kansas, for \$3 million. The plant has been dismantled and the production equipment moved to Nebraska, where the company is building an ethanol plant. The equipment left behind at the old site in New Iberia is for sale. The total original investment in the plant was \$105 million with \$78.9 million of it coming from a loan guaranteed by DOE in 1985. Construction was completed in 1987, but the plant never operated. After the company defaulted on the loan, DOE took possession of the plant in 1989 and spent some \$50,000 to \$100,000 per month maintaining it. Overall, the sale resulted in the U.S. taxpayer recovering less than four cents on the dollar of DOE's total expenditures on the plant.

The bankruptcy court is asking \$8.5 million for the Shepherd plant. A spokesman indicated it would cost about \$5 million more to refurbish it as compared to about \$80 million to construct a new plant. The plant operated the longest and produced the most ethanol, about 74 million gallons. This was two-thirds of the total cumulative production of all ethanol plants that had operated in the state. In 1987 it was converted to use grain as a feedstock instead of molasses. A hearing on the sale of the plant was held on October 26, 1993, in Phoenix, Arizona, where the company is domiciled. Two offers for the plant were recorded. The terms and conditions of the offers were sent to the court and creditors for their consideration. Two other groups are also interested in purchasing the plant. The hearing was continued, but no specific date for reconvening was set. Another hearing is expected to be held in late November. For additional information contact:

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 Houston, Texas 77042
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Although ethanol is no longer produced in Louisiana, gasohol made with ethanol produced in other states is still widely used in the state as a motor vehicle fuel. Since 1990, gasohol's most recent low point, Louisiana consumption has more than doubled from about 39 million gallons to nearly 84 million gallons in 1992, while gasoline consumption has remained about the same at about two billion gallons (Figure 2). Louisiana gasohol consumption as a percent of gasoline consumption was about 3.8% in 1991 as compared to the national average of 8.5%.

Figure 2
 LOUISIANA
 GASOHOL AND GASOLINE CONSUMPTION
 1984*-1992



Source: La. Dept. of Revenue and Taxation
 Research and Technical Services Division

Historical Perspective

The first federal legislation providing an ethanol production subsidy was the *Energy Tax Act of 1978*, which exempted 10% ethanol blends (gasohol) from gasoline excise taxes in the amount of \$0.04/gallon of gasohol. It also created a supplemental 10% investment tax credit on equipment for converting biomass to alcohol. In 1980 the *Windfall Profits Tax* gave, as an alternate to the tax exemption, a *Blender's Tax Credit* of \$0.40/gallon of ethanol. In 1982,

the *Surface Transportation Assistance Act* raised the tax exemption to \$0.05/gallon of gasohol, and the blender's credit to \$0.50/gallon of ethanol. The *Tax Reform Act of 1984* again raised the tax exemption and blender's credit to \$0.06/gallon of gasohol and \$0.60/gallon of ethanol, respectively. Finally, the *Energy and Environmental Security Act of 1990* extended to the year 2000 the partial excise tax exemption and the blender's income tax credit. But they were reduced to \$0.054/gallon of gasohol and \$0.54/gallon of ethanol, respectively. The reduction was done to pay for a new subsidy for small producers having a production capacity of less than 30 MM GPY. This subsidy established an income tax credit of \$0.10/gallon of ethanol for these producers up to the first 15 million gallons of production, but is not available for production consisting of only distillation. Effective January 1, 1993, the subsidy was prorated for ethanol percentages of 7.7% and 5.7% to correspond to the oxygen content requirements of the *Clean Air Act Amendments of 1990 (CAAA)* and California's unique requirements, respectively.

Effective October 1, 1993, the *Omnibus Budget Reconciliation Act of 1993*, signed into law by President Clinton on August 10, 1993, increased the excise tax on gasoline, diesel fuel, gasohol, and other transportation fuels by \$0.043/gallon. The new federal tax rate on these three fuels is now \$0.183, \$0.244, and \$0.130/gallon, respectively. The state tax remains at \$0.20/gallon for all three fuels. The federal excise tax on the two new ethanol blends of 7.7% and 5.7% that qualify for the federal ethanol production subsidy is \$0.1424 and \$0.1532/gallon, respectively.

Shortly after the federal government began subsidizing ethanol production, the *Louisiana Gasohol Act* was enacted by the Louisiana legislature in 1979. It exempted gasohol produced in Louisiana from state gasoline taxes. The legislation gained favor by being promoted as a boon to the state's sugarcane industry by using molasses as the feedstock for the ethanol plants. At that time the state gasoline tax was \$0.08/gallon, so when added to the then \$0.04/gallon federal exemption, the total exemption was \$0.12/gallon of gasohol, or \$1.20/gallon of ethanol. Since \$1.20/gallon was the full cost of production of the ethanol at the time, the exemption, in effect, provided the ethanol at no cost.

In 1982 the U.S. raised its tax exemption to \$0.05/gallon of gasohol, and in 1984 raised it again to \$0.06. Also in 1984 the state gasoline tax was doubled to \$0.16/gallon to bolster lagging revenues. This automatically doubled the ethanol exemption. So from 1979 to 1984 the total exemption went from \$0.12 to \$0.22/gallon of gasohol, or to \$2.20/gallon of ethanol. This enticed many new entrepreneurs to build ethanol plants.

Louisiana's high tax exemption attracted out-of-state producers, but this was not the intent of the legislature, so in 1985 the *Louisiana Gasohol Act of 1979* was amended so that to qualify for the exemption, the ethanol had to be produced in Louisiana from crops grown in Louisiana. This action was legally challenged, and the legislature responded by eliminating the tax exemption altogether. In its place they established an Agricultural Industrial Incentive Fund to provide direct subsidies to in-state producers. The fund, financed by the gasoline tax, was to be administered by an Agricultural Industry Board presided over by the Commissioner of Agriculture. The members were to be appointed by him, the Governor, and various other sectors of the legislative and agricultural communities. The amount of the subsidy was equal to the previous tax exemption of \$1.60/gallon of ethanol. Of this, \$0.30 was to be paid to the growers and \$1.30 to the ethanol producers. Later this was changed to a direct subsidy to producers of \$1.40/gallon of ethanol provided they pay farmers \$2.25/bushel for corn, a premium of \$0.60/bushel over the market price of corn at the time.

This direct subsidy program went into effect in September 1986. Due to the weak economy and mounting criticism of the subsidy program, the 1987 regular session of the legislature enacted *Act 18*, which appropriated total subsidy payments of only \$15.1 million for fiscal year 1987-88. This amount was reached in January of 1988, and no further payments were made. Without the subsidy all of the plants closed. In 1989 the Shepherd Oil Co. plant reopened and operated with the federal subsidy alone after having gone bankrupt and been sold to a new owner, but it closed again in December of 1990. The 1989 Legislature repealed all subsidies without which ethanol production in Louisiana was not economically feasible.

The corn subsidy to farmers was a windfall and had a predictable result. Corn acreage soared from 70,000 acres in 1983 to 400,000 by 1986. Production rose from 5 million bushels to 45 million. After the subsidy ended, the acreage settled back to 150,000 acres in 1989, but the experience did teach farmers that corn was a viable crop in the state. Acreage and production have steadily climbed so that in 1992 the state produced 37 million bushels on 309,000 acres.

A total of 18 ethanol plants were seriously planned in Louisiana at one time or another. The size varied from less than a million gallons per year to 100 million. Nine were actually built, and the maximum number that operated at any one time was six.

Although gasohol was widely available in Louisiana in the mid-eighties, it fell out of favor with consumers amid complaints about injector fouling, water in the fuel, performance problems, and car manufacturers ambivalence

about using it. Laws were passed requiring labeling of the ethanol content on the pumps in big, bold letters. Finally, in February of 1987 the three major gasohol marketers in Louisiana - Tenneco, Texaco, and TimeSaver - gave up and gasohol was removed from 600 of their pumps.

Future Outlook

The historical cost of ethanol production of \$1.00 to \$2.00 per gallon is too high to be profitable in Louisiana without a subsidy larger than the \$0.54/gallon federal tax credit now available. Large agribusiness firms in the Midwest, like Archer-Daniels-Midland, do manage to produce ethanol profitably, and they dominate the industry. These large, vertically integrated companies already have corn milling, byproduct handling and marketing facilities, and economies of scale with plants with capacities of over 100 MM GPY. They are also located in the heart of the source of their feedstock, thereby minimizing transit costs. None of these conditions exist in Louisiana, so future investment in new ethanol plants in the state is unlikely as evidenced by the decision of the new owners of the Agrifuels plant to move it to Nebraska rather than make the necessary process and equipment modifications to operate it in Louisiana.

The CAAA requires the use of additives to boost the oxygen content of traditional gasolines in areas with air pollution problems. Ethanol's high vapor pressure is a disadvantage for gasoline blending, but its excellent oxygenating characteristics and octane blending value increase the potential for increased use as gasohol. Moreover, the reformulated gasoline requirements effective in 1995 will provide an additional market opportunity for ethanol manufactured into the oxygenate and octane blending component ethyl tert-butyl ether (ETBE). Because of its lower volatility and superior blending characteristics, ETBE may prove to be a more valuable octane/oxygenate fuel additive than either ethanol or methyl tert-butyl ether (MTBE), the petroleum derived oxygenate now most widely used. However, ethanol is at a cost disadvantage as a raw material for ETBE compared to the petroleum derived raw material for MTBE, and only holds its niche in the marketplace because of tax subsidies. Also, as an alcohol, ethanol has an affinity for water, which limits its transportation and storage options. ETBE eliminates all of the disadvantages of ethanol except for cost.

A technological breakthrough that would reduce the cost of making ethanol to make it competitive with gasoline without the subsidy could conceivably increase its market share dramatically. BIONOL Corp. and BioEnergy International are presently in the engineering phase of a project to build jointly the world's first waste-to-ethanol plant near Glen Falls, N.Y. An official of BIONOL said the ethanol derived from the process could cost motorists as little as \$1.00/gallon. The plant will use paper waste as a feedstock, but any agricultural waste such as bagasse and corn stalks could also be used. He said a sugar mill could be retrofitted to process bagasse into ethanol, and then use the resulting waste byproduct as boiler fuel.

November 3, 1993

NOTE: Portions of the above were taken from DNR's June 30, 1993, report **Alternative Energy in Louisiana - Motor Vehicle Fuels (A Progress Report)**. Appropriate references are cited in that report. If you would like a copy of the complete report, please write to:

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