



## Current Status of Alternative Motor Fuels Act (AMFA) Light-Duty Fleet

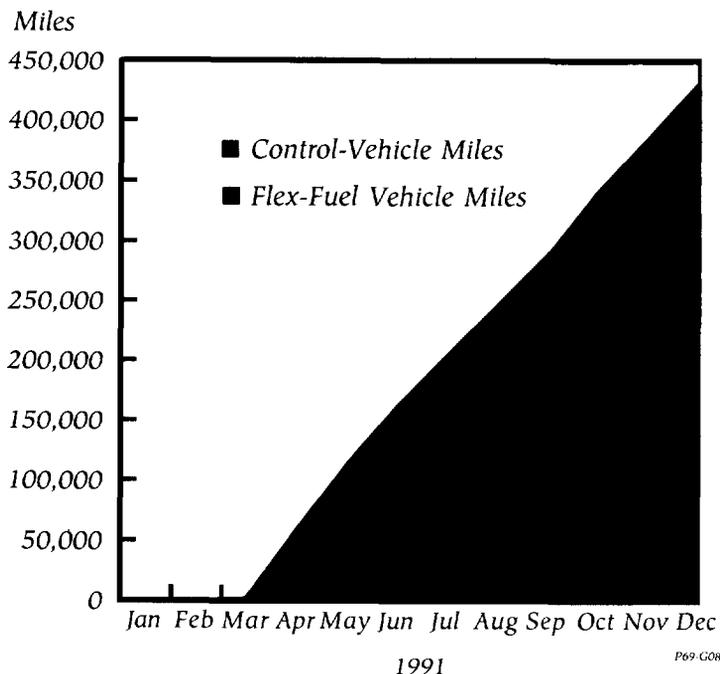
The AMFA-sponsored Light-Duty Vehicle Program operating within the federal fleet currently consists of 65 M-85 (85% methanol and 15% unleaded gasoline) flexible-fuel vehicles and 16 control vehicles operating in four geographical locations: Washington, DC; Detroit, MI; and Los Angeles and San Diego, CA.

The vehicles are distributed among 32 government agencies and consist of 1991 Ford Taurus and Chevrolet Lumina flexible-fuel models. Currently one Ford and one Chevrolet dealership at each site performs all necessary maintenance. Methanol fuel is supplied to the four sites by five oil companies: ARCO, Chevron, Mobil, Shell, and SUNOCO.

In addition to these vehicles, 2500 M-85 flexible-fuel Chrysler Acclaims, 600 CNG Chevrolet C-20 pickup trucks, 25 E-85 (85% ethanol and 15% unleaded gasoline) variable-fuel Chevrolet Luminas, and 75 CNG Chrysler vans have been purchased and are awaiting delivery to the federal fleet.

The current operating fleet has accumulated more than 400,000 miles through the end of 1991. The following graph summarizes the miles accumulated since the beginning of the program.

### Total Miles Accumulated by the Federal Alternative-Fuel Fleet

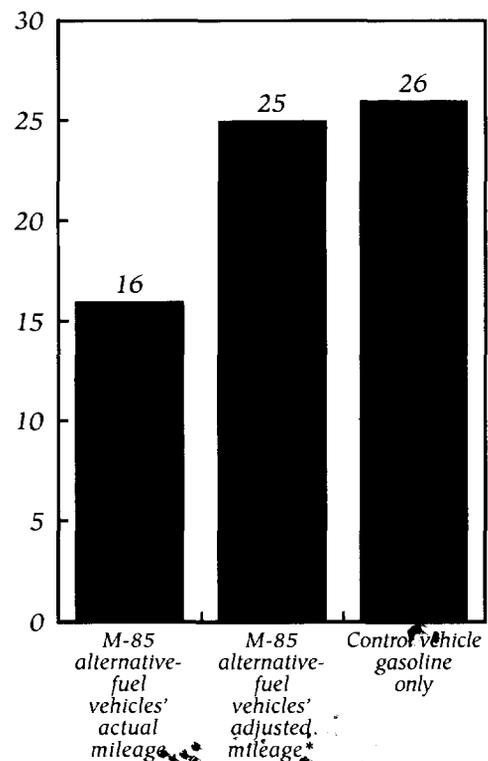


Through the end of calendar year 1991, the M-85 flexible-fuel vehicles in the light-duty fleet consumed more than 15,000 gallons of M-85 fuel. This accounted for approximately 87% of the fuel consumed by these vehicles, the remainder being unleaded gasoline.

The following figure illustrates the driver-reported, in-use fuel economy for alternative-fuel vehicles and control vehicles fueled by gasoline. The fuel economy for alternative-fuel vehicles is given both as miles per actual gallon and miles per equivalent gallons of gasoline. The difference indicated between the adjusted M-85 alternative-fuel vehicles' fuel economy and that of the gasoline-only control vehicle is not statistically significant considering the variability in the driver-reported data.

### Federal Alternative-Fuel Fleet Fuel Economy

Miles per gallon



\*Adjustment to equivalent gallon of gasoline based on 87% M-85 and 13% gasoline consumed

The first phase of emissions and dynamometer fuel economy testing at the Environmental Protection Agency's (EPA) Emissions Laboratory in Ann Arbor, MI, has been completed. The data are the first in a series of tests to be conducted on these vehicles at various mileage levels throughout the life of the vehicles. Results for all cars tested were well below current EPA federal emissions standards.

## Legislation

On November 1, 1991, the comprehensive "National Energy Security Act of 1991," introduced by Senators Johnston (D-LA) and Wallop (R-WY), was defeated by a filibuster before it reached the Senate floor for a vote. The bill, re-introduced this session as S.2166, was passed by the full Senate February 19 after controversial provisions regarding drilling for oil in the Arctic National Wildlife Refuge and the establishment of Corporate Average Fuel Economy (CAFE) standards were deleted.

On the House side, Rep. Sharp (D-IN) introduced a series of energy bills that were consolidated into the "Comprehensive National Energy Policy Act" (H.R.776). This omnibus bill has passed both Chairman Sharp's Subcommittee on Energy and Power and the full Energy and Commerce Committee. It is expected to be merged with other House Committee bills before it is taken to the House floor for a vote this May.

Regarding alternative fuels, the House bill contains a provision that would expand AMFA to include LPG, hydrogen, and electricity in addition to the act's previous stipulation of demonstrating natural gas and alcohol fuels. These fuels will be eligible for both the federal fleet program and CAFE credits under AMFA. These two comprehensive energy bills will be deliberated in a House-Senate conference this summer, where members are expected to work out compromises for comprehensive national energy legislation.

## Around the Country

### Transportable Heavy-Duty Vehicle Emissions Testing Laboratory

Stringent emissions legislation and fluctuating oil prices have caused heavy-duty bus and truck engine manufacturers to develop heavy-duty engines that employ alternative fuels. This has accelerated the need to examine the emissions from heavy-duty vehicles operating on natural gas, methanol, and ethanol. The Transportable Heavy-Duty Vehicle Emissions Testing Laboratory was not meant to replace EPA's test procedures for heavy-duty engines, but rather to provide a test that measures changes from an established baseline.

In the past it has been necessary to remove a vehicle's engine, transporting it to an emissions test site for diagnosis. This resulted in substantial downtime for the vehicle. To alleviate this situation, an emissions testing system has been developed and is currently being operated by the Mechanical and Aerospace Engineering Department at West Virginia University. It can be transported to the vehicle's routine maintenance location. This test laboratory does not require actual engine removal from the chassis.

The vehicle to be tested is placed on the transportable dynamometer test bed and operated through a transient test cycle, simulating vehicle inertia, road load, and wind drag. The emissions from the vehicle during the test cycle are sampled and analyzed. Measurements will be made of all regulated components normally present

in the exhaust emissions including carbon monoxide, carbon dioxide, oxides of nitrogen, methane, methanol, formaldehyde, and particulate matter.

The data obtained from the laboratory are being incorporated into the AFDC and will be available to users. For more information on the Transportable Laboratory, please call Don Lyons at (304) 293-3111, fax (304) 293-6689, or write:

Dept. of Mechanical and Aerospace Engineering  
West Virginia University  
Morgantown, WV 26506

### American Trucking Association Foundation (ATAF)

ATAF will play an important role in coordinating DOE's Heavy-Duty Truck Program, helping to evaluate alternative fuels' utilization by trucks. They are tracking more than 90 alternative-fuel heavy-duty vehicles that are currently participating in AMFA demonstration projects or are being operated in fleets.

The goal of the ATAF project is to develop and implement a comprehensive, three-year data management plan that allows for comparison of different alternative fuels in the same or similar operational conditions. The strategy is to enhance current DOE-funded projects and to encourage new projects in areas not being sufficiently tested.

The data currently being compiled for the AFDC pertain to the operation of 21 methanol, 8 ethanol, 27 CNG, 18 liquefied natural gas (LNG), and 17 LPG heavy-duty trucks.

### South Coast Air Quality Management District (SCAQMD)

As part of the nation's most comprehensive demonstration to date, SCAQMD, in cooperation with DOE and Federal Express, will soon have 113 alternative- and conventional-fuel vehicles operating throughout the Los Angeles basin. Of the vehicles, 86 will operate on alternative fuels (M-85, CNG, LPG, electricity, and reformulated gasoline); the remaining 27 will be control vehicles operating on unleaded gasoline. Information on all vehicles participating in the project will be available to AFDC users.

The data gathered will provide emissions and operational characteristics of each fuel type, such as reliability, performance, engine degradation, and driver acceptance. Results for each type

### **Around the Country (continued)**

of alternative-fuel vehicle will be compared with those of the control vehicles. The demonstration will begin operation in June and continue for 24 months.

### **Urban Mass Transit Administration (UMTA)/Transit Bus Data Collection**

Data from 15 transit bus districts operating 141 alternative-fuel buses are being collected in the AFDC. The alternative fuels include methanol, ethanol, CNG, and LPG; the control buses will operate on diesel fuel.

Battelle/Columbus Laboratory has been collecting bus performance data as part of the UMTA alternative fuels initiative for several years. To date these buses have reported data on more than 5 million revenue-generating miles. The data include information on individual bus fuel economy, maintenance, engine modifications, and safety. These data are available to users of the AFDC.

### **Opportunities for Cooperation**

NREL's Fuels Utilization Program is currently managing several cost-shared projects involving state governments and municipalities to demonstrate the use of alternative fuels in transportation applications. The alternative fuels used in these demonstration projects include methanol, ethanol, and natural gas (both compressed and liquefied). Information from these projects is collected by NREL for use as a basis for comparing and analyzing vehicle performance, fuel economy, emissions, safety, and operating and maintenance costs of alternative-fuel versus conventional-fuel operations.

Currently, projects such as these involve the states of California, New York, and Illinois; the Houston and Denver area transit authorities; county governments in Minnesota; SCAQMD in Los Angeles; the City of New York; and a New York City package delivery company.

In addition, DOE has published a Program Announcement that has been distributed to state energy offices for state/local government participation in cost-shared alternative-fuel school bus projects.

NREL is actively seeking other state and local governmental entities, as well as private organizations, to expand participation in similar cost-shared projects. For additional information, please send details of proposed projects to:

Manager, Fuels Utilization Program  
NREL, Building 15/1  
1617 Cole Blvd.  
Golden, CO 80401-3393

## **Meetings/Conferences**

### **June 1992**

June 15-17, the Windsor Workshop, sponsored by Energy, Mines and Resources/Canada, Ontario Ministry of Energy, and DOE will be held in Toronto, Ontario, at the Holiday Inn Toronto Downtown/City Hall. For more information, please call (416) 822-4111, ext. 515, fax (416) 823-1446, or write:

ORTECH International  
2395 Speakman Drive  
Mississauga, Ontario, Canada  
L5K 1B3

### **September 1992**

September 23-25, the Third IANGV Biannual International Conference and Exhibition on Natural Gas Vehicles will be held in Göteborg, Sweden. For more information, please contact Chairman Mats Ekelund at int + 46 8 7969995, fax int + 46 31 18 24 00, or write:

NGV '92 Conference, Congress  
Box 5222  
S-402 24 Göteborg, Sweden

Published by the  
Alternative Fuels Division of the  
National Renewable  
Energy Laboratory  
1617 Cole Boulevard  
Golden, CO 80401-3393

AFDC Hotline Number:  
1-800-423-1DOE

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Midwest Research Institute for the  
U. S. Department of Energy.