Order Code IB90122

Automobile and Light Truck Fuel Economy: The CAFE Standards

Updated September 17, 2004

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SUMMARY

Omnibus energy legislation (H.R. 6) would authorize $2 million annually during FY2004-FY2008 for the National Highway Traffic Safety Administration (NHTSA) to carry out fuel economy rulemakings. It also expanded the criteria that the agency would be required to take into account in setting maximum feasible fuel economy for cars and light trucks. The current corporate average fuel economy standard (CAFE) is 27.5 miles per gallon (mpg) for passenger automobiles and 20.7 mpg for light trucks (scheduled to increase to 22.2 mpg in model year [MY] 2007), a classification that also includes sport utility vehicles (SUVs).

On November 18, 2003, the House approved the conference report (246-180) on H.R. 6, the omnibus energy bill. On November 21, 2003, a cloture motion to limit debate in the Senate on omnibus energy legislation (H.R. 6) failed (57-40). Attempts to fashion a compromise stalled, and concern grew over the cost of the bill's provisions. On February 12, 2004, following agreement between the Senate Majority and Minority Leaders, Senator Domenici introduced S. 2095, a lower cost omnibus bill that includes the CAFE language that appeared in the conference version of H.R. 6. Passage of an energy bill before adjournment appears unlikely.

Congress had included language in the FY1996-FY2001 Transportation Appropriations prohibiting the use of appropriated funds for any rulemaking on CAFE, effectively freezing the standards. However, facing growing concern over the higher penetration of SUV sales as part of the national fleet, the FY2001 appropriations required a study of CAFE by the National Academy of Sciences (NAS). That study, released on July 30, 2001, concluded that it was possible to achieve a more than 40% improvement in light truck and SUV fuel economy over a 10-15 year period at costs that would be recoverable over the lifetime of ownership.

On April 1, 2003, NHTSA issued a final rule to boost the CAFE of light-duty trucks by 1.5 mpg by 2007. The rule sets the interim standards at 21.0 mpg for model year (MY)2005, 21.6 mpg for MY2006, and 22.2 for MY2007. It was the first increase in CAFE since MY1996.

On December 22, 2003, NHTSA issued an Advance Notice of Proposed Rulemaking not on raising the CAFE standards but on the structure of the program. The agency noted several prominent criticisms of the program and invited comment on several issues. Among these are the definitions and regulations for passenger cars and light duty trucks. Critics argue that the current system encourages manufacturers to nudge larger passenger vehicles into the light truck category and penalizes manufacturers who serve the market for the heavier vehicles in the light truck category. Some critics also argue that the increase in light truck CAFE will be achieved, in part, by downsizing vehicles and compromising safety. A number of other factors also affect vehicle safety, but NHTSA has asked for comment on whether establishment of a different CAFE across multiple weight categories in the truck fleet might better achieve CAFE objectives. Basing CAFE on vehicle attributes is offered as another policy option.

NHTSA has the latitude to make changes in the CAFE program, but some alterations to the structure of the program might require congressional authorization.

MOST RECENT DEVELOPMENTS

Omnibus energy legislation (H.R. 6) would authorize $2 million annually during FY2004-FY2008 for the National Highway Traffic Safety Administration (NHTSA) to carry out fuel economy rulemakings. It also expanded the criteria that the agency would be required to take into account in setting maximum feasible fuel economy for cars and light trucks. The current corporate average fuel economy standard (CAFE) is 27.5 miles per gallon (mpg) for passenger automobiles and 20.7 mpg for model year (MY) 2004 light trucks (scheduled to increase to 22.2 mpg in MY2007), a classification that also includes sport utility vehicles (SUVs).

The conference report on H.R. 6 passed the House on November 18, 2003; however, on November 21, a cloture motion to limit debate in the Senate on H.R. 6 failed (57-40). Attempts to fashion a compromise stalled, and concern grew over the cost of the bill's provisions. On February 12, 2004, following agreement between the Senate Majority and Minority Leaders, Senator Domenici introduced S. 2095, a lower cost omnibus bill that includes the CAFE language that appeared in the conference version of H.R. 6. Passage of an energy bill before adjournment appears unlikely.

On April 1, 2003, the National Highway Traffic Safety Administration (NHTSA) issued a final rule to boost the corporate average fuel economy (CAFE) of light-duty trucks to 22.2 by MY2007, an increase of 1.5 mpg. On December 22, 2003, NHTSA issued an Advance Notice of Proposed Rulemaking soliciting comments from manufacturers and the public on a number of issues relating to the structure of the CAFE program and its classification of light duty trucks.

BACKGROUND AND ANALYSIS

CAFE in the 108th Congress: Omnibus Energy Legislation (H.R. 6)

The conferees on omnibus energy legislation (H.R. 4) in the 107th Congress agreed to House language that would have required a reduction in light truck fuel consumption of 5 billion gallons during the period, MY2006-MY2012. The 107th Congress adjourned without taking final action on the bill. However, a final role issued by the National Highway Traffic Safety Administration (NHTSA) on April 1, 2003, requires a boost in light truck fuel economy to 22.2 miles per gallon (mpg) by model year (MY) 2007.

This rulemaking did not quell interest in CAFE. In the 108th Congress, the House version of an omnibus energy bill (H.R. 6) passed in the House on April 11, 2003, would authorize appropriations to NHTSA to conduct rulemakings and would require a study on the feasibility and effects of reducing fuel use by automobiles. During markup in the House Committee on Energy and Commerce, an amendment by Representative Markey to require reductions of 5% in automotive fuel usage by 2010 and an additional 5% by 2015 was defeated (14-38). An amendment offered on the floor of the House to include only the 5% savings by 2010 was defeated (162-268) as well.

Debate on the Senate energy bill, S. 14, resumed in late July. However, on July 31, 2003, the Senate, facing obstacles to passage of S. 14, substituted the text of the Senate-passed version of H.R. 4 from the 107th Congress, and sent the legislation to conference with the House. The Senate version of H.R. 6 would have required the Secretary of Transportation to issue, not later than 15 months after enactment, "new regulations setting forth increased fuel economy standards" reflecting "maximum feasible fuel economy levels" consistent with factors set out in the original legislation authorizing the corporate average fuel economy standards — the Energy Policy and Conservation Act (EPCA, P.L. 94-163). The Senate bill also included language to freeze "pickup truck" CAFE at 20.7 mpg; however, "pickup truck" is not defined in the bill.

H.R. 6 was reported from conference on November 15, 2003. It would authorize $2 million annually during FY2004-FY2008 for the National Highway Traffic Safety Administration (NHTSA) to carry out fuel economy rulemakings. It also expanded the consideration that the agency would be required to take into account in setting maximum feasible fuel economy for cars and light trucks. The current corporate average fuel economy standard (CAFE) is 27.5 miles per gallon (mpg) for passenger automobiles and 20.7 mpg for light trucks, a classification that also includes sport utility vehicles (SUVs).

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NHTSA Rulemaking for MY2005-MY2007: Light Truck Fuel Economy

In late November 2002, it was reported that the Administration was reviewing a draft proposal by the National Highway Traffic Safety Administration (NHTSA) to boost the Corporate Average Fuel Economy Standard CAFE for light duty trucks by 0.5 miles per gallon (mpg) for each of MYs 2005-2007 — a total of 1.5 mpg by MY2007. On December 16, 2002, NHTSA issued the proposed rule, calling for an increase in light-duty truck CAFE to 21.0 mpg in MY2005, 21.6 mpg in MY2006, and 22.2 mpg in MY2007. Noting the target of a 5 billion gallon savings between MY2006 and MY2012 called for in the conference bill, NHTSA indicates that the proposed increases for MY2006-MY2007 would save more than 3 billion gallons and, if the standard remained at 22.2 mpg through MY2012, approximately 8 billion gallons of gasoline would be saved during the period of MY2006-MY2012. On April 1, 2003, NHTSA announced its adoption of the proposed rule.

In the December 2002 proposal, NHTSA expressed its belief that "some manufacturers may be able to achieve CAFE performance better than they currently project." The agency's analysis assumed that compliance would be achieved by improvements in technology, and not by lightening vehicles and jeopardizing vehicle safety. NHTSA also indicates that it has "tentatively concluded that it is unnecessary for any manufacturer to restrict the utility of their products to meet our proposed CAFE standards."

NHTSA's calculation of the net benefits of the proposed boost to SUV CAFE is shown below. The estimate of the net benefits is significantly higher in the second and third years because the first increment of improvement is only 0.3 mpg, while it is 0.6 mpg in the second and third years. The "societal benefits" are calculated on an assumption of $0.083 per gallon over the lifetime of the vehicle. This assumes a benefit of $0.048 for the effect on the world market price for gasoline owing to lower U.S. demand, and $0.035 for the reduction in threat from oil supply disruption.

	Total Costs (million)	Total Societal Benefits (million)	Net Benefits (million)
MY2005	$108	$219	$111
MY2006	221	513	292
MY2007	373	794	421

Though NHTSA announced a boost of 1.5 mpg in light truck fuel economy in its final rule issued April 1, 2003, some argue that more steps should be taken. Senator Feinstein has introduced legislation (S. 255) that, among other provisions, would expand the applicability of fuel economy standards to vehicles up to 10,000 pounds GVW. While NHTSA has issued a rule boosting light truck CAFE, some policymakers believe an increase in passenger automobile CAFE is also in order. Others argue that the automotive industry should not be further burdened at this time by higher CAFE requirements.

Advance Notice of Proposed Rulemaking: December 2003

On December 22, 2003, NHTSA issued an Advance Notice of Proposed Rulemaking inviting comments not on the appropriate stringency of CAFE standards but on the structure of the program. The agency noted four broad criticisms of the program, and areas in which it invited comment:

- *Vehicle classifications.* Some argue that the considerable difference in passenger car and light truck fuel economy standards presents an incentive for manufacturers to produce vehicles that can be classified in the light truck category. Similarly, the applicability of CAFE standards to vehicles less than 8,500 pounds Gross Vehicle Weight (GVW) encourages manufacturers to offer vehicles that exceed this weight. Among many issues, the agency invited comment on whether or not the CAFE program should be extended to encompass vehicles of less than 10,000 pounds GVW.

- *Safety*. The trade-off between vehicle weight and safety continues to be controversial. Some argue that the increase in light truck fleet fuel economy to 22.2 mpg by 2007 will be achieved, in part, by reducing the weight of vehicles and possibly raising the risk to passengers and drivers. However, it's also noted that weight reduction of the heaviest vehicles in this category might achieve some savings without penalty to safety. Complicating any analysis is the fact that reductions in vehicle weight raise the odds of

survival for occupants of other vehicles involved in an accident. There are a number of other factors governing safety; it is a complex issue.

- *Economic impacts.* Increases in mandated fuel economy have economic consequences. Analysis by the Energy Information Administration suggests that a "sustained gradual increase" in light truck fuel economy of 0.6 mpg from 2007 to 2025 would incur a loss of $84 billion in real GDP over the period. Additionally, the structure of the light truck standards favors manufacturers who produce a line of models that includes some of the smaller vehicles in the light truck class. For example, two manufacturers could produce a vehicle of similar weight. However, the manufacturer of the less efficient of these two vehicles could still have a lower overall truck fleet fuel economy average if its product mix includes more smaller trucks than the other manufacturer.

- *Vehicle attributes.* The agency invited comment on whether or not the definitions and classifications of light trucks need to be amended in light of the considerable change in the vehicle feet and consumer demand since the CAFE program went into effect in 1977. Options that have been proposed include keying vehicle CAFE to vehicle "attributes," which could include vehicle weight or vehicle size, and the establishment of multiple classifications. Some argue that this will still encourage "upsizing," or "vehicle creep," to place a vehicle in a less stringent CAFE category. Classification of vehicles with "flat floors" as light trucks — that is, the capability of removing seats to create a flat load floor — has enabled manufacturers to incorporate flat floor design into vehicles that might have otherwise been classified as passenger automobiles. The PT Cruiser is cited as an example of this. Inclusion of cargo beds of any size may also allow classification of a vehicle as a light truck.

Origins of CAFE

The Arab oil embargo of 1973-1974 and the tripling in the price of crude oil brought into sharp focus the fuel inefficiency of U.S. automobiles. New car fleet fuel economy had declined from 14.8 miles per gallon (mpg) in model year (MY)1967 to 12.9 mpg in 1974. In the search for ways to reduce dependence on imported oil, automobiles were an obvious target. The Energy Policy and Conservation Act (P.L. 94-163) established corporate average fuel economy (CAFE) standards for passenger cars for MY1978-MY1980 and 1985 and thereafter. The CAFE standards called for a doubling in new car fleet fuel economy, establishing a standard of 18 mpg in MY1978 and rising to 27.5 by MY1985. (Interim standards for model years 1981-1984 were announced by the Secretary of Transportation in June of 1977.) EPCA also established fuel economy standards for light duty trucks, beginning at 17.2 mpg in MY1979 and currently 20.7 mpg. However, on April 1, 2003, NHTSA issued a final rule that will boost light truck fuel economy to 22.2 mpg in MY2007 — an increase of 1.5 mpg. (The CAFE standards to FY2003 are summarized in **Table 1**.)

Compliance with the standards is measured by calculating a sales-weighted mean of the fuel economies of a given manufacturer's product line, with domestically produced and imported vehicles measured separately. As originally enacted, the penalty for non-

compliance was $5 for every 0.1 mpg below the standard, multiplied by the number of cars in the manufacturer's new car fleet for that year. Civil penalties collected from 1983-1999 totaled roughly $500 million.

When oil prices rose sharply in the early 1980s, smaller cars were selling well, and it was expected that manufacturers would have no difficulty complying with the standards. However, oil prices had declined by 1985. Sales of smaller cars tapered off as consumers began to place less value on fuel economy and gasoline cost as an input in the overall costs of vehicle ownership. In response to petitions from manufacturers facing stiff civil penalties for noncompliance, the National Highway Traffic Safety Administration (NHTSA) relaxed the standard for model years 1986-1989, but it was restored to 27.5 in MY1990. The Persian Gulf War in 1990 caused a brief spike in oil prices, but it also demonstrated that it was unlikely that the United States or many of the producing nations would tolerate a prolonged disruption in international petroleum commerce. As a consequence, U.S. dependence upon imported petroleum, from a policy perspective, was considered less of a vulnerability.

It was also becoming apparent that reducing U.S. dependence on imported oil would be extremely difficult without imposing a large price increase on gasoline, or restricting consumer choice in passenger vehicles. Many argued that the impacts of such actions upon the economy or the automotive industry would be unacceptable. Meanwhile, gasoline consumption, which fell to 6.5 million barrels per day (mbd) in 1982, averaged nearly 8.4 mbd in 1999, and peaked at roughly 9.0 mbd during the summer of 2002. Gasoline demand averaged about 8.6 mbd during the first four months of 2003.

Past Role of CAFE Standards. The effectiveness of the CAFE standards themselves has been controversial. Since 1974, domestic new car fuel economy has roughly doubled; the fuel economy of imports has increased by roughly one-third. Some argue that these improvements would have happened as a consequence of rising oil prices during the 1970s and 1980s. Some studies suggest that the majority of the gains in passenger car fuel economy during the 1970s and 1980s were technical achievements, rather than the consequence of consumers' favoring smaller cars. Between 1976 and 1989, roughly 70% of the improvement in fuel economy was the result of weight reduction, improvements in transmissions and aerodynamics, wider use of front-wheel drive, and use of fuel-injection. The fact that overall passenger car fleet fuel economy remained comparatively flat during a period of declining real prices for gasoline also suggested that the CAFE regulations have contributed to placing some sort of floor under new-car fuel economy.

General criticisms of raising the CAFE standards have been that, owing to the significant lead times manufacturers need to change model lines and because of the time needed for the vehicle fleet to turn over, increasing CAFE is a slow and inefficient means of achieving reductions in fuel consumption. Further, it is argued that the standards risk interfering with consumer choice and jeopardize the economic well-being of the automotive industry. Opponents of raising CAFE usually cite fears that higher efficiency will likely be obtained by downsizing vehicle size and weight, raising concerns about safety.

Proponents of CAFE increases have argued that boosting the standards might bring about the introduction of technological improvements that do not compromise features that consumers value, but which would otherwise not be added because these improvements do add to the cost of a new vehicle.

Table 1. Fuel Economy Standards for Passenger Cars and Light Trucks: Model Years 1978 Through 2007

(miles-per-gallon)

Model year	Passenger cars	Light trucks[1]		
		Two-wheel drive	Four-wheel drive	Combined[2,3]
1978	[4]18.0	—	—	—
1979	[4]19.0	17.2	15.8	—
1980	[4]20.0	16.0	14.0	([5])
1981	2.0	[6]16.7	15.0	([5])
1982	24.0	18.0	16.0	17.5
1983	26.0	19.5	17.5	19.0
1984	27.0	20.3	18.5	20.0
1985	[4]27.5	[7]19.7	[7]18.9	[7]19.5
1986	[8]26.0	20.5	19.5	20.0
1987	[9]26.0	21.5	19.5	20.5
1988	26.0	21.0	19.5	20.5
1989	[10]26.5	21.5	19.0	20.0
1990	[4]27.5	20.5	19.0	20.2
1991	[4]27.5	20.7	19.1	20.2
1992	[4]27.5	—	—	20.2
1993	[4]27.5	—	—	20.4
1994	[4]27.5	—	—	20.5
1995	[4]27.5	—	—	20.6
1996	[4]27.5	—	—	20.7
1997	[4]27.5	—	—	20.7
1998	[4]27.5	—	—	20.7
1999	[4]27.5	—	—	20.7
2000	[4]27.5	—	—	20.7
2001	[4]27.5	—	—	20.7
2002	[4]27.5	—	—	20.7
2003	[4]27.5	—	—	20.7
2004	[4]27.5	—	—	20.7
2005	[4]27.5	—	—	21.0
2006	[4]27.5	—	—	21.6
2007	[4]27.5	—	—	22.2

[1]Standards for MY1979 light trucks were established for vehicles with a gross vehicle weight rating (GVWR) of 6,000 pounds or less. Standards for MY1980 and beyond are for light trucks with a GVWR of 8,500 pounds or less.

[2]For MY1979, light truck manufacturers could comply separately with standards for four-wheel drive, general utility vehicles and all other light trucks, or combine their trucks into a single fleet and comply with the standard of 17.2 mpg.

[3]For MYs 1982-1991, manufacturers could comply with the two-wheel and four-wheel drive standards or could combine all light trucks and comply with the combined standard.

[4]Established by Congress in Title V of the act.

[5]A manufacturer whose light truck fleet was powered exclusively by basic engines which were not also used in passenger cars could meet standards of 14 mpg and 14.5 mpg in MYs 1980 and 1981, respectively.

[6]Revised in June 1979 from 18.0 mpg.

[7]Revised in October 1984 from 21.6 mpg for two-wheel drive, 19.0 mpg for four-wheel drive, and 21.0 mpg for combined.

[8]Revised in October 1985 from 27.5 mpg.

[9]Revised in October 1986 from 27.5 mpg.

[10]Revised in September 1988 from 27.5 mpg.

Source: Automotive Fuel Economy Program, Annual Update, Calendar Year 2001, appearing in full at: [http://www.nhtsa.dot.gov/cars/problems/studies/fuelecon/index.html#TOC]; and U.S. Department of Transportation. National Highway Traffic Safety Administration. *Light Truck Average Fuel Economy Standard, Model Year 2004*. Final Rule. [http://www.nhtsa.dot.gov/cars/rules/rulings/Cafe/LightTruck/NPRM-final.htm]

There were highly controversial attempts to significantly raise the CAFE standards on passenger cars in the early 1990s. One proposal included in omnibus energy legislation was so controversial that it contributed to the Senate's inability in 1991 to bring the bill up for debate on the floor.

NHTSA typically established truck CAFE standards 18 months prior to the beginning of each model year, as EPCA allows. However, such a narrow window permitted NHTSA to do little more than ratify manufacturers' projections for the model year in question. In April 1994, the agency proposed to abandon this practice and issued an Advance Notice of Proposed Rulemaking inviting comment on what level that standards might be established for trucks for MY1998-MY2006. The following year, however, after a change in congressional leadership, Congress included language in the FY1996 Department of Transportation (DOT) Appropriations to prohibit expenditures for any rulemaking that would make any adjustment to the CAFE standards. Identical language was included in the appropriations and spending bills for FY1997-FY2000. An effort to pass a sense of the Senate amendment that conferees on the FY2000 DOT Appropriations should not agree to the House-passed rider for FY2000 was defeated in the Senate on September 15, 1999 (55-40). The rider also appeared in the FY2001 DOT Appropriations (H.R. 4475) approved by the House Committee on Appropriations May 16, 2000, and approved by the House May 19, 2000. However, the Senate insisted that the language be dropped in conference, opening the way for NHTSA to initiate rulemakings once again. The conferees also agreed to authorize a study of CAFE by the National Academy of Sciences (NAS) in conjunction with DOT.

Refocusing on Fuel Economy: SUVs, OPEC, and Kyoto

The sharp increase in crude oil and gasoline prices that began in 1999 brought into higher relief the continuing loss of market share of passenger cars to the larger, multi-purpose sport utility vehicles (SUVs) that are subject to the less stringent light-truck fuel economy standard.

Growth of Light-Duty Trucks and SUVs. What has spurred a new focus on CAFE in recent years has been the growing percentage of the fleet made up of light-duty trucks and sport utility vehicles (SUVs), which are subject to a less stringent CAFE standard than are passenger automobiles. In 1976, light trucks constituted roughly 19.8% of new vehicle sales. By 2001, this figure had grown to 50.5%. The change is attributable to the burgeoning popularity of mini-vans and SUVs. In 1985, passenger cars were responsible for more than 70% of annual highway vehicle miles traveled while light trucks accounted for about 22%. By 2000, cars had fallen to 58.3 % while light trucks had grown to 33.6% of annual highway vehicle miles traveled.[1] (See also CRS Report RS20298, *Sport Utility Vehicles, Mini-Vans and Light Trucks: An Overview of Fuel Economy and Emissions Standards*.)

A 1996 study conducted for the Department of Transportation found that consumers valued the larger vehicles for their versatility and roominess, and the availability of four-

[1] Oak Ridge National Laboratory. Center for Transportation Analysis. Transportation Energy Data Book: Edition 22 — 2002: p. 6-1, 7-1.

wheel drive. The increasing market share of these vehicles, combined with their lower average fuel economy, has contributed to a lowering in overall average fuel economy since the mid-1980s.

It takes several years after any increase in CAFE for the savings to be fully realized. This is because it takes several years before older, less efficient cars, trucks and SUVs are retired. The average age of automobiles and trucks in use is 8-9 years; the median age of automobiles is 16.9 years, and 15.5 years for light trucks.[2]

The Kyoto Agreement. Other pressures have had less to do with energy security and more to do with environmental objectives. The Kyoto Agreement would have required the United States to achieve a 7% reduction from1990 levels of carbon dioxide emissions, which implied a significant reduction in gasoline consumption, among other elements. Preferring to forestall any state or federal regulation, General Motors, Ford, Chrysler and Toyota announced on February 4, 1998, that they would produce cars in MY1999 with engine and catalytic converter technologies that would achieve lower emissions. In early November 1998, the California Air Resources Board (CARB) voted to reclassify SUVs 8500 pounds or less as passenger cars and hold those vehicles to California emission standards beginning in MY2004. Ford Motor announced in late July 2000 that it would improve the fuel economy of its SUV model line by 25% over a five-year period. Other manufacturers echoed similar intentions.

Table 2. Domestic and Import Passenger Car and Light Truck Fuel Economy Averages for Model Years 1978-2001

(in MPG)

Model Year	Domestic			Import			All cars	All light trucks	Total fleet
	Car	Light Truck	Com-bined	Car	Light[1] truck	Com-bined			
1978	18.7	—	—	27.3	—	—	19.9	—	—
1979	19.3	17.7	19.1	26.1	20.8	25.5	20.3	18.2	20.1
1980	22.6	16.8	21.4	29.6	24.3	28.6	24.3	18.5	23.1
1981	24.2	18.3	22.9	31.5	27.4	30.7	25.9	20.1	24.6
1982	25.0	19.2	23.5	31.1	27.0	30.4	26.6	20.5	25.1
1983	24.4	19.6	23.0	32.4	27.1	31.5	26.4	20.7	24.8
1984	25.5	19.3	23.6	32.0	26.7	30.6	26.9	20.6	25.0
1985	26.3	19.6	24.0	31.5	26.5	30.3	27.6	20.7	25.4
1986	26.9	20.0	24.4	31.6	25.9	29.8	28.2	21.5	25.9
1987	27.0	20.5	24.6	31.2	25.2	29.6	28.5	21.7	26.2
1988	27.4	20.6	24.5	31.5	24.6	30.0	28.8	21.3	26.0
1989	27.2	20.4	24.2	30.8	23.5	29.2	28.4	20.9	25.6
1990	26.9	20.3	23.9	29.9	23.0	28.5	28.0	20.8	25.4
1991	27.3	20.9	24.4	30.1	23.0	28.4	28.4	21.3	25.6
1992	27.0	20.5	23.8	29.2	22.7	27.9	27.9	20.8	25.1
1993	27.8	20.7	24.2	29.6	22.8	28.1	28.4	21.0	25.2
1994	27.5	20.5	23.5	29.6	22.0	27.8	28.3	20.7	24.7
1995	27.7	20.3	23.8	30.3	21.5	27.9	28.6	20.5	24.9

[2] *Ibid.*, p. 6-1.

Model Year	Domestic			Import			All cars	All light trucks	Total fleet
	Car	Light Truck	Com-bined	Car	Light[1] truck	Com-bined			
1996	28.1	20.5	24.1	29.6	22.2	27.7	28.5	20.8	24.9
1997	27.8	20.2	23.3	30.1	22.1	27.5	28.7	20.6	24.6
1998	28.6	20.5	23.3	29.2	22.9	27.6	28.8	21.1	24.7
1999	28.0	— -	— -	29.0	— -	— -	28.3	20.9	24.5
2000	28.7	— -	— -	28.3	— -	— -	28.5	21.2	24.7
2001	28.8	— -	— -	28.4	— -	— -	28.6	20.9	24.4

[1]Light trucks from foreign-based manufacturers.
Note: Beginning with MY1999, the agency ceased categorizing the total light truck fleet by either domestic or import fleets.

During the Clinton Administration, the Congress was chary of committing the United States to the Kyoto Agreement, pending further decisions about the participation of developing nations, and how the agreement would be enforced. However, on March 27, 2001, Environmental Protection Agency Administrator Christine Todd Whitman indicated that the Bush Administration had "no interest" in any further negotiations on implementing the Kyoto Protocol. On February 14, 2002, the President proposed his own plan to reduce the growth in emissions.

Improving Fuel Economy: Other Policy Approaches

Two possible approaches to reduce gasoline consumption involve (1) raising the price of gasoline through taxation, or other means, to a level that induces some conservation; and (2) increasing the efficiency of the automobile fleet in use. Of course, a combination of these two broad approaches can be used as well.

The Hydrogen Fuel Initiative, FreedomCAR and the Partnership for a New Generation of Vehicles (PNGV) (1993-2003). In his State of the Union Address on January 28, 2003, President Bush announced a new $720 million research and development (R&D) initiative for hydrogen as a transportation fuel. The President's Hydrogen Fuel Initiative is intended to complement a January 2002 Bush initiative to push for development of fuel cells. Called FreedomCAR, the Bush program was intended to replace a government and industry program established by President Clinton in September 1993 — Partnership for a New Generation of Vehicles (PNGV). Research on fuel cells has been a focus of PNGV; of the $127 million provided to the program in FY2002, roughly $40 million was provided for fuel cell research and an additional $20 million for hydrogen R&D. Although the Administration promised that the new initiative, called FreedomCAR, would be more aggressive, others expected it would largely operate along the lines of PNGV. FreedomCAR focuses on cooperative vehicle research between the federal government, universities, and private industry.

The earlier PNGV program had among its goals development of an environmentally friendly "Supercar" that would achieve 80 mpg without sacrificing performance, affordability, and safety. The PNGV was an effort to combine the resources and expertise of federal agencies and laboratories with the private sector to reduce U.S. dependence on oil

and maintain competitiveness without intervening to alter the market price of fuel. Research and development was to be focused on hybrid electric vehicles, direct-injection engines, fuel cells, and greater use of lightweight materials. Production prototypes of the Supercar were projected to be ready by 2004, a deadline that was appearing unlikely to be met.

(For additional information, see CRS Report RS21442, *Hydrogen and Fuel Cell Vehicle R&D: FreedomCAR and the President's Hydrogen Fuel Initiative*.)

Price of Gasoline. Owing to higher taxation of gasoline in other nations, Americans enjoy one of the lowest prices for gasoline. As a consequence, the higher prices since 1999 — especially during the summer driving seasons — are experienced in the United States as a much greater increase, in percentage terms, than elsewhere.

Past proposals to raise the price of gasoline to leverage consumers into more efficient vehicles have garnered little support. Owing to the relative price inelasticity of gasoline demand, many believe that the size of the price increase it would take to curb gasoline consumption to any degree would have a damaging effect on the economy of several times greater magnitude. Indeed, analysis of recent research (Plotkin, Greene, 1997, cited in References) suggested that an increase in gasoline taxes would be one-third as effective in achieving a reduction in demand as studies of the 1980s once projected. This is a significant reflection of the place that personal transportation and inexpensive gasoline has assumed in our economy and value system.

Price, however, could be used to at least keep some floor under the cost of gasoline to motorists. For example, some argued during past episodes of high prices that, when prices softened again, the federal government should step in and capture the difference as a tax, and possibly devote the proceeds to developing public transportation infrastructure and incentives. This tax could be adjusted periodically to see that gasoline would not become less expensive than a certain level in real (inflation adjusted) dollars.

Owing to the unpopularity of raising gasoline prices, raising the CAFE standard is more comfortable for some; however, it is a long-term response. Depending upon the magnitude of an increase in gasoline prices, no matter what the cause, a price-induced conservation response is nearly immediate and may grow as consumers initially drive less and eventually seek out more efficient vehicles.

CAFE and Reduction of Carbon Dioxide Emissions. Vehicles account for one-fifth of U.S. production of CO_2 emissions. Some argue that raising the CAFE standards would be an ineffective or marginal way to reduce emissions of carbon dioxide. On one hand, improvements in fuel economy should enable the same vehicle to burn less fuel to travel a given distance. However, to the extent that technologies to improve fuel economy add cost to new vehicles, it has been argued that consumers will tend to retain older, less efficient cars longer. It has also been suggested that there is a correlation between improved fuel economy and an increase in miles driven and vehicle emissions. However, vehicle miles traveled have continued to increase in recent years when fuel economy improved only slightly, suggesting that the broader factor is the overall cost of driving, which is tied as well to the price of gasoline. The relationship between where people live and where they work is also a factor.

The Clinton Administration proposed a five-year, $6.3 billion package of tax credits, and reliance on voluntary efforts by individuals and industry, to meet the proposed targets of the Kyoto agreement. Many believed that the Clinton Administration plan would fall well short, largely because carbon emissions are forecast by the Department of Energy to be 34% above 1990 levels by the year 2010. Some urged that Congress disapprove the treaty and sought renegotiation of the targets, arguing that meeting the proposed targets would require possibly crippling taxes and regulations. Others suggested that a significant increase in CAFE requirements would help meet the Kyoto targets and that an increase in CAFE should not wait final dispensation of the agreement. However, as noted earlier, the Bush Administration has removed the U.S. from the Kyoto process in favor of, for example, voluntary commitments on the part of industry.

One interesting development is legislation enacted in July 2002 in California authorizing the California Air Resources Board (CARB) to establish regulations reducing greenhouse emissions from cars, light trucks and non-commercial vehicles. These would apply to MY2009 vehicles. The legislation, which makes California the first state to regulate carbon dioxide emissions, may be challenged. Though the legislation neither sets target reductions nor specifies how they are to be achieved, the assumption is that these reductions could only be achieved by higher efficiency. Consequently, the automobile industry argues that the law infringes on the authority of the federal government to set fuel economy standards.

Senate Debate on S. 14

The Senate was debating its own energy bill, S. 14, on July 31, 2003, when it decided to send to conference the version of the energy legislation (H.R. 4) that the Senate had passed in the second session of the 107th Congress. It may be useful to detail Senate action on S. 14 before it was abandoned in favor of passing the energy bill approved by the Senate in the 107th Congress. Prior to that action on July 31, 2003, there had been some debate and attempts to amend the CAFE provisions of S. 14. That Senate energy bill would have:

- required that, in determining "maximum feasible average fuel economy," NHTSA consider technological feasibility and economic practicability, the effect of other standards — such as emissions — on fuel economy, the relationship between fuel economy and vehicle safety, the effect of higher fuel economy standards on employment, and the nation's need to conserve energy;
- required that NHTSA provide an environmental assessment of the effects of any boost in CAFE standards;
- extended the CAFE credit for dual-fueled vehicles;
- required that federal agencies increase the fuel economy of their fleets by 3 mpg above a baseline of the fleet average for vehicles purchased in 1999; and
- authorized $5 million for carrying out the provisions of the section during MY2004-MY2008.

On July 29, the Senate adopted S.Amdt. 1386 (66-30), which included provisions to:

- require NHTSA to establish new standards for passenger cars not more than 30 months after enactment, and for non-passenger vehicles by April 2006. It would establish additional considerations that must be weighed by NHTSA in determining "maximum feasible average fuel economy."
- establish expedited procedures for congressional legislation that would set new standards if NHTSA failed to meet the above deadlines; and
- authorize appropriations in FY2004-FY2006 for research and development on hybrid and diesel-fueled vehicles, and require that agencies of the executive branch acquire hybrid and alternative-fueled vehicles so long as they meet the agency's needs.

An amendment (S.Amdt. 1384) to raise the CAFE of passenger vehicles to 40 mpg, and non-passenger vehicles to 27.5 mpg, by MY2014, was defeated (32-65). This amendment would also have raised the applicability of CAFE standards to heavier vehicles, and would have raised the civil penalties for non-compliance with the standards and index them to inflation. A further amendment (S.Amdt. 1385) to boost the gas guzzler tax added to the cost of inefficient vehicles, and to institute credits for purchase of vehicles significantly higher than the CAFE standards in effect, was pending when the Senate substituted last year's bill and sent it to conference with the House version of H.R. 6.

On June 9, 2003, the Senate agreed (99-1) to an amendment proposed by Senator Landrieu that would require the Administration to develop a plan to reduce U.S. oil consumption by 1 million barrels daily by 2013 from projected consumption levels. The amendment does not create any new authorities. Rather, it would give the Administration the latitude to use currently existing authorities, including CAFE. Opponents of an increase in CAFE especially embraced the amendment because it would require a significant reduction in petroleum consumption without necessarily using CAFE as one of the levers.

Some policymakers argue that more needs to be done to reduce vehicle fuel consumption. Currently, light truck fuel economy standards do not apply to vehicles above 8,500 pounds gross vehicle weight (GVW). Senator Feinstein has introduced legislation (S. 255) that, among other provisions, would expand the applicability of fuel economy standards to vehicles up to 10,000 pounds GVW. The Fuel Economy Improvements Act (S. 794), introduced by Senator Durbin, would raise passenger car CAFE to 40 mpg by 2015. A companion measure, the Tax Incentives for Fuel Efficient Vehicles Act (S. 795), would establish a new tax credit for purchases of vehicles that exceed the current CAFE standards by at least 5 mpg and would modify the gas guzzler tax to include SUVs and some larger vehicles not currently subject to the tax. Opponents of measures like these argue that the automotive industry should not be further burdened at this time by higher CAFE requirements.

LEGISLATION

H.R. 6 (Tauzin)

Enhances energy conservation and research and development, provides for security and diversity in the energy supply for the American people, and for other purposes. Introduced April 7, 2003. Passed House (247-175) April 11, 2003. Senate version passed (84-14) July

31, 2003. Reported from conference, November 17, 2003. Passed House (246-180) November 19, 2003. Motion to invoke cloture failed in the Senate (57-40), November 21, 2003.

S. 14 (Domenici)

Enhances the energy security of the United States, and for other purposes. Introduced April 30, 2003; reported May 6, S.Rept. 108-43. For technical reasons, the Senate report reads to accompany S. 1005; however, the debate referred only to S. 14.

S. 255 (Feinstein)

Amends title 49, United States Code, to require phased increases in the fuel efficiency standards applicable to light trucks; requires fuel economy standards for automobiles up to 10,000 pounds gross vehicle weight; increases the fuel economy of the federal fleet of vehicles; and for other purposes. Introduced January 30, 2003; referred to Committee on Commerce, Science, and Transportation.

S. 2095 (Domenici)

Enhances energy conservation and research and development and provides for security and diversity in the energy supply for the American people. Introduced February 12, 2004. Placed on Senate Legislative Calendar, February 23, 2004.

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