SECTION III ENVIRONMENTAL ISSUES

ALTERNATIVE FUELS - LEGISLATIVE MANDATES, INITIATIVES AND ISSUES

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The purpose of this paper is to first examine the motivation for requiring state fleets to operate alternatively fueled vehicles. This is a public policy that is increasing in popularity and state fleets are a logic test bed for the promotion of social objectives. Next, the paper looks at the status of state alternatively fueled fleet programs.

PUBLIC POLICY JUSTIFICATION

The ownership and operation of alternatively fueled vehicles is generally more expensive than that of conventionally fueled vehicles. The equipment is more expensive, the fuels are sometimes more expensive on BTU per dollar basis, and all alternative fuels have special fuel supply/delivery problems.(*1*)

The prices of petroleum products have reached an all time low and there seems to be little reason to believe the supply of non-renewable petroleum based hydrocarbons will be consumed within at least the next several generations. For example, the retail price of a gallon of gasoline was about 1.25 dollars in 1978 (in 1990 dollars), rose to a 1.90 dollars in 1982, and has declined about one dollar in 1992.(*2*) The world demand for petroleum is about 22 billion barrels per year(*3*) and over 900 billion barrels of conventional oil reserves are remaining.(*4*) Known petroleum in tar sands and oil shale include another 5,000 billion barrels.(*5*) Hence, there are many decades of petroleum remaining for use at current consumption rates. Given that petroleum is inexpensive and plentiful, what then are the reasons for the use of public fleets as alternative fueled vehicle test beds?

There are three primary reasons why the promotion of alternative fuels should be a social objective and promoted through public policy. They are to:

- Reduce the volume local air pollution originating from mobile sources. Local air pollution, in the form of carbon monoxide, nitrogen oxides, volatile organic compounds and other harmful emissions are created by motor vehicles. For example, in the United States motor vehicles contribute 45% of the hydrocarbon emissions and 85% of the carbon monoxide emissions in a typical urban area.(*6*) There is still much debate over the magnitude of the benefits of some alternative fuels in reducing harmful emissions and some argue that particular alternative fuels may even be inferior to reformulated gasoline.

- Reduce the amount of green house gases originating from mobile sources. Between 25 to 40% of the carbon dioxide equivalent greenhouse gasses originate from mobile sources. Alcohol fuels from biomass are estimated to reduce motor vehicle greenhouse gas emissions by 70% in comparison to conventional fuels. Electricity also will reduce greenhouse gas emissions from roughly 25%, if the electricity is derived from conventional sources, to 100% if electricity is derived from solar energy.(*7*)

- Reduce the imbalance of trade payments with major oil exporting countries. Roughly 40% of the United States trade deficit is related to oil imports.(*8*) Clearly, petroleum imports have a significant impact on the United States' balance of payments.

All three of these reasons for promotion of alternative fuels represent social or national interests in the reduction of petroleum consumption. Presently, the cost of operating motor vehicles using petroleum motor fuels is generally less expensive than alternative fuels. Therefore, as long as the cost to own and operate an alternatively fueled vehicle is greater than a conventional fueled vehicle, individuals and firms cannot be expected to assume the added costs of experimentation with alternative fuels. The promotion of alternative fuels is a social objective and hence it is appropriate public policy to foster alternative fuel use through public fleets.

In addition to having the added responsibility of promoting social objectives, public agencies with large fleets have much more leverage over which vehicles are introduced into the market place. There is a great deal of cost lumpiness in changes to the manufacturing of motor vehicles and changes in the supply of motor fuel. This is due to the high level of fixed costs associated with the manufacturing and distribution of new products. Specifically, transportation equipment must be made in great numbers to bring down the average cost of the vehicle plants, processing, and vehicle distribution systems. On the fuel supply side, there is lumpiness in the cost of manufacturing fuel, the provision of fueling systems, and in the creation of fuel distribution systems. After all, the petroleum industry has had the last 100

years to build up to a distribution system that delivers 110 billion gallons of gasoline and 20 billion gallons of diesel fuel per year.(*9*)

The fixed costs of ramping up to the production quantities for engines and the building of a network for fuel delivering are likely to be significant cost barriers associated with establishing an alternatively fueled vehicle industry. Many of the start-up costs can be more easily absorbed by public agencies, who can use their market leverage through large fleet purchases of alternatively fueled vehicles.

CURRENT ALTERNATIVELY FUELED VEHICLE STATE INITIATIVES

Several states have taken a leadership role in promoting the alternatively fueled engines through state mandated purchase of or conversion to alternatively fueled engines in state vehicles. The status of each state with respect to use of alternative fuels in state owned and operated fleets is presented in Table 1. The responses in Table 1 were gathered from a questionnaire letter asking the state energy office, in each state, if they had a voluntary or mandatory alternatively fueled vehicle program for state owned vehicles. Alternative fuels were defined as liquified petroleum gas, liquified or compressed natural gas, ethanol or methanal at the 85 percent concentration or higher, and electricity. Reformulated gasoline and gasohol were not considered alternative fuels.

Six states have mandatory alternatively fueled vehicle requirements for procurement of new vehicles. They include California, Colorado, Iowa, Missouri, New Mexico, and Texas. Other states have laws requiring the purchase of vehicle that can burn "clean fuels." Some states have left the interpretation of the meaning of clean fuel to administrative rule making, and others have adopted the clean fuel definition of the 1990 Clean Air Act Amendment. Massachusetts has a demonstration program that is so large in magnitude and involves several state agencies, that it is similar to a mandatory requirement of alternatively fueled vehicles. Several states have enacted laws that are pro-alternative fuel use and require demonstrations or evaluations of alternatively fueled vehicles. However, a significant minority of states (roughly fifteen) have no alternative fuels program and do not anticipate implementing a state alternative fuels program.

CONCLUSIONS

Mandatory purchase of alternatively fueled vehicles by state fleets is a legitimate public policy for promoting a social objective. Government should use its leverage to push the market to provide alternative fuels and alternatively fueled motor vehicles. However, promoting social objectives through public programs is likely to reduce the resources available for other programs. Thus, if public agencies must partially absorb the start-up costs of making alternatively fueled vehicles commercially available and increasing the supply and distribution of alternative fuels, then fewer resources will be available to achieve other agency missions.

Several states have taken the initiative to demonstrate alternatively fueled vehicles through their state fleets. It appears that states are advancing agendas which include alternatively fueled vehicle requirements for state fleets. A recent (Spring, 1992) survey of state legislatures found that clean fuel and alternative fuel issues were on the agendas of 33 state legislatures.(*10*) Through the results presented in this paper, it is clear that more states are very likely to adopt alternatively fueled vehicle requirements to help achieve environmental and national security social objective.

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Table I Status of State Vehicle Alternative Fuel Programs

Alabama. No alternatively fueled vehicle requirements. CNG demonstration program with the University of Alabama and state fleet.

Alaska. No alternatively fueled vehicle requirements. Small demonstration program in Fairbanks. No plans for the future.

Arizona. No alternatively fueled vehicle requirements. Evaluating alternative fueled vehicles for potential use.

Arkansas. No alternatively fueled vehicle requirements. Legislation will be considering requirements in next year's session.

California. State law enacted in 1989 requires that at least 25% of all newly acquired state vehicles have clean-fuel capabilities.

Colorado. State legislature established goals for alternative fueled state vehicles, 10% of state purchased or leased new vehicles during fiscal year 1991-92, 20% in 1992-93, 30% in 1993-94, and 40% in 1994-95. Alternative fueled vehicle must be powered by CNG, E-85, M-85, LPG, and electricity.

Connecticut. No alternatively fueled vehicle requirements. Currently member of coalition of northeastern governors exploring alternative fuel options.

Delaware. No alternatively fueled vehicle requirements. Small demonstration program.

Florida. No alternatively fueled vehicle requirements. Several demonstrations. Executive order requiring state agencies to plan for the use of alternatively fueled vehicles in fleet operation in non-attainment areas. Legislation requiring use of alternative fueled vehicles in all state fleet vehicles is under consideration.

Georgia. No alternatively fueled vehicle requirements. Some demonstrations.

Hawaii. No alternatively fueled vehicle requirements. Evaluating the use of alternative fuels.

Idaho. No alternatively fueled vehicle requirements. Evaluating the use of alternative fuels.

Illinois. No alternatively fueled vehicle requirements. Legislation for mandatory purchase of alternatively fueled state fleet vehicles is being considered.

Indiana. No alternatively fueled vehicle requirements. Several state demonstrations and legislature is considering the issue of alternative fuel use.

Iowa. State law requires beginning July 1, 1992 that 5% of the new vehicles purchased by state agencies are alternatively fueled or flexible fueled and 10% beginning July 1, 1994.

Kansas. No alternatively fueled vehicle requirements. Some demonstration programs.

Kentucky. No alternatively fueled vehicle requirements. Some demonstration programs.

Louisiana. State law requires that 30% of the state vehicles are alternatively fueled by September 1, 1994, 50% by September 1, 1996. However, the definition of alternative fuel includes all fuels meeting CAA clean fuel standards (e.g., reformulated gasoline and clean diesel). Has studied options and is considering incentives for conversion to CNG.

Maine. No alternatively fueled vehicle requirements. No plans for a program in the future.

Maryland. No alternatively fueled vehicle requirements. No plans for a program in the future.

Massachusetts. In the process of demonstrating alternatively fueled vehicles with an 8,400 vehicle fleet distributed throughout four state agencies.

Michigan. No alternatively fueled vehicle requirements. Plans are in embryonic stages.

Minnesota. No alternatively fueled vehicle requirements. No plans for a program in the future.

Mississippi. No alternatively fueled vehicle requirements. No plans for a program in the future.

Missouri. State law requires both an increased fuel economy and the mandatory use of alternatively fueled vehicles. It requires that 10% of the fleets of all state agencies be alternatively fueled by July 1, 1996, 30% by July 1, 1998, and 50% by July 1, 2000.

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Table I Status of State Vehicle Alternative Fuel Programs (Cont.)

Montana. No alternatively fueled vehicle requirements. Currently evaluating options.

Nebraska. No alternatively fueled vehicle requirements. No plans for a program in the future.

Nevada. No alternatively fueled vehicle requirements. No plans for a program in the future. Small demonstration program.

New Hampshire. No alternatively fueled vehicle requirements. No plans for a program in the future.

New Jersey. No alternatively fueled vehicle requirements. No plans for a program but expect state level action.

New Mexico. State law mandates the use of alternatively fueled vehicles. It requires that the state fleet shall "convert" 30% of newly purchased vehicles to alternative fuel by mid-1993 and 60% by mid-1994.

New York. Demonstration program but no alternatively fueled vehicle requirement. Legislature is presently considering a bill to ramp-up to all new vehicles being alternatively fueled by 2002.

North Carolina. No alternatively fueled vehicle requirements. Currently evaluating options.

North Dakota. No alternatively fueled vehicle requirements. No plans for a program in the future.

Ohio. No alternatively fueled vehicle requirements. No plans for a program in the future.

Oklahoma. No alternatively fueled vehicle requirements. Extensive voluntary program features zero interest loans for governmental vehicle conversions and fueling facility construction.

Oregon. No alternatively fueled vehicle requirements. Voluntary program and demonstration program.

Pennsylvania. No alternatively fueled vehicle requirements. Voluntary program and demonstration program.

Rhode Island. No alternatively fueled vehicle requirements. Voluntary program and small demonstration program.

South Carolina. No alternatively fueled vehicle requirements. Expected to evaluate alternative fuel options.

South Dakota. No alternatively fueled vehicle requirements. A small demonstration program.

Tennessee. No alternatively fueled vehicles requirements. No plans for a program in the future.

Texas. State law requires that beginning September 1, 1991 state agencies may purchase or lease motor vehicles which are capable of using alternative fuels, by September 1, 1994 30% of the fleet must be alternatively fueled and by September 1, 1996, 50% and by September 1, 1998, 90%.

Utah. No alternatively fueled vehicle requirements. A small demonstration program.

Vermont. No alternatively fueled vehicle requirements. Expected to evaluate options.

Virginia. No alternatively fueled vehicle requirements. A large demonstration program.

Washington. State law requires that starting in 1993, 30% of all state vehicles purchased must be clean fueled. State is currently evaluating the definition of clean fueled.

West Virginia. No alternatively fueled vehicle requirements. A large demonstration and evaluation program.

Wisconsin. No alternatively fueled vehicle requirements. A large demonstration and evaluation program.

Wyoming. No alternatively fueled vehicle requirements. No plans for a program in the future.