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Testimony

Before the Committee on Finance,  
U.S. Senate

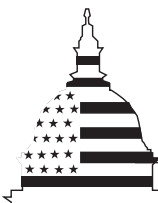
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**ALTERNATIVE MOTOR  
FUELS AND VEHICLES**

**Impact on the  
Transportation Sector**

Statement of Jim Wells, Director, Natural Resources and  
Environment



**G A O**

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Mr. Chairman and Members of the Committee:

We are pleased to be here to discuss alternative motor fuels and vehicles and related tax incentives. As you know, the transportation sector accounts for the bulk of the petroleum consumption in our nation, currently representing about two thirds of total petroleum use and roughly a quarter of our total energy consumption. Each day, vehicles in the United States consume about 10 million barrels of petroleum fuels, primarily gasoline and diesel. According to projections made by the Energy Information Administration (EIA), this figure will rise to about 15 million barrels per day by 2010, much of which will be met by importing oil. This trend has long been a source of national concern.

Partly to address this concern, a number of measures have been taken over the past 25 years either to reduce petroleum consumption or to increase fuel diversity in the transportation sector, including tax incentives, mandates for alternative fuel vehicles, and laws to promote automobile fuel efficiency.<sup>1</sup> In 1992, Congress passed the Energy Policy Act (EPACT) which, among other things, sought to replace at least 10 percent of the projected petroleum fuels consumed by Light Duty Vehicles in 2000 and 30 percent in 2010 with alternative fuels—such as ethanol, methanol, liquefied petroleum gas, compressed natural gas, liquefied natural gas, and electricity. To achieve these goals, Congress has established federal tax deductions and credits aimed at encouraging the purchase of alternative fuel vehicles and use of alternative fuels. Federal agencies, state governments, and private consumers have purchased an increasing number of alternative fuel vehicles. Despite these efforts, alternative fuel use in the transportation sector remains very small.

Recently, GAO has issued several reports examining, among other things, federal programs to promote alternative fuel vehicles and alternative fuel use in the transportation sector.<sup>2</sup> My testimony today, which is based on

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<sup>1</sup> Some of the other steps that have been taken to reduce petroleum consumption in the transportation sector include encouraging the use of mass transit and high-occupancy vehicles (e.g., carpooling).

<sup>2</sup> *Tax Incentives for Petroleum and Ethanol Fuels* (GAO/RCED-00-301R, Sept. 25, 2000), *Energy Policy Act of 1992: Limited Progress in Acquiring Alternative Vehicles and Reaching Fuel Goals* (GAO/RCED-00-59, Feb. 11, 2000), *Energy Policy Act: Including Propane as an Alternative Motor Fuel Will Have Little Impact on Propane Market* (GAO/RCED-98-260, Sept. 24, 1998), *Tax Policy: Effects of the Alcohol Tax Incentives* (GAO/GGD-97-41, Mar. 6, 1997).

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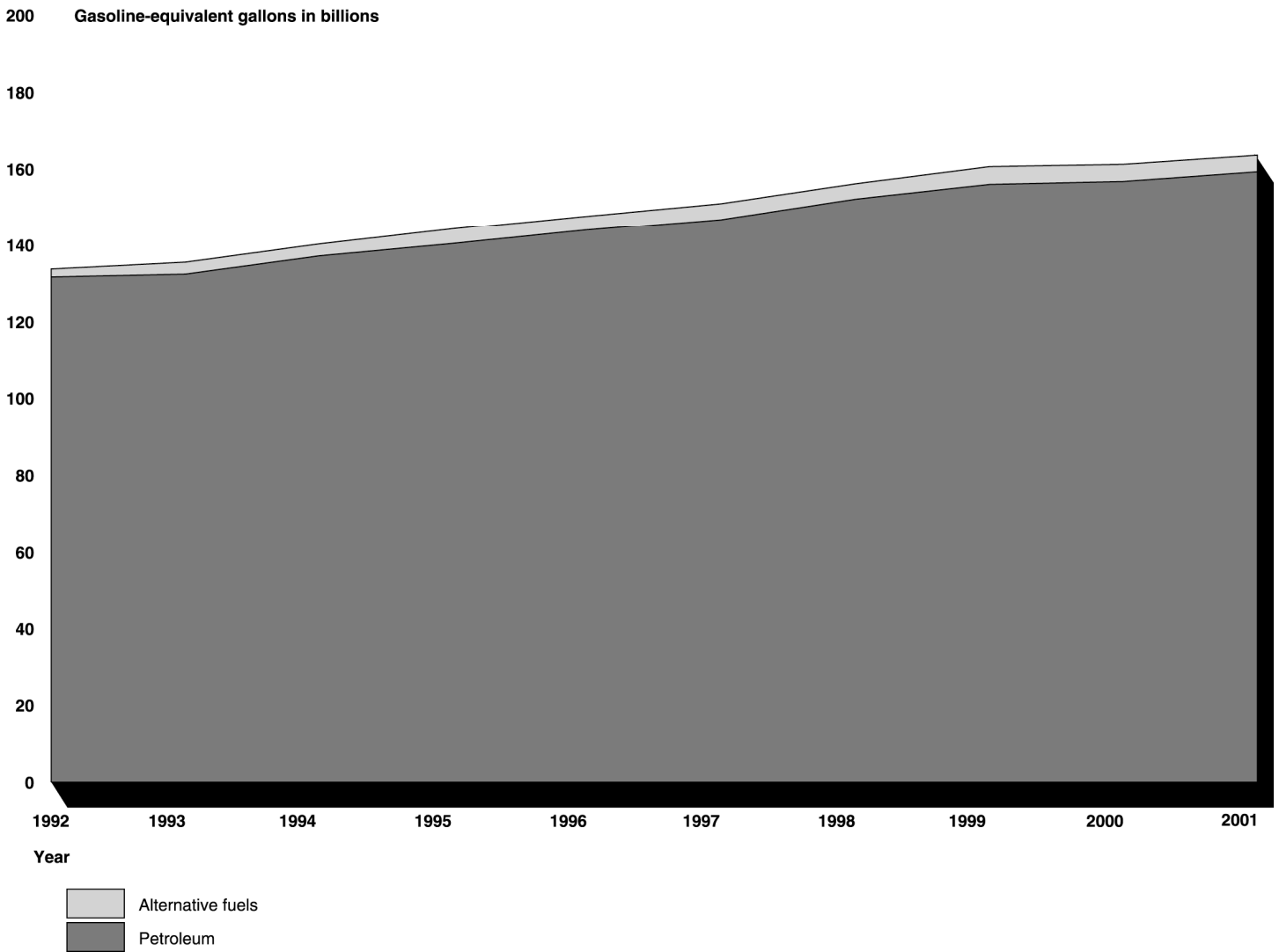
these reports, specifically discusses the extent of alternative fuel vehicle acquisition and fuel use, some of the barriers inhibiting greater use of alternative fuels and vehicles, and the federal tax incentives used to promote the use of alternative motor fuels and vehicles.

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## Purchases of Alternative Fuel Vehicles and the Use of Alternative Motor Fuels Remain Limited

Limited progress has been made in increasing the numbers of alternative fuel vehicles in the national vehicle fleet and the use of alternative fuels, relative to conventional fuel vehicles and gasoline and diesel. For example, according to EIA's estimates, alternative fuel vehicles accounted for about 1 million or 0.4 percent of all vehicles in the United States in 1999. EIA also estimates that alternative fuels accounted for the equivalent of about 354 million gallons of gasoline or about 0.2 percent of total vehicle fuels consumption in 2000. When alternative fuels that are used as oxygenates in gasoline, such as ethanol and MTBE are added, the total increases to about 4.5 billion gallons or less than 3 percent of the total motor fuels consumption—about 162 billion gasoline-equivalent gallons—in 2000. As shown in figure 1 below, the consumption of alternative fuels has increased in absolute magnitude since the early 1990s, but its relative share in total motor fuel consumption has remained very small.

**Figure 1: Trends in Motor Vehicle Consumption of Petroleum and Alternative Fuels**



Note 1: Alternative fuels include ethanol and MTBE used as oxygenates in gasoline.

Note 2: Year 2001 data are forecasts.

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## Fundamental Economic Impediments Hinder the Acquisition and Use of Alternative Fuel Vehicles and Alternative Motor Fuels

A number of barriers have impeded the American public's acquisition of alternative fuel vehicles and use of alternative motor fuels. The most critical of these are:

- The relatively low price of oil—Even today's gasoline prices are not high enough to induce many people to give up their conventional gasoline and diesel automobiles in favor of alternative fuel vehicles and fuels. For example, in an analysis performed last year for GAO, EIA estimated that doubling the price for crude oil (then \$20/barrel) would not significantly increase the market share for alternative fuel vehicles. Moreover, an entire refueling infrastructure and auto-manufacturing system dedicated to this fuel has been established. This system has become so developed and entrenched over time that even if the price of gasoline rose above the price of an alternative fuel, many consumers would be reluctant to switch to alternative fuel vehicles and alternative fuels.
- Insufficient availability of alternative fuel refueling infrastructure—Likewise, the limited number of refueling stations for alternative fuels, compared with gasoline and diesel stations, has been a major impediment to using alternative motor fuels and vehicles. For example, in 1999, there were only about 6,000 refueling stations for alternative fuels in the United States, compared with over 180,000 conventional fuel refueling stations. The federal and state officials that administer vehicle fleets told us last year that the lack of adequate refueling infrastructure represents the biggest impediment to using alternative fuel vehicles. A chicken- and-egg situation prevails here. Because of the insufficient number of alternative fuel vehicles in the nation's vehicle fleet, owners of gasoline refueling stations are reluctant to provide refueling facilities for them. Adding to this reluctance, the high cost of providing some alternative fuels at existing refueling gasoline stations reduces station owners' willingness to provide the facilities. For example, the costs to build facilities that provide compressed natural gas cost about \$300,000—significantly more than the cost of refueling stations for gasoline, ethanol, or methanol. At the same time, the scarcity of alternative fuel refueling stations makes it less convenient to acquire alternative fuels, which in turn deters the general public from buying the vehicles that use them.
- The relatively higher cost of certain alternative fuel vehicles—According to most stakeholders we contacted last year, on average, alternative fuel vehicles cost more than conventional vehicles which reduces the incentive for their purchase, although these costs vary by type of vehicle. For example, a vehicle that runs on compressed natural gas generally costs from \$3,000 to \$5,000 more than the conventional version of the same

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vehicle. In addition, last year, we reported that the price of an electric-powered vehicle generally ranges from the low \$30,000s to the mid-\$40,000s, according to the Electric Vehicle Association of the Americas. Because of the high purchase price, most of the estimated 3,500 electric vehicles in operation were identified as having been leased. The costs of alternative fuel vehicles are often higher than vehicles that run on conventional fuels because consumer demand for them is not great enough to achieve economies of scale in their production.

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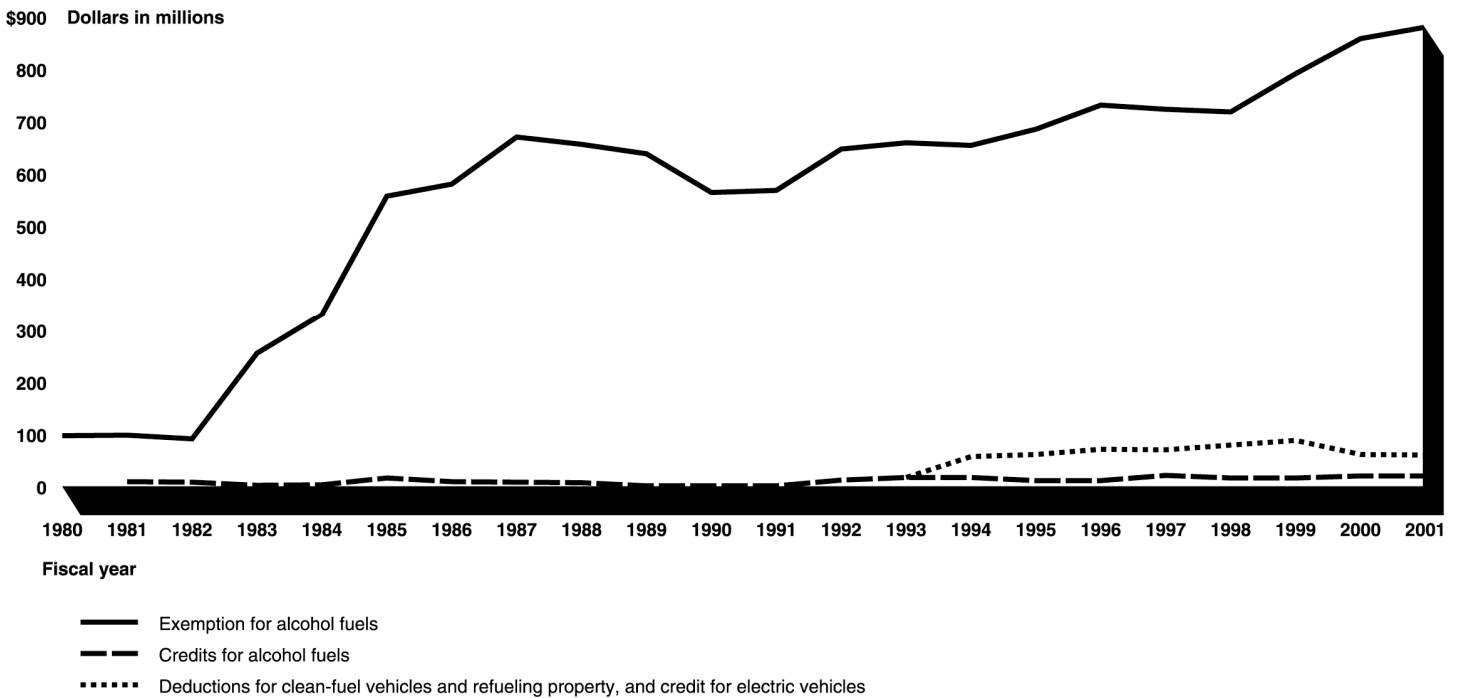
## Tax Incentives Promote the Acquisition and Use of Alternative Fuel Vehicles and Alternative Motor Fuels

To promote increased use of alternative fuels and vehicles in the transportation sector, Congress has supported and enacted certain tax incentives, including federal tax exemptions, credits and deductions. Based on U.S. Treasury Department's estimates, since the late 1970s, these tax incentives have resulted in forgone tax revenues of about \$13 billion for alcohol fuels and about \$600 million for clean-burning fuels and electric vehicles, in year-2001 dollars.<sup>3</sup> These amounts comprise only a small share of the total transportation tax incentives over the years (much of which has been devoted to conventional fuels) but, as figure 2 shows, they have risen fairly steadily over time.

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<sup>3</sup> Qualifying clean burning fuels include natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, or other fuels composed 85 percent of methanol, ethanol, any other alcohol, ether, or any combination of these.

**Figure 2: Trends in Tax Revenue Forgone Through Tax Incentives for Alternative Fuels**



Note: Revenues are in 2001 dollars.

In conclusion, so far, based on our studies and EIA's statistics, alternative fuels and vehicles have not made much of a dent in the conventional fuel and vehicle dominance of the U.S. vehicle fleet, primarily because of the fundamental economic obstacles just discussed. As we reported in our February 2000 report, any significant increase in the use of alternative motor fuels and vehicles by the general public will depend on two main factors: (1) a dramatic and sustained increase in the price of gasoline and (2) very large incentives, far above the current levels, to reduce the cost of using alternative fuels and vehicles. Depending on what happens to conventional fuel prices, these incentives would likely need to be maintained for sometime—at least until the number of vehicles reaches the level necessary to support an economically sustainable infrastructure.

Mr. Chairman, this concludes my prepared remarks. We would be pleased to answer any questions you or any other member of the Committee may have.

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**Contact and  
Acknowledgments**

For further information, please contact Jim Wells at (202) 512-3841. Individuals making key contributions to this testimony include Godwin Agbara, Anne Stevens, and Daren Sweeney.



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