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PASSENGER VEHICLE FUEL ECONOMY

Preliminary Observations on Corporate Average Fuel Economy Standards

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Highlights of [GAO-07-551T](#), a testimony before the Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

Concerns over national security, environmental stresses, and economic pressures from increased fuel prices have led to the nation's interest in reducing oil consumption. Efforts to reduce oil consumption will need to include the transportation sector. For example, several Members of Congress have introduced bills proposing changes to the corporate average fuel economy (CAFE) program. This program includes mile per gallon standards for light trucks and cars that manufacturers must meet for vehicles sold in this country.

This testimony is based on ongoing work for this committee. This testimony describes (1) recent and proposed changes to CAFE standards; (2) observations about the recent changes, the existing CAFE program, and NHTSA's (National Highway Traffic Safety Administration) capabilities to further restructure CAFE standards; and (3) initial observations about how the CAFE program fits in the context of other approaches to reduce oil consumption. To address these issues, we reviewed program legislation, rule makings, and operational documents. Also, we interviewed officials from NHTSA, the Department of Energy, Environmental Protection Agency, the auto industry, labor unions, and the insurance industry. Finally, we contacted several recognized experts in fuel economy and safety. Our report will be issued in July 2007.

www.gao.gov/cgi-bin/getrpt?GAO-07-551T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Katherine Siggerud on (202) 512-2834 or siggerudk@gao.gov.

PASSENGER VEHICLE FUEL ECONOMY

Preliminary Observations on Corporate Average Fuel Economy (CAFE) Standards

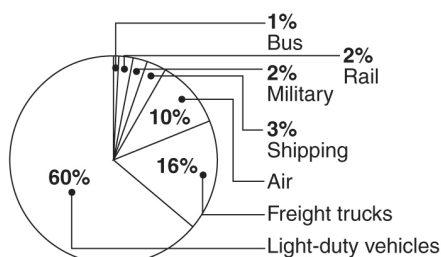
What GAO Found

The National Highway Traffic Safety Administration (NHTSA), the agency responsible for setting CAFE standards for cars and light trucks—such as sport utility vehicles, minivans and pickup trucks—recently raised CAFE standards for light trucks to reduce oil use and restructured this part of the program to help address safety, among other issues. However, the CAFE standard for cars has changed little over the past 2 decades. In 1975, Congress established CAFE standards for cars rising to 27.5 miles per gallon (mpg) by 1985 but did not allow NHTSA to restructure how car standards are applied. As part of the administration's plan to meet the President's recently stated goal to reduce oil use by 20 percent over the administration's projected levels by 2017, the NHTSA Administrator submitted a plan to Congress that would allow NHTSA to reform the car CAFE program in a manner similar to NHTSA's recent changes to the light truck program.

The majority of experts with whom we spoke stated that CAFE standards are an important approach to reducing oil consumption and NHTSA's recent reform of light truck standards addresses previous safety and competitive concerns, among others. However, they also identified some ways to further refine the CAFE program such as considering harmonizing light truck and car standards. Further, NHTSA officials identified ways to improve the agency's capabilities to administer the program. For example, the agency would benefit from some additional expertise on automotive engineering. Finally, several experts observed that the model that NHTSA uses to help set CAFE standards does not fully account for the impact of greenhouse gas emissions.

While the CAFE program is an important program in the nation's efforts to reduce oil consumption, other policies and programs exist to help the nation reduce oil consumption in the transportation sector. We will report on how these programs align with the CAFE program in our report to be issued in July 2007. For example, according to experts with whom we spoke, CAFE's effectiveness in reducing oil consumption is hampered by a provision granting manufacturers a 1.2 mpg CAFE credit toward meeting its fuel economy standard for selling flexible fuel vehicles, even though these vehicles are not often run on fuel other than gas.

2005 U.S. Oil Consumption within the Transportation Sector (Numbers may not add to 100% due to rounding)



Source: Department of Energy.

Mr. Chairman and Members of the Committee:

We appreciate the opportunity to provide testimony on the nation's approach to reducing oil consumption through fuel efficiency standards. Concerns over national security, environmental stresses, and economic pressures from increased fuel prices have led to the nation's interest in reducing oil consumption. Several Members of Congress have introduced bills proposing to mandate fuel economy increases, such as increasing car standards from the current 27.5 miles per gallon (mpg) to 40 mpg within 10 years. In addition, the President recently announced a nationwide goal to reduce oil consumption 20 percent from the levels that the administration projects would otherwise occur by 2017.

Efforts to reduce oil consumption will need to include the transportation sector, because transportation in the United States currently accounts for 68 percent of the nation's oil consumption. And, within the transportation sector, 60 percent of the oil consumed is consumed by cars and light trucks. In the aftermath of the energy crisis of the early 1970s, Congress developed the Corporate Average Fuel Economy (CAFE) program to help reduce the fuel used by light trucks and cars. Under the CAFE program, manufacturers must ensure that the vehicles in their fleets, on average, meet a specified mpg standard or pay a penalty. The National Highway Traffic Safety Administration (NHTSA) within the Department of Transportation (DOT) is primarily responsible for setting and enforcing CAFE standards. Many changes in automotive technologies and the auto industry have occurred since the program was designed in the 1970s. These developments, along with the concerns mentioned above, have led to some changes in the CAFE program, along with calls to further alter the program, including raising CAFE standards or revising how the program applies the standards.

My testimony today will discuss (1) recent and proposed changes to the CAFE standards; (2) observations about the recent changes, the existing CAFE program, and NHTSA's capabilities to further revise CAFE standards; and (3) observations about how the CAFE program aligns with other approaches and options for reducing oil consumption. My comments are based on ongoing work for this committee, and therefore my comments reflect our preliminary observations. We plan to issue our report in July 2007. To obtain information on the CAFE program and recent and proposed changes to the program, we reviewed relevant U.S. code and program guidance, including rule making documents, and interviewed a wide range of program stakeholders, including NHTSA, the Environmental Protection Agency (EPA), the Department of Energy

(DOE), the applicable automobile workers trade union (UAW), industry groups representing the automobile manufacturers, automotive safety experts, insurance industry representatives, and environmental advocates. To obtain information about recent program revisions and NHTSA's plans and capabilities to further revise CAFE standards, we interviewed NHTSA officials, experts in fuel economy and safety as well as reviewed CAFE program budgets, key studies, and other documentation. To obtain information on how the CAFE program aligns with other approaches and options for reducing oil consumption by cars and trucks, we interviewed experts in fuel economy and other industry stakeholders. We selected these experts by contacting officials who worked on a 2002 National Academy of Sciences report on CAFE standards. During conversations with these experts, we asked them for additional experts we should contact. We also contacted officials in selected foreign countries with programs designed to reduce oil consumption for passenger vehicles. We conducted our work for this statement from September 2006 through February 2007 in accordance with generally accepted government auditing standards.

In summary:

- In 2003, NHTSA raised light truck CAFE standards from 20.7 mpg in 2004 to 22.2 mpg in 2007. Subsequently, NHTSA restructured the CAFE program for trucks using a method that categorizes light trucks based on their size. This new method is meant to help address potential safety consequences and other issues that had previously been cited as negative consequences of raising CAFE standards. The nation's CAFE standard for cars has changed little over the past 2 decades, for example CAFE standards for cars have not risen above 27.5 mpg since 1990. Furthermore, Congress included provisions in DOT's appropriations acts from fiscal years 1996 through 2001 preventing NHTSA from spending any funds to change CAFE standards. The Secretary of Transportation recently asked Congress for the ability to restructure CAFE standards for cars. More recently, as part of the Administration's plan to meet the President's oil reduction goal the Secretary of Transportation submitted a plan to Congress that would allow NHTSA to restructure the car CAFE program based on an attribute of the vehicle, such as size. This plan mirrors NHTSA's recent changes to the light truck program. In addition, several Members of Congress have introduced legislation to raise CAFE standards.
- The majority of experts with whom we spoke believe that CAFE standards are an important approach to reducing oil consumption; and NHTSA's recent reform of the light truck standards addresses other concerns,

including safety and competition among individual car companies, among others. However, these experts also identified some further revisions to the CAFE program that could be considered in determining ways to further optimize the CAFE program, including:

- evaluating a size-based approach for cars similar to the one implemented for light trucks to address safety and other concerns and encourage fleet-wide improvements in fuel efficiency;
- considering harmonizing light truck and car standards to have an integrated program and reduce incentives to classify vehicles as light trucks;
- reassessing the length of time for which standards are set to reduce costs for manufacturers;
- allowing trading of CAFE credits between vehicle classes and among manufacturers to provide additional incentives and flexibility in meeting CAFE standards; and,
- evaluating the need for the distinction between domestic and foreign vehicles when calculating CAFE to simplify the program and recognize changes in where automobiles are manufactured.

Further, experts and NHTSA officials also identified ways NHTSA could improve its capabilities to revise CAFE standards including:

- obtaining additional expertise on automotive engineering to review product plans automakers submit in the CAFE rule-making process;
 - updating a 2002 National Academy of Sciences study that included information on the potential impact of technologies that could improve fuel economy; and
 - identifying a valuation of greenhouse gas emissions used in analysis to estimate the costs and benefits of changes to CAFE standards.
- Finally, while the CAFE program is an important program in the nation's efforts to reduce oil consumption, other policies and programs exist or have been proposed to help the nation reduce oil consumption by the transportation sector that could complement CAFE. We will be reporting in more detail on how these options align with the CAFE program in July 2007. We will also identify policies that potentially decrease the effectiveness of the CAFE program in reducing oil consumption. For

example, experts with whom we spoke identified the program that grants manufacturers a 1.2 mpg CAFE credit toward meeting its fuel economy standard for selling flexible fuel vehicles, even though these vehicles are not often run on fuel other than gas.

Background

Congress enacted the 1975 Energy Policy and Conservation Act (the Energy Act) during the aftermath of the energy crisis created by the Arab oil embargo of 1973 and 1974 to reduce oil consumption by the transportation sector in the United States.¹ The act established what is commonly known as the CAFE program, which requires that manufacturers meet separate fuel economy standards for passenger cars and light trucks.² To reduce oil consumption, the program uses fuel consumption standards—measured in mpg—that cars and light trucks must meet. In addition to decreasing oil consumption by increasing the mileage driven on a gallon of gas, an increase in the standards also decreases tailpipe emissions, including greenhouse gases.

A manufacturer's compliance is based on a comparison of a manufacturer's fleet-wide fuel economy average against the appropriate CAFE standard.³ The Energy Act grants NHTSA the authority to calculate a car and light truck figure for each manufacturer, measuring compliance of domestically produced and imported cars, separately. The law considers a vehicle domestic if at least 75 percent of the cost of the vehicle to the manufacturer is attributable to value added in the United States, Mexico, or Canada.

Congress set a standard for passenger cars (currently 27.5 mpg) but did not establish specific CAFE standards for light trucks in the Energy Act.

¹Pub. L. 94-163.

²For CAFE purposes, NHTSA currently defines light truck as a four-wheel vehicle which is designed for off-road operation or which is designed to perform certain functions such as transporting more than 10 people or transporting property in an open bed. This includes most pickup trucks, minivans, and sport utility vehicles. The most recent standards NHTSA set will apply to trucks up to 10,000 lbs. and pickup trucks up to 8,500 lbs.

³For example, manufacturers meet the standard if the average mpg of all the vehicles they manufacture in a year meet the CAFE standard for that year. Manufacturers have had to meet mpg of 27.5 for cars since 1990. EPA performs the tests that determine what mpg each manufacturer's model obtains. A model's CAFE figure generally differs from the window sticker a new vehicle displays showing its fuel economy. The window sticker mpg is determined through a different methodology than the CAFE figure.

Instead, the Energy Act grants NHTSA authority to establish both the structure of the CAFE program and the fuel economy standards for different classes of light trucks. Rather than Congress specifying a mpg target for light trucks as it did for passenger cars, NHTSA is required to set standards at the maximum feasible level using the same criteria and lead-time requirements used in setting standards for passenger cars. However, appropriations acts restricted NHTSA from increasing or otherwise changing CAFE standards from fiscal year 1996 through 2001. For fiscal year 2002, Congress did not renew the multiyear freeze on NHTSA's CAFE rule-making responsibilities and the agency resumed efforts for future rule makings to raise CAFE standards for light trucks.

The CAFE program is generally considered to have contributed to increasing the nation's fuel economy. For example, a 2002 NAS report found that the CAFE program has been particularly helpful in keeping fuel economy above levels to which it might have fallen due to the low and declining real price of gas. The NAS study estimated that if fuel economy had not improved, gas consumption and oil imports would have been about 14 percent higher than they were in 2002.

To help meet CAFE standards, manufacturers may earn credits that can be used to help them meet fuel economy standards. For instance, if a manufacturer exceeds the required fuel economy in a certain year, it earns credits that can be applied to past or future model-year fuel economy numbers. Credits, however, cannot be passed between manufacturers or among fleets. In addition, the Alternative Motor Fuels Act of 1988 encourages the use of alternative fuels by giving credits to manufacturers toward meeting CAFE standards for producing cars that can run on alternative fuels⁴ in addition to gas. Under the resulting "Dual Fuel" program, manufacturers may earn up to a 1.2 mpg credit for producing vehicles through model year 2010 that are capable of using both regular gasoline and an alternative fuel.⁵ If a manufacturer does not meet the standards and has no credits to apply, it must pay a civil penalty.

In addition to CAFE standards administered by NHTSA, Congress and other federal agencies have established programs to reduce oil consumption in the transportation sector. These programs include (1)

⁴Alternative fuels are fuels other than conventional fossil fuels and include ethanol, hydrogen, and batteries.

⁵NHTSA has the authority to continue this credit through rule making.

vehicle acquisition requirements at federal agencies to purchase alternative fuel vehicles, (2) research and development of alternative fuels and new vehicle technologies, and (3) tax incentives for consumers purchasing fuel efficient vehicles like hybrids.

In addition to NHTSA, other federal entities contribute to the nation's efforts to reduce oil consumption. For example, DOE coordinates federal research on strategies for reducing oil consumption; developing advanced technologies such as fuel cells; producing and using alternative fuels and more fuel efficient vehicle technology, as well as providing grants for research into such areas as plug-in hybrid⁶ technology and ways to expand the production and use of ethanol. In addition, the National Economic Council assists the administration in developing its energy initiatives.

NHTSA Recently Raised and Restructured Light Truck CAFE Standards and Has Not Raised the Car CAFE Standard Since 1990, but Has Requested Authority to Make Changes

NHTSA has recently raised the light truck CAFE standard and reformed the program using a method that categorizes light trucks based on their size, doing so in part to address potential safety concerns. CAFE standards for cars have not changed since 1990. This is due, in part, to past congressional prohibitions against NHTSA using any of its appropriation to raise fuel economy standards and, more recently, NHTSA's preference to tie raising the car standard to restructuring the program. Recently, the administration has submitted a proposal to restructure and increase passenger car CAFE standards. Members of Congress also have submitted proposals to change the CAFE standards.

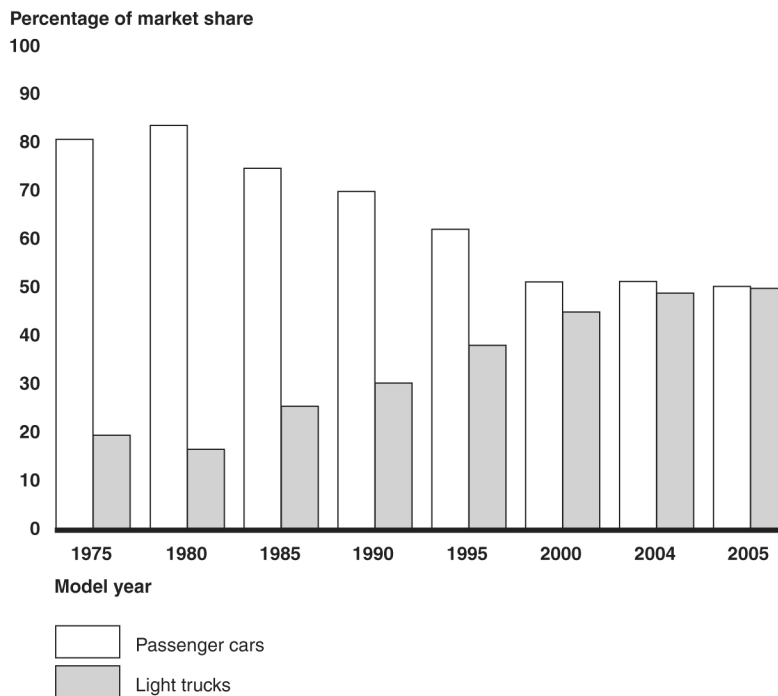
NHTSA Recently Increased Standards and Reformed the Light Truck CAFE Program

In April 2003, NHTSA released a final rule increasing light truck CAFE standards from 20.7 mpg in 2004 to 22.2 mpg in 2007. As part of this rule making, NHTSA explained the importance of increasing the CAFE standards for light trucks because of the growing market share of these vehicles. The impact of the light truck market on overall oil consumption in the United States had grown since the beginning of the CAFE program

⁶Hybrid technology refers to vehicles that run on both a gasoline-powered engine and an electric battery. Plug-in hybrids are vehicles that recharge their battery at battery charging stations.

as market share for these vehicles has increased. Specifically, in 1980, shortly after the program began, light trucks composed about 20 percent of the new passenger vehicle market in the United States. By 2005, light trucks, including minivans, pickup trucks, and sport utility vehicles, accounted for about 50 percent of the new passenger vehicle market in the United States. The overall fuel economy of the U.S. vehicle fleet declined in the 1990s, in part due to the increased market share of light trucks. (See fig. 1 showing share of fleet composed by light trucks).

Figure 1: Increased Share of Light Trucks in the U.S. Passenger Vehicle Market



Source: GAO analysis of data from DOE/Transportation Data Energy Book, edition 25.

While NHTSA took these steps to raise CAFE standards for light trucks, the agency also began investigating reforming the light truck CAFE program in part to address safety concerns. A 2002 National Academy of Sciences (NAS) report⁷ on the impact of CAFE standards⁸ stated that

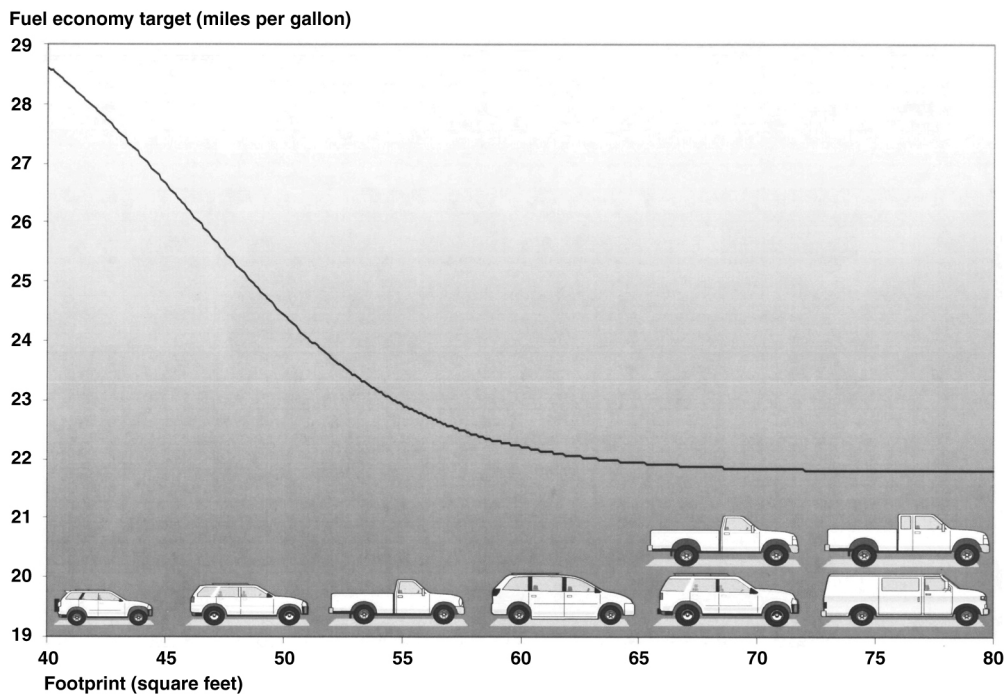
⁷“Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards,” National Academy of Sciences (Washington, D.C.: 2002).

⁸Congress requested that the National Academy of Science, in consultation with DOT, conduct a study to evaluate the effectiveness and impacts of CAFE Standards.

because the easiest way for an automobile manufacturer to increase vehicle fuel economy is to decrease vehicle weight, increases to CAFE standards were likely to have a negative impact on safety and result in more highway fatalities. The report recommended that NHTSA investigate implementing a CAFE system based on the attributes of a vehicle, such as size and/or weight, where there would be separate standards for vehicles with similar attributes.

In response, NHTSA released a rule in April 2006 that reforms the structure of the CAFE program for light trucks and continues to increase light truck CAFE standards for model years 2008 to 2011. Under the new rule, fuel economy standards are established based upon truck size instead of having one average standard for all light trucks. Each truck is assigned a fuel economy “target” based on a measure of vehicle size called “footprint,” the product of multiplying a vehicle’s wheelbase (the distance from front to the rear axles) by its track width (the horizontal distance between the tires). (See fig. 2 for a display of how the standard applies to trucks of different sizes).

Figure 2: Application of Reformed Light Truck CAFE Standards to Light Trucks of Different Sizes for Model Year 2011



Source: NHTSA.

According to NHTSA officials, the reformed CAFE approach may enable the country to achieve larger reductions in oil consumption, while enhancing safety and preventing adverse economic consequences. Under the current standard, manufacturers of smaller light trucks may already exceed the fleet CAFE standard and, therefore, have little incentive to increase fuel economy. However, under the reformed standards, the required overall fuel economy of the light truck fleet will rise over time. In addition, the reformed standards include larger vehicles such as sport utility vehicles, but not pickup trucks, weighing between 8,500 and 10,000 pounds that previously were exempt from the CAFE program. NHTSA estimates that including these vehicles in the CAFE program will save 7.8 billion gallons of fuel over the life of the vehicles sold between 2008 and 2011.⁹ In addition to these expected fuel savings, the reformed CAFE standards offer enhanced safety by discouraging downsizing of vehicles since, as vehicles become smaller, the applicable fuel economy target becomes more stringent. In addition, according to NHTSA, the reformed CAFE standards spread the regulatory cost burden for fuel economy improvements more broadly across the industry instead of concentrating it more exclusively on the manufacturers who may produce heavier, less fuel efficient vehicles.

NHTSA Has Not Raised the Car CAFE Standard Since 1990 but Has Requested Authority to Make Changes

The 1975 Energy Act established CAFE standards for passenger cars for model years 1978 to 1980 and 1985 and thereafter. The standards called for manufacturers to produce vehicles averaging 18 mpg in 1978, rising to 27.5 mpg by 1985.¹⁰ In the 1980s, NHTSA reduced the CAFE standard for cars, and the agency did so for model years 1986 to 1989. NHTSA raised the car CAFE standard back to 27.5 mpg for the 1990 model year and has made no changes to the standard since then. See table 1 showing CAFE standards over time.

⁹71 Fed. Reg. 17566 (2006).

¹⁰The Secretary of Transportation issued interim standards for 1981 to 1984.

Table 1: Fuel Economy Standards for Passenger Cars and Light Trucks, Model Years 1985 through 2007, in miles per gallon

| Model year | Passenger cars | Light trucks |
|-------------------|-----------------------|---------------------|
| 1985 | 27.5 | 19.5 |
| 1986 | 26.0 | 20.0 |
| 1987 | 26.0 | 20.5 |
| 1988 | 26.0 | 20.5 |
| 1989 | 26.5 | 20.5 |
| 1990 | 27.5 | 20.0 |
| 1991 | 27.5 | 20.2 |
| 1992 | 27.5 | 20.2 |
| 1993 | 27.5 | 20.4 |
| 1994 | 27.5 | 20.5 |
| 1995 | 27.5 | 20.6 |
| 1996 | 27.5 | 20.7 |
| 1997 | 27.5 | 20.7 |
| 1998 | 27.5 | 20.7 |
| 1999 | 27.5 | 20.7 |
| 2000 | 27.5 | 20.7 |
| 2001 | 27.5 | 20.7 |
| 2002 | 27.5 | 20.7 |
| 2003 | 27.5 | 20.7 |
| 2004 | 27.5 | 20.7 |
| 2005 | 27.5 | 21.0 |
| 2006 | 27.5 | 21.6 |
| 2007 | 27.5 | 22.2 |

Source: NHTSA.

NHTSA officials cited several reasons for not raising the CAFE standard over 27.5 mpg. First, for several years, Congress specifically prevented NHTSA from making any adjustments to CAFE. Beginning in fiscal year 1996 and lasting through fiscal year 2001, Congress included language in DOT's appropriations acts preventing NHTSA from expending any appropriated funds for rule makings to adjust CAFE standards, for either cars or trucks. Second, although NHTSA officials state that the agency has the legislative authority to raise CAFE standards for cars above 27.5 mpg,

as specified by the Energy Act, these officials stated the Energy Act prevents NHTSA from restructuring the program, for example, by developing a size-based standard as it recently did for light trucks.¹¹ NHTSA is reluctant to raise the car standards without restructuring the program as it is concerned about the effect on safety, competition between auto manufacturers, and other issues.

However, in 2007 the NHTSA Administrator submitted proposed legislation to Congress that, if enacted, would give the Secretary of Transportation the authority to restructure and increase CAFE standards for cars. The proposal calls for the fuel economy standard to be the maximum level that NHTSA believes the manufacturers could achieve in a specific model year. The proposal would also give NHTSA the power to base the standard on one or more vehicle attributes similar to the light truck standard. In addition, the proposal calls for a credit trading system among manufacturers. If a manufacturer exceeds the mileage standard, it can sell its credits to another manufacturer or a broker. The proposal does not provide a specific goal or mpg standard; but, like the light truck standard, it sets an average fuel economy standard that is the maximum feasible average fuel economy level that the Secretary of Transportation decides the manufacturers can achieve in a specific model year. NHTSA officials indicate that they may follow a process similar to the rule-making process they followed to recently reform and set new light truck standards.

In addition to this proposed legislation, several Members of Congress have submitted bills that have some similarities to the Secretary's proposal but, if enacted, would set a specific fuel economy mpg standard for manufacturers to meet, rather than allow NHTSA to determine the maximum feasible level. For example, one bill calls for cars and light trucks achieve a combined CAFE average of 35 mpg by 2019.¹² Another bill would raise CAFE standards for passenger cars to 40 mpg by 2017.¹³ These

¹¹The Energy Act includes a so-called legislative veto provision allowing either the House of Representatives or the U.S. Senate to disapprove any attempt to increase CAFE standards above the current 27.5 mpg level (or decrease them below 26.0 mpg). However, since the Energy Act was passed, the Supreme Court has held that such legislative vetoes are unconstitutional.

¹²S. 357, 110th Congress.

¹³S. 183, 110th Congress.

are only selected examples of the many bills currently pending in Congress on this topic.

A Majority of Industry Stakeholders and Experts Support NHTSA's Recent CAFE Revisions, While Recommending Further Refinements to the CAFE Program and Ways for NHTSA to Improve Its Capability to Revise Standards

The majority of industry stakeholders and experts with whom we spoke supported NHTSA's revisions to the light truck standards, and many of them specifically stated that NHTSA should consider further refinements to the CAFE program, such as restructuring the car CAFE standards based on the size of the vehicle. In addition to these refinements, stakeholders and experts identified issues about both the appropriate information for NHTSA's rule making deliberations and NHTSA's capabilities to most effectively revise car CAFE standards. For example the model that NHTSA uses to estimate the impact that changes in CAFE standards will have on oil consumption does not currently place a dollar value on the reduction of carbon emissions. If NHTSA is able to revise car standards, it may be an opportunity to consider how to value greenhouse gas emissions. Furthermore, many experts indicated that the agency would benefit from some additional expertise, for example, on automotive engineering to, among other duties, review product plans automakers submit in the CAFE rule-making process.

Stakeholders and Experts Support Recent Restructuring of Light Truck Standards

While it is impossible to determine the extent to which NHTSA's recent restructuring of the light truck CAFE standards will reduce oil consumption since the standards will not take full effect until vehicle model year 2011, experts and industry stakeholders whom we interviewed generally praised the restructuring. Many, including representatives from the insurance industry, specifically praised the restructured CAFE program for removing most incentives manufacturers may have had to reduce vehicle weight in order to meet CAFE standards, and thereby make vehicles less safe. A number of experts also noted that the restructured standards treated all manufacturers more equitably, in that each company would now have an incentive to use additional fuel efficient technologies across its light truck fleets, rather than only in selected vehicles needing a boost to meet CAFE standards.

Auto industry representatives with whom we spoke also supported the restructuring because it seemed to spread the burden of compliance evenly across the industry. Also, industry representatives stated that the reformed light truck standard did not favor big or small vehicles, so manufacturers could produce a range of vehicles that appeal to different segments of the market.

A few experts with whom we spoke expressed concern regarding the reformed standards, stating that NHTSA did not raise CAFE standards far enough or that the system could not guarantee oil savings because manufacturers could choose to build—and consumers might elect to buy—trucks with the largest footprints, which must meet lower fuel economy standards than smaller trucks.

Experts Have Recommended Further Refinements to the CAFE Program

Many of the experts with whom we spoke identified several refinements to the CAFE program that could improve the program by improving safety, making the program more equitable for manufacturers, or reducing the costs that manufacturers incur to comply with the program. In addition to increasing fuel efficiency standards to reduce oil consumption, further refinements may help address safety concerns and improve the efficiency of the CAFE program. Some of these potential changes include the following:

- *Evaluating footprint approach for cars:* Currently, the car standard uses a single, mpg standard as opposed to the recently reformed light truck standard, which uses a footprint-based standard. The majority of the experts with whom we spoke believed that changing the structure of the light truck program to a footprint-based standard was positive, and many of them specifically stated that NHTSA should be allowed to evaluate a similar structure for the car program. They believe that such a structure will provide similar safety benefits to those expected with the revised truck program and would also treat car companies more equitably.
- *Harmonizing light truck and passenger vehicle standards:* Currently, light truck and car standards are separate. However, of those experts that expressed an opinion, almost all thought the car and light truck CAFE programs should be harmonized if a footprint system was instituted for cars as it has been for light trucks. Experts noted several advantages of harmonizing the programs, including reducing the current incentive for manufacturers to reclassify vehicles from cars to light trucks in order to be able to comply with a lower CAFE standard. One expert also noted that harmonizing cars and light trucks was appropriate, given that light trucks are now primarily used as passenger vehicles rather than as cargo and agricultural vehicles, as was the case when CAFE was instituted.
- *Reassessing the length of time for which CAFE standards are set:* Currently, NHTSA sets new CAFE standards generally for 2 to 4 years at a time with the first new year of standards beginning 18 months after the completion of a rule-making process. Of those that expressed an opinion, almost all the experts with whom we spoke stated that setting standards

for about 7 to 10 years out reduces costs for manufacturers by allowing the manufacturers to capitalize on normally scheduled plans to redesign models.

- *Allowing CAFE credit trading between vehicle classes and among manufacturers:* Currently, if manufacturers exceed the required fuel economy in a certain year, they earn credits that can be applied to past or future model-year fuel economy numbers. Such credits applied to previous model years are known as “carry-back” credits, while those applied to future model years are known as “carry-forward” credits. These credits cannot be traded among manufacturers or between fleets (that is, between cars and trucks). Of those who expressed an opinion, many of the experts with whom we spoke thought that the manufacturers should have greater flexibility in trading CAFE credits than is now afforded under the “carry-forward carry-back” approach. Economists in particular noted that credit trading both between vehicle classes within a manufacturer’s own fleet and credit trading among manufacturers would reduce the compliance costs of CAFE for manufacturers, since manufactures for whom it would be very costly to achieve a CAFE standard for a particular line could trade with another line where exceeding the standard would be less costly.
- *Removing the distinction between domestic versus import vehicles to calculate CAFE standards:* Currently, the CAFE program determines a manufacture’s compliance with CAFE car standards for its domestic- and foreign-made fleets, separately. According to a labor union official, this distinction was designed as a way to keep some small car production within the country and thus protect workers that produce small cars domestically. Of those who expressed an opinion, almost all the experts we spoke to believe that CAFE compliance should no longer be calculated separately for domestic and import fleets. Industry representatives noted that cars produced in Canada and Mexico count as domestic vehicles and that many foreign manufacturers make vehicles in the United States, thus the distinction is not as meaningful as it once was. However, the union believes that if this incentive is removed, automakers will continue producing small cars in foreign markets, but close domestic plants producing small cars, thus adversely impacting U.S. jobs.

**NHTSA and Experts
Identified Ways to Improve
NHTSA Capabilities to
Reform the CAFE Program**

As discussed above, the Secretary of Transportation has submitted legislation to Congress that, if enacted, would give the Secretary of Transportation the authority to revise CAFE standards for cars. Many of the experts with whom we spoke raised some concerns about NHTSA’s capabilities to revise CAFE standards. These experts identified several ways NHTSA could improve its capabilities to revise CAFE standards in

the future. In some instances, NHTSA officials acknowledged the benefit of these potential improvements.

- *Expanding staff expertise and levels:* Two experts with whom we spoke cited the congressional prohibition on any work at NHTSA to increase CAFE standards in the 1990s as a reason the agency lost qualified, experienced staff. An expert stated that in the past, NHTSA was more aggressive at critiquing cost estimates and product plans that automakers submitted when the agency was determining how much of an increase in CAFE standards the auto manufacturers could handle technologically. Several experts believed that NHTSA currently does not have the capacity to do this sort of checking. NHTSA officials disagreed with this assessment but stated that additional staff with automotive engineering skills would help them in future CAFE rule makings and that they will hire an additional person with an automotive engineering background. NHTSA officials agreed that they are, to a degree, dependent on the information automakers provide them about product plans and future technological capabilities in enhancing fuel economy.
- *Updating the NAS report:* NHTSA officials involved in setting the reformed light truck standard told us they relied extensively on the 2002 NAS report that evaluated CAFE standards. Specifically, these officials cited the report's assessment of the impact on fuel economy and cost of emerging automotive technologies as crucial to their decision making about how high to raise future CAFE standards and how quickly to require future increases. Also, NHTSA officials stated that because the report had been peer reviewed, it was even more useful and mitigated criticism regarding the agency's assumptions. NHTSA officials and several experts whom we interviewed supported updating the study, as the original information is now 5 years old and rapidly becoming outdated, since technologies on automotive technologies change quickly, and cost information also varies over time. For example, NHTSA officials pointed out that the study did not include an assessment of alternative technologies, such as electric hybrids. These officials and experts stated that it would be ideal to complete such an update before NHTSA issues a new car or light truck fuel economy standard, and NHTSA has request funding for such a study in its 2008 budget proposal to Congress.
- *Identifying a valuation for greenhouse gas emissions:* Several stakeholders and experts told us they were concerned about certain inputs that NHTSA officials used in the computer model maintained by DOT's Volpe Research Center. NHTSA uses this model as a tool to help estimate the fuel savings that will result from CAFE increases and to estimate how likely it is that the manufacturers will comply with future CAFE

standards.¹⁴ Specifically, some experts were critical of the fact that NHTSA and Volpe staff assigned a “zero” dollar value to the benefit of reductions in greenhouse gas emission that would result from an increased standard. NHTSA officials stated they did this because the scientific community had not reached a consensus on the value that should be assigned to carbon dioxide, though researchers have developed a range of values that could be considered in giving a dollar value to greenhouse gas reductions. Therefore, according to one expert, the results of the model may underestimate the total dollar benefits to society of raising CAFE standards, since the dollar value of reduced greenhouse gas emissions was not included in the model’s results. If the car CAFE program is revised, it may provide an opportunity to revisit how to value a decrease in greenhouse gas emissions through improved fuel efficiency.

Other Federal Programs Also Seek to Reduce Oil Consumption in the Transportation Sector

While the CAFE program is an important program in the nation’s efforts to reduce oil consumption, other policies and programs currently exist to help the nation reduce oil consumption in the transportation sector. The White House National Economic Council’s 2006 Advanced Energy Initiative and the Department of Energy’s Strategic Plan both highlight a number of ongoing programs and initiatives in the transportation sector, such as developing and deploying alternative fuels that can help reduce oil consumption. Other existing programs include CAFE credits for manufacturers of “flex fuel” vehicles capable of running on gasoline or alternative fuels, a federal vehicle acquisition program requiring federal agencies buy vehicles capable of running on alternative fuels,¹⁵ tax incentives for consumers purchasing fuel efficient vehicles like hybrids, and taxes to discourage the purchase of cars with low fuel efficiency, known as the “gas guzzler” tax. We will be reporting in July 2007 on the extent to which these programs complement or contradict the goals of the CAFE program. We will also report on other proposals to reduce oil consumption by cars and light trucks and their potential effects.

¹⁴NHTSA also uses the model to predict the effect of efficiency-increasing technologies on specific vehicle models and to calculate the resultant CAFE levels among vehicle manufacturers resulting from changes in CAFE standards. The model also predicts impact on energy use, and other monetary and nonmonetary externalities.

¹⁵We recently issued a report on the U.S. Postal Service’s attempts to comply with this federal requirement. GAO, *U.S. Postal Service: Vulnerability to Fluctuating Fuel Prices Requires Improved Tracking and Monitoring of Consumption Information*, [GAO-07-244](#) (Washington, D.C.: Feb. 16, 2007).

However, many of the experts with whom we spoke have pointed out that the program granting manufacturers a maximum of 1.2 mpg CAFE credit toward meeting fuel economy standards for flex-fuel vehicles, currently may be actually increasing oil consumption among passenger vehicles. Specifically, the credit allows manufacturers to build these vehicles to meet a lower CAFE standard, and this credit is granted regardless of whether consumers are actually running the vehicles on gas or E85 (a blend of 85 percent ethanol).¹⁶ As a result, flex fuel vehicles fueled with gasoline are generally less efficient than non-flex fuel models because these vehicles have to meet a lower fuel efficiency standard than non-flex fuel models. Also, manufacturers have generally put this flex-fuel capacity in their larger, less efficient models. NHTSA officials pointed out, however, that they view this credit as providing an incentive to auto manufacturers to bring vehicles to the market that can run on E85 and other alternative fuels, which would help expand the infrastructure to make these fuels available to consumers.

Mr. Chairman, this concludes my statement. I would be pleased to answer any questions that you or other Members of the Committee may have at this time.

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¹⁶In 2006, there were about 1,000 E85 stations across the country (mostly in the Midwest) compared with 176,000 stations selling gas.

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