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STATEMENT OF
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BEFORE A JOINT HEARING OF THE
SUBCOMMITTEE ON INVESTIGATION AND OVERSIGHT
COMMITTEE ON SCIENCE AND TECHNOLOGY
AND THE SUBCOMMITTEE ON WHEAT, SOYBEANS,
AND FEED GRAINS
COMMITTEE ON AGRICULTURE
UNITES STATES HOUSE OF REPRESENTATIVES



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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the General Accounting Office's report on federal fuel ethanol tax incentives dated June 6, 1984.¹ The report was requested by Senators Charles Percy, David Durenberger and J. James Exon who asked us to gather information on the costs and benefits associated with the tax incentives.

BACKGROUND ON INCENTIVES

The federal government has provided a variety of financial incentives to promote the development of the domestic fuel ethanol industry including tax incentives, loan guarantees, cooperative agreements, and research grants. The cornerstone of the incentives, however, is the partial exemption of gasohol (a blend of 10 percent ethanol and 90 percent unleaded gasoline) from the 9 cents a gallon federal gasoline excise tax. This exemption, initially set at 4 cents a gallon in 1978, was increased to 5 cents a gallon in 1983 and was recently increased to 6 cents a gallon as part of the Deficit Reduction Act of 1984. Because only one tenth of a gallon of ethanol is needed to exempt the entire gallon of mixed fuel from tax, the tax advantage amounts to 60 cents per gallon of ethanol.

In addition to the federal exemption, many states provide exemptions from state gasoline taxes. These state incentives range from 1 cent a gallon to 11 cents a gallon with most falling

¹Importance and Impact of Federal Alcohol Fuel Tax Incentives (GAO/RCED-84-1, July 6, 1984)

in the range of 3-5 cents per gallon. Thus, in a state with a 4 cents a gallon exemption the combined federal and state exemptions would be 10 cents per gallon of gasohol or \$1.00 per gallon of ethanol. As a result, fuel distributors could afford to pay \$1.00 a gallon more for ethanol than they do for unleaded gasoline and be able to sell the resulting mixture for the same net price.

In conducting our review we assessed the importance of the incentives to the fuel ethanol industry and attempted to measure the industry's impact on various factors such as the national economy, the federal budget, and national energy security. I would like to focus my remarks on our findings and conclusions in each of these areas.

IMPORTANCE OF FEDERAL INCENTIVES TO THE INDUSTRY

Based on our review of both relative ethanol and gasoline selling prices as well as ethanol production costs, we found that unsubsidized ethanol has not been able to compete with gasoline in the marketplace. Over the last 3 years ethanol has sold for about \$.60 - \$.85 a gallon more than unleaded gasoline. Today, fuel ethanol sells for about \$.85 more. Our analysis showed that ethanol production costs have historically been considerably higher than gasoline selling prices. For example, the best available production cost data we could obtain suggested that at \$3 a bushel for corn (the primary ethanol feedstock), ethanol could be produced for about \$1.40 a gallon, considerably higher than the \$.80 - \$1.00 a gallon wholesale gasoline prices that have prevailed

over the last few years. Recognizing these financial considerations and the views expressed to us by ethanol producers, fuel distributors, and members of the financial services industry, it appears that the creation and expansion of the fuel ethanol industry has been and continues to be largely dependent on federal tax incentives.

A crucial public policy question, however, is whether the fuel ethanol industry will be perpetually dependent on federal incentives for its survival. We found that the price gap between unleaded gasoline and ethanol has actually widened over the last 3 years. While technological advances that could lower the real cost of ethanol production are possible and even likely, industry members we spoke with suggested these cost reductions would most likely be marginal especially if corn remained the primary ethanol feedstock. As a result, future ethanol competitiveness probably depends on a significant increase in the price of oil. If current crude oil to gasoline price ratios are maintained, crude oil prices would have to increase to over \$50 a barrel to result in gasoline prices reaching ethanol prices. Predictions as to whether this might occur and, if so, when it might occur are highly speculative.

Lacking such an oil price increase, the fuel ethanol industry's success in entering the high octane gasoline component market could be an important factor in determining its future competitiveness. When blended with gasoline, ethanol provides a substantial octane boost much like conventional petroleum-derived

octane components. The high octane components cost more than the final unleaded gasoline itself. However, as currently marketed, most ethanol is sold to fuel distributors who mix it with gasoline at a distribution point. As such, ethanol is displacing unleaded gasoline not higher value, high octane gasoline components and consequently must be priced competitively with the final unleaded gasoline product. If the refinery industry viewed ethanol as a viable substitute for these higher priced components rather than as a displacer of the completed unleaded gasoline, its competitive position would be improved and its chances for economic self-sufficiency enhanced. For example, compared to the wholesale unleaded gasoline price of about \$.75 a gallon, toluene (a petroleum derived octane component) sells for about \$.95 a gallon. Ethanol would therefore be \$.20 closer to being competitive with toluene than unleaded gasoline.

It is likely that there will be an increasing demand for high octane components in the future as a result of the government's policy of phasing down lead use in gasoline. Since passage of the Clean Air Act in 1977 the federal government has markedly reduced the allowable levels of lead in gasoline. Recently, the Environmental Protection Agency announced its intentions to reduce allowable levels even further. As a result refiners unable to use lead as an octane source will be seeking alternative octane sources and ethanol could become one of the sources to meet that demand.

ECONOMIC IMPACTS

From virtually any perspective, the fuel ethanol industry has had only a modest impact on the U.S. economy. Fuel ethanol production met only about one-fifth of 1 percent of gasoline demand in 1982 and is projected to meet only about 1 percent of gasoline demand by 1990.

Accordingly, while economic impacts on certain localities could be significant, the industry's impact on national output, employment, agricultural prices, and the federal budget is very small. For example, concerning the federal budget, we found that in 1982 the incentives resulted in about a \$100 million tax loss to the Treasury. This loss was at least partially offset by reduced agricultural support program costs attributable to the ethanol industry's demand for corn. Because the industry's impact on total national output and income cannot be precisely calculated with available information, it is not possible to calculate the industry's impact on tax revenue. Consequently, it is impossible to conclusively determine the industry's net revenue impact. In any case, the impact is not large.

The economic sector most directly impacted by large scale ethanol production is of course the agricultural sector. Each bushel of corn yields about 2.5 gallons of ethanol. Accordingly allowing for small volumes of ethanol being produced from other feedstocks, we estimated that in 1983 the ethanol industry required about 150 million bushels of corn or about 2 percent of

total corn use for the year. Using a Department of Agriculture econometric model, we estimated that this demand increased the national average corn price by \$.04 a bushel.

Assuming an ethanol production level of 1 billion gallons by 1990 with an associated corn demand of about 400 million bushels, we projected a price impact of about \$.15 a bushel. Our analysis also indicated that 1983 ethanol production generated a \$.07 per bushel reduction in soybean prices and a \$393 million increase in net farm income. While not large on a national scale, our work again showed that price and income impacts on local markets surrounding ethanol plants can be more dramatic. For example, one producer we spoke with said corn purchases by his firm have generated corn price increases as large as \$.15 a bushel in his local grain market.

NATIONAL ENERGY SECURITY IMPACTS

Domestically produced fuel ethanol enhances national energy security by reducing U.S. dependence on imported oil from the Middle East and other politically unstable regions. However, as with the industry's domestic economic impact, fuel ethanol's impact on national energy security is small because the industry's current and projected output represents only a small fraction of gasoline demand.

We estimate that 1982 ethanol production made it possible to save about 5 million barrels of oil or about one day's worth of current imports. Higher production levels would obviously permit larger oil import reductions. For example, if the industry's

production capacity expands enough to permit one billion gallons of ethanol production, about 30 million barrels or the equivalent of 6 days of current imports could be saved. While remaining very small, there are indications that ethanol's contribution to energy security could expand during a fuel supply emergency even with current capacity. Industry analysts estimated that in 1983 there was about 175 million gallons of capacity that could have been pressed into service if all-out production became necessary. Much of this surge capacity involved shifting the output of wet corn milling plants in the Midwest from corn sweetener to ethanol production.

OVERALL CONCLUSIONS

Based on our assessment of currently identifiable costs and benefits surrounding the federal fuel ethanol tax incentives, we believe that it is appropriate to continue these incentives until their currently scheduled 1992 expiration date. The private sector has invested considerable sums of money in fuel ethanol plants--total plant value exceeds \$1 billion--with the expectation that the market created by the incentives would be present at least until 1992 when the incentives are scheduled to expire. Removing the incentives at a time when ethanol remains uncompetitive with gasoline could be viewed as a break in faith that could not be justified by any expectation of major budget savings or significant economic gains.

I would be happy to answer any questions you might have at this time.