

APPENDIX A

Responses to Questions in *Federal Register* Notice

(A) Questions/Issues Primarily Related to Automobile Manufacturers

1. How and to what extent has the AMFA CAFE incentives program affected manufacturers' decisions to design, manufacture and sell dual fueled alcohol and natural gas powered vehicles and other alternative fuel vehicles (AFVs)?

General Motors: The list of vehicles designed to operate on various alternative fuels is indicative of the need not to prematurely decide on one alternative fuel versus another. Customer needs, technology developments, and especially infrastructure development need to be considered as manufacturers, fuel providers, and consumers look to fuels that can compete with petroleum. In general there are many reasons why GM offered AFVs. CAFE incentives played a major factor for some of the models. However, it is not the exclusive reason. Some programs were driven by fleet purchasers, some by environmental considerations, some by emission mandates, and some by technology advancements. CAFE incentives are playing a role in GM's decision to offer AFVs such as the E85 S-10 and Sonoma pickups and may continue to do so.

Ford: CAFE incentives have been a major factor in Ford's decision to develop and manufacture alternative fuel vehicles in high volume. Early models were used to develop the technology and to examine the issues of bringing AFVs to market. The low volumes prior to 1999 represent the existing market demand for AFVs. If the infrastructure had been more developed, the demand may have been greater. Prior to the 1999 MY, the typical CAFE adjustment attributed to dedicated and dual fuel vehicles was less than 0.05 mpg.

Alliance of Automobile Manufacturers (Alliance): Alliance stated that the incentive program was and still is a major factor for the Alliance member companies' decision to offer AFV and dual fuel vehicles. The association listed models and types of AFVs the manufacturer offered in the U.S. in the 1990's.

DaimlerChrysler: DaimlerChrysler stated that it has demonstrated an interest in AFVs since the early 1990's with dedicated CNG vehicles, M85 FFVs and dedicated LPG vehicles (Canada only). These vehicles were produced to meet an expected demand for AFVs rather than CAFE incentives, but the demand did not materialize as the manufacturer had hoped. An AFV must be produced in large volumes before it will have any significant impact on fuel economy. DaimlerChrysler stated that the only AFV that it has produced in significant volume, impacting CAFE, is the 3.3L E85 minivan. This AFV was produced in MY 1998, and production continues today.

2. What was/is the price differential for offering alcohol and compressed natural gas powered dual fueled vehicles and other AFVs versus conventionally fueled models? Please provide examples of manufacturers' suggested retail price of applicable AFV models versus the retail price of their conventional fuel counterpart models.

General Motors: Pricing of models reflects the popularity of the model, competitive pressures, and manufacturer's cost. For some AFVs, constraints from the market or competition may preclude manufacturers from pricing an AFV model commensurate with its cost.

Ford: For E85 products, consumers have not seen an increase in vehicle price. In the early years, Ford offered an incentive equal to the price premium, but for the high volume Ranger and Taurus, there is no price premium. A price premium does exist for Ford's LPG and NG vehicles, but Ford provides some incentives for some of these vehicles.

Alliance: The Alliance stated that customers have not seen an increase in vehicle price for the E85 dual fuel version of the product. Ford, in the early years, listed the price premium, but then offered incentives equal to the cost of the dual fuel option. The price difference for the MY 2000 E85 Taurus and Ranger is zero (after incentive). There is a price premium for the CNG and LPG bi-fuel cars and trucks and for the dedicated natural gas and LPG vehicles. For DaimlerChrysler, the E85 package is standard equipment on the 3.3L Chrysler Town & Country, Plymouth Voyager, and Dodge Caravan.

DaimlerChrysler: The manufacturer produced three FFVs: 1) 1993-1994 M85 Dodge Spirit/Plymouth Acclaim (no cost option); 2) 1994-1995 M85 Dodge Intrepid (\$125 option); and 3) 1998-present E85 Dodge Caravan, Chrysler Town & Country, and Plymouth Voyager (standard equipment on federal 3.3 L engine—no incremental cost). Daimler Chrysler has not offered any CNG dual-fuel vehicles.

3. Using the response to Question 2, what was/is the "dollar value" of each AMFA qualifying vehicle, defined as the savings generated by avoiding CAFE penalties less the expenses associated with design and manufacturing of these alternative fuel vehicles?

General Motors: Due to market demand for larger vehicles, increased performance, and more options, full-line vehicle manufacturers have found meeting the CAFE standards to be a challenge. No domestic manufacturer has paid CAFE fines. Manufacturers have taken extraordinary steps to meet CAFE standards while at the same time addressing the needs of their customers, shareholders, and environmental goals. The "dollar value" for CAFE penalty avoidance is only meaningful in situations where a manufacturer is below the CAFE standard. In this situation the value of avoiding a CAFE fine is simply the MY production multiplied by \$5.50 for each tenth of a mpg it is below the standard.

Ford: Ford has never had to pay penalties for a CAFE shortfall. This has been accomplished through a variety of measures to maintain compliance. Utilizing CAFE incentives for dual fuel vehicles is just one of many methods available to Ford as it determines how best to comply with the CAFE standards. It is nearly impossible to apply a dollar value to each AMFA vehicle in

terms of the savings generated by avoiding CAFE penalties.

Alliance: The coalition did not respond because of confidentiality issues. However, it stated that the dual fuel vehicles production is consistent with the Congressional directive/incentive and is not a substitute for other actions to reduce reliance on petroleum use. The relationship of CAFE credits for dual fuel vehicles, for a CAFE compliance version, other than means of reducing petroleum consumption was addressed by Congress. Alliance did not state what actions they would have been taken absence the CAFE statute provision.

DaimlerChrysler: The manufacturer views using the CAFE credit incentives as a way to comply with the statute. DaimlerChrysler cannot say what actions they would have taken without this statutory incentive. DaimlerChrysler stated that the Congress addressed the issue of CAFE credits as substitutes to improve fuel efficiency by capping the availability of such credits.

4. What was/is the cost differential (on a per vehicle basis) to produce alcohol and compressed natural gas powered dual-fuel vehicles and other AFVs versus conventionally fueled models?

General Motors: Due to market demand for larger vehicles, increased performance, and more options, full-line vehicle manufacturers have found meeting the CAFE standards to be a challenge. No domestic manufacturer has paid CAFE fines. Manufacturers have taken extraordinary steps to meet CAFE standards while at the same time addressing the needs of their customers, shareholders, and environmental goals. The “dollar value” for CAFE penalty avoidance is only meaningful in situations where a manufacturer is below the CAFE standard. In this situation the value of avoiding a CAFE fine is simply the MY production multiplied by \$5.50 for each tenth of a mpg it is below the standard.

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Alliance: The coalition did not response because of confidentiality issues.

DaimlerChrysler: The manufacturer stated that it has exerted efforts on its alcohol vehicle program. Early M85 vehicles were equipped with a “Smart Sensor” that detected the methanol concentration supplied to the fuel injector. The computer optimized engine controls, the spark advance, fuel injection, etc. to give peak efficient fuel economy and low emissions. For 1998, computers advanced technology allowed its engineers to remove the “Smart Sensor” and perform the same task using input from the oxygen sensor and complex algorithms.

5. What new technologies have been specifically developed and implemented in order to accommodate the use of methanol/ethanol or natural gas to qualify for the fuel economy calculation benefit? What is the attributed cost of each of the technologies?

General Motors: GM has spent significant resources and manpower to develop AFVs to the level they are today. Technologies were developed so as to make operation on the AFV as transparent to the operator as possible. The details concerning specific technologies involving the development of AFVs are deemed “Company Confidential.”

Ford: The new technologies listed by the “Alliance” are common to the technologies Ford developed and implemented to manufacture and produce vehicles capable of running on alternative fuels. These include fuel sensors, improved evaporative emission systems, engine improvements, improved materials, cold start enhancement, fuel handling systems, and improved pressure regulators and injectors. A number of new technologies were developed to provide outstanding emissions, safety and performance from Ford dedicated natural gas vehicles. Ford does not have figures for the development cost of these technologies individually, but throughout the years, Ford has spent more than one billion dollars on the development of AFVs.

Alliance: The Alliance stated that, in the beginning years of the incentive program, its member companies spent time and resources to develop technologies that helped in using alternative fuels in vehicles. The technological advances include materials used in the vehicles’ fuel system to reduce evaporative emissions and corrosion caused by some fuels. Special fuel sensors were developed to aid in maintaining performance and to make the transition from gasoline to the alternative fuel seamless in operating the vehicle and the performance. The Alliance did not discuss cost.

DaimlerChrysler: The manufacturer stated that the MYs 1993-1995 FFVs were equipped with a DaimlerChrysler designed and patented fuel sensor (**Smart Sensor**). DaimlerChrysler developed patented software that removed the sensor and reduced the cost of the system. By using alcohol fuels, the fuel system components must be upgraded to stainless steel.

6. Have there been performance or durability problems associated with operating vehicles on methanol/ethanol or natural gas? If yes, please specify the nature (e.g., materials degradation due to incompatibility of oxygenated fuels, cold start and driveability issues, etc) and extent of the problems.

General Motors: GM helped to develop a new test method to characterize ethanol’s corrosivity due to strong acid impurities. Vehicle fuel system tests showed that about 25% of ethanol fuels surveyed had a pH level low enough to cause premature fuel pump, fuel injector, and cylinder bore failures. The automotive, ethanol, and oil industry worked together to develop ASTM specifications to control the pH ethanol fuels which were adapted in 1999.

Many other technical issues had to be overcome in order to produce an AFV that would be used in a variety of situations. Now that many of these issues have been dealt with, large volume production has begun. Auto manufacturers are supplying AFVs in quantities sufficient to accelerate infrastructure development, and now it is time to boost the alternative fuel

infrastructure. It would be ill-advised timing to withdraw incentives to manufacture and produce these vehicles.

Ford: Ford has had to overcome similar performance and durability problems as other Alliance members. Because of the corrosive nature of ethanol, Ford continues to work through the durability issues caused by the fuel. Ford has been and is working with various fuel providers on fuel quality. Fuel quality remains a big issue that leads to customer complaints.

Ford is also aware of fuel quality issues in commercially available NG and LPG. These fuels are not as tightly regulated as gasoline fuel quality, and there has been a wider variation in fuel quality experienced in the field. Poor fuel quality has led to instances of fuel system performance degradation. It is clear that high quality fuels are necessary to maintain the performance of AFVs to maintain customer satisfaction and ensure that all of the benefits of AFVs are achieved.

Alliance: The Alliance stated, in the beginning, manufacturers experienced challenges that were inherent with developing AFVs, causing low production. Some solutions included material upgrades, cold start enhancement, unique piston rings, plugs, and injectors, and actions that addressed M85, E85, and LPG fuel quality.

DaimlerChrysler: The manufacturer stated that using alcohol can cause cold start problems. They recommend using 70% alcohol or less at temperature below 32°F. A poor fuel quality and incompatible gasoline additives have been sources of performance problems.

7. What efforts have manufacturers taken, or plan to take, to market dual fueled or other AFVs to fleet operators? What information relative to performance or durability has been or will be provided by the fleet operators?

General Motors: GM has several initiatives to support marketing of alternative fuel vehicles to fleet buyers.

- i. An alternative fuel product brochure for 2001 MY products.
- ii. An alternative fuel product brochure for 2000 MY has been developed for fleet buyers.
- iii. Arizona Special Tax Incentive Flyer to increase awareness about the tax benefits for AFVs.
- iv. Propane school bus flyer.
- v. 1999 Alternative fuels and EV events.

Ford: Ford's first alternative fuel vehicle customers were fleet operators.

To support fleet mandates and the Clean Fuel Fleet Program, Ford has produced dedicated or dual fuel versions of the Contour, F-Series Trucks, Superduty Trucks, Econolines, Taurus, Crown Victoria, Explorer, and Ranger.

Ford supplies fleet buyers with the Ford Fleet Vehicle Guide. In addition, brochures detailing vehicle specifications and performance characteristics are available at trade shows.

Ford also maintains a fleet web site. The site is <http://www.fleet.ford.com>.

Alliance: The Alliance jointly answered questions 7 and 8. Alliance stated that marketing, education, information, and incentives have been the tools used by its members to give owners and customers information and to support fleet operators.

DaimlerChrysler The manufacturer stated that the fleet market has been the focus of its AFV sales, except the E85 minivans. DaimlerChrysler has a group focusing on AFV fleet sale, developing newsletters and brochures, and advertising material for the fleet.

8. What initiatives have manufacturers and dealers taken to educate consumers about vehicles' capability to operate on an alternative fuel. Please provide any available owner's manual information, dealer bulletins, or other point of sale literature that is relevant.

General Motors: There may be early signs that the increased number of alternative fueled vehicles and fueling stations is having an effect in some areas. For example, Minneapolis reports that in January 11,000 gallons were sold at 17 reporting station which is double last year's level.

The Department of Defense announced a new alternative fuel vehicle service station next to the Pentagon. The E85 station will service federal AFVs powered is expecting an estimated 200,000 gallons of ethanol fuel to be pumped in the first year alone.

President Clinton recently issued an executive order to reduce their fleet's petroleum consumption by at least 20 percent by the end of fiscal year 2005. The new AFV station is the "first of seven gas stations offering those fuels [in the Washington, D.C. metropolitan area.]"

Ford: Education is a key factor in improving consumer awareness and acceptance of alternative fuel vehicles.

Highlights

- Ford highlights our alternative fuel vehicles in many national, state and local press conferences, public events, and gatherings.
- Ford Motor Company introduced the Road and Leaf logo. It is a corporate identity symbol that represents to consumers Ford's environmental commitment and alternative fuel leadership.
- Ford provides brochures of Ford alternative fuel vehicles at dealerships, exhibits, and conferences and conventions throughout the U. S.
- Ford gave coupons worth \$40 towards the purchase of E85 fuel. To date, Ford has distributed more than \$100,000 worth of free ethanol coupons to qualified FFV purchasers in Minneapolis/St. Paul and Chicago.

- To increase public awareness about alternative fuels, Ford has placed alternative fuel vehicles in places that are visible to the public.
- To promote natural gas, Ford has held high-profile natural gas taxi delivery events for Regents Cab of San Francisco, American Livery and Taxi of Orange County, Barwood Cab of Washington, D. C., and Beck's Taxi of Toronto.

DaimlerChrysler: The manufacturer worked with DOE on Clean Cities Program, education programs, and other programs enacted under the Energy Policy Act of 1992. Presently, DaimlerChrysler is participating in Minneapolis, MN and other cities where DOE is involved in establishing an infrastructure. Sales brochures and point of sale information are provided in areas where E85 is available.

9. What are the auto manufacturers' plans for MY 2001 through MY 2008 relative to the AMFA CAFE incentive program? How would the decision to either extend the maximum allowable mileage increase at 0.9 mpg as prescribed by AMFA, or modify it otherwise, including removal of any maximum allowable increase limit, effect manufacturers' product strategy? Conversely, what affect would a decision not to extend the provision beyond MY 2004 have on manufacturers' product plans?

General Motors: GM's response to this question is considered "company confidential." To be a successful program requires contributions from the automakers to produce these vehicles, from fuel producers to supply the fuel, and the government to create incentives to consumers, manufacturers, and fuel providers to bridge any gap in the market forces.

Ford: The extension of the CAFE credits for dual fuel vehicles will be a major factor in Ford's decision to continue offering dual fuel vehicles in the volumes that are being produced today with the 3.0L Taurus and Ranger.

If the incentive is not extended, Ford, like the other manufacturers will be guided by customer demands and offer only those alternative fuel vehicles that are in demand.

Alliance: The Alliance stated that extending the CAFE credits for dual fuel vehicles will be a major factor for manufacturer to continue offering dual fuel vehicles in high volumes that are being produced today. Manufacturers will be guided by market pull to offer alternative fuel vehicles that consumers require.

The Alliance did not provide future product plans because of confidentiality.

DaimlerChrysler: The manufacturer stated that, by extending the CAFE credit, it would consider expanding high volume E85 programs to other models to increase CAFE. While the manufacturer will continue to pursue AFVs, CAFE credits provide an incentive to produce high volume FFV products. The absence of the CAFE credit beyond MY 2004, DaimlerChrysler

stated, would be a disincentive to the continuing wide scale production of AFVs, given the additional engineering and costs associated with such products.

(B) Issues Primarily Related to Fuel Producers, Distributors and Retailers

1. How has the AMFA CAFE program affected the fuel industry's production and sales of alternative fuels from 1993 through 2000?

General Motors: It is too early to judge the impact of AMFA's CAFE incentives on the fuel industry's sales of fuels and development of infrastructure. Large volume program delay has likely contributed to the slow development of infrastructure. However, the AMFA provisions so far should be viewed as a success - they are contributing to AFV production. To withdraw the CAFE incentives could significantly undercut the development of AFVs.

Renewable Fuels Association (RFA): In 1999, the total ethanol fuel production was slightly higher than 1.47 billion gallons. Demand for E85 has largely come from state and other fleets to meet requirements of the EPAct of 1992. Fuel rebates and funds for E85 refueling sites have also been offered by some auto manufacturers.

Alliance: The association stated that, in the past two years, alternative fuel vehicles have increased to a number sufficient for establishing additional refueling stations in some areas.

DaimlerChrysler: The manufacturer jointly responded to questions 1 and 2. Because of manufacturers producing high volume E85 vehicles, the DOE, the manufacturers, and the ethanol industry have developed E85 model cities. The large volume of E85 FFVs led to forming the NEVC dedicated to advancing ethanol vehicles and their production.

National Ethanol Vehicle Coalition (NEVC): The coalition stated the program was responsible for the introduction and growth of the E85 vehicle production. The program first began affecting the ethanol industry in spring 1992, with GM offering a 1992-1993 Lumina modified to operate as a flexible fuel vehicle. It had limited production of 450 vehicles restricted to customers who were familiar with using alternative fuels and whom they ensured that E85 fuel was available. These vehicles annually consumed 335,000 gallons of E85 fuel.

RFA: The coalition stated that, in 1999, total fuel ethanol production was higher than 1.47 billion gallons, according to the U.S. Energy Information Agency.

2. How has the AMFA CAFE program directly affected the number of fuel refueling sites from 1993 through the present time?

General Motors: Refer to response to Question 1 above.

RFA: The number of public E85 fueling stations has increased from zero in 1993 to 90 today.

The ethanol fuel industry has committed to provide the fuel when there is a demand. However, until the economics of E85 provide some incentive to fuel marketers, meaningful numbers of E85 stations will not materialize.

Alliance: The Alliance believes that as the demand for alternative fuel vehicles increases so will refueling stations.

NEVC: The coalition stated that, in 1993, there were zero public E85 fueling stations in the nation, and no demand for E85 as an alternative transportation fuel because of the lack of OEM vehicles manufactured. Farther, NEVC stated that the AMFA of 1988 was responsible for introducing and increasing E85 fuel vehicle production. Today, there are about 750,000 E85 vehicles manufactured.

RFA: RFA stated that 90 public E85 fueling stations exist today, growing from zero in 1993.

RFA stated that until E85 economics provides incentives to fuel marketers, meaningful numbers of E85 refueling stations will not materialize.

3. How will the fuel industry's projected plans for production and distribution be affected by the decision to either continue or discontinue a vehicle-specific incentive program beyond 2004?

General Motors: The fuel providers' business decisions will be driven in large part by the ability of the CAFE incentives to producing dual fueled vehicles in large quantities.

RFA: If the incentive program is discontinued after 2004, the auto industry will likely discontinue the production of FFVs and the demand for E85 will decline as a result.

Alliance: The coalition stated that the Governors' Ethanol Coalition supports and encourages extending these credits.

Missouri Department of Natural Resources Energy Center (DNREC): The commenter stated that the federal law and Missouri statute require state government fleet to acquire alternative fuel vehicles. By eliminating CAFE incentives, state governments' ability to comply with these requirements could be affected, producing fewer (or no) AFVs for purchase.

NEVC: They believe that if the AMFA incentive program is discontinued automakers would stop offering many AFVs, absents continued E85 passenger cars and trucks production from the OEMs.

RFA: RFA believes that it is likely that if the CAFE incentive program is discontinued after 2004, manufacturers will stop producing FFVs and demands for E85 will decline.

4. Does the fuel industry believe that changes to the infrastructure are warranted as a result of considerations other than/in addition to the AMFA CAFE program would be warranted in order to improve an alternative fuels infrastructure? Please recommend any

possible changes other than AMFA CAFE incentives that would facilitate further development of that infrastructure.

General Motors: Incentives for vehicle purchases, and fuel use would certainly facilitate development of the fuel infrastructure.

RFA: Optimization of vehicles for ethanol use will help to minimize the fuel economy penalty currently associated with E85 use in FFVs, and remove a disincentive to consumers to refuel with E85. Greater funding at the federal level for the development of infrastructure would accelerate the development of refueling facilities.

Alliance: The Alliance stated that manufacturers developed and sold about two million AFVs, and its members' companies plan to continue producing these vehicles. The infrastructure needs developing, and current programs exist that will improve the infrastructure. The program would be like the Arizona NG refueling station incentives.

The Alliance believes that programs to encourage alternative fuel use will promote developing more refueling stations.

NEVC: The coalition stated that modifications to the AMFA might address mechanisms to encourage the petroleum industry to embrace alternative transportation fuels sales.

RFA: RFA stated that demand is the largest consideration to further develop alternative fuels infrastructures. Demand can be increased through government and state mandates, consumer education, and vehicle optimization. Optimization of vehicles for ethanol helps to minimize the fuel economy penalty associated with E85 use in FFVs. It also removes a disincentive to consumers to refuel with E85. RFA believes that greater federal funds to develop infrastructures would excel expanding alternative fuel refueling facilities.

5. What efforts have been made by the fuel industry and other groups to educate consumers and promote the use of methanol/ethanol or compressed natural gas as an alternative fuel?

Alliance: The Alliance listed actions that manufacturers, fuel providers, and government have done to promote alternative fuels use. These activities include the following:

- The fuel industry and the manufacturers joined fuel coalitions to promote alternative fuels use.
- Ford provided funds to "Clean Cities" to build refueling stations in Chicago, Minneapolis/St. Paul, and the University of Kentucky.
- Education programs to raise the awareness of alternative fuels vehicles and the benefits of alternative fuel use (i.e., ethanol television program and university competitions)
- DOE awarded grants to States to promote developing E85 infrastructure.

NEVC: NEVC and its member organizations have educated consumers about the benefits of

alternative transportation fuels. The following list several activities:

- Participated in all DOE Clean Cities Conferences.
- Participated as a member of several national Clean Cities Programs.
- Developed E85 web site, <http://www.e85fuel.com>.
- Printed information for the general public through regional meetings and conferences.
- Supported efforts to introduce E85 through its “Model Cities Effort,” like Minneapolis/St. Paul region. The program objective is to place several E85 fueling sites into operation (currently 40 in the Twin Cities).
- Implement a marketing program directed to the general public.

RFA: RFA provided activities that they conducted to promote alternative fuels. The projects follow:

- Created a web site about the benefits of ethanol (i.e., environment, performance, energy security, and the environment)
- Attended public forums, conferences, and trade shows annually distributing promotional materials.
- Established working relationship with Downstream Alternatives, Inc., a fuel industry consultant, to educate auto technicians and educators about the fuel properties and performance values.

General Motors: Automakers have participated in coalitions with fuel providers such as the National Ethanol Vehicle Coalition and Electric Vehicle Association of America. Also participated in coalitions with local, state, and federal governments, such as the Department of Energy’s Clean Cities program.

RFA: The RFA’s web site provides information on the benefits of ethanol in terms of the environment, performance, energy security and the economy. The Association also attends public forums, conferences and trade shows each year where promotional materials are distributed.

Ford: Ford has sold more than half a million alternative fuel vehicles during the period covered by the CAFE incentives for dual fuel vehicles and defers to the Alliance comments for questions 1 through 5.

(C) Issues of General Interest

1. How difficult is it for consumers to find fueling locations and availability information on alternative fuels? How do they seek alternative fuel locations?

General Motors: Fleet buyers seek out refueling locations in their areas through industry contacts and AFV fuel providers or install their own refueling appliances. GM

directs customers to use the Department of Energy's AFV Refueling Site Locator on the DOE Web Site.

Ford: Alternative fuel providers must have business reasons to establish new sites throughout the country. The current increase in the dual fuel vehicles will start to provide the business case, but additional vehicles and incentives are needed.

RFA: A common complaint regarding the use of E85 in FFVs is the mileage penalty and the performance associated with the use of E85. These penalties can be eliminated if the vehicles were optimized to operate on ethanol as opposed to gasoline. In some cases, as much as a 13% increase in fuel economy has been demonstrated on vehicles optimized for E85 use. Optimization for ethanol use would provide an added incentive for consumers to use the alternative fuel, and result in greater consumption of the alternative fuel.

Clean Fuels Development Coalition (CFDC): There are numerous sources available for locations of refueling stations for alternative fuel vehicles. The National Renewable Energy Laboratory oversees the Department Association (www.aga.org), have nationwide lists of available refueling sites.

There are numerous information sources available for locations of refueling stations for alternative fuel vehicles. The National Renewable Energy Laboratory oversees the Department of Energy's National Alternative Fuel Hotline (www.afdc.nrel.gov). In addition, many industry trade associations such as the American Coalition for Ethanol (www.ethanol.org) are sources for such information.

Alliance: The Alliance stated that information is available for consumers to locate alternative fueling locations. The Alliance listed web sites including the US Alternative Fuel Refueling sites <http://www.afdc.doe.gov/refuel/usmaps.com>.

DaimlerChrysler: The manufacturer stated that alternative fuel information continues to become more readily available. Previously, alternative fuels were available only for fleets. While the alternative fuels attributes are not widely known, information continues to become accessible as the ability to use the fuel increases.

NEVC: The coalition stated that consumers can obtain information from the internet, motorist information signs on US and interstate highways, automotive national advertising, and mass media press.

RFA: RFA stated that it receives e-mail requests regarding the location of refueling stations. The coalition indicated that state and local organizations maintain a list of these fueling stations in their areas. It has tried to maintain a list of the NEVC's sites.

2. What are the most common consumer complaints regarding problems or concerns related to the use of the AFVs or availability of the alternative fuels?

Alliance: The coalition stated that manufacturers receive questions about the location of refueling stations. Consumers' surveys indicated concerns about variable alternative fuel prices, alternative fuel quality, vehicle range and packaging, and refueling pressure for natural gas vehicles.

DaimlerChrysler: The manufacturer listed fuel availability as consumers biggest concern. Other concerns are reduced driving range for most fuels and higher operating costs for E85/M85 vehicles.

NEVC: NEVC stated that the common consumer complaint with E85 use in FFVs is the lack of fuel availability, about which NEVC receives an average of 15 to 20 inquiries weekly.

RFA: The coalition stated that it receives requests about refueling stations through its Internet web site. State and local organizations/associations maintain a list of fueling locations for their areas.

Ford: The most common complaints for alternative fuel vehicles and traditional vehicles are the same. Ford customers have several sources for resolving AFV problems including:

- The 1-877-ALT FUEL hotline
- Ford Customer Service, which is available to all customers.

RFA: Several studies have shown that the American public would opt to fuel their vehicles with cleaner, more environmentally-friendly alternatives to petroleum. The use of alternative fuels, however, must be nearly transparent to the drivers relative to refueling, performance and fuel economy. The Ethanol Vehicle Challenge has demonstrated that FFVs, optimized for E85, can achieve comparable if not increased fuel economy and performance compared to their conventional gasoline counterparts.

CFDC: The availability of refueling sites remains the number one question. Other concerns include cost and safety issues, most of which are adequately addressed the NREL website (www.afdc.nrel.gov).

3. Assuming an ample supply of alternative fuels and vehicles, would consumers be willing to use alternative fuels over conventional ones? Please provide the basis for this response.

Alliance: The Alliance believes that, in the future, alternative fuels may play a pivotal role in putting a ceiling on price increases of traditional fuels, noticing as fuel prices increased alternative fuel used also increased. Currently, customers are using the alternative fuels. The coalition believes, with time and infrastructure landscape changes, acceptance will be broadened for consumer use of alternative fuels. Cost and fuel

availability are the key changes.

Alliance stated that consumers must be able to find alternative fuels refueling stations easily and in convenient locations. The association also believes that as more vehicles are available than the incentives for refueling infrastructures will also increase, providing more alternative fuel refueling stations.

DaimlerChrysler: The manufacturer stated that consumers must view operating the vehicle on the two fuels as transparent. If vehicle operators are comfortable using either fuel, they will use the fuel that offers the greatest benefit (lower operating costs, convenience, environmental, energy awareness, etc.).

MO DNREC: This state entity stated that market transfer of alternative fuel vehicles and fuels has not been completed. There is not sufficient demand for alternative fuel vehicles to sustain ongoing production. The alternative refueling infrastructure is still developing. Furthermore, additional incentives are needed for manufacturers to continue production until the public becomes educated on the benefits of using these vehicles.

The state government stated that ethanol is domestically produced in Missouri and the Midwest, which reduces our dependence on fossil fuels by encouraging a diverse energy supply. Thus, some alternative fuels such as ethanol, are cleaner-burning than conventional fuels and displace fossil fuel combustion, thereby reducing emissions.

NEVC: The coalition stated that consumers are concerned with issues about energy use, environment, and domestic economic opportunity.

RFA: The association stated that based on recent surveys the American public would opt to fuel vehicles with cleaner, more environmentally-friendly alternatives to petroleum. According to the Sustainable Energy Coalition 1998 poll, eight of 10 American voters favor increasing the use of renewable transportation fuels to power their vehicles. RFA stated using alternative fuels must be transparent to the driver from the refueling, performance, and fuel economy methods.

The coalition believes that consumer education and marketing are vital to alternative fuel succeeding. They must make consumers aware of alternative fuel benefits (air quality, economic benefits, energy security). These benefits must be personalized to demonstrate how they, individually, can contribute to refueling with ethanol.

General Motors: In general, consumers' willingness to purchase AFVs and use alternative fuel requires them to possess characteristics equal to or better than conventionally fueled vehicles.

Customers have not demonstrated a willingness to pay for environmental improvements in vehicles. AFVs currently have no performance improvements over conventional vehicles.

With larger volume vehicle production, larger sales of alternative fuels leading to possibly lower prices, and developments in vehicle and infrastructure technology, it is possible many of these inhibitors to the widespread use of AFVs will be removed.

RFA: Optimization of FFVs to operate on E85 is a key to overcoming the fuel economy and performance issues related to the use of E85 in FFVs. The increased demand for E85 created by optimization will provide an impetus to fuel marketers that the economics are in their favor to provide alternative fuels at their stations. In many cases, customers are unaware they have vehicles capable of operating on E85. Without this knowledge, customers will not demand the alternative fuel and will operate on 100% gasoline.

CDFC: Numerous studies and polls have been conducted that address this issue. The results show that the American public says it is willing to use products that are beneficial to the environment. The key is to increase public awareness of the availability of the vehicles and fuels and their benefits to the environment.

4. What changes would be necessary to improve consumer awareness and acceptance of AFVs?

Alliance: The Alliance stated that public education is the key to awareness. Local public relations efforts that promote those companies and customers that use environmental-friendly fuels will help to encourage others to try these fuels.

Alliance believes that transparency is crucial in making these vehicles and providing a fuel infrastructure that allows the consumer to use AFVs in a way that is similar to a conventionally fueled vehicle. Thus, the decision making process will be determined by cost and environmental choice, which consumers would have preference rather than be pushed because of convenience. The coalition estimates that as the number of AFVs increases and fueling stations are available, consumers will feel comfortable with AFVs.

DaimlerChrysler: The manufacturer stated that public relations and educational efforts like those conducted by DOE are necessary. DaimlerChrysler stated that manufacturers need more incentives to continue providing high volume AFV families, which will provide impetus for the infrastructure. The manufacturer also stated that it is critical that the fuel industry becomes involved in promoting fuel use.

NEVC: The coalition believes that the driving public's lack of knowledge and the shortage of refueling stations are the primary factors that limit using alternative fuels today. They list actions that may be considered to improve public awareness:

- Implement a national alternative fuel information program, with federal leadership. Such a program could be based on public service messages and paid advertising similar to those used by the Council for a Drug Free American, Mothers Against Drunk

Driving, and others.

- Require all automobiles (passenger cars and light trucks) that are manufactured pursuant to the AMFA CAFE credit program be maintained in a national registry. The database would be used to communicate with the vehicles operators and promote their awareness and use of alternative transportation fuels.
- Implement a national program that requires fuel retailers to establish alternative fuel vehicle fueling sites based on the numbers of AFVs in the state, which would be similar to the one in California.

RFA: RFA stated that, for flexible fuel vehicles, optimization to operate on the alternative fuels is the key to overcoming the fuel economy and performance issues (cold-starting related to using E85 in a vehicle designed to operate on gasoline).

The coalition stated that consumer education is important, with making efforts to ensure that auto dealers inform consumers about the flexible fuel option.

General Motors: Consumers' willingness to purchase AFVs and use alternative fuel requires them to be equal to or better than conventionally fueled vehicles. Fuel cost and fuel availability must be comparable.

Ford: We believe that a bottom-up approach, beginning with a knowledgeable public that understand the need for AFVs, can create a demand for AFVs that will further drive and develop the AFV market.

To be effective, the job of educating of the public cannot lie solely with the manufacturers. The U. S., State and Local Governments all have a responsibility to contribute to the AFV education of America.

RFA: Without a doubt, the AMFA CAFE program and the EPA Act of 1992 have been instrumental in increasing the availability of FFVs. Ultimately, the Department may need to consider tying the AFV CAFE credit directly to the use of the alternative fuel. By failing to optimize the vehicles for the alternative fuel, auto manufacturers have created a disincentive for consumers to actively use the fuel.

CDFC: Many groups have been working on improving consumer awareness and acceptance on a regional basis. This effort needs to be moved to the national arena. Increased efforts by the Department of Energy, the Department of Agriculture and other government agencies would increase public awareness of alternative fuels.

5. What other efforts could government or industry take to increase the use of alternative fuels?

General Motors: Educational programs on the environmental benefits of AFVs, advertising of fuels like ethanol that are renewable and homegrown, promoting increased participation from the petroleum industry in distributing alternative fuels. Federal tax incentives and expansion of state incentive programs such as that in Arizona could address price differential.

Ford: The most significant action the government could take would be to provide a fuel price advantage for the alternative fuels.

CDFC: Public education is the key, but other incentive programs could also be used to increase the use of alternative fuels.

Alliance: The coalition listed actions that could be taken to promote using alternative fuels include education, refueling center incentives, home refueling station incentives, vehicle purchase incentives, fuel purchase incentives, relax GSA requirements for vehicle purchase so AFVs could be purchased readily, Clean Cities programs, fulfill existing government fleet mandates, and continue biomass research.

DaimlerChrysler: The manufacturer stated that the government needs to provide incentives to customers who use alternative fuel. Because the customer has the option of using gasoline rather than an alternative fuel when operating a dual fuel vehicle, the incentive would promote the sale of these vehicles and fuel.

NEVC: The coalition listed options the government may consider to further promote alternative fuels include suspending (or reducing) the federal-state-local road use taxes on alternative fuels, requiring all federal drivers to use alternative transportation fuels, providing financial incentives via tax credits to persons/companies that purchase an alternative fuel vehicle with an incremental cost, and providing tax incentives to the petroleum industry to develop and establish alternative fuel infrastructure.

RFA: RFA suggested that the Department may tie the alternative fuel vehicle CAFE credit to the use of the alternative fuel. The coalition stated that the flexible-fuel vehicles have been useful in stimulating this emerging market. By failing to optimize the vehicles for the intended alternative fuel, auto manufacturers have created a disincentive for consumers to actively use the fuels.

6. Is there any information available on the approximate percentage of vehicle mileage for which a owner/driver of a dual-fuel vehicle uses the alternative fuel versus gasoline or diesel fuel? If so, should the "50/50" used in the credit calculation formula be revised to a value that more closely represents actual fuel use?

General Motors: It is premature to judge the results of the AMFA CAFE incentives based on today's statistics. Changes in the CAFE credit calculation formula to reduce the CAFE incentives could impact manufacturers' decisions on AFV production levels.

CDFC: While CFDC is not aware of any surveys or other information on how often dual fueled vehicles are run on alternative fuels, we believe that the 50/50 split should be continued. Ethanol dual fuel vehicles are currently available at no additional cost to the consumer. Reducing the amount of credit received by the automakers could make it more difficult for the industry to justify not increasing the price of the vehicle.

Alliance: Alliance stated that the “50/50 split” in the calculation formula is an integral part of the incentive program. Any change that lessens the CAFE credits undermines the incentive for manufacturers to produce dual fuel vehicles. Furthermore, the coalition stated that the need to move the economy to renewable fuels, building a larger base of dual fuel vehicles, is an appropriate and a socially responsible step. As the vehicles fleet continues to increase and crude prices continue to rise, suppliers may make the switch to these renewable fuels.

DaimlerChrysler: The manufacturer stated that it knows of no data that indicates the actual amount of alternative fuel used although it is below the 50 percent level. The 50/50 split and the mpg cap limit the incentive. For the incentive to be effective, the split cannot be lowered. The manufacturer believes that until the infrastructure is in place, the 50 percent level is not attainable. The incentive should serve to promote the sale of the vehicles and to encourage the infrastructure. DaimlerChrysler stated that maintaining the 50/50 split would send a signal regarding what the incentive should be and what the alternative fuel market could be.

NEVC: NEVC stated it is unaware of information about the approximate percentage of vehicle mileage that a FFV operated on alternative fuels. Further, the coalition stated that the petroleum industry has had over 90 years to establish gasoline fueling infrastructure, maintaining the incentives available to the automakers on the “50/50 split” used in the CAFE credit calculation is essential and necessary. NEVC recommended extending the AMFA CAFE credits through the year 2008, as provided by the law, providing the maximum attributed CAFE allowance available. The coalition believes that the extension will allow all alternative fuel advocacy groups more time to promote usage of various alternative fuels.

7. Are there companion programs necessary to ensure that vehicles manufactured for purposes of complying with the CAFE requirement are actually using alternative fuels? What changes would be necessary to improve consumer awareness and acceptance of AFVs?

CDFC: Several programs already exist that are complimentary to the current CAFE incentives. However, it is important to note that the CAFE credits themselves are doing the job they were designed to do - get the vehicles capable of using alternative fuels out on the road.

Alliance: The Alliance stated that companion programs will assist to encourage using alternative fuels; however, increased use of the fuel could be accomplished when consumers realize the economic benefits of using alternative fuels. Few existing companion programs include Clean Fuel Fleet program, EPAct fleet mandates, Clean Cities Program, the AMFA purchase incentives, and Cooperative Automotive Research for Advanced Technologies (CARAT).

Alliance also listed companion programs that would encourage using alternative fuel--improve the availability, cost, and price, and help to promote the goals of AMFA and EPAct. These actions include providing incentives to fuel providers to produce and market fuels, extending EPAct to encourage alternative fuel use, and providing incentives to consumers to use the alternative fuel.

The coalition stated that the answer to this question is important to the long-term success of the alternative fuel usage. The question is not about the question whether the CAFE credits should be extended. Extending the credits is a short-term issue, and it affects manufacturers whether they will be encouraged to produce dual fuel vehicles.

DaimlerChrysler: The manufacturer stated that any companion program would involve ensuring that the alternative fuel is produced and encouraging its use.

NEVC: The coalition stated that the only program that would ensure that vehicles are using alternative fuels is a program predicated that alternatives to motor gasoline are available. NEVC believes that when all gasoline fueling stations are required to provide alternative fuels, would a compliance program would be feasible.

8. Has the AMFA CAFE program affected the total use of methanol/ethanol and compressed natural gas use? If so, how?

General Motors: There may be early signs that the increased number of alternative fueled vehicles and fueling stations is having an effect in some areas. For example, Minneapolis reports that in January 11,000 gallons were sold at 17 reporting stations which is double last year's level.

Department of Defense announced a new alternative fuel vehicle service station next to the Pentagon. The E85 station will service federal AFVs powered is expecting an estimated 200,000 gallons of ethanol fuel to be pumped in the first year alone.

President Clinton recently issued an executive order to reduce their fleet's petroleum consumption by at least 20 percent by the end of fiscal year 2005. The new AFV station is the "first of seven gas station offering those fuels [in the Washington, D. C. metropolitan area.]"

CDFC: The demand for renewable ethanol for use in E-85 is predicted to grow over the next twenty years. The total for ethanol use in transportation is currently about 1.5 billion gallons of ethanol production capacity.

Alliance: The coalition stated that many fleet owners, the major users of the pre-MY1999 alternative fuel vehicles, affect the total use of alternative fuels. Several local fleets, taxis and law enforcement offices, own refueling stations and use the alternative fuel exclusively. A recent GAO study estimated that, in 1998, alternative fuel vehicles replaced 334 million gallons of gasoline. The Alliance believes that the figure will grow as the alternative fueled vehicle population increases and fuels are accessible.

DaimlerChrysler: The manufacturer stated that they produce large volumes of alternative fuels to take advantage of the AMFA CAFE program, applying only to the E85 vehicles. Efforts to implement an E85 infrastructure trail the vehicles available. These vehicles are growing to a number that justify investing in a sustainable infrastructure. Those investments are occurring in Minneapolis, Denver, and Chicago. Ethanol usage is rising, as incentives are available for vehicles, infrastructure and fuel use.

NEVC: The coalition stated that there are 90 public E85 fueling stations operating across the nation, as of June 1, 2000, selling about 1,000 gallons of E85 monthly (averaging 90,000 gallons of E85 or 1.09 million gallons annually). NEVC estimates that fewer than 100,000 gallons monthly are consumed in private fueling facilities (or 1.2 million gallons annually). NEVC estimates that two million gallons of E85 are consumed annually through private fueling sites and the 90 public sites.

The coalition stated if a provision is adopted that establishes E85 fueling sites at the 178,000 stations selling gasoline and each station sold 1,000 gallons monthly, the sale of E85 would exceed 2.1 billion gallons annually.

9. What changes could be made to this program, either from the vehicle production aspect or the fuel industry aspect, that would be perceived as an even greater incentive to produce, distribute and market alternative fuels in the future?

Alliance: The Alliance recommends extending the CAFE credits for dual fuel vehicles and providing additional economic incentives to increase the refueling infrastructure and alternative fuel use. These actions would promote alternative fuel use.

DaimlerChrysler: The manufacturer stated that the automotive industry needs to know the government sincerity about AFVs. Furthermore, the manufacturer stated that to show that the government is serious, incentives must continue, especially the CAFE incentives. The CAFE incentive placed more AFVs on the road than all other incentives combined, without any tax money being used.

NEVC: The coalition stated that an increase in the allowable mileage credit from 0.9 mpg to 1.2 mpg (current level) would improve the likelihood that the automakers will continue to produce FFVs. Furthermore, this option would not penalize the automakers for the petroleum industry failing to assist with developing an adequate infrastructure, it would provide

additional benefits to the automakers should infrastructure efforts are successful.

General Motors: To be a successful program requires contributions from the automakers to produce these vehicles, from fuel producers to supply the fuel, and the government to create incentives to consumers, manufacturers, and fuel providers to bridge any gap in the market forces.

CDFC: Government incentives should be extended to the fuel industry to encourage greater availability of alternative fuels. Incentives could be offered to consumers.

10. In addition to energy conservation, environmental considerations, and the availability of AFVs and alternative fuels to the public, what other factors should be considered in the evaluation of the policy of providing additional CAFE credits for dual fueled vehicles?

Alliance: The Alliance stated that the reasons listed in the question supports extending the dual fuel vehicle CAFE credits separately. There is also a unique impact that extending dual vehicle credit program will have on the farm community as a renewable feedstocks source.

DaimlerChrysler: The manufacturer recommends the agency consider extending the CAFE credit program for 10 more years beyond 2008, if the 30% EPAct goal is extended 10 years to 2020.

NEVC: The coalition recommends extending the AMFA CAFE credit program to assist with this objective.

General Motors: AMFA incentives are having their intended effect on manufacturers. The program is doing what it was designed to do. To prematurely remove these incentives could undermine our best chance to meet the goals of AMFA.

CDFC: The increased production and use of ethanol boosts farm income and can have a positive impact on our nation's trade deficit.

11. Do you believe the policy of providing additional CAFE credits for dual fueled vehicles should be continued, modified, or discontinued? Please explain the basis for your position.

Alliance: The Alliance recommends extending the CAFE credits. There can be long-term societal benefits to this effort, and it needs encouragement.

The Alliance agrees with the GAO report that the 30% light-duty petroleum-based fuel replacement goal by the year 2010 may not be achieved. Because of barriers to the alternative fuels were greater than imaged in 1992 when EPACT was enacted, DOE is

considering extending the 30% goal to 2020. The goal will not be met in 2020 without extending current incentives and implementing new ones.

The association stated that incentives to encourage fuel producers to provide the fuel and owners to use the fuel are needed to maintain the momentum to develop the E85 infrastructure.

If DOE extends the 30% goal to the year 2020, DOT needs to consider extending the CAFE credits in their current form. Alliance believes that by extending the time period for the goal without extending incentives will result in not achieving the goals. Furthermore, Congress needs to consider extending the CAFE credits for dual fuel vehicles beyond the year 2008. Depending on developing the infrastructure and transition to dedicated AFVs, a longer extension may be needed.

DaimlerChrysler: The manufacturer stated that the CAFE credit incentives should be extended. It serves to increase the total sales of AFVs that could provide the incentive for a substantial investment in the refueling infrastructure.

DaimlerChrysler listed benefits of the CAFE incentives including that the incentive is a plan incentive, not a loophole; the incentive has done more to encourage the AFV market than any other incentive; a long-term vision is necessary to develop an AFV market, mandates and other limited incentive have not worked; and an infrastructure action plan is under review.

NEVC: The coalition stated that in the future, vehicles will be produced to operate on hydrogen, fuel cells, and other forms of fuels. To push the marketplace and overcome the burdens of the nation's "hydrocarbon economy" and the U.S. dependence on imported petroleum, extension of the CAFE credits is essential. Furthermore, absent the continued growth of the nation's alternative fuel program, such dependence on petroleum can increase.

General Motors: GM urges NHTSA to extend the CAFE incentives for dual fuel automobiles for another four years through 2008 MY.

The intent of the original law establishing these incentives was to reduce the dependence on foreign oil through increased use of alternative fuels and alternative fuel vehicles (AFV). Dual fuel vehicles can provide a bridge to larger volumes of dedicated vehicles as the infrastructure for alternative fuels develops. If we are ever to achieve this transition from gasoline to alternative fuels, we must solve the problem facing vehicle manufactures and fuel providers: manufacturers are reluctant to provide AFVs if there is no fuel and fuel providers are reluctant to provide alternative fuel if there are no AFVs.

Dual fueled vehicles are a technology that can help resolve this dilemma. Based on what we have seen recently, the CAFE incentives are working. - the program is highly successful. We urge NHTSA to implement this provision and extend the CAFE incentives through 2008 model year, as wisely allowed by Congress.

Ford: The CAFE credits for dual fuel vehicles should be extended for at least four more years. The use of alternative fuels has environmental benefits and can reduce petroleum use and our reliance on foreign oil. The availability of the credits has provided a reason for manufacturers to introduce vehicles with alternative fuel capability which will help to encourage the development of the alternative fuel infrastructure.

CDFC: CFDC strongly believes that the policy of additional CAFE credits for dual fuel vehicles should be continued. The program has proven to be very successful by increasing the number of alternative fuel vehicles available. Complete success has not yet been attained and discontinuing the program could do irreparable harm.

APPENDIX B

**SUMMARY OF CAFE CIVIL PENALTIES COLLECTED
FROM MY 1983 TO 2000**

Model Year	Manufacturer	Amount	Date
1983	Jaguar Cars, Inc.	\$57,970	12/85
1984	Jaguar Cars, Inc.	\$5,958,020	12/85
1985	Aston Martin Lagonda Ltd.	\$2,550	7/87
1985	Jaguar Cars, Inc.	\$8,799,010	7/87
1985	Porsche Cars North America, Inc.	\$1,253,580	7/87
1985	Mercedes-Benz of North America, Inc.	\$5,509,400	12/88
1986	Mercedes-Benz of North America, Inc.	\$20,214,700	12/88
1986	Peugeot Motors of America, Inc.	\$793,080	2/89
1986	Jaguar Cars, Inc.	\$8,040,550	2/89
1986	Porsche Cars North America, Inc.	\$823,440	2/89
1986	Sun International	\$45	5/89
1987	BMW of North America, Inc.	\$1,088,895	6/89
1987	Jaguar Cars, Inc.	\$5,320,135	6/89
1987	Mercedes-Benz of North America, Inc.	\$20,526,490	6/89
1987	Peugeot Motors of America, Inc.	\$767,600	6/89
1987	Porsche Cars North America, Inc.	\$948,480	6/89
1987	Range-Rover of North America, Inc.	\$272,955	6/89
1987	Sterling Motor Cars	\$2,056,625	8/89
1988	Range-Rover of North America, Inc.	\$553,980	7/89
1988	BMW of North America, Inc.	\$16,411,380	8/89
1988	Sterling Motor Cars	\$1,248,120	8/89
1988	Mercedes-Benz of North America, Inc.	\$18,295,455	12/89
1988	Jaguar Cars, Inc.	\$5,582,070	3/90
1988	Peugeot Motors of America, Inc.	\$482,280	3/90
1988	Porsche Cars North America, Inc.	\$1,048,905	5/90
1989	Mercedes-Benz of North America, Inc.	\$20,415,045	4/90
1989	Porsche Cars North America, Inc.	\$1,875,125	5/90
1989	Peugeot Motors of America, Inc.	\$487,800	7/90
1989	Volvo Cars of North America	\$1,036,115	7/90
1989	BMW of North America, Inc.	\$14,923,580	7/90
1989	Maserati Automobiles of America, Inc.	\$120,000	1/91
1989	Range-Rover of North America, Inc.	\$778,140	5/91
1989	Jaguar Cars, Inc.	\$6,311,895	7/91
1990	Range-Rover of North America, Inc.	\$656,370	5/91
1990	Volvo Cars of North America	\$12,244,440	6/91
1990	BMW of North America	\$14,878,160	7/91
1990	Porsche Cars North America, Inc.	\$2,033,770	7/91
1990	Mercedes-Benz of North America, Inc.	\$17,556,105	9/91
1990	Callaway Cars, Inc.	\$20,400	1/92
1989	PAS, Inc.	\$294,500	2/92
1990	Peugeot Motors of America, Inc.	\$72,500	3/92
1991	BMW of North America	\$11,249,230	6/92
1987	Fiat Auto S.p.A.	\$279,350	7/92
1988	Fiat Auto S.p.A.	\$897,260	7/92
1989	Fiat Auto S.p.A.	\$670,120	7/92
1991	Mercedes-Benz of North America, Inc.	\$19,169,540	12/92
1991	Peugeot Motors of America, Inc.	\$192,660*	2/92
Model Year	Manufacturer	Amount	Date
1991	Volvo Cars of North America	\$7,768,420*	2/92

1990	Fiat Auto S.p.A.	\$705,220	5/93
1991	Fiat Auto S.p.A.	\$796,575	5/93
1992	Fiat Auto S.p.A.	\$466,750	5/93
1989	Sterling Motor Cars	\$588,195	7/93
1990	Sterling Motor Cars	\$162,000	7/93
1991	Vector Aeromotive Corp.	\$1,740	7/93
1992	Peugeot Motors of America, Inc.	\$58,375	9/93
1991	Range-Rover of North America, Inc.	\$520,520	10/93
1992	Range-Rover of North America, Inc.	\$607,620	10/93
1991	Sterling Motor Cars	\$254,840	12/93
1991	Porsche Cars North America, Inc.	\$1,871,470	2/94
1992	Porsche Cars North America, Inc.	\$781,575	2/94
1992	Volvo Cars of North America	\$5,361,515	4/94
1992	BMW of North America	\$12,888,750	5/94
1992	Vector Aeromotive Corp.	\$1,740	5/94
1993	Volvo Cars of North America	\$5,764,800	6/94
1993	Panoz Auto Development Corp.	\$3,080	7/94
1993	Fiat Auto S.p.A.	\$194,220	7/94
1993	Vector Aeromotive Corp.	\$870	7/94
1991	Fiat Auto S.p.A. (revised)	\$416,385	8/94
1992	Fiat Auto S.p.A. (revised)	(\$2,250)	8/94
1993	Porsche Cars North America, Inc.	\$668,500	10/94
1993	Peugeot Motors of America, Inc.	\$910	10/94
1990	Callaway Cars, Inc. (refund reported by GM)	(\$20,400)	12/94
1992	Mercedes-Benz of North America, Inc.	\$18,122,440	12/94
1993	Mercedes-Benz of North America, Inc.	\$13,531,590	12/94
1994	Mercedes-Benz of North America, Inc.	\$11,254,080	12/94
1995	Mercedes-Benz of North America, Inc.	\$7,498,995	12/94
1991	Maserati Automobiles of America, Inc.	\$1,600	12/94
1990	Consulier Industries	\$50	1/95
1991	Consulier Industries	\$50	1/95
1992	Consulier Industries	\$50	1/95
1993	Range-Rover of North America, Inc.	\$1,094,660	1/95
1993	Autokraft Ltd.	\$2,590	8/95
1993	BMW of North America	\$7,427,160	9/95
1994	Fiat Auto S.p.A.	\$387,375	12/95
1995	Mercedes-Benz of North America, Inc.	\$6,525,085	12/96
1994	Porsche Cars North America, Inc.	\$804,600	12/96
1995	Porsche Cars North America, Inc.	\$1,949,520	12/96
1994	BMW of North America	\$10,140,120	12/96
1995	BMW of North America	\$13,136,530	12/96
1994	Volvo Cars of North America	\$7,173,630	12/96
1995	Volvo Cars of North America	\$6,375,675	12/96
1994	Range-Rover of North America, Inc.	\$1,734,915	12/96
1995	Range-Rover of North America, Inc.	\$4,499,090	12/96
1995	Fiat Auto S.p.A.	\$801,220	7/97
1994	Panoz Auto Development Corp.	\$3,850	8/97
1995	Panoz Auto Development Corp.	\$1,395	8/97
1996	Fiat Motors of North America	\$194,480	10/98
1997	Fiat Motors of North America	\$542,340	10/98
1996	BMW of North America	\$289,840	11/98
Model			
Year	Manufacturer	Amount	Date
1997	BMW of North America	\$11,834,910	11/98
1996	Volvo Cars of North America	\$5,534,550	11/98
1997	Volvo Cars of North America	\$5,162,135	11/98
1996	Mercedes-Benz of North America, Inc.	\$6,825,610	11/98

1997	Mercedes-Benz of North America, Inc.	\$11,731,035	11/98
1996	Porsche Cars North America, Inc.	\$2,127,600	11/98
1997	Porsche Cars North America, Inc.	\$2,525,820	11/98
1996	Range-Rover of North America, Inc.	\$4,329,850	11/98
1997	Range-Rover of North America, Inc.	\$4,195,032	11/98
1997	Range-Rover of North America, Inc.	\$68	1/99
1997	Volkswagen of America, Inc.	\$176,220	04/99
1997	Panoz Auto Development Corp.	\$7,400	08/00
1998	Fiat Motors of North America	\$527,450	04/99
1997	Lotus Cars USA, Inc.	\$36,890	05/99
1998	Mercedes-Benz of North America, Inc.	\$1,683,525.00	07/99
1998	BMW of North America	\$13,851,569.00	12/99
1998	Porsche Cars North America, Inc.	\$1,613,865.00	03/00
1998	Rover Group, Ltd.	\$3,849,037.50	04/00
1998	Mercedes-Benz of North America, Inc.	\$168,352.50	05/00
1998	Lotus Cars USA, Inc.	\$34,782	06/00
1998	Panoz Auto Development Corp.	\$11,192.50	08/00
1999	Porsche Cars North America, Inc.	\$4,884,627	07/00
1999	BMW of North America	\$13,147,249.50	08/00

Total Penalties Collected

\$499,830,940.00

*Modified penalty for MY 1982, 1983, 1986, 1987, 1989, and 1990 to be paid in 16 quarterly payments of \$7,500 starting 1/91

SOURCE: U.S. Department of Transportation, 8/00

APPENDIX C

U.S. REFUELING SITE COUNTS BY STATE AND FUEL TYPE

As of 5/25/2001

STATE	M85	CNG	E85	LPG	ELEC	BD	LNG	ALL
Alabama	0	15	0	75	35	0	2	127
Alaska	0	0	0	9	0	0	0	9
Arizona	0	30	1	106	52	1	3	193
Arkansas	0	7	0	68	0	0	0	75
California	2	211	0	342	335	2	9	901
Colorado	0	41	2	68	0	0	1	112
Connecticut	0	25	0	33	1	0	0	59
Delaware	0	4	0	4	0	0	0	8
District of Columbia	0	3	0	0	1	0	0	4
Florida	0	36	0	149	3	0	1	189
Georgia	0	67	0	55	73	0	2	197
Hawaii	0	0	0	7	3	1	0	11
Idaho	0	8	1	34	1	0	0	44
Illinois	0	23	13	56	2	0	0	94
Indiana	0	32	2	45	1	0	3	83
Iowa	0	0	8	40	0	0	0	48
Kansas	0	5	1	68	0	0	1	75
Kentucky	0	6	7	25	0	0	0	38
Louisiana	0	14	0	33	0	0	0	47
Maine	0	0	0	20	0	0	0	20
Maryland	0	30	0	29	1	0	2	62
Massachusetts	0	14	0	37	3	0	0	54
Michigan	0	31	7	132	6	0	1	177
Minnesota	0	11	54	61	0	0	1	127
Mississippi	0	3	0	32	0	0	0	35

STATE	M85	CNG	E85	LPG	ELEC	BD	LNG	ALL
Missouri	0	7	5	130	0	0	0	142
Montana	0	9	1	42	0	0	1	53
Nebraska	0	5	7	29	0	0	0	41
Nevada	0	18	0	32	0	0	0	50
New Hampshire	0	1	0	29	1	0	0	31
New Jersey	0	30	0	28	0	0	0	58
New Mexico	0	15	1	88	0	0	1	105
New York	0	62	0	98	6	0	0	166
North Carolina	0	9	0	77	8	0	0	94
North Dakota	0	4	2	14	0	0	0	20
Ohio	0	55	0	75	1	0	1	132
Oklahoma	0	58	0	39	0	0	0	97
Oregon	0	15	0	50	0	0	1	66
Pennsylvania	0	56	0	107	1	0	1	165
Rhode Island	0	6	0	7	0	0	0	13
South Carolina	0	4	0	60	1	0	0	65
South Dakota	0	2	7	26	0	0	0	35
Tennessee	0	2	0	59	0	0	0	61
Texas	0	65	0	442	2	0	7	516
Utah	0	62	0	18	0	0	1	81
Vermont	0	0	0	17	7	0	0	24
Virginia	0	28	1	63	8	0	3	103
Washington	0	25	0	88	6	0	1	120
West Virginia	0	43	0	10	0	0	0	53
Wisconsin	0	22	1	82	0	0	0	105
Wyoming	0	18	0	32	0	0	1	51
TOTALS	2	1237	121	3270	558	4	44	5236