AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 110–1215

OVERSIGHT OF THE CORPORATE AVERAGE FUEL ECONOMY (CAFE) PROGRAM

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

MARCH 6, 2007

Printed for the use of the Committee on Commerce, Science, and Transportation

U.S. GOVERNMENT PRINTING OFFICE

80–088 PDF WASHINGTON : 2013

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

DANIEL K. INOUYE, Hawaii, *Chairman*

JOHN D. ROCKEFELLER IV, West Virginia	TED STEVENS, Alaska, *Vice Chairman*
JOHN F. KERRY, Massachusetts	JOHN MCCAIN, Arizona
BYRON L. DORGAN, North Dakota	TRENT LOTT, Mississippi
BARBARA BOXER, California	KAY BAILEY HUTCHISON, Texas
BILL NELSON, Florida	OLYMPIA J. SNOWE, Maine
MARIA CANTWELL, Washington	GORDON H. SMITH, Oregon
FRANK R. LAUTENBERG, New Jersey	JOHN ENSIGN, Nevada
MARK PRYOR, Arkansas	JOHN E. SUNUNU, New Hampshire
THOMAS R. CARPER, Delaware	JIM DEMINT, South Carolina
CLAIRE MCCASKILL, Missouri	DAVID VITTER, Louisiana
AMY KLOBUCHAR, Minnesota	JOHN THUNE, South Dakota

MARGARET L. CUMMISKY, *Democratic Staff Director and Chief Counsel*
LILA HARPER HELMS, *Democratic Deputy Staff Director and Policy Director*
MARGARET SPRING, *Democratic General Counsel*
CHRISTINE D. KURTH, *Republican Staff Director and General Counsel*
KENNETH R. NAHIGIAN, *Republican Deputy Staff Director and Chief Counsel*

CONTENTS

	Page
Hearing held on March 6, 2007	1
Statement of Senator Boxer	34
Statement of Senator Carper	44
Statement of Senator Dorgan	23
Statement of Senator Inouye	2
Prepared statement	2
Statement of Senator Kerry	47
Statement of Senator Lautenberg	37
Statement of Senator Pryor	1
Statement of Senator Rockefeller	32
Statement of Senator Smith	29
Statement of Senator Snowe	40
Prepared statement	42
Statement of Senator Stevens	21
Prepared statement	22
Statement of Senator Sununu	25
Statement of Senator Thune	98

WITNESSES

Friedman, David, Research Director, Clean Vehicles Program, Union of Concerned Scientists	53
Prepared statement	55
Greene, David L., Corporate Fellow, Engineering Science and Technology Division, Oak Ridge National Laboratory	73
Prepared statement	75
Lowery, Elizabeth A., Vice President, Environment and Energy, General Motors	67
Prepared statement	70
Nason, Hon. Nicole R., Administrator, National Highway Traffic Safety Administration	3
Prepared statement	4
Reuther, Alan, Legislative Director, International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW)	86
Prepared statement	88
Siggerud, Katherine, Director, Physical Infrastructure, U.S. Government Accountability Office (GAO)	6
Prepared statement	8
Stricker, Tom, Director, Technical and Regulatory Affairs, Toyota Motor North America	80
Prepared statement	82

APPENDIX

Speech given by Jim Press, President, Toyota Motor North America, on July 18, 2006	105

OVERSIGHT OF THE CORPORATE AVERAGE FUEL ECONOMY (CAFE) PROGRAM

TUESDAY, MARCH 6, 2007

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:30 a.m. in room SR–253, Russell Senate Office Building, Hon. Mark Pryor, presiding.

OPENING STATEMENT OF HON. MARK PRYOR, U.S. SENATOR FROM ARKANSAS

Senator PRYOR. Well, I want to thank the Members of the Committee for being here, and I also want to thank our witnesses and guests for being with us today. Chairman Inouye has bestowed an honor on me to allow me to chair the Committee today, and it's an honor for me to do that.

Today, we'll look at both the Corporate Average Fuel Economy Program—the program that was designed to improve fuel efficiency for passenger cars and light trucks—and current efforts to improve the fuel economy of the entire passenger fleet. Last week, I was part of a bipartisan group of Senators that went to the White House to talk to President Bush and Vice President Cheney about energy issues here in the Senate—this is one of the things they wanted us to legislate on. They wanted us to come up with a new CAFE regime, or a new set of standards. And certainly, I think we can find common ground with the White House, Democrats and Republicans, House and Senate, all the way around on this very, very, important issue.

Given the fact that we anticipate we will have a number of Senators here today, and we know there's a heavy committee schedule, so some will probably have to come and go, what I would like to do is for people to forego their opening statements, but do a 7-minute round of questions, so if people want to make a little opening statement during their round, that's certainly fine with the Chair, and I'm sure it will be with the Committee, but I want to give Senators 7 minutes during their rounds.

In 1975, the Senate successfully passed the first fuel economy standards for passenger cars. It was part of the Energy Policy and Conservation Act of 1975. Manufacturers were required to achieve 27.5 miles per gallon for the passenger car fleet. The standard-setting legislation in 1975 proved to be effective, as the fuel economy of cars nearly doubled within 10 years, and automobile fuel con-

sumption was reduced by an estimated 2.8 million barrels of oil a day.

After the original goal was met in 1985, focus on fuel efficiency seemingly went into idle, went into neutral. Since then, the CAFE program for passenger cars has not been updated, despite efforts by Chairman Inouye, myself, and many others on this committee and in the Senate. This inability to continue to improve our fuel economy standards is disappointing to many, since fuel efficiency technologies and designs have improved greatly over the past 20 years.

Another year has passed, and the need to act has become more acute. President Bush even highlighted this issue in his State of the Union Address. I think updating the CAFE program in an achievable and logical manner is of critical importance.

Families in Arkansas and Americans across the country can benefit immensely from greater fuel economy. I know that many of my constituents are growing tired of relying on unstable regions to provide energy to fuel their vehicles. I know my colleagues in Congress are growing tired of dealing with foreign policy decisions that are greatly complicated by our dependence on foreign oil. I know that we are all growing tired of paying upwards of $50 each time we head to the gas pump.

I believe we must do better for our constituents, our country, and for the world we live in. Our constituents understand that more fuel-efficient vehicles can help reduce their dependence on foreign oil, lower costs at the pump, and limit the environmental damage caused by vehicle emissions. And they expect us to act.

For these reasons, I look forward to this hearing, and it will begin our dialogue on this issue of fuel economy standards in the 110th Congress. I hope the Committee and the Senate will address this issue in a bipartisan manner and make substantial, measurable progress this year on CAFE legislation.

Today, our witnesses will be comprised of two panels, and I look forward to hearing their testimony. But, first, I would like to recognize Senator Stevens for his opening statement.

Senator STEVENS. Mr. Chairman, I'll be happy to accept your suggestion and make my statement at the beginning of the questions. Thank you.

Senator PRYOR. OK.

Chairman Inouye?

STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

The CHAIRMAN. May I ask that my statement be made part of the record?

Senator PRYOR. Without objection.

[The prepared statement of Senator Inouye follows:]

PREPARED STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

The Corporate Average Fuel Economy Program, or CAFE, has proven to be an effective tool to decrease the consumption of fuel in the passenger fleet. The National Academy of Sciences found in its 2002 CAFE study that the CAFE program has significantly contributed to increased fuel economy of the Nation's passenger fleet since its inception in 1975. From the time CAFE was implemented until 1985, passenger cars achieved a 75 percent increase in fuel economy. Light truck CAFE standards

led to a fuel economy increase of 50 percent. The National Academy also found that improvements to vehicle design between 1975 and 1985 improved fuel economy by an average of 62 percent for all vehicles without loss of performance.

Despite past progress, a lack of will and years of inaction in improving CAFE has led to increased fuel consumption in the passenger fleet, thereby increasing the rate of global warming and making us more dependent on foreign oil. Passenger car CAFE standards have remained stagnant for more than 20 years. The light truck standard was not improved by the Department of Transportation until 2003, and those efforts have been criticized as insufficient by many constituencies and Members of Congress.

We cannot turn back the clock to reclaim lost opportunities, but we must take the necessary steps to reduce fuel consumption in the passenger fleet now. Several Senators have introduced legislation to improve CAFE standards, including the Vice Chairman. Several Members of this Committee have joined me in support of S. 357, the Ten-in-Ten Fuel Economy Act. It is also encouraging that the President announced in his State of the Union Address that he would set a goal of improving fuel economy by 4 percent annually, the same percentage increase proposed by S. 357.

I look forward to today's testimony, and the opportunity to work with Members of this Committee to move CAFE legislation to the floor and ultimately to the President's desk.

Senator PRYOR. Our first panel is Honorable Nicole Nason, the Administrator of the National Highway Traffic Safety Administration, that we call NHTSA; and Katherine Siggerud, Director of the Physical Infrastructure Team at GAO.

Ms. Nason, would you like to start?

STATEMENT OF HON. NICOLE R. NASON, ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Ms. NASON. Thank you, Mr. Chairman.

Good morning, Mr. Chairman, Mr. Chairman, Mr. Vice Chairman members of the panel. Thank you——

Senator STEVENS. Can you pull that mic toward you?

Ms. NASON. Thank you for inviting me to be here today to discuss the Corporate Average Fuel Economy standards for passenger cars.

In the State of the Union Address, the President announced his "20 in 10" proposal to reduce domestic gasoline consumption by 20 percent in 2017. A key component of this plan is to significantly boost fuel economy standards for cars. Toward that end, last month the administration forwarded draft legislation to Congress that would give the Secretary of Transportation the statutory authority to reform fuel economy standards for passenger cars.

The Bush administration already has a history of reforming and raising fuel economy standards. Consider our record on light trucks, which comprise half of the vehicles sold today. This administration raised the CAFE standard for light trucks for 7 consecutive years, 2005 to 2011. Our 2006 light truck rule not only will save a record amount of fuel, it also regulated, for the first time, fuel economy for some of the heaviest light trucks.

However, the method by which these accomplishments were achieve, we believe, is the most important. In its 2002 study on CAFE by the National Academy of Sciences, the NAS found that, while the CAFE program did fulfill its original goals, it contained flaws that were preventing the program from living up to its full potential. For example, one of the NAS criticisms was that the program concentrated most of the regulatory requirements on a few

full-line manufacturers. This resulted in some manufacturers already above the standard not being required to make any further improvements in fuel efficiency. This means we are continuing to lose potential fuel savings from a significant portion of the fleet.

Next, the NAS study estimated that CAFE probably had cost between 1,300 and 2,600 lives in 1 year alone, 1993, because the standards were structured in a way that enabled automakers to meet much of their compliance obligations by downsizing cars. NHTSA carefully considered the NAS study and methodically developed a new structure for light truck CAFE standards that addressed each of these criticisms. This new standard, which we call "Reformed CAFE," is based on requiring automakers to achieve improved fuel economy, not by downsizing, but by adding fuel-saving technologies. Basing CAFE on adding fuel-saving technologies has a number of benefits. First, by setting fuel economy targets for every size of vehicle, instead of having one flat standard, every model will potentially have to improve fuel economy. Reformed CAFE helps to ensure that vehicles—small, medium, or large—can become more fuel efficient.

Second, under Reformed CAFE there is no longer an incentive for automakers to improve their fleet by downsizing. By removing this incentive, we can raise the CAFE standard without decreasing safety.

And, third, since Reformed CAFE seeks to achieve greater fuel efficiency from every model vehicle affected, every automaker can share the regulatory burden for improving fuel economy, not just a few.

Finally, our draft bill contains a voluntary CAFE credit trading provision, which could help alleviate regulatory costs for manufacturers.

Mr. Chairman, the President has stated his desire to raise the fuel economy standard. We believe that having experts develop the standard, using sound science and data in an open and reviewable rulemaking process is the most responsible way to determine the new CAFE standard.

If Congress authorizes the Secretary to reform CAFE for passenger cars, we will immediately begin a rulemaking to boost passenger car fuel economy. If the administration's draft legislation is enacted soon, cars rolling off the assembly line for the 2010 model year could have to meet a higher CAFE standard.

Mr. Chairman, given NHTSA's recent experience with setting the fuel economy standard for light trucks, we believe we have demonstrated our capability to set balanced standards for passenger vehicles, given the authority for the reform.

Thank you. I would be pleased to answer any questions.

[The prepared statement of Ms. Nason follows:]

PREPARED STATEMENT OF HON. NICOLE R. NASON, ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Mr. Chairman, thank you for inviting me to discuss Corporate Average Fuel Economy standards (CAFE) for passenger cars.

In January, the President announced in the State of the Union address his "20 in 10" proposal that would reduce domestic gasoline consumption by twenty percent in 2017. A key component of the President's "20 in 10" plan is to significantly boost fuel economy standards for cars. Toward that end, last month the Administration

forwarded draft legislation at the request of Representatives Dingell and Boucher that would give the Secretary of Transportation the statutory authority to reform and raise fuel economy standards for passenger cars.

The Bush Administration already has a history of reforming and raising fuel economy for light trucks. Consider our record: this Administration has raised the CAFE standard for light trucks for seven consecutive years, from 2005 to 2011. Our 2006 light truck rule not only will save a record amount of fuel, it also regulates for the first time fuel economy for some of the heaviest light trucks, such as the Hummer H2. This rule also boosted the CAFE target for some light trucks to a level that exceeds the Congressionally-mandated passenger car standard of 27.5 miles per gallon.

While these are notable accomplishments, the method by which they were achieved is probably the most important. In its landmark 2002 study on CAFE by the National Academy of Sciences, the NAS found that while the CAFE program did fulfill its original goals, it contained flaws that were preventing the program from living up to its potential.

For example, one of the NAS criticisms was that the program concentrated most of the regulatory requirements on a few full line manufacturers. This resulted in some manufacturers who produced primarily smaller vehicles not being required to make *any* further improvements in fuel efficiency.

Additionally, the study found that having a "one-size-fits-all" standard allowed some automakers to produce fleets that met the standard even though many of the cars in the fleets were relatively fuel inefficient. This meant that we were, and still are, losing fuel savings from a significant part of the fleet.

Finally, and most disturbingly, the study estimated that CAFE probably had cost between 1,300 and 2,600 lives in 1 year alone, 1993, because the standards were structured in a way that enabled automakers to meet much of their compliance obligations by downsizing cars.

NHTSA carefully considered the NAS study, and methodically developed a new structure for light truck CAFE standards that addressed each of these criticisms.

This new system, called "Reformed CAFE," is based on requiring automakers to achieve improved fuel economy not by downsizing, but by adding fuel-saving technologies. Basing CAFE standards on adding fuel-saving technology instead of downsizing vehicles has a number of benefits. First, by setting fuel economy targets for every size of vehicle, this ensures that vehicles small, medium and large have to improve fuel economy.

Second, under Reformed CAFE there is no longer an incentive for automakers to improve their fleet average by downsizing. Accordingly, no longer will raising the CAFE standard mean a decrease in safety.

Third, since Reformed CAFE demands greater fuel efficiency from every model of vehicle affected, every automaker will share the regulatory burden for improving fuel economy, not just a few.

Finally, the Administration's draft bill contains a CAFE credit trading provision. The NAS study pointed out how the current CAFE system makes it more expensive than necessary to achieve a given level of fuel economy in the vehicle fleet. Because one company may find it less expensive than another company to increase the fuel economy of its fleet, there are further cost-savings to be gained from allowing credit trading across companies.

CAFE already allows a manufacturer to accumulate credits if its fleet mix exceeds the standard. These credits may be carried forward or "banked" and used to offset future CAFE deficits by the same manufacturer. Credit trading is a natural extension of this framework.

Credit trading would be purely voluntary, and we believe it will help lower the industry's cost of complying with CAFE.

In 1975 when Congress wrote the original CAFE standard, it did so by taking the average fuel economy number for the fleet and doubling it over a ten-year period. Today, NHTSA can perform a much more sophisticated analysis on how to determine the CAFE standard. We can do this because we have the benefit of individualized data on the fuel-saving capabilities of each car.

Accordingly, there is no need to set an arbitrary fuel economy standard, there is no need to sacrifice safety for better fuel economy, and there is no reason why some auto companies have to shoulder nearly all the regulatory burden. Our light truck rule demonstrated that all of these problems can be overcome.

Mr. Chairman, the President indicated in his State of the Union address his desire to raise the fuel economy standard. We believe that having experts develop the standard, using sound science and hard data, in an open and reviewable rulemaking process, is the most responsible way to determine a new CAFE standard.

If Congress authorizes the Secretary to reform CAFE for passenger cars, we will immediately begin a rulemaking to boost passenger car fuel economy. If the Administration's draft legislation is enacted soon, cars rolling off the assembly line for the 2010 model year will have to meet a higher CAFE standard.

Mr. Chairman, given NHTSA's recent experience with setting the fuel economy standard for light trucks, which comprise half the vehicle sold today, we believe we have demonstrated our capability to set balanced standards for passenger vehicles, given the authority for reform.

Senator PRYOR. Thank you.

Ms. Siggerud?

STATEMENT OF KATHERINE SIGGERUD, DIRECTOR, PHYSICAL INFRASTRUCTURE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE (GAO)

Ms. SIGGERUD. Mr. Chairman, Mr. Chairman, Mr. Vice Chairman and Members of the Committee, I appreciate the invitation to testify on the Nation's approach to reducing oil consumption through fuel economy standards. It is important that any approach to reducing oil consumption in the United States include the transportation sector. Transportation accounts for 68 percent of the Nation's oil consumption, and, within that sector, 60 percent of the oil is consumed by cars and light trucks.

The Corporate Average Fuel Economy, or CAFE, program was developed in the 1970s to increase the fuel economy of cars and light trucks sold and driven in the United States. While the fuel economy standards for light trucks have been increased over time, and were recently restructured by NHTSA, the car standards have been largely static for two decades. Both the administration and Members of Congress have proposed changes that would increase fuel economy for cars.

My testimony today is based on our ongoing work for the Chairman of this Committee, and will cover, first, recent and proposed changes to the CAFE standards; second, observations about the recent changes, the existing CAFE program, and plans to further revise the CAFE standards; and, third, observations about how the CAFE program aligns with other approaches and options for reducing oil consumption. We will be reporting on our work in full in July.

With regard to the recent and proposed changes to CAFE, Administrator Nason has covered the administration's proposal. In addition to raising the light truck standards and including, for the first time, some light trucks that weigh up to 10,000 pounds, the program was restructured to set different fuel efficiency standards for light trucks based on attributes; specifically, their footprint, which is closely related to their size.

This restructuring was meant to address safety consequences and concerns about the disparate effects on manufacturers that had been cited as negative consequences of raising CAFE standards. Rather than reducing the weight of their vehicles to reach the standards, manufacturers now have an incentive to increase fuel economy across all their vehicles.

The administration has proposed an attribute-based approach to raising the standards for cars, and also proposed to allow manufacturers that exceed the standards to trade credits to other manufacturers or to use them within their own fleets.

The CAFE program has been successful in increasing and maintaining fuel efficiency, and we've found broad support for increasing the CAFE standards for cars. In our discussion with stakeholders from industry, academia, and the safety community we also found support for the changes NHTSA has made to the light truck program particularly the attribute-based approach.

While the extent to which this approach will improve fuel economy will not be evident for several years, stakeholders explain that the restructured program takes important steps in addressing safety and fairness issues. Most were supportive of adopting a similar approach when increasing standards for cars.

The proposal regarding credit trading is a new concept, supported by experts, that will need additional analysis to determine its potential. Experts we consulted also identified several other possible reforms to improve the program. These include, first, harmonizing light truck and car standards to reduce incentives to classify vehicles as light trucks because of their lower mileage standards. Second, reassessing the length of time for which standards are set in order to reduce cost for manufacturers. And, third, evaluating the distinction between the domestic and foreign fleets, given changes in where and how automobiles are manufactured.

With regard to NHTSA's actions to change the car standards, Congress's prohibition from 1996 through 2001 against reforming the standards kept NHTSA from considering the kind of programmatic changes we have been discussing. As a result, the agency lost some expertise necessary for a significant revision of the program. But NHTSA's recent experience in restructuring the light truck standards helped to redevelop that expertise and provided a model.

Unlike the light truck program, NHTSA cannot restructure the program for cars without congressional direction. Assuming that Congress provides this direction, there are additional ways NHTSA could improve its capabilities. These include, first, obtaining additional expertise on automotive engineering to review the product plans automakers submit in the CAFE rulemaking process; second, updating a 2002 National Academy of Sciences study on automotive technologies for improving fuel economy. It is now out of date with regard to the technologies it assessed and their associated costs.

Finally, when the CAFE program was created, greenhouse gas emissions were not viewed as an important issue. Identifying a valuation of these emissions when estimating the costs and benefits of changes to CAFE's standards is important if the Nation decides to act to control these emissions. When we report, this summer, I anticipate placing the CAFE program in context of other existing and potential programs to reduce oil consumption by the transportation sector.

While the CAFE program concentrates on the supply of vehicles, other programs focus on the demand for fuel-efficient vehicles by encouraging or requiring their purchase. It is also possible to integrate the transportation sector with other significant users of oil. We will identify policies that potentially decrease the effectiveness of the CAFE program, as well, when we report out, this summer.

Mr. Chairman, that concludes my statement. I'm happy to take any questions you may have.

[The prepared statement of Ms. Siggerud follows:]

PREPARED STATEMENT OF KATHERINE SIGGERUD, DIRECTOR, PHYSICAL INFRASTRUCTURE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE (GAO)

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 rulemaking 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 rulemaking 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

[1] Pub. L. 94–163.

[2] For 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.

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. 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 rulemaking responsibilities and the agency resumed efforts for future rulemakings 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 fuels[4] 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) 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 hybrid[6] 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.

---

[3] For 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.

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

[5] NHTSA has the authority to continue this credit through rulemaking.

[6] Hybrid 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.

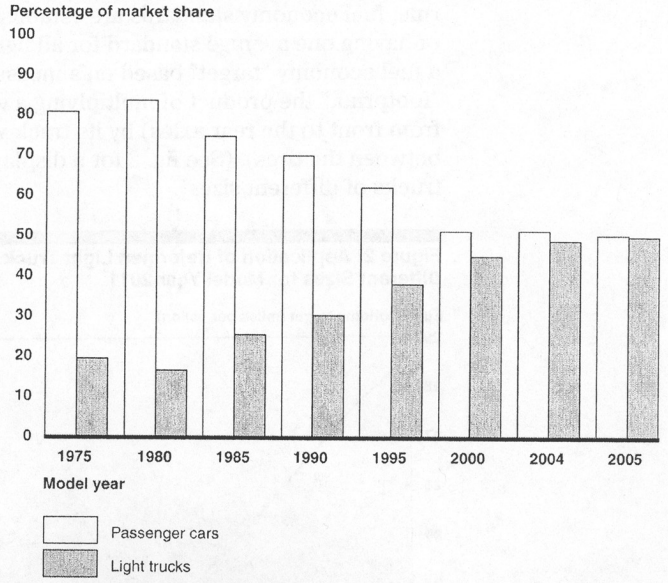
NHTSA Recently Raised and Restructured Light Truck CAFE Standards and Has Not Raised the Car CAFE Standard Since 1990, but Has Requested Authority to Make Changes

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 rulemaking, 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 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



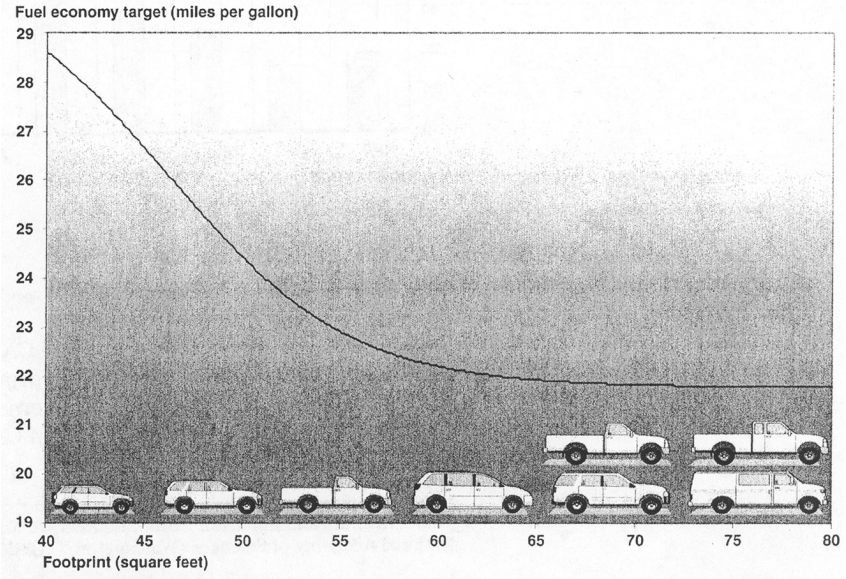
Source: GAO analysis of data from DOE/Transportation Data Energy Book, edition 25.

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) report[7] on the impact of CAFE standards[8] stated that 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

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

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

[9] 71 *Fed. Reg.* 17566 (2006).

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.

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 rulemakings 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

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

[11] The 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.

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 rulemaking 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 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 rulemaking 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 rulemaking 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

[12] S. 357, 110th Congress.
[13] S. 183, 110th Congress.

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 rulemaking 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' 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 rulemakings 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 decisionmaking 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.

[14] NHTSA 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.

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.

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 nonflex-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.

Senator PRYOR. Thank you.

What we'll do is, we'll start a 7-minute round here.

And, Ms. Siggerud, what I'd like to do is start with you and ask about your GAO study that, I believe, Senator Inouye requested. And I want to thank him for that. But in looking at NHTSA from your perspective, from the GAO's perspective, does NHTSA have enough expertise in-house to assess the accuracy of the information that the automakers provide?

Ms. SIGGERUD. It's an important question. And I think if you had asked me that question 4 or 5 years ago, the answer would be somewhat different than it is today because of the prohibition, that I mentioned, against changing the program. We do believe that NHTSA needs to hire some additional expertise to review the project plans. NHTSA does have a proposal to hire one new staff member. At this point, we haven't evaluated whether, from our view, that is sufficient.

I also want to point out and emphasize what I said in my statement that updating this study, and having it done by an independent panel, is extremely important in setting NHTSA up to be able to revise these standards to withstand the kind of scrutiny

[15] We 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).

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

that they will be put under when it proposes revisions to the standards.

Senator PRYOR. So, if you have a concern that NHTSA may not have the expertise and resources necessary in-house, do they have sufficient resources and budget to go outside to hire expertise, when necessary?

Ms. SIGGERUD. NHTSA has proposed funding the National Academy of Sciences study in this—I believe, in the Fiscal Year 2008 budget. That is an important step, and we are fully supportive of that concept. It also has an ongoing relationship with the Volpe Transportation Center, near Boston, that will need to update the model that it runs in order to revise the CAFE standards in the way that NHTSA has proposed.

Senator PRYOR. And right now when NHTSA collects monies, as I understand it, it's about $30 million a year? Do you know?

Ms. SIGGERUD. Are you talking about in terms of fines?

Senator PRYOR. Yes.

Ms. SIGGERUD. I don't have that number at my——

Senator PRYOR. OK.

Ms. SIGGERUD.—fingertips.

Senator PRYOR. But, do you know, does that money go to the general treasury? Do you know?

Ms. SIGGERUD. Administrator Nason is saying yes. I didn't know the answer——

Senator PRYOR. OK.

Ms. SIGGERUD.—to that. But apparently that is a yes.

Senator PRYOR. OK.

Let me ask the Administrator a couple of questions, as well. The President, in his State of the Union, talked about this goal that you mentioned of "20 in 10." Could you, again, explain that for the Committee, please?

Ms. NASON. Yes, thank you, Mr. Chairman. The "20 in 10" goal is the President's proposal for a 20 percent reduction in gasoline consumption in—by 2017. The 20 percent, 15 of which would come from the alternative and renewable fuels proposal, which is Department of Energy, largely, and 5 percent of which comes from CAFE—increase in the CAFE—in our estimate, as the President noted, 8.5 billion gallons of gasoline reduced in 2017. In order to get there, you need a 4 percent, roughly, gradual increase from 2010 to 2017 for passenger cars. That is our proposal, we would like to reform the program while increasing the stringency. So, we have two pieces that we're asking for, from Congress. The one would be the authority to reform the passenger car program, and the second is to increase it. We believe we can do a straight increase, but we'd like to reform the program also. So, we'd like to marry the two.

Senator PRYOR. In your opinion, is the "20 in 10" achievable?

Ms. NASON. Yes. As the President has noted, it's a heavy technology bet. I know the President has been traveling around the country, visiting various companies that are, for example, doing enzyme development to help break down cellulosic ethanol more quickly. For CAFE purposes, for our 5 percent, I think it is fair to say you would expect to see, with a goal—a targeted goal of a 4 percent annual increase—a far greater penetration in the fleet of

the more expensive, but more fuel-efficient, technologies, such as hybridization and dieselization.

Senator PRYOR. And in your conversations with the auto industry since the State of the Union, what has been the response of the auto industry to the "20 in 10"?

Ms. NASON. Well, I've only have conversations with them about our 5 percent, about the CAFE, so I can't speak, necessarily, to the view on ethanol. I know many of the manufacturers have put out press releases announcing that they intend to double their ethanol production. So, I can assume there's some support for that.

Regarding the CAFE proposal, we have heard, for example, strong criticism against credit trading. There has been some concern regarding our credit trading proposal. We offered it up as an alternative flexibility for the manufacturers, and some of them have said they would not be interested in that. It would be voluntary, so we think we can address that concern.

I think, overall, and I know you have members representing the manufacturing sector, so I don't want to speak for all of them, because we haven't received a straight—a clear answer from overall automotive industry, where they are. Some are more supportive than others. Some have raised concerns about some pieces of it. So, I think, generally, we think we can work with the industry regarding reform. And then, there have been concerns about other pieces of the proposal, that we'd be happy to work with Congress on.

Senator PRYOR. Thank you.

Chairman Inouye?

The CHAIRMAN. I thank you very much.

The administration has made it very clear that it wants the authority to set the standards. The last time it did so, on light trucks, it was 1.5 miles per gallon over 3 years. And now, you're asking for—in this most recent case—1.8 miles per gallon, which is a little worse than that. Do you believe you can really set this new standard with that record?

Ms. NASON. Yes, thank you, Mr. Chairman. One of the most important things we believe we did with the light truck rule was reform the program so that it's very different from traditional CAFE. And we had, I believe, a 2 percent—under the light truck rule—annual increase. The goal for this proposal, for the "20 in 10," would be a 4 percent increase. I certainly acknowledge it's a very aggressive proposal. But we've asked for product plans from the manufacturers. I think—we believe we will see a greater improvement in the fuel efficiency just in the product plans that we will see. And then, we will build from there and include new fuel-saving technologies.

The CHAIRMAN. I'm interested in the GAO report that noted that the "statistical cost-benefit analysis model [your] agency uses does not fully account for the impact of greenhouse gas emissions in the computer model used to set a CAFE level." Experts note that the benefits of reducing greenhouse gas could be as much as $50 billion by 2020. But these benefits are virtually ignored in the cost-benefit analysis of your light truck rule. Is there any credence to this criticism by GAO?

Ms. NASON. Yes, thank you, Mr. Chairman. We have heard the concern, and we understand the concern, about monetizing CO_2 re-

duction. In the light truck rule, for example, we were able to quantify that we were reducing 73 million metric tons of CO_2. The question then becomes, how do you place a value on that? And we looked at it. The agency looked at it when they were performing—when they were doing the light truck rule. And there's such a disparity right now in the scientific community about how to value CO_2—I've seen as low as negative 1 to negative 3 and as high as $1,600 a ton—that they made a determination during the light truck rulemaking, it was too difficult to try to monetize. One of the things I think GAO has suggested, or will suggest when the report is final, is perhaps looking at a range. Instead of trying to determine an actual number, we could look at a range. That is something that we considered last time. The range was too broad. I think we'd certainly be willing to look at it again to see if there's consensus in the scientific community.

The CHAIRMAN. What does GAO say about this?

Ms. SIGGERUD. We think that if the car standards are reformed in the way that your legislation or the administration has proposed, that it is important to revise that model to include greenhouse gas emissions in some way. If the administration is not ready, or cannot discern a consensus value at that time, a range would certainly be appropriate. But the time is here to move forward on including that information in some way in the model.

The CHAIRMAN. Do you believe that the administration will be able to respond to this—raising CAFE standards in this bill?

Ms. SIGGERUD. Are you referring to the bill that you sponsored, Senator Inouye?

The CHAIRMAN. Yes.

Ms. SIGGERUD. Because the administration has developed an attribute-based concept already for the light truck model, it has a bit of a headstart from where it would have been without doing that. So, we think that, if that is the model that is approached, that NHTSA can move forward fairly quickly, in terms of getting the information it needs into its modeling. And also, we feel it's very important to get this National Academy of Sciences study updated.

Nevertheless, this will be a several year process to get that study updated, to revise the model, to get out the proposed rule and get the comments. The last rule, the light truck rule, there were 45,000 comments to respond to. So, I think we're looking at a several year approach here before a final rule can be in place.

The CHAIRMAN. Is there anything you can suggest to this committee on how to improve the efficiency of passenger cars? You're the expert.

Ms. SIGGERUD. Well, I'm not an engineer, but we have been talking to a lot of engineers in doing our work. There is a consensus out there, in the industry and in those who study the industry, that it is possible to improve the fuel efficiency of passenger cars. It has been static for 20 years. There are technologies on the horizon that will allow for potentially significant increases over the next 10 years. There are a number of—there are new diesel fuels available. When the study was done in 2002 on this issue, the—I think the extent that the hybrids would be available was not included in that study, or not really anticipated. So, there are tech-

nologies out there that will allow, over the next 10 years, the passenger car fuel economy standards and performance to improve.

The CHAIRMAN. The events of the last several months, plus the statistics that indicate that in the 1970s General Motors, Ford, and Chrysler sold nine out of every ten cars in the United States, and today Toyota will be number one, above GM. These numbers and statistics frighten us, and we're not certain whether this bill is sufficient or insufficient. We hope we can work with you.

Thank you very much.

Senator PRYOR. Vice Chairman Stevens?

STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKS

Senator STEVENS. Mr. Chairman, please print my statement in full. At this point, I'll just summarize it a little bit.

I do believe that this is one of the most serious issues we face, in terms of the energy crisis. The question of how to reduce our dependence on foreign oil has to be paramount, in my opinion. And I applaud the President for looking at a combination of initiatives, including conservation, domestic production, and alternative sources of energy.

I introduced, at the beginning of this Congress, S. 183, the Improved Passenger Automobile Fuel Economy Act, which would set the goal at a minimum of 40 miles per gallon by 2017. And it's my feeling, Ms. Nason, that we ought to set out to do what President Reagan did, set the goals out further, and hope people will go toward achieving them, and give some discretion to the industry, if it's needed, later. But the goals ought to be very firm right now.

And let me just say this, Ms. Nason, the claim was made by at least one manufacturer in the mid-1970s that the original CAFE standards were set so that only pint-sized cars would be able to make the 27.5 mile-per-gallon standard by 1985, as required by the statute. But the automobile industry met and exceeded that standard now, and fuel-efficiency gains have led to enhanced power, rather than fuel economy. Now, Ms. Nason, in setting CAFE standards, how does NHTSA strike the balance between furthering the public goals of CAFE with the competitive need of the manufacturer to produce a product with performance that will be marketable to consumers? Aren't consumers looking for more power, despite the fact we're setting higher mileage standards?

Ms. NASON. Thank you, Vice Chairman Stevens. The challenge that we face under a Reformed CAFE proposal is to try to see an increase in fuel efficiency from all manufacturers. Some manufacturers may have to do much more than others. There may be some that are already exceeding the standards, and, under a rulemaking—for example, for a light truck rulemaking, there are some manufacturers who are already beyond where we're going. But our overall goal is to get as much fuel savings as possible from the program if we were to have a reform.

So, we would do a balancing, a weighing, of technological feasibility and economic practicability. One of our basic policy tenets would be to be technology neutral. As the GAO noted, we really do need to update the study that was done by the National Academy of Sciences, because, at the time, hybrids and diesels were very cut-

ting-edge, there were one or two on the market, and that is the bottom of the—or the top, maybe, of the technology list for the NAS. We need to find a way to show the manufacturers that it is feasible, there is a path, using technology. And we believe there are still gains to be made, even making changes to the good old internal combustion engine—again, also seeing an increase in hybrids and diesels. The manufacturers can then look at our path and decide that is not how they would like to go. They want to make their own changes, they'd like to go more towards direct injection, or they want to go more toward dieselization. Some of the manufacturers are looking more aggressively at diesels. We leave it open to them.

What we need to do in a rulemaking is to demonstrate to them that it is technologically feasible to get this increase, to show them that it's possible, still balancing economic practicability, and then we allow them to choose which technologies they would like to use to get there. So, we try not to do anything that would reduce consumer choice. We'll just show the manufacturers there is a way, but, when they look at their own product plans, when they're making determinations about who their customers are and what their customers want to buy, they can decide for themselves which technologies they choose to apply.

Senator STEVENS. Well, should we include some limitation on power? Senator Inouye and I came out of the generation where a Ford V8 that had 85 horsepower was considered good enough for us.

[Laughter.]

Senator STEVENS. Why do we have to have this race for power?

Ms. NASON. There is—you're absolutely right, Senator Stevens. When you look at the distinction between fuel efficiency for some of the cars of a particular class—and we would be doing an overall attribute-based reform, so, by weight or by size—you see that you can get nearly the same fuel efficiency from a Toyota Avalon or a Chevy Impala, for example. But then, when you change the engine size, and you see some vehicles within that class that have a larger engine—a Chrysler 300, maybe, with a 6.1-liter engine is going to get worse fuel efficiency. The manufacturers, we believe, have determined that there is interest on the part of consumers in having the larger engines, and, when they are doing their product plans, as long as we can show them a path that is technologically achievable, they can make the decisions about whether or not they want to change their engine sizes. We don't want to do anything in a rulemaking—at least NHTSA doesn't—that would prohibit an engine size. Some consumers feel very strongly that they need a larger engine, for a variety of reasons. And we don't want to eliminate that possibility.

Senator STEVENS. Well, it seems to me as long as you take that position, you're never going to achieve the CAFE standards.

Thank you very much.

[The prepared statement of Senator Stevens follows:]

PREPARED STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKA

Mr. Chairman, thank you for calling this important hearing, and I thank the witnesses for their willingness to appear.

The issue of fuel economy of our cars and light trucks is significant as our country faces an energy crisis. The September 11 terrorist attacks and the current struggles in the Middle East have brought into focus the need to reduce our dependence on foreign oil. But addressing this problem will require a combination of initiatives. Conservation, domestic production, and the development of alternative energy sources are all part of the solution.

In January, I introduced legislation that would address conservation, and with it, a reduction in greenhouse gas emissions—as the impacts of climate change are more evident in Alaska than anywhere in the country.

The Bill, S. 183, the Improved Passenger Automobile Fuel Economy Act, would make clear the Department of Transportation's authority to reform fuel economy standards for passenger cars, and require that the domestic passenger car fleet achieve a minimum fuel economy of 40 miles per gallon by model year 2017.

However, the legislation does not contemplate an increase in fuel economy standards for light trucks given the recent reforms made by the Secretary of Transportation to the light truck CAFE program. I applaud the Secretary for taking that action, and believe that Congress should allow the reformed program to take effect before taking more action.

While I am fully aware of the aggressiveness of the target standard set forth in S. 183, it is designed to begin a discussion that I look forward to having with the Chairman, and the rest of the Committee, as we develop a thoughtful bipartisan product.

Senator PRYOR. Thank you. And let me also remind staff that all Senators' statements will be made part of the record, and we'll leave the record open for 2 weeks for Senators to ask questions in writing.

STATEMENT OF HON. BYRON L. DORGAN, U.S. SENATOR FROM NORTH DAKOTA

Senator DORGAN. Mr. Chairman, thank you very much.

This—I understand the point you're making about consumer choice. I was thinking, whenever I pull up to a red light next to someone driving a Hummer or a humvee, I think of the broken Latin—since Latin wasn't taught in a high school class of nine—I think of broken Latin, *totus porcus*——

[Laughter.]

Senator DORGAN.—which, in my hometown, roughly translated, means "whole hog."

You know, there's this old saying, "If you don't care where you are, you're never going to be lost." You've got to—it seems to me you have to set goals, set way-points, set destinations, and then get there. And I don't—I guess I don't quite understand the—the administration, at this point, is saying they want greater automobile efficiency. And that's certainly something we should aspire to achieve. It's been 20 or 25 years with no change. And, in fact, to whatever extent there has been a change in efficiency, it's been converted into weight and power. And so, if you look at a car that you purchased 10 years ago, and then the equivalent vehicle today, you'll see that there's no difference in the mileage standards on those vehicles, by and large. We just did that with a car, and—so—but the seller of that car would say, "Yes, but it's more efficient, because this is a heavier car with a bigger engine." So, that's the point.

And I guess I have, in the past been satisfied with leaving this to the scientific inquiry at NHTSA and so on, so forth. I've—I'm not going to do that anymore. I think it's important for us to have enforceable CAFE standards. We don't have any choice. And the only way we're going to get to this point is to force the issue.

The thing I don't understand, and perhaps someone can describe it for me, is, everything in a—in the vehicles these days has been the subject of breathtaking change—absolutely breathtaking—except there have not been quantum leaps in efficiency. And I don't understand why, for 20–25 years, we've had very little change with respect to efficiency.

Ms. Nason, can you tell me why that's the case?

Ms. NASON. Again, Senator Dorgan, I don't want to speak, necessarily, for the manufacturers. We regulate them; I don't speak for them. But I think when—a good example is the National Academy of Sciences' study that they did 5 years ago, maybe 6 years ago—they were looking at the technologies, and there have been dramatic breakthroughs just in the last 5 to 10 years. I think there was—there's certainly an increase in curb weight, if you look at the weight of vehicles in the 1970s, and they essentially went on a diet, and then they got heavier again. We do have a concern with downsizing. There is, as the National Academy of Sciences noted, a safety penalty if manufacturers simply choose to downsize their vehicles, rather than increase technology to make the vehicles more fuel-efficient. So, I think we share that goal with you. And I understand—we differ in how we might get there. But our overall goal is to have new fuel-efficient technologies apply to the vehicles rather than making changes simply to the weight of the vehicle as a way to increase the fuel efficiency. So, I do think we have agreement on that point.

Senator DORGAN. But the technology changes in virtually every other part of the vehicle are just breathtaking. I mean, it's almost unbelievable. And yet, that same technology has not been brought to bear with respect to efficiency, and that's the point I don't understand.

Again, the question, I think, for the Congress is, do we just keep going here, saying, "Well, whatever the manufacturers decide to produce, whatever consumer choice, that's just the way it works," or do you say, "In order for us to deal with this question of the unbelievable dependence on foreign oil, and the increasing dependence on foreign oil, we have to set some enforceable standards"? Is the administration—is it your testimony that the administration will oppose, and continue to impose, enforceable CAFE standards?

Ms. NASON. No, Senator Dorgan.

Senator DORGAN. OK.

Ms. NASON. We enforce CAFE compliance right now.

Senator DORGAN. No, I'm talking about setting new CAFE standards and——

Ms. NASON. Oh, you mean if——

Senator DORGAN. Yes.

Ms. NASON. I'm sorry. If the——

Senator DORGAN. I understand you——

Ms. NASON.—Senate were to choose a number, it would be our preference to have the authority to reform the program, overall.

Senator DORGAN. But if the Congress decides to increase CAFE standards and say, "You know, we're going to have to bite the bullet here. It's been 20 years. We have more cars on the road. The average efficiency is still what it was 20–25 years ago." Will the

President sign legislation that the Congress determines it wishes to pursue, that would mandate increases in CAFE standards?

Ms. NASON. I think, from this table today, Senator, I can tell you that we would very much like to work with you to find ways to improve our draft legislation. If the Congress isn't comfortable, maybe, with the "trust us" message, which is part of what we heard last year when Secretary Mineta was testifying—we've heard concerns about backsliding, for example, that there needs to be some sort of floor. We've heard concerns about what is achievable. We need to have a ceiling. We would like the authority to reform the program. It becomes much more challenging for the agency to reform if there's a floor and a ceiling, because we're essentially directed in where to go. But I'm certainly not prepared to issue a veto threat from—that is the President's, alone.

Senator DORGAN. Ms. Siggerud, let me just, finally, ask—while I think there needs to be, now, enforceable new standards with respect to CAFE, and I hope the Congress will do that, it also seems to me, as I've looked at this issue, that American automakers, over the several decades, have been disadvantaged because of the fleet mix with respect to U.S. domestic automakers versus foreign automakers. Is that the case? And can you describe that for me?

Ms. SIGGERUD. Well, yes, that is the case. Those manufacturers that make a full line, from small to large, heavy vehicles, have incurred more cost in responding to the CAFE standards since they were enacted in the 1970s. However, a number of the stakeholders we've spoken with on this issue viewed the recent reform—to use this attribute concept for the light trucks—as being somewhat mitigating of that issue, and spreading, shall we say, the cost or the impact somewhat more equitably across foreign and domestic automakers than we have seen with just a single average standard that—as has been used in the past. I would also like to say that I think there probably is a compromise to be reached here between a standard set by the Congress and allowing the administration some flexibility to study the technology and make recommendations, in terms of what the appropriate increase in standards is over time.

Senator DORGAN. Well, I think all of us look for opportunities to find ways to have an effective standard here. But we've been talking, now, for the last 4 or 5 years, and, as we've talked, nothing has changed. And I think most people in Congress are becoming anxious about that and want to see some action.

Thank you very much.

Senator PRYOR. Senator Sununu?

STATEMENT OF HON. JOHN E. SUNUNU, U.S. SENATOR FROM NEW HAMPSHIRE

Senator SUNUNU. Thank you, Mr. Chairman.

I note that Senator Stevens observed that 85 horsepower in a Ford was always good enough for him, and I absolutely believe that. But I would be remiss if I didn't point out that it was also members of his generation that turned 45 in 1967 and gave us the 427 and the GTO. So, there's always——

[Laughter.]

Senator SUNUNU.—a tradeoff to be made with the preference of the great consumer.

Ms. Nason, I want to hear you talk a little bit more about the new light truck standard, because—and I don't have strong opinions about whether it's the right approach or the wrong approach, but it's obviously a change. And I want to understand how significant a change it is, and whether it will result in continued increase in performance and fuel efficiency standards. We all know that no new standards had been set for a number of years. And I think this is really the first rulemaking that raised standards significantly in the last few years.

Currently, for the light trucks, what is the fuel efficiency standard, for model year 2007?

Ms. NASON. I believe it's 22.2. We started at 20.7 in 2004, and we—and we end at 24 in——

Senator SUNUNU. OK.

Ms. NASON.—2011.

Senator SUNUNU. So, between 2007 and 2011, you increase the fleet fuel efficiency standard every year.

Ms. NASON. Yes, the reform takes place starting in 2008, from 2008 to 2011. The new CAFE—one of the issues that we have currently in litigation, Senator, is whether we should have given the manufacturers a choice. We allowed them to opt in or out to the reform proposal——

Senator SUNUNU. For model years——

Ms. NASON.—for 3 years, right.

Senator SUNUNU.—2008 to 2011.

Ms. NASON. Yes.

Senator SUNUNU. But after 2011, everyone has to comply with the new vehicle footprint——

Ms. NASON. Yes, sir.

Senator SUNUNU.—standards.

Ms. NASON. That's correct, Senator.

Senator SUNUNU. And then, after that time, the way that improvements in the fuel efficiency will be implemented is to take that vehicle footprint——

Ms. NASON. Correct.

Senator SUNUNU.—standard, and continue to move it in the right direction, so that——

Ms. NASON. Correct.

Senator SUNUNU.—the overall fuel efficiency of any vehicle at any footprint has to be improved each year, correct?

Ms. NASON. Exactly.

Senator SUNUNU. OK.

Ms. NASON. So, it——

Senator SUNUNU. You also got rid of the two-fleet rule for light trucks, is that correct?

Ms. NASON. The two-fleet rule was eliminated for light trucks several years ago.

Senator SUNUNU. OK.

Ms. NASON. It as—this was not part of this rulemaking.

Senator SUNUNU. What's the value of that? Is there a value to that? Looking back over the years that it has been eliminated, what benefits do you think that provided?

Ms. NASON. I think when NHTSA eliminated the two-fleet rule several years ago, it was because less than 1 percent of the light trucks were being imported. It essentially eliminated itself by decisions regarding production. We did not propose changes to the two-fleet rule in the passenger car reform proposal. We know that there is some interest in having conversations about two-fleet. When we were looking at sending draft legislation to the Congress, to be frank, Senator we looked at those provisions, those places where we could save fuel. This was not a fuel-saving——

Senator SUNUNU. Fine.

Ms. NASON.—issue.

Senator SUNUNU. I appreciate that. So, it wasn't a useful rule, we got rid of it, which is actually very refreshing. We probably don't do quite enough of that in Congress.

You made the point, or made the claim, that the curve prevents companies, manufacturers, from simply meeting the fuel-efficiency standard now by downsizing. And as I look at these curves, what that means—what I think that means—is that because a vehicle of a particular size now has to meet a particular standard, if they want to look good by improving their vehicle fleet fuel performance, they can't just reduce the size of the car, because if they reduce the size of the car, they have to meet an even higher performance. Is that correct?

Ms. NASON. That's correct.

Senator SUNUNU. So, that's——

Ms. NASON. They would shift from——

Senator SUNUNU.—the disincentive to downsizing simply in an effort to meet the regulation.

Ms. NASON. Yes.

Senator SUNUNU. And each year the performance standard for every vehicle at every size, including the Hummer, will be increased, correct?

Ms. NASON. Right, by having new technologies added, new fuel-efficient technologies.

Senator SUNUNU. Was there something you wanted to add?

Ms. NASON. We did hear some concerns about reform, just to be—as long as we're discussing the issue—about creating an incentive to upsize, however; that if you look at that curve, if you look at the fact that a larger vehicle would have a lower fuel-efficiency target for that class, that size, or that weight vehicle, that there would be an incentive to go the other way, to upsize. And we disagree that there is an incentive. There's certainly no financial incentive. It's not as if we give a bonus or a credit if you upsize. But it would be, again, up to the manufacturers and how they would choose to set their vehicle fleet. And when you look at just what happened last year to the light—larger light trucks, I think most manufacturers are looking to manufacture vehicles that consumers want to buy. They don't manufacture vehicles based on CAFE, as far as we can ever tell in the history of the program.

Senator SUNUNU. That's an interesting assertion. I don't know whether that's true or not. I look at it, and, while I understand the argument that someone might make, that there's now less of a penalty for upsizing——

Ms. NASON. Right.

Senator SUNUNU.—because you know where you need to fit on the curve, from a regulatory perspective, I think this makes it a lot easier for either Congress or the regulator to penalize a particular manufacturer of a particular size of car, because all I have to do now is raise the right-hand edge of that curve for larger vehicles.

You can just push up fuel efficiency requirements on that side, and create huge disincentives to manufacture that car if it can't be done economically, if they can't meet the fuel standard. Today, the only lever a regulator has is to increase the average fleet——

Ms. NASON. Right.

Senator SUNUNU.—efficiency, which doesn't necessarily penalize anyone who's making large cars, as long as they're also making small cars.

Ms. NASON. Correct.

Senator SUNUNU. Under the footprint, if you want to really penalize the manufacturer of a large car, you know exactly what part of the curve, what part of the performance curve, you need to push up, and so, you just change the shape of the curve, and make it economically nonfeasible for someone to manufacture a car of a particular size. You could do the same at the smaller footprint size. I understand you're a regulator, and you take your job seriously, but it's basically a very effective tool for aggressively manipulating the vehicle footprint on the road.

That's an observation, you don't have to comment——

Ms. NASON. Yes, sir.

Senator SUNUNU.—on that.

Ms. NASON. I won't.

[Laughter.]

Senator SUNUNU. And I suppose there may be some people who are getting ideas, who I don't necessarily want to give ideas to, but——

[Laughter.]

Senator SUNUNU.—I think honesty is always the best policy.

All right. Finally, one observation that you made in your testimony was that there are—two things—one, there are vehicles that are now covered under this light truck standard that previously weren't covered by——

Ms. NASON. Yes.

Senator SUNUNU.—fuel economy standards. And, two, that there are some light trucks that have been brought to a level that currently exceeds the overall passenger car standard of 27.5 miles to a gallon. Could you expand on both of those points?

Ms. NASON. Yes, Senator, thank you.

The MDPV, the 8,500- to 10,000-pound vehicles have never been regulated before. We included those vehicles when we look at—again, it's consumer choice—there has obviously been a great explosion in these——

Senator SUNUNU. The vehicles between 8,500 and 10,000 pounds——

Ms. NASON. Less than 10,000.

Senator SUNUNU.—previously were not covered by any——

Ms. NASON. Correct.

Senator SUNUNU.—fuel economy standard, and they are now covered by this light truck curve.

Ms. NASON. Not all of them. We include what we refer to as MDPVs, the medium duty passenger vehicle. So, not the largest work trucks, the largest pickup trucks, F–650 for example, that people are using back and forth to construction sites, or wherever they need them for work, but the larger vehicles that people are using to essentially drive around town. They're using them mostly as a passenger vehicle, and we've included those. So, it's essentially super large pickup trucks that were not included. Everything else is included.

Senator SUNUNU. And cars that are——

Ms. NASON. And what was your question on——

Senator SUNUNU.—cars that are exceeding the standard?

Ms. NASON. Well, there are.

Senator SUNUNU. OK.

Ms. NASON. And we—you know, when you look at 27.5 you're going to see some manufacturers who are above it and some manufacturers who are below it. You've got specialty manufacturers, for example, who would be way below it. But there are some manufacturers under our first—under the light truck rule, if that's what you're asking about, who are already——

Senator SUNUNU. I——

Ms. NASON.—at the——

Senator SUNUNU. I'm over my time. I apologize, Mr. Chairman. One final question, though.

Am I correct that we can take this curve, look at the number of cars that are manufactured, and calculate, sort of, an implied national light truck fleet efficiency standard, correct?

Ms. NASON. We can still do an overall CAFE number——

Senator SUNUNU. Congress could, if we wanted to, legislate that overall standard for 2015 or 2020 or 2025, but still allow that to be met using this approach. Is there an inconsistency there? I understand it might not be the administration's preference, but that could be done, could it not?

Ms. NASON. We do think there is a way for us to compromise with Congress, understanding that there is concern about needing an increase and not having backsliding, but still having reform. It would just need to be written carefully, but, yes, we think——

Senator SUNUNU. Thank you very much, Mr. Chairman.

Senator PRYOR. Senator Smith?

STATEMENT OF HON. GORDON H. SMITH, U.S. SENATOR FROM OREGON

Senator SMITH. Thank you, Mr. Chairman.

Ms. Siggerud, it seems to me that in Europe and in much of Asia, even China, they have fuel-efficiency levels that exceed ours. Is there something that we can learn from them? What are they doing that we're not doing?

Ms. SIGGERUD. Sure.

Senator SMITH. And, by the way, you can get the same vehicles there as you get here, but they meet the standards abroad.

Ms. SIGGERUD. To a great extent, yes.

Senator SMITH. OK.

Ms. SIGGERUD. The Chinese standards are just—frankly, just being developed now. And so, we don't have a lot of observations

there as to how effective they are or exactly how they are working, though, looking at Europe, what you have there is really a fuel efficiency standard that has been legislated through fuel taxes. Essentially, the fuel tax, as well as some European countries have changed the level of sales tax, depending on the fuel efficiency of a car, as well, to provide consumers incentives to buy more fuel-efficient vehicles.

Senator SMITH. So, they don't do it like we do?

Ms. SIGGERUD. Right.

Senator SMITH. I see.

Ms. SIGGERUD. The European community now has a voluntary standard, but is considering a compulsory standard that is focused more on the greenhouse gas issue than on the fuel economy standard itself.

Senator SMITH. But whether it's driven by tax policy or by CAFE policy, they're meeting much higher standards.

Ms. SIGGERUD. Yes.

Senator SMITH. That seems to put in question claims that current U.S. standards are as high as they can possibly be without affecting the kind of choices consumers get and the safety they enjoy.

Ms. SIGGERUD. Yes. I guess I wouldn't say the standards are as high as they could possibly be. That's why we're having this hearing today. And I think that, for passenger car vehicles, they certainly could be higher, as proposed both by the administration and by Members of Congress. I think what's important to keep in mind, though, that you've raised here, is that CAFE is, sort of, one piece of what could be a several-piece puzzle. CAFE does focus on the supply of vehicles and try to provide manufacturers an incentive to manufacture more fuel-efficient vehicles over time. There is the demand side, as well. And you've mentioned that in Europe there are various tax policies that one could implement to provide incentives for consumers, as well.

Senator SMITH. Did you find that NHTSA, when they admitted to needing additional expertise, that they became more conservative or more aggressive in the administration of CAFE standards?

Ms. SIGGERUD. Well, as you know, NHTSA was not able to do anything with CAFE standards until Fiscal Year 2002. When it was allowed to start to make some changes, in fact, it did become more aggressive, and proposed a new light truck standard that we've been talking about today.

Senator SMITH. Ms. Nason, we have separate standards for vehicles and light duty trucks and for domestic and imported fleets, isn't that correct?

Ms. NASON. Yes.

Senator SMITH. But, by law, a vehicle is considered a domestic vehicle if at least 75 percent of the cost of the vehicle is attributable to the value added in the United States, Mexico, or Canada.

Ms. NASON. That's correct, Senator Smith.

Senator SMITH. So, how much of meeting CAFE standards becomes just a numbers game, where manufacturers make modifications to move a vehicle from its passenger vehicle line to its light truck fleet or from its foreign to its domestic fleet? Is it just a numbers game?

Ms. NASON. I think—and certainly the National Academy of Sciences, even, has noted the least expensive way to meet a CAFE increase is to produce more small vehicles to offset some of your large vehicles. Downsizing is a concern, and certainly compatibility between large and small vehicles is a concern that the agency has, independent of CAFE. Compatibility—safety is something that we're working on. So, there are a little bit of numbers to it. I would note, again, that we have not seen or heard that there are manufacturers who are intending to change their product plans or make dramatic changes on production decisions, based on what the CAFE number might be. Some years, they make CAFE—some of the manufacturers—and some years, they don't. They either use the credits that they've built up, because we allow them to save their credits for 3 years if they're over the CAFE number, and some years they pay fines. But, so far as we can tell, they're not making production decisions based on the particular CAFE number.

Senator SMITH. Aren't there other ways to enhance safety, Nicole, such as by standardizing bumper heights, that aren't based on weight, but that can, in fact, increase safety?

Ms. NASON. Yes, Senator, we have recently had conversations about making changes to bumpers, specifically.

Senator SMITH. I see.

Ms. NASON. The bumper standard has changed since the 1980s. But one of the things that we're looking at—for example, is, when we're testing the vehicles, do we need to make changes in our barrier, the way that we run a barrier into a vehicle—should we make changes so that it's a barrier that perhaps more closely replicates a real-world larger vehicle with a higher bumper? So, there are things that we are looking at, and we agree, there are improvements that can be made in safety in those areas.

Senator SMITH. I recently saw a report to that effect, that there is tremendous damage caused from the smallest kind of accidents because of——

Ms. NASON. Right.

Senator SMITH.—bumper configuration. So, I would certainly draw your attention to that.

Ms. NASON. Yes, sir.

Senator SMITH. In my part of the world, and, I think, in most of rural America, farmers are gearing up substantially, and are shifting crops to produce ethanol.

Ms. NASON. Yes.

Senator SMITH. Obviously, fuel and food are now going to be very much in competition in this country. And yet, it's also a fact that ethanol burns less efficiently than gasoline. In fact, it reduces the mileage that vehicles will get. Have you factored that in to CAFE and what it all will mean, in terms of fuel efficiency standards?

Ms. NASON. Well, we agree, Senator, yes, it does take more ethanol than it does gasoline. I think the President's overall goal is to help move the country toward energy security, and that is something that you gain with an increase in ethanol. Right now, if you are an alternative—a flex-fuel vehicle, a vehicle that could run, for example, on gasoline or E85, you do receive a credit. The credit is capped at 1.2, as you undoubtedly know, miles per gallon, and it

goes down to .9, per the Energy Act of 2005. That is factored in by the EPA when they do the testing. So, when the numbers come to NHTSA for compliance purposes, whether we're going to give credits or impose a fine, we don't make any additional credits, we don't add on for ethanol, because that would be double-counting. EPA does it the first time.

Senator SMITH. But will you ultimately need to put in some factor for ethanol, as opposed to gasoline?

Ms. NASON. At this time, I believe we—we think it makes sense to let EPA——

Senator SMITH. OK.

Ms. NASON.—do accrediting for it. But we can discuss further, if you're interested.

Senator SMITH. Thank you, Mr. Chairman.

Senator PRYOR. Senator Rockefeller?

STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

Senator ROCKEFELLER. Thank you, Mr. Chairman.

There are several things I wanted to say, and then I'll ask a couple of questions.

First of all, I have long supported CAFE increases. I can think of only one example in 23 years here where I have not, and I'm not particularly proud of that example. At the same time, I have opposed, always, what is sometimes referred to as universal percentage increase, or UPI. I need to explain.

UPI is a CAFE reform that would require all automakers to increase fuel efficiency by a set percentage from today's corporate fuel standards. For example, Honda, Toyota—to some extent, Nissan—have much better CAFE numbers than the Big Three. Am I sympathetic to the Big Three? No. And I'll explain that in a moment.

It is, in large part, because they made the technological and the innovation changes, these three other companies, to achieve their efficiencies while the Big Three concentrated on horsepower, plain and simple, with an occasional model to hint at otherwise. That's what Americans like. I don't particularly admire what people watch on television, but what Americans like, Americans get. And it's exactly and totally true with, particularly, the Big Three's attitude.

So, it would be relatively easy, it would seem to me, to improve—if you're of the Big Three, to improve 10 percent from their current fuel efficiency numbers, because they're very low, they haven't done that much, they haven't been innovative. They're massive bureaucracies. I have hours of testimony I would be delighted to give you on that subject. A 10 percent increase would be very difficult, although perhaps not impossible, for the companies that I mentioned before that, Nissan, Toyota, and Honda.

Now, very rarely does Senator Sununu make a mistake, but he made a big one this morning. And I want to get your views on it, because it's the law. The President and the various administration officials have said that the Congress needs to act to increase CAFE standards. I have been here when we last did that—I think, 14 years ago. Actually, that was—sort of, the price of gasoline—it went up 4.3 cents per gallon, the great gesture of efficiency. How-

ever, when the President and the administrative folks, like yourself, say that we require congressional action, that is not true. There is no further authorization of Congress required for NHTSA and the President to get together and do this very basic important matter, which is to: increase the fuel efficiency of our automotive fleets in one fell swoop—without the entanglements of two branches and 535 Members of Congress—lessen our dependence on foreign sources of oil, improve the quality of the air we breathe, and reduce the carbon that the transportation sector is emitting.

Now, I put that down as writ. Writ. I would encourage both of our Government witnesses to respond today—if they so choose? No, I would like you to respond. But I also want you to make an additional comment, and then I have additional questions, if I have time.

Whoever has to take the lead, be it the Congress or the Administration, I sincerely hope we can agree—we must agree—that we must increase automobile fuel efficiency. I, frankly, am a purist about this. No, I don't come from a big automobile-producing state, and I have—ever since I've been here, for 23–24 years, I've been a purist on this subject. Purist. With one exception, which I regret. I believe there should be a standard much higher than we have in place today, which every automaker should exceed or meet, and in a reasonable timeframe. And I don't think either of you have really risen to that excitement very much.

So, let me just, for a moment, go back to the idea of the power of the President and NHTSA, or perhaps other agencies, to go ahead and do this on their own, without us, which is, in fact, the case, and which you have carefully avoided mentioning.

Ms. NASON. Thank you, Senator Rockefeller. Perhaps you will be surprised that I do agree on both points. On UPI, on an uniform percentage increase, in our draft legislation, we proposed prohibiting that, making that not a way for the agency to increase CAFE, because, as you said, there are some manufacturers who have already made the investments, and others have not. So, we wouldn't want to ask for—our goal, for example, is 4 percent—a 4 percent increase may be easier at a lower end than it is at a higher end, and that is why we agree that a UPI would be an unfair imposition on some manufacturers.

Regarding the authority to increase the CAFE number for passenger cars, I believe we do have the authority to increase the passenger car. Right now, the overall fleet average is 27.5. We could probably—28 or 29 or 30. What we'd like to have, and what we are asking for—Congress for, is for two pieces, the ability to reform the program, similar to what we've done to light trucks, and to increase the stringency level. And we'd like to marry those two pieces together and reform CAFE in a way that the National Academy of Sciences has recommended, in a way that we believe is most responsible, but also guaranteeing an increase.

Senator ROCKEFELLER. If you mean what you say, the National Academy of Sciences, you agree with me, et cetera, but you want to marry these two in legislation, one supporting the other, either of which could bring the other down—535 people agreeing on a CAFE standard, to be then supported by the President of the United States, with a lot of pressure building up from all over the

country, is not an easy thing to do. So, it seems to me that you'd do better to go ahead and do the first, and then come to us for the second, if you need to.

One more point, Mr. Chairman. I think, frankly, it is an insult for those who would make this argument to the American worker, to say that somebody comes before Congress and—that our automakers cannot make efficient cars. I find that an extraordinary statement. Don't blame the workers for that. I blame the management for that. I've dealt with GM, Chrysler, and Ford management for many years. I have three Ford cars, if that'll do you any good. But it is astounding, it is one of the great examples of lassitude in our public policy in the last couple of generations.

Thank you, Mr. Chairman.

Senator PRYOR. Thank you.

Senator Boxer?

STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM CALIFORNIA

Senator BOXER. Thank you so much.

Administrator Nason, I think you do a very good job of testifying for this administration, but I have to tell you, for those who want to do nothing about fuel economy, you are the perfect spokesman. And it's amazing to me, because I've been listening. You're the perfect spokesman. And, you know, to me, I look at the world today, I look at the fact that we're at war in the Middle East, I look at the fact that we have a situation where we are dependent on countries we don't want to be dependent upon, and you are in a position, in this day, in this moment, to step up to the plate, and it is very sad that, you know, you just sit there and absorb these questions, and business as usual seems to be fine.

Now, I want to ask you, do you think fuel economy is a good thing for our country? Do you think it's good that we try to push forward to get better fuel economy in our country?

Ms. NASON. If you mean improve fuel economy, yes, Senator——

Senator BOXER. OK.

Ms. NASON.—Boxer, I do.

Senator BOXER. Now, do you know what fuel economy was when Congress instituted the law in 1975?

Ms. NASON. I believe the law doubled the fuel economy at the time.

Senator BOXER. It was 13.5 miles per gallon. And if you were sitting in that seat for this administration back then, I would bet you would have the same type of responses. And then nothing got done since 1990. Nothing has gotten done. And it's extraordinary to me.

Now, the automakers—and I want to talk about greenhouse gas emissions, because we have—myself, Senator Lautenberg, Senator Snowe—are very involved in meeting that challenge. And I want to ask you this. Do you know that the automakers have admitted that they're part of the greenhouse gas emissions problem? Are you aware that they've admitted that?

[No response.]

Senator BOXER. I mean, if—I will place in the record for you to see that they have—do you know what proportion of greenhouse

gas emissions are traced to mobile sources in America today? How much of the problem?

Ms. NASON. I believe it's 30 percent for the transportation sector.

Senator BOXER. That is absolutely right. Why on earth would you have assigned a zero—a zero benefit for reduction of carbon dioxide? I don't understand it. Now, your answer that was given is, "The scientific community has not"—this is not you, this is your organization—"The scientific community has not reached a consensus on the value that should be assigned to carbon dioxide." However, are you aware that they did give you a range of options, none of which were zero? Why would you pick zero?

Ms. NASON. I believe, at the time, the agency did look at the range, and the range was very broad; and so, they were not able to narrow it. I do think——

Senator BOXER. Did you ever heard of compromising between the low range and the high range. How do you give it zero? How do you give it zero? Reducing greenhouse gas emissions from vehicles has important long-term implications for our environment and our way of life. Have you not read the IPCC report? Have you seen the IPCC report?

Ms. NASON. I have not read the report, but I——

Senator BOXER. OK.

Ms. NASON.—I have read our rulemaking. I do agree with you. That's what it says for light trucks. I think the range that we were looking at was somewhere between—even if you drop off the far-right and the far-left numbers——

Senator BOXER. What do you mean, "the far-right and the far-left"?

Ms. NASON. Negative values, which we disagree with, to $1,600 a ton——

Senator BOXER. But why do you say "far-right and far-left"?

Ms. NASON. On the range, the——

Senator BOXER. Oh, I thought you meant——

Ms. NASON.—not——

Senator BOXER.—politically. I was wondering——

Ms. NASON. No, no, no.

Senator BOXER.—because this is a scientific issue, and I was—when we say "far right and far left," we talk about politics.

[Laughter.]

Senator BOXER. So, you mean the range on the left side of the page and——

Ms. NASON. Right. Of the——

Senator BOXER.—the right side.

Ms. NASON.—the ledger.

Senator BOXER. OK.

Ms. NASON. The right and the left.

Senator BOXER. But—so, you have read about the IPCC——

Ms. NASON. Yes.

Senator BOXER.—report. And the U.N. Foundation report that came out right after it. And you have heard the President mention climate change in his speech. And yet, you assign it a zero.

Mr. Chairman, this is really sad. When you have a third of the problem coming from mobile sources, and you get zero credit for reducing greenhouse gas emissions.

You know, I think you need to go back and take another look at that.

Now, are you aware that—I'm sure you agree, because I think we all agree, that it's important for America to be able to sell its products in other countries. I'm sure you would agree with that.

Ms. NASON. Yes.

Senator BOXER. Yes. Well, are you aware that China, for the first time, is going to impose minimal fuel economy standards? Now, China has the worst environmental record of any country. You realize they're going to surpass us in greenhouse gas emissions very soon.

Ms. NASON. I am aware they are discussing that in China. I don't believe that they've passed anything yet.

Senator BOXER. Well, let me make my point.

Ms. NASON. Yes.

Senator BOXER. The draft—OK—that they have come up with would mean that some of our automakers, including the auto—Chevrolet Blazer—would not measure up to the standards. Now, doesn't—as you sit there, does it give you any pause that China, you know, the worst leader on the environment, the worst leader on greenhouse gas emissions, is—may well, because of their legislative actions, say to American car companies, "Gee, if you don't modify, you're not going to be able to sell here?" Does that give you pause? Does that not make you realize that sometimes when we do things around here, it actually helps our business? Are you aware that when seatbelt laws went in, the automobile companies said, "Oh, don't do this to us." And then, they had the airbags, "Oh, don't do this to us." And now, they take credit for it. They take credit for it. And now, you see ads where the companies are saying, "We're doing better on fuel economy." Why? Because we took action.

So, the point I'm trying to make is—when you were confirmed, I asked you a question in that confirmation hearing, and I said, "How do you feel about fuel economy standards?" And you answered you're going to work with us on this. Have you met with Senators here on this issue to discuss ways of making fuel economy better in America since you are going to celebrate your 1-year anniversary in your post pretty soon in a couple of months? Have you met with anyone?

Ms. NASON. Yes, Senator, we met with some Members and staff last year and again this year.

Senator BOXER. Do you support the legislation, say, of my colleagues, Senator Snowe and Senator Feinstein?

Ms. NASON. I think we have the same goals.

Senator BOXER. Do you support their legislation?

Ms. NASON. Of course we support the administration's——

Senator BOXER. Do you——

Ms. NASON.—proposal to——

Senator BOXER. Do you oppose their legislation?

Ms. NASON. No, I don't think——

Senator BOXER. Does NHTSA oppose the legislation?

Ms. NASON. No, I don't think I'd say we——

Senator BOXER. So——

Ms. NASON.—oppose it. I think——

Senator BOXER. So, therefore, we can say, at this hearing, because it's news, that NHTSA does not oppose Senator Snowe's legislation. Can we tell the people that at home?

Ms. NASON. I think "does not oppose" and "would like to work with the Senators to"——

Senator BOXER. OK.

Ms. NASON.—"make some changes" is not the same as——

Senator BOXER. And what would those changes—what would those changes be—look like?

Ms. NASON. Well, the challenging issue for us in many of the pieces of legislation that we've seen, not just that particular bill, but others in the House and others in the Senate——

Senator BOXER. Well, I'm talking about this particular bill.

Ms. NASON. They have the same—the same theme seems to be coming through, which is that Congress would like to have a guarantee in statute of an increase, and Congress would like to make sure that there's a guarantee that there's no backsliding, if you will. So, there needs to be a guaranteed floor and a guaranteed ceiling. And the challenge that we have in doing a reform proposal is being hemmed in by specifics.

Senator BOXER. OK.

Ms. NASON. You must be a top and you must be a certain number at the bottom.

Senator BOXER. OK. All right. Well, that says it all. Fuel economy standards are specific, and they are numbers.

Thank you.

Senator PRYOR. Before I recognize Senator Lautenberg, I'd just like to tell the Committee and the witnesses that it looks like we're going to have a vote, around noon, which is in about 10 minutes or so, and we're on a trajectory with two or three Senators remaining to wrap up this panel at about, maybe, 5 or 10 after. So, we'll do that. What I'd like to do is just take a very brief 5- to 10-minute recess, and then have the second panel come back immediately after that vote.

Senator Lautenberg?

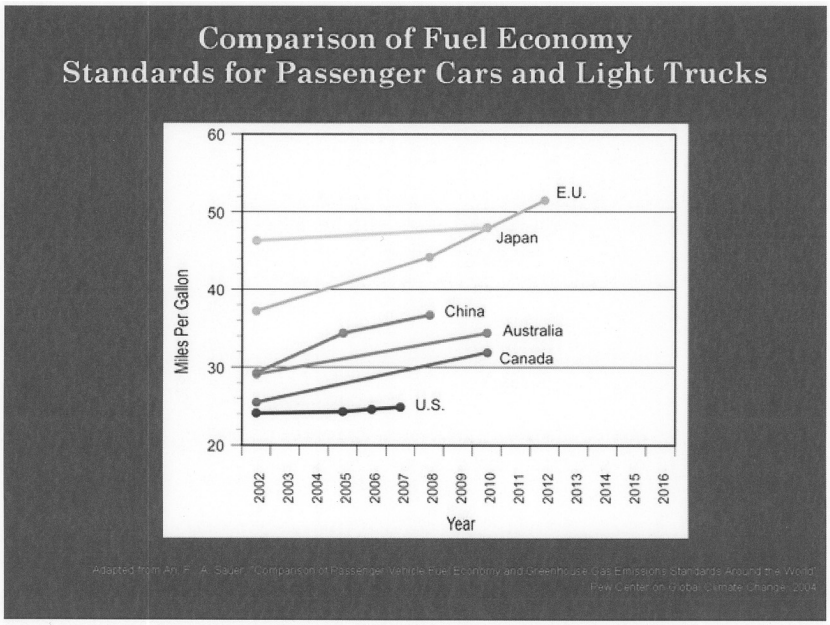
STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Thanks very much, Mr. Chairman. And I'm sorry that I was called to another committee.

But this hearing, in my view, borders on the critical, because this is the one place that others have shown us that we can deal with. And it's pitiful, when you look at how we are smothered with information about global warming and the threats that it poses to my ten grandchildren, to everybody's grandchildren, to future generations, and we, kind of, sit back, and things don't happen. So, it pains me when I see what has happened. I don't think I can be here for the next panel, Mr. Chairman, but the next panel is a place that I'd like to discuss why America dropped the ball—when we had the goal posts, the stadium, the whole thing, and we dropped the ball. It's pitiful.

All of us want America to lead, and, when it comes to reducing emissions that create global warming, we're behind. And we've got a chart here that my able chart-holder——

[Laughter.]



Senator LAUTENBERG.—and we see what has happened. These were projected goals. And we see that America is at the bottom. And if we look at the year 2006, where the projections have actually kind of been met, and China—China is doing better than we are. And the EU—you know, they're almost double our accomplishments to date, when you look at—here we are, we're hovering around the 22–24 miles to the gallon, and the others are now—Japan's over 40, and people are buying Japanese cars, and in pretty good quantity. Unfortunately—and the negative effect is on our jobs and is on our industry leadership and our growing import base. So, based on this, Japan, obviously, is currently leading the world. Many Japanese drivers are getting more than 40 miles per gallon. And when you look at us, we are, as I said earlier, behind. Our passenger cars have been getting 27.5 miles to the gallon since 1990. And light trucks have been getting 21.6 miles per gallon. One-third of America's greenhouse gases, as you acknowledged, Ms. Nason, come from the tailpipes of cars and trucks. And to cut those emissions and fight global warming, we've got to increase our CAFE standards, and make those standards mandatory.

This year, the Bush Administration adopted new CAFE standards for light trucks. Their standards are too weak. They're not going to cut emissions or global warming. We need stronger standards to cut emissions and save the environment. And I don't know where we're going to step up to the plate and do it. I'm an original cosponsor of legislation to improve fuel economy by 10 miles a gallon over 10 years, and I'm going to work with my colleagues on the Commerce Committee to promote mandatory laws that reduce greenhouse gases in our atmosphere.

And I would ask you, Ms. Nason—the President's plan for a CAFE reform allows the Department of Transportation to revise CAFE standards up or down based on market conditions. What are the conditions that could lead NHTSA to reduce CAFE standards—to reduce them?

Ms. NASON. I can commit to you, Senator Lautenberg, that if we have the authority to reform the program, we will increase the standards.

Senator LAUTENBERG. We want to increase them.

Ms. NASON. Yes, sir.

Senator LAUTENBERG. So, then, again, we are effectively having reductions by not meeting the more imposing conditions that we have upon us. I think Senator Boxer was quite clear in her expressions about where we are and why we're, kind of, sitting on our hands. We've got Americans traveling 33 million trips on public transportation each day, which significantly reduces the amount of people that get in their cars and drive——reducing congestion, pollution, et cetera. Now, what are the specific measures that the President's gasoline reduction proposal contained, that will increase the use of public transit? Do you see any?

Ms. NASON. The President's proposal to reduce gasoline consumption——

Senator LAUTENBERG. Yes, that will——

Ms. NASON.—is 8.4 billion gallons.

Senator LAUTENBERG.—that will take advantage of this one thing that we know about, that is to increase the use of public transportation.

Ms. NASON. Well, there's nothing in the proposal that would decrease——

Senator LAUTENBERG. No, no——

Ms. NASON.—the use of public transportation. It's a——

Senator LAUTENBERG. I know. So, we just stand still, then.

Ms. NASON. It's a proposal directed toward cars and light trucks for an increase——

Senator LAUTENBERG. Well, but——

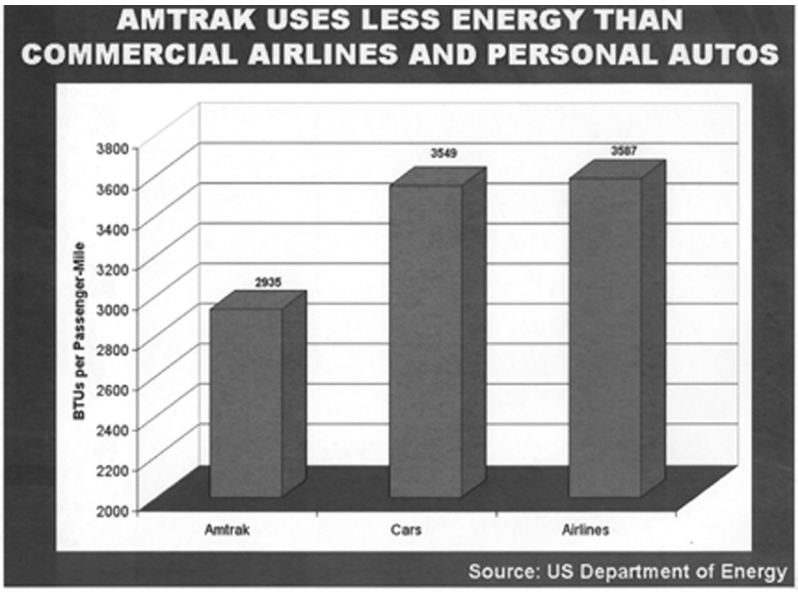
Ms. NASON.—in CAFE. It could be that if CAFE——

Senator LAUTENBERG. Well, one of the ways that we can do that, we know, is to get people out of their cars——

Ms. NASON. Right.

Senator LAUTENBERG.—and get to more efficient use of public transportation. And so, we're looking at a—an opportunity here—for instance, I'm a strong advocate of improving Amtrak's ability to carry people, as you know, and the President offers us budgets that will put Amtrak into bankruptcy. And so, it seems to me that with that easy transition from the roadway to the better way—is something that we ought to be doing. And I have one last chart that shows you the BTU per passenger mile. Amtrak is—has the number 2,935; cars, way up ahead of that; airlines, even more. So, there's an opportunity to do something here. And I would urge you to talk to the people you know in the administration, rather, and urge them to find the easy way out, just step up and support Amtrak all the way.

[]The chart referred to follows:]



Senator LAUTENBERG. Thanks very much.

[Laughter.]

Ms. NASON. Thank you, Senator Lautenberg.

Senator PRYOR. Thank you, Senator Lautenberg.

Senator Snowe, as always, you've been patient.

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. Oh, thank you. Thank you, Mr. Chairman.

Well, first of all, Administrator Nason, I share many of the statements that Senator Boxer raised. It is confounding to me that NHTSA would place a zero-value benefit to the reductions of carbon dioxide emissions that I think is a fundamental benefit of the CAFE standards. Why would you place a zero-value benefit to those reductions? I mean, since the United States represents 4 percent, 5 percent of the world's population, yet we contribute 25 percent of the world's carbon dioxide emissions—I mean, it's demonstrated, time and time again, that CAFE standards will reduce those emissions. Why would you provide a zero-value benefit?

Ms. NASON. Thank you, Senator.

We agree that it's a benefit, and we were able to quantify it for the light truck rule, 73 million metric tons. The difficulty we had was in monetizing the value of the benefit. So, we can quantify it, but we had a challenge—the agency had a challenge in trying to monetize that, because there was no consensus, when they did a review of the scientific literature, of what the appropriate value would be, as compared to, say, carbon monoxide or nitrogen oxide or particulate matter or VOC—there were—there was consensus in the industry—in the community on that. There was not consensus on CO_2.

Senator SNOWE. Well, I think—Ms. Siggerud, do you have any comments on that? Is that possible to do for—and make a recommendation to this committee?

Ms. SIGGERUD. Administrator Nason is right that there is some uncertainty on this issue; however, in running a cost-benefit analysis that lays the foundation for the standards that have been proposed for light trucks, or that could be used to increase the car standard, there are ways of dealing with uncertainty in a model, developing a range, perhaps, and then using that information to set a standard.

Senator SNOWE. Well, Mr. Chairman, I'd recommend that we require NHTSA to come back, you know, with a model that includes a benefit regarding carbon dioxide emissions. I think there's no other way. I sense a great deal of foot-dragging, reluctance, and, frankly, you know, just bureaucratic obstacles to this whole process. I mean, it doesn't really exemplify—and I think you'll sense the frustration here today—the—America's "can do" spirit, you know, that should be resonating at this point in time, where we're, you know, facing radical regimes, and we're—dependency on foreign oil, the whole issue concerning the crisis in climate change. We should be rising to the occasion. And that's just simply not happening. And that's why, you know, you see the concerns here, demonstrated, you know, in multiple ways, through legislation, through speeches, and so on, because we don't see amything but otherwise bureaucratic resistance and—you know, and obstruction, frankly, to this process.

What I keep hearing is what we can't do. We have to reform the CAFE standards. Well, that doesn't have to be mutually exclusive by increasing the CAFE standards. I mean, the National Academy of Sciences report, you know, spoke to the enormous and measurable benefits that CAFE standards—increasing CAFE standards have brought to this country. I mean, we increased it by 40 to 50 percent when we did it between the 1970s and through 1990. What is preventing America today, in the 21st century, with the technological advancements in—it's just—it's astonishing to me what I'm hearing. Where we're facing a confluence, you know, of, you know, national security challenges, and it's central to our dependency on foreign oil, not to mention the environmental implications, and we're saying, "Well, we've got all of these multiple bureaucratic steps to be taken, and we can't do it." Well, of course we can do it.

And I just think that—Mr. Chairman, that we ought to be considering a requirement for NHTSA to come back with a model and—because it's obviously not going to happen, and, if it does happen, it's going to be such a long period of time.

I mean, I'm just thinking—how long is it going to take to reform the CAFE program, Ms. Nason? What's your estimate of time? How long would it take to reform? What are you giving for time on that?

Ms. NASON. Our goal would be to begin in—seeing an increase in model year 2010. By statute, the manufacturers have 18 months to make changes to their product plans to meet CAFE, so we'd have to have a final rule out by next April 1, essentially, to guarantee an increase in model year 2010.

Senator SNOWE. Well, you know, frankly, that's why, you know, Senator Feinstein introduced the legislation. I think that all—you know, there are many of the Committee members who have supported it. Senator Boxer's been a leader on this question. I think, frankly, the time has come for Congress—I mean, I don't think we can afford, you know, to rely on bureaucratic passivity, frankly. And I think that's what we've got here. I mean, I really do. I don't see any sense of urgency. It's not what—you know, like President Kennedy did when he was, you know, in—you know, calling upon America and its entrepreneurial spirit to place a man on the Moon, and we did it within 10 years, and—actually, less than 10 years. I don't—I just cannot understand why we can't be, at this moment in time—and I just don't see it. I think we ought to be able to meet "Ten-in-Ten" without any question. We have that capacity. And I just—it just sounds like, to me, where we've got more, you know, impediments, you know, the—and I think it's just not willing to do—it's a lot of foot-dragging, frankly. That's what I sense here. And, frankly, it's minuscule on the light truck side. I mean, seriously. And that's all America can do? I mean, China's beating us—as Senator Boxer said. I mean, you know, elevating their CAFE standards? I don't know how we can be competitive in, you know, this global economy of the 21st century, if this is the kind of attitude we continue to exhibit, time and again, when we're facing some serious, you know, challenges. And, frankly, the CAFE standards is the least of which we can do. We're not saying it's mutually exclusive to all other propositions. But clearly it is a central force. And the reason why we're—we—if we could improve it, you know, by 50 percent—we increase the fuel efficiency standards, the—and, you know, it's between—from 18 miles per gallon to 27.5 between 1978 and 1990, then can you imagine, if we'd been on this course, we would be at 40 miles per gallon. So, it's just not exhibiting the necessary approach and attitude and spirit that I think that these times require.

Thank you, Mr. Chairman.

[The prepared statement of Senator Snowe follows:]

PREPARED STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

I want to thank the Chairman for holding this hearing, and look forward to working with my colleagues to ensure that this Committee asserts itself as an integral part of the holistic revision of our Nation's energy policy. Certainly as a longtime proponent of increasing CAFE standards, I believe increasing the fuel economy of America's automobiles, SUVs, and trucks is indispensable in attaining that goal.

In a recent meeting of energy stakeholders, Thomas Friedman, the noted *New York Times* columnist, was approached by an industry representative. This individual stated that, although he appreciated the columnist's push towards alternative fuels and greater energy efficiency, he needed to recognize that petroleum was going to remain a significant part of our Nation's fuel supply. In other words, he said that we should be "realistic." Mr. Friedman responded by saying it was fortuitous that this industry representative was not a stakeholder when President Kennedy addressed a Joint Session of Congress on May 25, 1961, where the President famously said, "I believe that this Nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth."

Although many at NASA and within the space industry found the challenge daunting, they were inspired by this initiative and fulfilled the President's dream with roughly 5 months to spare. I begin with this anecdote because I believe we should approach America's failed energy policy with a challenge that echos the magnitude of President Kennedy's.

According to *BusinessWeek,* U.S. vehicles are currently the greatest consumers of petroleum in the world, accounting for 9 million barrels of gasoline a day. Furthermore, the transportation sector is projected to become an even larger percentage of our overall energy demands. Specifically, the Energy Information Agency in its 2007 Annual Energy Outlook projected that, between 2005 and 2030, 93 percent of the growth in the demand for liquid fuels will occur in the transportation sector, citing, "Growing population, incomes, and economic output spur travel demand." EIA further notes that projected fuel efficiency will only improve "slightly" if we maintain our present course. The bottom line is that the transportation sector is the single largest contributor to our failing energy policy.

It is particularly regrettable that Congress has not addressed CAFE standards because the effectiveness of such a policy should not be in question. Economics Professor Austan Goolsbee, of the University of Chicago Graduate School of Business, illustrated the rewards of CAFE standards in an opinion-editorial in *The New York Times* in January. In the article, Professor Goosbee illustrated that from 1980 the efficiency increases in the transportation sector were consistent with other sectors. However, from 1990 to the present day while other sectors have modestly improved their energy efficiency the transportation sector's energy efficiency has been stagnant. Professor Gossbee concluded that, "Our regulations are now much less stringent than those in Europe, Japan and even China . . . Since 1990, the number of gallons we use, even on a per vehicle basis, rose substantially."

The fact is that, since 1990, Congress has neglected its responsibility to increase fuel efficiency standards, and I do not believe that Congress should continue to abrogate this responsibility. Since 2001, Senator Feinstein and I have introduced legislation that would have significantly increased CAFE standards by closing the SUV loophole. In this Congress, Senator Feinstein and I have introduced even broader legislation that would raise average fuel economy standards for all vehicles, including SUVs and sedans, from 25 miles per gallon to 35 miles per gallon average across a manufacturer's fleet by model year 2019. Like Kennedy's call in 1961, I believe our initiative rises to the energy policy challenge facing the United States. A compelling comparison is that my legislation would save 2.5 million barrels of oil a day by 2025, which just happens to be nearly the same amount of oil that we import daily from the Persian Gulf.

From 1978 to 1990, automobile fuel efficiency increased from 18 miles per gallon to 27.5 miles per gallon—an increase of more than 50 percent. If the United States had been consistent and continued this course our automobile fuel efficiency would be more than 40 miles per gallon. I believe it is imperative that this Congress resuscitate a policy that *The New York Times* called the "most successful energy-saving measure this country has ever seen" and pass increased CAFE standards.

I was dismayed to read in the GAO testimony that some experts were critical of the fact that NHTSA assigned a "zero dollar" value to the benefit of reductions in greenhouse gas emissions that would result from an increased CAFE standard. NHTSA officials stated they did this because the scientific community had not yet reached a consensus on the value that should be assigned to carbon dioxide. One expert told GAO that the results of the NHTSA model may underestimate the total dollar benefits to society if CAFE standards were raised since the dollar value of reduced greenhouse gas emissions was not included in the model's results.

Researchers have indeed developed a clear value that should be considered in giving a dollar value to greenhouse gas reductions and I believe it is very important that a benefit value other than zero be given to reducing carbon dioxide emissions through increasing CAFE standards. As a matter of fact, the Feinstein-Snowe-Inouye Ten-in-Ten bill will eliminate 420 million metric tons of carbon dioxide emissions by 2025, the equivalent of taking 90 million cars (or 75 million cars and light trucks) off the road in 1 year. There is more than a "zero dollar" value to the benefit to society for these reductions.

My concern is that, if NHTSA is given the jurisdiction by the Congress to revise the CAFE program that it will not put a value on a decrease in greenhouse gas emissions through improved fuel economy. It seems no one at NHTSA has read the February report from the Intergovernmental Panel on Climate Change on the dangers this planet is facing now and in the future from global warming. The IPCC said that there is at least a ninety percent certainty that humans are causing it.

In light of the IPCC report, I find it unconscionable that NHTSA could draw up reforms for improving CAFE standards and present them to the Congress while using models where the benefits of reducing greenhouse gas emissions through greater fuel economy are given no dollar value. Until I see proof that NHTSA will change its model and put an appropriate dollar value on reducing CO_2 emissions through greater fuel economy standards, I will not abrogate my responsibility to legislate that these benefits to society be used in NHTSA's models.

Mr. Chairman, I would like to suggest that this committee require that NHTSA come back to Congress with a revised assigned dollar value on the benefits of greenhouse gas reductions from increases in CAFE standards before this committee votes to hand over jurisdiction for the CAFE standards program for passenger cars to NHTSA. We are now in the 21st century and our climate is reaching crisis proportions because of the increases of manmade greenhouse gas emissions and this fact—and the facts of the IPCC—should not be dismissed out of hand by the Department of Transportation. Light vehicles use 60 percent of the polluting oil in the transportation sector in this country and NHTSA has placed a zero dollar value on the benefits to society if emissions were decreased through greater fuel economy. This is beyond my comprehension.

When Congress passed an automobile efficiency title to the Motor Vehicle Information and Cost Savings Act in the 1973 Energy bill, the overall objective was to nearly double the fuel economy of new passenger vehicles sold in the United States—from 14 to 27.5 miles per gallon (mpg)—by model year (MY) 1985. And, guess what, the goal was met. Now, in 2007, the standard is still set at 27.5 miles per gallon because Congress has not demanded a higher goal—even in light of tremendous advances made in advanced technologies and vehicle construction.

The Administration is asking for substantial new authority without guaranteeing any increase in fuel economy that we need to save oil and reduce global warming pollution, and which we know to be technologically feasible. We have the technology to improve fuel economy by 4 percent per year (34 mpg by 2017). According to the Union of Concerned Scientists, the U.S. industry could make a 41 mpg family car, a 37 mpg minivan, 34 mpg mid-size SUV, and a 30 mpg pickup. But this won't happen without direction from Congress given this administration's anemic track record on fuel economy.

I thank the Chair.

Senator PRYOR. Thank you.

Senator Carper?

STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM DELAWARE

Senator CARPER. Thanks, Mr. Pryor—Mr. Chairman.

Senator Pryor was in Delaware—was it yesterday—was in Wilmington. When he was in Wilmington, he was about 5 miles away from an auto plant where we build all the Pontiac Solstices, all the Saturn Skyes in the world. And he was about 20 miles from a DaimlerChrysler plant in Newark, where we build all the Dodge Durangos and all the Chrysler Aspens in the world.

Just a couple of comments. Because we have two plants in my state, I like to go up to the Detroit Auto Show—if not every year, then every other year—just to see what's being built there, what's being conceptualized. And 2 years ago, at the 2006 Auto Show, the neatest thing I saw was—actually two things—I was—the folks from Honda had a real cool idea with respect to hydrogen and being able to generate electricity from your onboard vehicle, and put it in the garage, sell electricity back on the grid, you know, use the electricity that was being created in the garage to, you know, charge your—get your car ready to go out and to be able to, you know, light your house, cool your house, warm your house, sell electricity back. It was really a cool idea. The other neat idea I saw a year ago was DaimlerChrysler's idea called BlueTEC, B-l-u-e-T-E-C. And BlueTEC is low-emission, 50-state diesel, EPA-approved diesel, and that gets real good gas mileage. And it's going to be, probably, on our roads next year. This year, at the Auto Show, I thought the neatest vehicle I saw was a Chevrolet product—it was a GM product, called a Chevrolet Volt. And the Chevrolet Volt is a great-looking vehicle. I call it "eye candy," visually very appealing. And it's kind of a sports car. And the neat thing about it is

that it's a flex-fuel plug-in hybrid. And the battery can be recharged by putting your foot on the brake. But the batteries also could be recharged on it with an auxiliary power unit onboard—could be fuel cells, it could be internal combustion. And then, with flex fuel, it could be diesel, with flex-fuel biofuels. And the battery always moves the wheels. The auxiliary power units always recharge the battery. It's really an elegant solution, I thought, a flex-fuel plug-in hybrid.

At the Auto Show, I talked to the folks from GM. And I talked to folks from all the major auto companies that were there, at least the U.S.-based, and some of the foreign folks. And I said, "I'm really enamored with the flex-fuel plug-in hybrid concept that you've shown us here," and I said, "What's keeping us from making it?" And they said, "The thing that is keeping us from making it is that we don't have the battery." And then they said, "Apparently, the Japanese are over there working on battery technology. They're not anxious to share it with us, because that would give us a leg up, and they want to have a leg-up, as you might imagine." I called on the President and also the—Rob Portman, OMB Director. I called on Secretary Bodman at the Energy Department, to put some real money in the budget for battery technology. And, lo and behold, he put $81 million in the Administration's budget, on battery technology. And y'all have been getting beaten on here pretty good today, which is probably not altogether bad. We've all been in—sitting in the seats that you've taken—and I must say that the administration's leadership on these issues has been disappointing, at best. But I must say, I was encouraged that there's real money for this battery technology and that we have the ability to move a little closer to having the ability to provide more energy-efficient vehicles. The bad thing is it just takes so long.

And the last thing I want to say, Senator Lautenberg showed us some nice-looking charts up here, and multicolored, and they're looking at comparing BTU consumption for trains and planes and cars. It was just a good "gee-whiz" for y'all to take home with you. If you move a ton of freight by rail from Washington, D.C., to Boston, Massachusetts—a ton of freight by rail from Washington, D.C., to Boston, Massachusetts—it takes about 1 gallon of diesel fuel. Pretty good, isn't it? Move it—1 ton of freight from Washington, D.C., to Boston, Massachusetts, by rail, takes about 1 gallon of diesel fuel. And I know the administration is not a big believer in trains, whether moving people or freight, for that matter, but I think that's part of the solution.

Let me ask you, if I can in the 2 minutes that are left for me, if you were in my shoes, if you were in Senator Pryor's shoes, and you were looking at this issue, what would you do differently? What would you do—not the administration's proposal—but what would you do differently? Not to say it's totally without value, but what would you do if you were in our shoes?

Ms. NASON. If—I agree with you, Senator. One of the huge challenges for all of the industry is battery technology. I mean, if you're looking to make improvements in CAFE, CAFE is not a program that you're going to see a turnaround at the price of the pump tomorrow. There was a lot of conversation last year about that. CAFE is a long-term gradual increase. But, still, the only way,

overall, to have a higher fuel efficiency for the fleet, 40-mile-per-gallon type, is to move into new technologies, is to move away from a straight internal combustion engine and to move more toward, first, clean diesels, but also into hybrids and then into hydrogen fuel cells, into vehicles like the Volt, which I also saw at the Detroit Auto Show. And I think we do need to, and the administration has, as you said, put more money into battery research technology. That is the way of the future. If you're moving away from nickel-metal-hydride and into lithium-ion, you need to resolve some of the problems with lithium-ion, like catching fire, for example, is a safety issue that we need to address. You need to make them durable. You need to bring the cost down. So, that is something that I think we need to look at more closely, and be more supportive of, for the overall auto industry.

Senator CARPER. Thank you.

Ms. Siggerud?

Ms. SIGGERUD. Senator Carper, setting aside the Volt car, there are a number of other technologies that look to be available in the nearer future than that, that certainly make it possible to increase the car standard over time. It has been static for largely two decades, although the work that we've done showed it is possible and should be done. The question that the Congress needs to address at this point is whether to move ahead, have the administration simply set a higher standard over time, using the current program, or to make some revisions to it to address some of the equity and safety issues that are associated with increasing that standard. And that is really a decision for the Committee to make, whether to direct the administration to simply move ahead in a straight-line approach or to make some changes to the program. If the latter choice is the one you would choose, then the Congress does need to act to provide some different authority.

Senator CARPER. My time's expired. Let me just say, I think there are three things that we can do as a country—administration, Congress, and private sector together—but, for the Federal Government, number one, use Federal monies to help fund R&D—basic R&D, whether it's fuel cells, whether it's battery technology—Federal funds going into new technology to enhance the energy performance of our vehicles. Number two, use the Government's purchasing power to help commercialize these technologies when they are produced—on the defense side and the civilian side—to use our purchasing power to help commercialization. Number three is, where it's appropriate, to provide tax credits to incentivize people to buy, whether it's a highly energy-efficient hybrid or a highly energy-efficient low-emission diesel, to use it—those are three things that I think we can do. And, to some extent, we're doing them; we just need to do more of them. Thank you.

Thanks, Mr. Chairman.

Senator PRYOR. Senator Carper, thank you.

And we've had a little change in plans. And that is, I'm going to recess the Committee probably for about 5 minutes. Senator Kerry is voting right now and is going to come right back, and he'll restart, because he wants to ask this panel some questions. And then, as soon as Senator Kerry finishes, I anticipate, unless other Senators show up that want to ask this panel questions, we'll go

to the second panel. So, what we'll do is, we'll stand in recess here for approximately 5 minutes, until Senator Kerry comes back.

[Recess.]

STATEMENT OF HON. JOHN F. KERRY, U.S. SENATOR FROM MASSACHUSETTS

Senator KERRY [presiding]. Well, we'll come back to order. Thank you all for already, I guess, being there. An orderly group. And thanks for staying over. I apologize—with the vote—but I wanted to have an opportunity to be able to ask a few questions.

I've listened to some of the testimony. I was stuck back in my office, but I have been able to hear some of the questioning, certainly that of Senator Sununu, Senator Rockefeller, and others, Senator Boxer, so I'm a little—I've got some sense of what has transpired here.

But let me, kind of, touch upon something that I don't think has really been yet established. There's been some discussion about the goal, the President's goal, and it being a goal, et cetera. The legislation that I am a cosponsor of, that others here in the Committee have joined in on, sets a mandate with respect to that goal, as you know, with the clear understanding and belief from the scientific community that it's achievable, as many of us believe it has been for some considerable period of time. So, let me ask you that—I mean, you're—obviously, you're familiar with the goal. A 2002 National Academy of Sciences report shows that we could easily achieve this fuel economy improvement. So, given the President's stated goal, can you share with the Committee, why does your proposal fail to set or recommend any mandatory improvement to meet the goal? And, given that fact, why should the Committee not, therefore, embrace, codifying that goal and setting it?

Ms. NASON. Thank you, Senator Kerry.

The legislation that we sent up, the draft legislation, is very similar to the legislation that the administration sent up last year. And last year, when I was the Assistant Secretary here with Secretary Mineta, and he testified in both the House and the Senate, there was clear interest on the part of many of the members on the panel to have more of a guarantee that instead of simply saying, "Give us the authority, give the agency the authority, and we will do a new rulemaking," there was a feeling that we—sense—that we needed to offer more, that there—there needed to be a stronger message. And so, the President, in the State of the Union, articulated, as you said, his goal of 8.5 billion gallons of gasoline saved in 2017. The way to get there is a 4 percent annual increase in CAFE. However, as the President also noted, the ability to do a full cost-benefit analysis is important to the agency. And so, no, it is not in—on any particular page in our draft legislation. Four percent is a goal. It's our target. But it is not something that we put into the legislation, because we did want to have the flexibility to review the product plans by the manufacturers, and to do a full cost-benefit analysis, and to see what is achievable. That is our target, and that is what we hope to achieve, a 4 percent annual increase, year over year, from 2010 to 2017. But it is not—you are correct, Senator, it not in the legislation.

Senator KERRY. But some people have tried to argue and question whether or not NHTSA, in fact, has the authority to raise those standards. Do you—would you agree that you have the authority?

Ms. NASON. I believe we have the authority to raise the number. As you noted, the National Academy of Sciences report, we do not have the authority to reform the program for passenger cars. We have it for light trucks. When Congress first passed the statute in 1975, there was a distinction between trucks and cars.

Senator KERRY. Right.

Ms. NASON. And trucks being a far smaller percentage of the market than they are now—now they are half, then they were about 20 percent—so, we have reformed light truck. We would like to have the authority to reform passenger car and increase the stringency.

Senator KERRY. Well, yes, but the record on this is, in fact—I mean, it may go back to that period of time when the light truck/passenger fleet was divided and distinguished differently. But the fact is that, only a few years ago, we all tried very hard to change it based on the realization that that had—that balance had changed. And we ran into a buzzsaw of opposition. Senator Hollings and I introduced Senate 1926, which was the National Fuel Savings and Security Act of 2002, and it called for a combined fuel economy average in 2002—that's 5 years ago, obviously—of 35 miles per gallon by 2015. That became part of the comprehensive energy bill. And then, the industry and others joined together with a couple of Senators who brought, you know, an amendment to the floor which created this elaborate set of standards that they gave to you. And it struck the Kerry-Hollings provision from the energy bill. So, we have been trying to respond to this for 5 years now, or more. You folks have, frankly, been way behind the eight ball on it, as you've heard from my other colleagues here this morning.

So, my question, again, sort of, is, if the President sets a goal, and the goal is to have any meaning, why would you not require an increase that is clearly within the technological capacity of the United States to achieve, and the industry?

Ms. NASON. Yes, again, thank you, Senator.

What we would like to do is, as you know, to have 4 percent as a goal. But based on the most updated product plans from the manufacturers, we would like to see what is technologically feasible but——

Senator KERRY. But haven't you seen that?

Ms. NASON.—economically——

Senator KERRY. I mean, everybody else has. Are you—aren't you familiar with the National Academy of Sciences studies and reports?

Ms. NASON. Yes, I'm very familiar with them, Senator.

Senator KERRY. Do you doubt the science?

Ms. NASON. No, I think we agree that basing reform on their suggestions is the most responsible way to increase CAFE.

Senator KERRY. Well, they've basically laid out a lot of the technology that's available now.

Ms. NASON. Yes, and we agree that that report needs to be updated, based on new technologies, but the NAS has——

Senator KERRY. Which might even give you better improvements——

Ms. NASON. Yes.

Senator KERRY.—correct? But just the de minimis improvements that they already lay out as feasible are well larger than the range that you're currently talking about. So, why do you have to stop to do this analysis? Why not embrace this?

Ms. NASON. The National Academy of Sciences, Senator Kerry, was clear, in the report, that they don't endorse any particular CAFE number. They looked at some of the drawbacks to the program. It certainly was successful.

Senator KERRY. Do you know what they said, Ms. Administrator? You know what they—sorry to interrupt you—but in 2001—that's 6 years ago now—they found that existing engine technologies were inexpensive enough to pay for themselves over the life of the vehicle, and could enhance fuel economy by 8 to 11 miles per gallon, with no net consumer cost. And with most fuel economy improvements for SUVs and other heavier vehicles, 34 percent increase from 18 to 28. That's what they found in 2001 technology. Here we——

Ms. NASON. Yes——

Senator KERRY.—are in 2007. You don't think we can do better?

Ms. NASON.—and our light truck rule was a 9 percent increase. The passenger car fleet is a little bit higher than where the light truck fleet is.

Senator KERRY. Right.

Ms. NASON. So, it is more——

Senator KERRY. Well, this has——

Ms. NASON.—challenging to——

Senator KERRY. Right.

Ms. NASON.—increase fuel efficiency. But, again, what we'd like to do is to do a full reform, as NAS recommended, and to balance economic practicability with technological feasibility.

Senator KERRY. Well, let me ask you, very bluntly, if we were to give you sort of a required reform authority—additional reform authority—can you assure the Committee that—I mean, can you guarantee the Congress that you will require a 4 percent per year improvement in fuel economy?

Ms. NASON. Senator, 4 percent, again, is a goal, it's our target, but without having the product plans and having the benefit of doing a full cost-benefit analysis, I can't, today, tell you exactly what percentage increase we would see, year over year.

Senator KERRY. Well, then why——

Ms. NASON. That is our goal.

Senator KERRY.—did the President put the goal out there? I mean, this is meaningless. This is just a game.

Ms. NASON. Yes, sir, I think we felt that having the President of the United States, in the State of the Union, address this and to speak specifically to 8.5 billion gallons of gasoline saved in 2017, is—that's the way to get there. And we certainly—the Secretary's position would be—and the NHTSA Administrator's position would be—that if the President sets that as a goal, you do everything you can to meet it. That would be our message today, that we will certainly do everything we can to meet it, but we'd like to have the

ability to do a cost-benefit analysis to weigh the technological feasibility with the economic practicability, to look at the impact of other Federal motor vehicle safety standards on CAFE, to consider the need for the Nation to conserve energy, all of the statutory requirements that we have right now to do a full balancing of all those factors, and then propose a rulemaking.

Senator KERRY. Well——

Ms. NASON. But——

Senator KERRY.—I think it's all—I mean, I have to tell you, it's been frustrating, over 22 years, to watch this process, watch it slide backward some of those years, stay the same, do worse than Europe and other countries, watch the Japanese and Germans clean our clock in the marketplace, and we just sit around and play games with this. You could get 500 miles per gallon if you had a hybrid combined electric plug-in whatever—you guys just don't excite the marketplace. You're not willing to challenge it. So, I just think we have to. I really believe that. You know, if you had a mix of—I mean, if we were to take initiatives to get different fuels out there, and different mixes for automobiles, instead of Ford having had to lease, from Toyota, the technology to be able to produce a hybrid, we might have produced it. But there has been no push here, and a complete avoidance of the reality that, when you demand something, the marketplace responds. If you set a standard, the marketplace responds. And the fact is that, you know, there has been this myopia, and it goes back to the 1960s, when Volkswagen first introduced the Bug, and everybody said, "Oh, that's a niche market, that's not going to mean anything," and, boom, they got their clocks cleaned. And it's gone on one time after another after another. I mean, this would be a Harvard Business School case study in bad management and bad marketing, in the final analysis, having taken people who had unbelievable market share, unbelievable power in the marketplace, and just ignored the consumer realities and desires and a whole bunch of other things. And I think the same thing's happening here, in terms of fuel efficiency.

Do you think a consumer—a mom with an SUV would rather spend 7,800 bucks on fuel that goes, half of it, to foreign countries, or would she rather spend a certain lesser percentage of that on a new technology that provides jobs and income to Americans?

Ms. NASON. Well, I am a mom with an SUV. I have a Honda——

Senator KERRY. Where would you rather have your money go?

Ms. NASON.—and I agree that——

[Laughter.]

Senator KERRY. To Saudi Arabia?

Ms. NASON. I think the administration's proposal is—as the President has noted, it's a heavy technology bid. We have to assume, and we would be seeing a far greater penetration in the fleet, with a 4 percent annual increase of hybrids and diesels, and moving forward with improved battery technology to hydrogen fuel cell and plug-in vehicles. That is where the industry needs to go to see greater fuel efficiency levels. We agree with you.

Senator KERRY. So, why wouldn't you consider something like a $3,000 or $4,000 per vehicle tax credit for purchasers that go out and buy that kind of vehicle? You don't think the industry wouldn't

leap at higher production level, and consumers would leap at the purchase?

Ms. NASON. I think the administration has looked at—there are multiple ways to——

Senator KERRY. But they aren't doing any of them. I mean, what is the plan? What is the plan for meeting the 4 percent goal?

Ms. NASON. Our target of 4 percent——

Senator KERRY. Target. What is the plan for meeting the 4 percent goal—not a target—what is the plan to say to us, "We're going to meet the 4 percent goal?"

Ms. NASON. We would treat reform, Senator, the same way we treated the light truck reform. We would do the same type of rulemaking. I'm not sure how else to help answer that question, other than to say that we understood—we understand that there is a great interest on the part of many of the members to try to find assurances in the legislation. We did not propose 4 percent, because, as the President has said, he'd like to let the Department and the agency have the authority to do a full cost-benefit analysis and to do a full rulemaking. But, again, it's draft legislation, so, if there are ways that we can——

Senator KERRY. How long have you folks been in office?

Ms. NASON. I've been the NHTSA Administrator since last May.

Senator KERRY. And how long has the administration been in office? Since 2001?

Ms. NASON. Yes, well, as was noted by GAO, we did have a freeze for some years in Congress from making changes. But we did initiate a light truck——

Senator KERRY. How do you think——

Ms. NASON.—rulemaking.

Senator KERRY.—that came about? You know that your rule on the light SUVs reaches only 2.8 percent of the 8.5 million light trucks that are sold annually. You think that's good enough? 2.8 percent of the 8.5 million light trucks?

Ms. NASON. It's a 2 percent annual increase, and there are some manufacturers who, under the light truck rulemaking, are at the far end, and will need to make small to no changes, because their fuel efficiency—they've already invested in some of those technologies, and their fuel efficiency levels are already high enough that our rulemaking will not force a greater increase. One of the things we're trying to avoid in doing a reform proposal is asking all of the manufacturers to have the same percentage increase. Some of them have already invested in the higher-end technologies, and so, we have specifically said we do not want to have a uniform percentage increase from all the manufacturers. So, yes, there would be some, even under a reform passenger car, there would be some manufacturers who would have to make smaller improvements than others.

Senator KERRY. Well, Mr. Chairman, I've gone over my time, and I appreciate it. But, you know, I'm just—I think there's such a—I know you sensed it from some of my other colleagues, there is such a frustration level up here with this—the sort of reluctance to excite the industry into a new performance standard, buying into, I think, some old views of things that are not realistic, measured against what others are doing, and measured against what

the science tells us we could do. And that resistance has cost us a lot, not just in terms of gasoline consumption, oil dependency, but also health, jobs, economic advantage, I mean, a host of other things. I think the myopia has been unbelievably costly to the country, and I think it would be good for the administration—I mean, these technologies, we've talked about them here in this Committee for years. We've had any number of people come in and give us mix-and-match ways in which this could be done, but some people just don't want to do it. So, they sell a very complicated set of formulae to you and to others, and people don't do it. And the result is, we are where we are, but I think it's time for us, somehow, to seize the baton here and try to get something done that's more realistic.

And obviously none of us want to lose jobs. We don't want to make an industry noncompetitive. I understand that, which is why I proposed, 2 years ago, putting a billion dollars, flat, right up front, into the industry, help them retool, put it into the plant retooling, put it into the ability to be able to do this, not to mention the tax credits you could give for the purchase of the vehicles or the assistance you could give in putting E85 into gas stations and a whole bunch of things. It would change the entire demand curve of our country.

I'm not saying any one of those is the best thing to do, or 100 percent correct, but I know this, we're not doing any of it. We are just nibbling at the margins in the most timid and reluctant and ineffective way. And it's costing us market share, and it's costing us jobs, and it's costing us health costs and—asthma and other things from the air quality. You name it. We're not even meeting those standards.

So, I hope you all will, you know, do something. But, in the meantime, I hope we will, Mr. Chairman. Thanks.

Senator PRYOR [presiding]. Thank you, Senator Kerry.

I want to thank the panel. You've been patient. And we've had that vote in the middle of the panel. You've gone through a lot of questions. And I'd like to excuse the first panel and then have the second panel come up.

And you all come up and take your seats, and I'll go ahead and introduce you. And I know many of you, if not all, have opening statements, so we'll run through those, and then we'll ask questions after that.

First, we have Mr. David Friedman, Research Director, Clean Vehicles Program, Union of Concerned Scientists; second, we have Ms. Elizabeth Lowery, Vice President, Environment and Energy, General Motors; third, we have Dr. David L. Greene, Corporate Research Fellow, Oak Ridge National Laboratory, National Transportation Research Center; next, we have Tom Stricker, Director, Technical and Regulatory Affairs, Toyota Motor of North America; and last, we have Alan Reuther, Legislative Director, International Union, United Auto Workers.

So, if you, ladies and gentlemen, could take your seat, and as soon as everybody's seated, we'll recognize David Friedman. And I don't know if we'll have any other Senators join us. I know that, with the 7-minute rounds, with the number of Senators we have,

this is going to go a little bit later than some Senators had scheduled, but——

David Friedman, would you mind giving us your opening statement, please? And, by the way, there's a clock in front of you, so if you could just keep an eye on that, and maybe even keep it shorter than the time permits. Thank you.

STATEMENT OF DAVID FRIEDMAN, RESEARCH DIRECTOR, CLEAN VEHICLES PROGRAM, UNION OF CONCERNED SCIENTISTS

Mr. FRIEDMAN. Great, thank you, Mr. Chairman. I'll do my best.

Recently, the country has reached a really important fuel economy milestone. Leaders in Congress, including Chairman Inouye and several members of this committee and the President, are basically in agreement with how far we should go to increase fuel economy standards over the next 10 years. The President's 8.5-billion-gallon conservation goal and the "Ten-in-Ten" fuel economy bill would both require a fuel economy improvement of about 34 to 35 miles per gallon in 10 years. While these targets and dates are slightly different, the oil savings from both would be about the same, about 1.4 million barrels of oil per day in 2020. Basically, the "Ten-in-Ten" bill would make the President's goal the law of the land.

Now, I think this general agreement on goals means that what we really need to do now is focus on how to get there. And obviously that's the devil in the details. By reforming and strengthening fuel economy standards, this committee has a significant opportunity to cut our oil addiction, to save consumers money, to create jobs, and, very importantly, to tackle global warming. Global warming is the single largest environmental challenge we face today. And our cars and trucks have impacts that are worldwide in scale. They require special attention because of that. Only the entire economies of the United States, China, and Russia produce more global warming pollution than just our cars and trucks. Those vehicles also are responsible for 40 percent of our oil addiction. In fact, we import about 60 percent of our oil and pay about $60 per barrel today. That's over $700 million per day, $500,000 per minute, leaving this country, that could have, instead, been spent to create U.S. jobs and strengthen our economy.

Now, one of the main reasons why cars and trucks contribute so much to oil dependence and global warming is that the average fuel economy of the new car and truck sold in 2006 was lower than it was in 1986. Fuel economy standards can reverse this trend by steering automakers to use existing technology to put more high fuel economy choices on showroom floors. We can't afford to wait for hybrids, fuel cells, plug-ins, or alternative fuels to address these problems, when we have technology already in the hands of automakers.

Technologies already on the shelf could be used across the fleet to reach more than 40 miles per gallon in the next 10 years. But today automakers mainly offer compacts and a few family cars to consumers who want higher fuel economy. That leaves a mother with three children in car seats, or a farmer who needs a work truck, with no gas-sipping choices.

Consumers aren't the only ones who are missing out. A 2006 study from the University of Michigan shows that Detroit's Big Three could increase—increase profits by $1.3 billion in 2010 if they invest in fuel economy, even if gasoline costs only $2 per gallon. There's a real opportunity here. Existing technologies could create over 160,000 new jobs throughout the economy. In the automotive sector alone we could see an increase of over 40,000 new jobs. These jobs would be created by investing in better technology and because consumers would be spending less money on oil and more money here in America.

Now, if the country is to realize these benefits, we recommend that Congress take the following three steps. First, Congress should establish a concrete fuel-economy target to guarantee that the President's oil savings goal is met. We have to guarantee that that happens. Adopting the "Ten-in-Ten" bill would achieve this goal, and, by 2027, would save as much oil as we currently import from the entire Persian Gulf.

Congress should not cede this authority to NHTSA. NHTSA has not come through when setting the magnitude of fuel economy standards. They have reformed the system for light trucks and brought in size-based systems, which is a positive move, but the magnitude of their increase will save less than 2 weeks of gasoline each year from the most recent rule. And in—this is, in large part, because NHTSA is just not the right place to estimate the value of things like global warming pollution and oil dependence. Congress is the right place to show what consumers and the public think we should do about those problems.

Now, second, Congress should provide NHTSA with the authority to extend these size-based standards to cars. This will give manufacturers, who make everything from compact cars to large pickups, the flexibility they have been asking for.

Under the "Ten-in-Ten" bill, with size-based standards, this would mean a pickup would only have to meet 28 miles per gallon, not the 35 mile per gallon standard. The technology is out there to do that while saving consumers money.

Now, finally, this pickup truck, of course, would have the same size, the same performance, and the same, or even better, safety than we have today by tapping into these existing technologies. Now of course this is going to require investments from automakers. And since the country is going to get a significant amount of benefits from increased fuel economy standards, in return for these improvements, Congress could provide incentives to companies that invest in the equipment and the people who will be needed to make these more fuel-efficient vehicles.

At the end of the day, high oil and gasoline prices and continued increases in our oil addiction represent significant threats to our country, our economy, the climate, and U.S. auto jobs. Congress can do something about these problems by taking a leadership role on fuel economy.

Thank you very much.

[The prepared statement of Mr. Friedman follows:]

PREPARED STATEMENT OF DAVID FRIEDMAN, RESEARCH DIRECTOR, CLEAN VEHICLES PROGRAM, UNION OF CONCERNED SCIENTISTS

Mr. Chairman and Members of the Committee, I would like to thank you for the opportunity to testify before you today. I am a research director and senior engineer with the Union of Concerned Scientists (UCS). UCS is a leading science-based nonprofit that has been working for a healthy environment and a safer world for over 30 years.

I want to begin today by saying that I think we have reached an important milestone on fuel economy. It would appear that some leaders in Congress, including Members of this Committee, and the president are basically in agreement on how far we should increase fuel economy standards in about a 10-year period.

In the President's State of the Union speech, he set a goal for America to conserve up to 8.5 billion gallons of gasoline by 2017. To do so, we would need to increase fuel economy standards for cars and trucks to about 34 miles per gallon by 2017, or about 4 percent per year. At the same time, the bill recently introduced by the Chairman and many members of this committee establishes a fuel economy target of 35 mpg by 2019. Figure 1 shows the oil savings benefits of the existing Senate bills and the President's 8.5 billion gallon goal. The oil savings benefits of S. 357 are almost the same as the President's goal. Other members of the Senate and House have put forth bills with similar requirements in this and recent years.

In addition, Senator Stevens, has introduced a bill to raise fuel economy standards for passenger cars to 40 mpg by 2017, or about a 39 percent increase compared to the average fuel economy of cars today. If Senator Stevens applied the same improvement to the rest of the fleet, it would average just over 34 mpg by 2017. As it stands, the oil savings from S. 183 are half of the others since only half the fleet is included.

I consider this a milestone because this significant agreement on fuel economy goals means that we can focus now on how best to reach them. By reforming and strengthening fuel economy standards for cars and trucks, this committee has a significant opportunity to help cut our oil addiction, save consumers money, create new jobs, and tackle the largest long term environmental threat facing the country and the world today, global warming.

Global Warming

Carbon dioxide, the main heat trapping gas blanketing our planet and warming the Earth, has reached a concentration of about 380 parts per million. That is higher than the globe has experienced in the past 650,000 years. We are already seeing the impacts of these elevated concentrations as eleven of the last 12 years rank among the 12 hottest on record (IPCC, 2007).[1]

The worldwide costs of global warming could reach at least 5 percent of global GDP each year if we fail to take steps to cut emissions (Stern Review, 2006). These costs would come in lives and resources as tropical diseases and agricultural pests move north due to our warming continent. These costs could also come from losing 60–80 percent of the snow cover in the Sierras by the end of the century and the resulting impacts on agriculture in California and similar states that rely on snow melt for water. We will also see increased asthma and lung disease because higher temperatures will make urban smog worse than it is today.

Global warming is a worldwide problem and our cars and trucks have impacts that are worldwide in scale. Only the entire economies of the United States, China, and Russia exceed the global warming pollution resulting from our cars and trucks alone. It is clear that the scope of pollution from our cars and trucks requires special attention as we begin to address climate change.

Oil Addiction

In addition to the costs created by the pollution from our cars and trucks, our vehicles also contribute to 40 percent of our oil addiction. Overall, data from the Energy Information Administration indicates that we imported about sixty percent of our oil and other petroleum products in 2006. Last year alone, our net imports were more than 12 million barrels per day. When oil is at $60 per barrel, every minute that passes means over $500,000 that could have been spent creating U.S. jobs and strengthening our economy instead leaves this country. At the end of the day, high oil and gasoline prices and continued increases in our oil addiction represent one of the single biggest threats to U.S. auto jobs today.

[1] Reliable records began in 1850, when sufficient worldwide temperature measurements began.

Fuel Economy Background

One of the main reasons our vehicles contribute so much to U.S. oil dependence and global warming is that the average fuel economy of the fleet of new cars and trucks sold in the U.S. in 2006 was lower than it was in 1986. And while automakers note the number of models on the market that get more than 30 miles per gallon on the highway, a look at EPA's 2007 fuel economy guide shows that there are more than 300 car and truck configurations that get 15 mpg or less in the city.[2] Even if you exclude pickups and work vans, automakers still flood the market with nearly 200 car, minivan, and SUV configurations that get 15 mpg or less in the city. Consumers simply do not have enough high fuel economy choices when it comes to cars, minivans, SUVs and pickups.

Fuel economy standards were created to solve this exact problem. Just as we see today, automakers were not ready for the problems created in part by our gas guzzling in the early 1970s. As a result consumers jumped on the only option they had at the time, relatively poorly designed smaller cars. However, as fuel economy standards were fully phased in automakers switched from giving consumers poor choices to putting technology in all cars and trucks so car buyers could have options in the showroom with 70 percent higher fuel economy than they had in 1975 (2006 EPA Fuel Economy Trends Report). If the fuel economy of today's cars and trucks was at the level the fleet experienced in 1975 instead of today's 25 miles per gallon, we would be using an additional 80 billion gallons of gasoline on top of the 140 billion gallons we will use this year. That would represent an increase in oil demand by 5.2 million barrels of oil per day, or a 25 percent increase in our oil addiction. At today's average price for regular gasoline, about $2.50 per gallon, that represents $200 billion saved. That number could have been much better, however, if fuel economy standards had not remained essentially unchanged for the past two decades.

Technology to Create Consumer Choice

Driving in America has become a necessity. Because of this and a lack of options, even the spikes in gasoline prices over the past 5 years have not been enough to push consumers to significantly reduce their gasoline consumption.[3] Better fuels and more alternatives to driving are important to helping consumers and cutting pollution, but the quickest route to reduced gasoline consumption and saving consumers money is put to more high fuel economy choices in the showroom.

The automobile industry has been developing technologies that can safely and economically allow consumers to get more miles to the gallon in cars, minivans, pickups and SUVs of all shapes and sizes. Figure 2 shows the potential for these technologies to dramatically increase the fuel economy of an SUV with the size and acceleration of a Ford Explorer. This could be achieved using direct injection gasoline engines, high efficiency automatic manual transmissions, engines that shut off instead of wasting fuel while idling, improved aerodynamics, better tires and other existing efficiency technologies. These technologies have no influence on the safety of the vehicle. Others, such as high-strength steel and aluminum and unibody construction could actually help make highways safer.

For just over $2,500 a consumer could have the choice of an SUV that gets more than 35 mpg. This is an SUV that alone could meet the fuel economy targets laid out by Members of this committee and the President. At $2.50 per gallon, this SUV would save consumers over $7,800 on fuel costs during the vehicle's lifetime. The technologies needed for this better SUV would even pay for themselves in about 3 years. Automakers do already have vehicles on the road that can match this fuel economy, but most are compact cars. That leaves a mother with three children in car-seats or a farmer who needs a work truck with few vehicle choices until these technologies are packaged into higher fuel economy minivans, SUVs, pickups and other vehicles.

The technologies in this better SUV could be used across the fleet to reach more than 40 miles per gallon over the next 10 years. The 2002 study by the National Academies on CAFE showed similar results. Data in the report indicate that the technology exists to reach 37 mpg in a fleet of the same make-up as the NAS analyzed, even ignoring hybrids and cleaner diesels. (NRC, 2002)

---

[2] The EPA fuel economy guide configurations separate out two- and four-wheel drive and different engine sizes for each model. The number of models getting less than 15 mpg in the city will therefore be lower.

[3] A recent University of California, Davis study concluded that consumers' short term response to gasoline prices has dropped by more than a factor of four since the 1970s. (Hughes, Knittel, and Sperling, 2006) Data from the past 5 years indicates that a consumer would only decrease gasoline consumption by 3.4 to 7.7 percent in response to a doubling of gasoline prices compared to a 21 to 34 percent reduction in the late 1970s.

The question now is whether automakers will use these tools to increase fuel economy. Automakers have spent the past twenty years using similar technologies to nearly double power and increase weight by twenty-five percent instead of increasing fuel economy. (EPA Fuel Economy Trends Report, 2006) As a result, consumers today have cars and trucks with race-car like acceleration and plenty of room for children, pets and weekend projects. What consumers need now is to keep the size and performance they have today, while getting higher fuel economy. Without increased fuel economy standards, however, this future is unlikely. We are already seeing automakers market muscle hybrids, vehicles that use hybrid technology for increased power instead of increased fuel economy. And technologies such as cylinder cut-off, which increases fuel economy by shutting off engine cylinders when drivers need less power, are being used to offset increased engine power rather than increased fleetwide fuel economy.

This committee is in a position to ensure that consumers can keep the power, size and safety they have in their vehicles today, and save thousands of dollars while cutting both global warming pollution and our oil addiction through deployment of technology aimed at better fuel economy across the vehicle fleet.

Economic and Employment Impacts of Setting Fuel Economy Targets

Contrary to claims by the auto industry, investments in fuel economy technology, just like other investments in the economy, will lead to prosperity. No automaker would simply shut down a plant if it was making gas guzzlers that don't meet national fuel economy targets. Instead, they would make investments to upgrade their tooling to build more fuel efficient vehicles. A 2006 study from Walter McManus at the University of Michigan shows that automakers that invest in fuel economy, even as early as 2010, will improve their competitive position (*Can Proactive Fuel Economy Strategies Help Automakers Mitigate Fuel-Price Risks?*). According to the study, Detroit's Big Three could increase profits by $1.3 billion if they invest in fuel economy, even if gasoline costs only $2 per gallon. However, if they follow a business-as-usual approach their lost profits could be as large as $3.6 billion if gasoline costs $3.10 a gallon.

UCS has also sought to quantify the benefits of increased fuel economy. (Friedman, 2004, *Creating Jobs, Saving Energy and Protecting the Environment*) We estimated the effect of moving existing technologies into cars and trucks over 10 years to reach an average of 40 miles per gallon (mpg). We found that:

- In 10 years, the benefits resulting from investments in fuel economy would lead to 161,000 more jobs throughout the country, with California, Michigan, New York, Florida, Ohio, and Illinois topping the list.
- In the automotive sector, projected jobs would grow by 40,800 in 10 years.

A similar analysis done by the economic-research firm Management Information Services (MIS) evaluated the potential job impacts of increasing fuel economy to about 35–36 mpg by 2015 and found even greater growth at more than 350,000 new jobs in 2015. (Bezdek, 2005, Fuel Efficiency and the Economy) This job growth included all of the major auto industry states.

In both the UCS and the MIS studies these new jobs would be created both because of investments in new technologies by the automakers and because consumers would shift spending away from gasoline to more productive products and services.

Requiring all automakers to improve fuel economy will increase the health of the industry. Companies like Ford, General Motors and the Chrysler division are currently in bad financial condition due to poor management decisions and elevated gas prices, not fuel economy standards, which have been stagnant for the past two decades. Those poor decisions have put them in a place where, just as in the 1970s, they do not have the products consumers need at a time of increased gasoline prices, and they are continuing the slide in market share that began the first time they made this mistake.

By requiring Ford, GM, Chrysler and all automakers give consumers the choices they need, Congress can ensure automaker jobs stay in the U.S. and models like the Ford Explorer and Chevrolet Tahoe are still on the market 10 years from now—though they will go farther on a gallon of gas.

Safety Impacts of Setting Fuel Economy Targets

While the NAS study clearly states that fuel economy can be increased with no impact on the safety of our cars and trucks, critics of fuel economy standards often point to the chapter, which takes a retrospective look at safety. Despite the fact that this chapter did not represent a consensus of the Committee (a dissenting opinion from two panel members was included in the appendices) and the fact that three

major analyses have since shown that fuel economy and safety are not inherently linked, claims are still made to the contrary.

First, David Greene (one of the NAS panel members) produced a report with Sanjana Ahmad in 2004 (*The Effect of Fuel Economy on Automobile Safety: A Reexamination*), which demonstrates that fuel economy is not linked with increased fatalities. In fact, the report notes that, "higher mpg is significantly correlated with fewer fatalities." In other words, a thorough analysis of data from 1966 to 2002 indicates that Congress can likely increase fuel economy without harming safety if the past is precept.

Second, Marc Ross and Tom Wenzel produced a report in 2002 (*An Analysis of Traffic Deaths by Vehicle Type and Model*), which demonstrates that large vehicles do not have lower fatality rates when compared to smaller vehicles. Ross and Wenzel analyzed Federal accident data between 1995 and 1999 and showed that, for example, the Honda Civic and VW Jetta both had lower fatality rates for the driver than the Ford Explorer, the Dodge Ram, or the Toyota 4Runner. Even the largest vehicles, the Chevrolet Tahoe and Suburban had fatality rates that were no better than the VW Jetta or the Nissan Maxima. In other words, a well-designed compact car can be safer than an SUV or a pickup. Design, rather than weight, is the key to safe vehicles.

Finally, a study by Van Auken and Zellner in 2003 (*A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk In Model Year 1985–98 Passenger Cars and 1985–97 Light Trucks*) indicates that increased weight is associated with increased fatalities, while increased size is associated with decreased fatalities. While this study was not able to bring in the impacts of design as well as size, it helped inform NHTSA as they rejected weight-based standards in favor of size-based standards based on the vehicle footprint.

These studies further back up Congress' ability to set fuel economy targets as high as 40 mpg for the fleet in the next 10 years without impacting highway safety.

Getting Fuel Economy Policy Right

Given broader agreement on how far fuel economy must increase, we now need policies to lay out how to get there. Congress should follow four key steps to ensure that the country gets the benefits of existing fuel economy technology:

- Establish a concrete fuel economy goal
- Provide NHTSA with additional flexibility to establish size based standards
- Institute a backstop to ensure that the fuel savings benefits are realized
- Provide consumers and/or automakers with economic incentives to invest in technology for increased fuel economy

Set a Target of 34–35 mpg

Congress can set a standard either meeting the President's goals of 34 mpg by 2017 or 35 mpg by 2019 as in S. 357. Both of these fuel economy levels are supported by the guidance requested and received from the NAS and UCS analysis. By doing adopting S. 357, Congress would cut global warming pollution by more than 230 million metric tons by 2020, the equivalent of taking more than 30 million of today's automobiles off the road. The bill would also cut oil dependency by 2.3 million barrels of oil per day in 2027, as much oil as we currently import from the Persian Gulf.

The key to reaching these goals, however, is that Congress must set these targets and not leave it up to NHTSA. NHTSA has proven to have a poor track record when setting fuel economy standards so far. Their recent rulemaking on light trucks will save less than 2 weeks of gasoline each year for the next two decades. This happened in part because they did not value the important benefits of cutting oil dependence and reducing global warming pollution from cars and trucks. By setting specific standards based on where technology can take us, Congress can make clear the importance of tackling these important problems which are hard to quantify analytically, but easy to qualify based on consumer discontent with gasoline prices last summer, political instability from dependence on oil from the Persian Gulf, and the surge in concern over global warming.

Congress should not defer its regulatory authority to the Administration and it need not as it can base such standards on the scientific research it requested. Congress can be confident that the goals are technically feasible, cost effective, and safe.

Provide NHTSA Authority to Establish Size-Based Standards

The bills in the Senate and the President's plans include the ability for NHTSA to set car and light truck standards based on vehicle attributes such as vehicle size. These size-based standards give manufacturers who make everything from compact

cars to minivans to large pickups the flexibility they have been asking for and eliminate any arguments automakers have made about CAFE standards treating them inequitably.

Size-based standards designed to increase fleet fuel economy to 35 mpg might require a family car to reach 40 mpg, but a pickup would only have to reach about 28 mpg because it is larger. This is good news for farmers and contractors who rely on these vehicles. With existing technology, pickups could readily reach 28 mpg and would save their owners over $6,000 on gasoline during the life of the vehicle. The pickup would have the same power, performance, size and safety it has today, and would cost an additional $1,500. However, the added fuel economy technology would pay for itself in less than 2 years with gasoline at $2.50 per gallon. Higher fuel economy standards will help farmers and small businesses who rely on trucks as much or even more than the average consumer.

Ensure No Backsliding

The one challenge with size-based standards is that automakers can game the system and drive down fuel economy. Much as automakers switched to marketing SUVs because of the lower standards required of light trucks to date, automakers may also upsize their vehicles to classes with lower fuel economy targets when they redesign their vehicles every 4 to 7 years. Our analysis of NHTSA's most recent light truck rule shows that we could lose as much as half of the promised fuel economy gains, as small as they are, if the fleet of light trucks increased in size by just 10 percent over 10 years. Congress must require a backstop to ensure that fuel savings that would be generated from a 10 mpg fuel economy increase are not lost due to automakers who game the system.

Provide Incentives

Because increased fuel economy will provide a wide variety of benefits for the Nation, it is in the Nation's interest to help automakers and suppliers who make cars and trucks in the U.S. that go farther on a gallon of gasoline. One way to help the auto industry is to provide tax credits, loan guarantees, or grants to companies that guarantee fuel economy improvements by investing in the equipment and people who will be needed to make these more efficient vehicles. This policy could be further supported by a set of charges and rebates applied to vehicles based on their fuel economy. These "feebates" will send market signals to producers and consumers in support of higher fuel economy standards and can even be made revenue neutral.

Conclusions

Climate change represents the largest long-term environmental threat facing our country and the world today and the costs of our oil addiction continue to grow. Setting a fleet-wide target sufficient to meet the President's goal and guarantee fuel economy improvements of at least 10 mpg over the next decade while giving the President the authority to reach that target through size-based standards will save consumers money, stimulate the economy, create and protect jobs and preserve the safety of our vehicles. All of these benefits will come in addition to cutting our oil dependence and emissions of global warming pollutants from our cars and trucks.

Consumers are clearly happy with the size and acceleration of their vehicles today. We don't have to change that. But consumers are clearly unhappy with the growing impacts of global warming and the high cost of gasoline and the pumps and on our economy and security.

Congress has the opportunity to ensure that automakers spend the next decade or more using technology to curb our oil addiction. This is not a surprising role for Congress, the Federal Government has helped drive every major transportation revolution this country has seen, whether it was trains, planes, or automobiles. The next transition will be no different.

Thank you for the opportunity to testify today. I would be happy to answer any questions you may have.

I have attached several fact sheets to provide additional background information.

Figure 1. Oil Savings From Senate Bills and the President's SOTU Fuel Economy Goal.

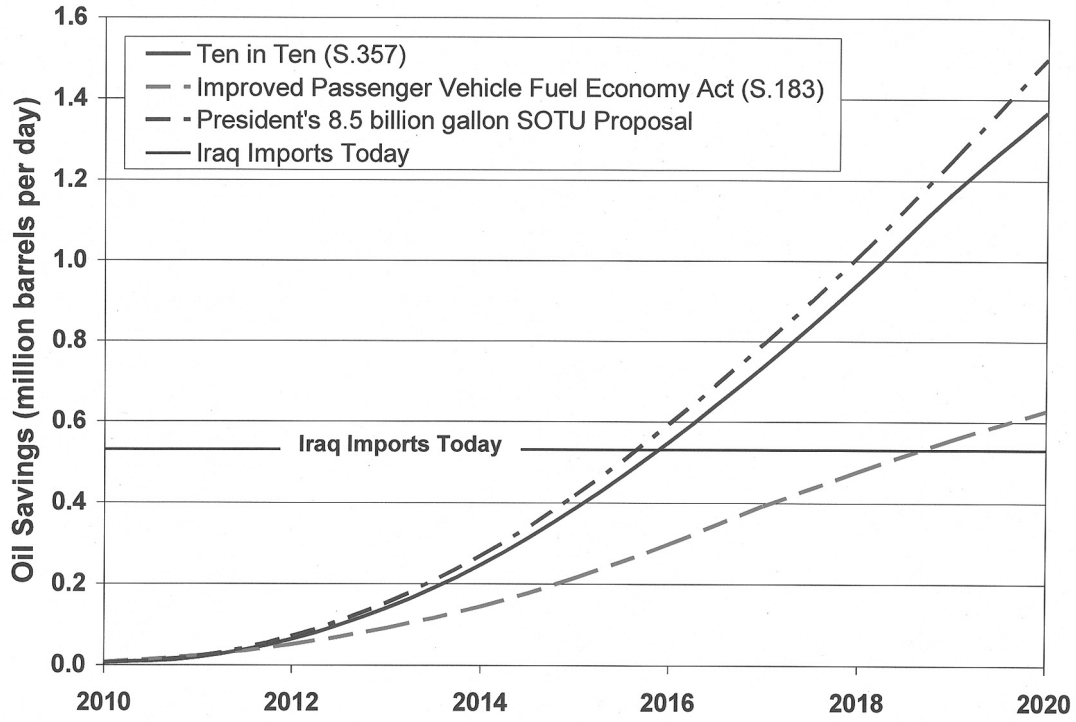
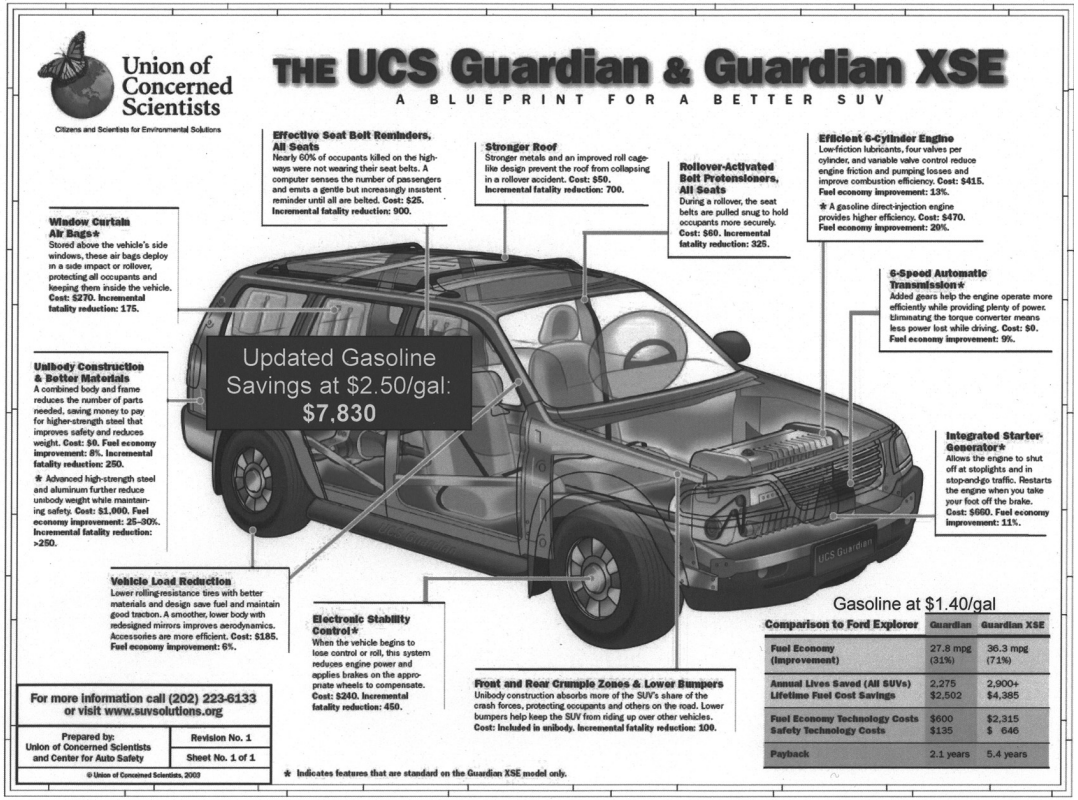


Figure 2. Fuel Economy Potential for a Ford Explorer.



S. 357—The Ten-in-Ten Fuel Economy Bill

In the midst of high gasoline prices and continuing unrest in many oil-producing regions of the world, our country's vulnerability to its growing dependence on oil has been laid bare. The Ten-in-Ten bill directs the administration to save consumers money and cut projected oil demand from cars, SUVs, minivans and pickups by 10 percent in 2019. This is achieved by a modest fuel economy increase that would raise the fleet of new vehicles from today's 24.6 mpg to 35 mpg by 2019 while protecting highway safety and U.S. auto industry jobs.

Figure 1 shows the amount of money consumers would save annually through 2025, even after accounting for a modest increase in vehicle price to cover fuel-saving technologies. In addition to saving consumers money at the pump, the Ten-in-Ten bill would reduce the Nation's dependence on oil and significantly cut the emissions of global warming pollution from cars and light trucks (Table 1). The reduction in oil demand in 2025 is equal to our current imports from the Persian Gulf.

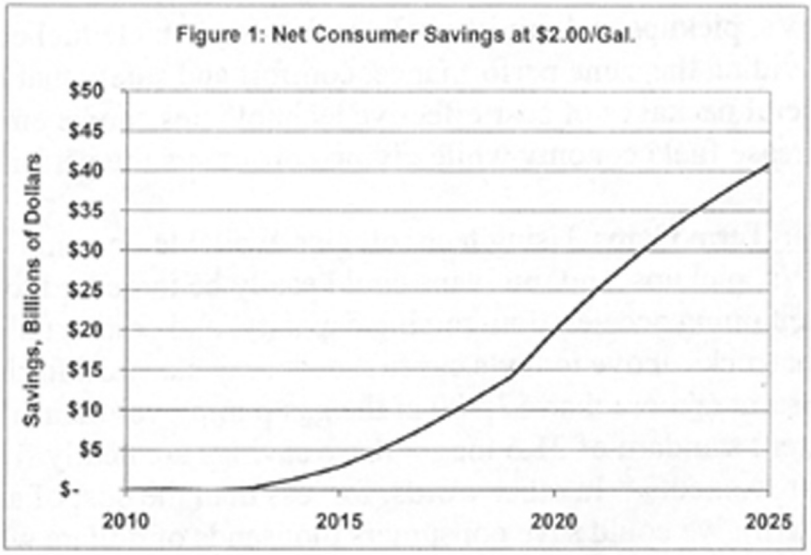


Table 1.—Benefits of Increasing Fuel Economy Standards to 35 mpg by 2019

	2015	2020	2025
Reduction in Oil Demand (million barrels per day)	0.4	1.4	2.1
Net Consumer Savings with gasoline at $2.00 per gallon (billions per year)	$3	$20	$41
Reduction in Global Warming Pollution (million metric tons CO_2-equiv. per year)	66	233	358

The Ten-in-Ten bill would give NHTSA the authority to set size-based standards for all vehicles, as the President requested in 2006. When coupled with an overall target for improving the fleet average and a backstop to prevent the erosion of fuel economy gains, size-based standards can give the auto industry increased flexibility in complying with the strengthened standards.

In a time of high gas prices, the technologies available to increase fuel economy are more cost effective than ever. A package of modest, proven conventional technologies is all that would be needed to meet a standard of 35 mpg. Today's size and acceleration could remain the same and safety could be improved. The technologies would add about $1,100 to the price of an average vehicle in 2019, an investment

that would be recovered in less than 3 years of driving, assuming that gasoline costs $2.00 per gallon. Over the lifetime of the vehicle the owner would save a total of more than $3,600 in gasoline costs.

Union of Concerned Scientists—Fact Sheet—May 2006

FUEL ECONOMY AND LIGHT TRUCK TECHNOLOGY

There are many technologies available to cost-effectively improve the fuel economy of sport-utility vehicles (SUVs), pickups, and minivans—whether used for hauling, off-road travel, or the trip to the supermarket. Because these technologies have been left on the shelf for so long, there is an even greater potential to improve the fuel economy of light trucks compared to cars.

Improving Light Truck Fuel Economy

The Union of Concerned Scientists has investigated the best ways to increase the fuel economy of SUVs, pickups and minivans. In each case, vehicle fuel economy potential was evaluated while providing the same performance, comfort and safety that consumers have today. We found that several packages of cost-effective technologies can be employed to save consumers money and increase fuel economy while giving consumers the performance and features they expect today.

Near-Term Gains. Using technologies available on some of today's cars, the average fuel economy of SUVs, pickups, and minivans could easily be increased to 28 miles per gallon (mpg) while maintaining acceleration, towing capacity, and comfort along with improved safety. That would put light trucks above today's car fuel economy standard for less than $800.[1] These vehicles would save consumers more than $3,900 at the gas pump over their lifetimes compared to vehicles meeting the current standard of 21.6 mpg—these savings are nearly five times the cost of the fuel economy improvements.[2] In other words, for less than the cost of air conditioning (or a 6-disc CD sound system), we could save consumers thousands of dollars while closing the light truck loophole that allows the average light truck to guzzle more than 30 percent more fuel than the average car.

Ten Years Away. If a more significant investment, around $2,600, is made to increase the fuel economy of our SUVs, pickups, and minivans, their average fuel economy could reach 36 mpg using technologies that could be in mass production within the next 10 years. Consumers would see benefits of nearly $7,000 in savings at the gasoline pump during the vehicle's lifetime.

Safety Benefits

Most of the near-term improvements in the fuel economy of light trucks can be accomplished through optimizing transmissions and other engine improvements with no impact on vehicle safety. Further fuel economy gains can be made with additional technology that can improve both safety and fuel economy. This can be done through reducing the weight of light trucks using materials like high strength steel and aluminum and unibody construction—this means that SUVs can be just as large as they are today, but will be safer for the driver. Because light trucks pose a substantial risk to other vehicles on the road due to their mass and design, making them lighter will also save the lives of others on the road.

Great Potential for Pickup Trucks

Pickup trucks represent one-third of the light truck market and must be improved if we are to truly address the global warming and energy security problems of booming sales of low fuel economy vehicles and if consumers are to reap the fuel saving benefits of efficiency technology. Questions have been raised about the potential for these vehicles to meet higher fuel economy levels. While it is true that pickup trucks do have a greater technical hurdle given the payload and towing capacities that are required for some applications, the broad range of technologies that exist to improve other light trucks can also increase pickup truck fuel economy significantly. In the end, pickup trucks may not be able to reach the same fuel economy levels as SUVs or minivans, but the significant improvements that are possible will help pickup owners save money, helping, not harming businesses, farmers, rural residents and others who purchase these vehicles.

---

[1] Derived from light truck averages based on results in The Diesel Dilemma and year 2000 sales mix.

[2] Based on an average 15-year life with first year mileage of 15,600 miles, declining at 4.5 percent per year, and a gasoline price of $2.50 per gallon. Ten percent rebound in vehicles miles traveled is assumed based on per-mile cost of fuel.

Fuel Efficient Pickups. Farmers, rural residents and businesses can be confident that using existing and emerging technologies, pickup truck fuel economy could reach at least 26 mpg using on the road technology and more than 33 mpg over the next 10 years. These levels of fuel economy improvements can save pickup drivers $4,300 to nearly $7,400 at the gasoline pump, three to six times the cost of the fuel economy improvements.

Efficiency with Power. High-efficiency engines do not have to be low-power engines; pickups and other light trucks that achieve over 30 mpg can perform at least as well as those on the road today. One key to maintaining towing performance and acceleration is the use of variable valve engines that are both more efficient and more powerful than most engines in trucks today. Also, using cylinder shut-off means you can have a powerful 8-cylinder engine when you need high torque and power, and an efficient 4-cylinder engine when half of the cylinders are shut off at low power to save fuel. Automakers have traditionally met fuel economy standards without sacrificing power. In fact, pickup truck horsepower has increased more than 50 percent over the past decade while fuel economy has remained relatively constant.

Class-based Standards. In March 2006, the National Highway Traffic Safety Administration (NHTSA) finalized a set of structural changes to the light truck CAFE program. Chief among the structural changes was the introduction of size-based standards, which permit manufacturers who produce more large trucks to meet a lower standard than manufacturers focusing on smaller trucks. This change addresses longstanding industry concerns that increasing truck CAFE would force them to stop making large pickups. Technological improvements can increase fuel economy across the board, allowing automakers to continue selling a broad array of vehicles to meet consumer needs while meeting higher standards overall.

Union of Concerned Scientists—Fact Sheet—May 2006

NATIONAL ACADEMIES NATIONAL RESEARCH COUNCIL REPORT ON: EFFECTIVENESS AND IMPACT OF CORPORATE AVERAGE FUEL ECONOMY (CAFE) STANDARDS

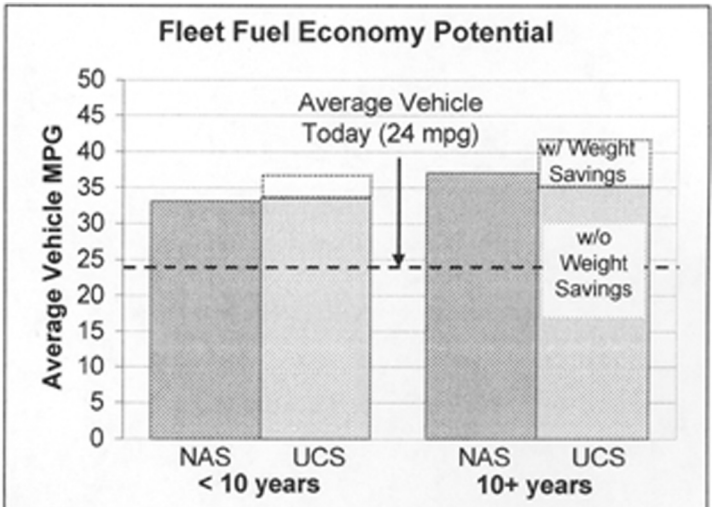
> "Because of concerns about greenhouse gases and the level of oil imports, it is appropriate for the Federal Government to ensure fuel economy levels beyond those expected to result from market forces alone." [p. 5]

In January 2002, the National Research Council (NRC) released their final report on Corporate Average Fuel Economy (CAFE) Standards. The report was requested by Congress and produced by a National Academy of Sciences (NAS) committee. *UCS analysis of the results from that study indicate that it is both technically feasible and cost effective to raise the average fuel economy of new passenger cars and light trucks from today's level of 24 mpg to 37 mpg within 10 to 15 years, even if gas drops back to $2.50 a gallon.*

Technical Potential

> "Portney, chair of the National Research Council's Committee on Effectiveness and Impact of CAFE Standards, noted that, upon reflection, the Committee's 2001 report may have been too conservative in its fuel economy recommendations . . . 'It might be possible to meet more stringent fuel economy standards at lower costs than the Committee foresaw in 2001.'" February 9, 2005 press release from Resources For the Future regarding the former RFF President's statement before the House Science Committee.

The report explored three paths to increase fuel economy, two focused on existing technologies that could be used within 10 years, and one focused on emerging technologies that could be used in 10 to 15 years. For each path, NAS estimated potential increases for each of ten major car classes (*e.g.,* subcompacts, large SUVs). Based on Model Year 2000 market shares and NAS estimates for the 10 year potential, a fleet fuel economy of 33 mpg is possible within the decade of the report publication (2002). Using the emerging technologies added in Path 3, the fleet could reach 37 mpg in the 2012 to 2017 timeframe.



Notes:
a. NAS values based on sales-weighted average of individual class fuel economy estimates from NRC, *Effectiveness and Impact of CAFE Standards*. January 2002.
b. UCS estimates from Friedman, et al., *Drilling in Detroit*. June 2001.

In the four years since the report was published, many of the emerging technologies have become available. Further, as recently noted by the panel's Chair, the report did not anticipate the progress that has happened with hybrids and cleaner diesel. The report also did not account for growing oil demand from the developed world, the full impact of 9/11, or Hurricanes Katrina and Rita.

Even with the limits on the panel's work, the results are in close agreement with UCS analysis of fuel economy potential. While the panel either increased the weight of the vehicles or left it the same, UCS included the potential for even more improvements using high-strength, advanced materials to safely reduce vehicle weight.

Cost Effectiveness

In evaluating costs, the NAS report undertook what they called a "cost efficiency" analysis. This analysis identifies the fuel economy level where consumers save the most money, assuming a gasoline price of $1.50 per gallon. However, as analysis of the report shows, the higher the fuel economy the better when gasoline is at $2.50 per gallon.

Cost-Effectiveness of NAS Fuel Economy Gains

	mpg	*Incremental Cost*	*Net Savings*
Fuel economy potential	37	$ 2,703	$ 2,500

Notes:
UCS analysis of NAS Path 3 fuel economy and cost estimates, using 14-yr vehicle life, $2.50/gallon, and 5% real discount rate similar to auto loans.

UCS's analysis of the NAS cost and fuel economy projections show that the technologies available for a 37 mpg fleet would yield very positive consumer benefits, saving drivers $2,500 more at the pump than the cost of the fuel economy improve-

ments. Even in this case the NAS did not consider the use of hybrid technology, cleaner advanced diesel engines, or advanced high-strength materials, which would have made the potential fuel economy, and the savings to consumers, even higher.

Safety Impacts

> "Thus, it is technically feasible and potentially economical to improve fuel economy without reducing vehicle weight or size, and, therefore, without significantly affecting the safety of motor vehicle travel." [p. 70]

The NAS committee could not come to agreement on the question of safety and fuel economy. Some panel members dissented from the conclusion that past fuel economy improvements have had a negative impact on safety. They cite several problems with the majority analysis. The majority findings are further predicated on the assertion that past data can be used to evaluate current and future safety implications. However, it is clear that the cars and trucks of today are not the same as those from 10–20 years ago—and those differences drastically influence the nature of accidents today. Since the release of the panel's report, several studies have shown that increasing weight is bad for highway safety. These studies cast further doubt on the theory of fuel economy having negative safety impacts.

UCS and the Center for Auto Safety, in both *Building a Better SUV* and *Drilling in Detroit,* demonstrate that fuel economy can be improved while actually improving safety. First, both the NAS and the American Council for an Energy Efficient Economy conclude that large fuel economy gains are achievable simply through technical modifications that do not affect vehicle safety in any way. Second, if there is serious concern about the fact that over 40,000 people die on U.S. highways every year, then a significant focus should be placed on the most important factor, vehicle design—safety standards should be tightened to require better technology to avoid crashes and better protect occupants when crashes do happen. Third, even if weight were to be taken out of vehicles, high-strength materials that have superior crash safety performance can be used and vehicle size, a more important safety factor, can be maintained. Finally, reducing the weight disparity between heavy vehicles and light vehicles can actually improve safety of the overall fleet.

Regulatory Loopholes

Light Truck Loophole. The NAS committee found that the distinction between cars and light trucks "has been stretched well beyond its original purpose." [p. ES–4] and will lead to further erosions in fuel economy as new trucks replace older vehicles that had higher fuel economy. Recently enacted rules from NHTSA claim to address this, but since they only apply to light-trucks the rules will not close the loophole.

Dual-Fuel Loophole. NAS also found that oil dependence is being increased by the CAFE provision allowing dual-fuel vehicles (vehicles that can run on gasoline or an alternative fuel) to garner extra CAFE credits and calls for the elimination of the credits. Less than 1 percent of these dual-fuel vehicles ever use alternative fuels. Instead of closing the loophole, it was extended in the final version of H.R. 6, the recently enacted energy bill.

Union of Concerned Scientists—Fact Sheet—July 2006

MODERN FUEL ECONOMY AND VEHICLE SAFETY RESEARCH

Consumers and lawmakers can be confident that increased fuel economy standards and vehicle safety are compatible. While the specter of a deadly vehicle fleet is often raised by critics of improved fuel economy standards, it is just an attempt to scare away support from a path that will save consumers billions, improve America's energy security, reduce global warming pollution, and increase consumer choice.

The myth that fuel economy and safety are not compatible has been discredited by several recent studies. These works are summarized below and demonstrate that:

- Increased fuel economy can be achieved with technologies that have nothing to do with the safety performance of a car or truck,
- Historically, higher fuel economy has not been linked with increased fatalities,
- Large vehicles do not have inherently lower fatality rates than smaller vehicles, and
- Increased weight is actually associated with increased fatalities.

National Academy of Sciences, 2002—Effectiveness and Impact of CAFE Standards

This report, requested by Congress, concluded that there is technology already available that could raise the fuel economy of our vehicle fleet without compromising its safety. Most of technologies considered by the NAS relate to engines, transmissions, and other improvements that have no connection to crash safety. Opponents of fuel economy improvements often point to the chapter of the NAS report which took a retrospective look at safety, and gloss over the fact that this chapter did not represent a consensus of the Committee or modern safety research (appendices included a dissenting opinion pointing out problems with the majority's analysis).

S. Ahmad and D. Greene, 2004—The Effect of Fuel Economy on Automobile Safety: A Reexamination

Greene (one of the dissenting NAS panelists) and Ahmad demonstrated that higher fuel economy is not linked with increased fatalities. In fact, their report noted that "higher mpg is significantly correlated with fewer fatalities." A thorough analysis of data from 1966 to 2002 indicated if the past is precept, fuel economy could likely be increased without harming safety.

M. Ross and T. Wenzel, 2002—An Analysis of Traffic Deaths by Vehicle Type and Model

This analysis of Federal accident data from 1995–1999 demonstrated that quality of engineering, rather than weight, is the key determinant of vehicle safety. In other words, a well-designed compact car can be safer than an SUV or a pickup. The study pointed specifically to the Honda Civic and the Volkswagen Jetta as well-engineered compact cars that have lower driver fatality rates than the Ford Explorer, the Dodge Ram, or the Toyota 4Runner.

R.M. Van Auken and J.W. Zellner—A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk In Model Year 1985–98 Passenger Cars and 1985–97 Light Trucks

This study indicated that while increasing vehicle size tends to decrease fatalities, increasing vehicle weight increases fatalities. This study helped inform NHTSA as it chose to base its model year 2008–2011 light truck rule on a size attribute rather than a weight attribute.

Senator PRYOR. Thank you.

Ms. Elizabeth Lowery?

STATEMENT OF ELIZABETH A. LOWERY, VICE PRESIDENT, ENVIRONMENT AND ENERGY, GENERAL MOTORS

Ms. LOWERY. Good afternoon, Mr. Chairman. My name is Elizabeth Lowery, and I'm Vice President for Environment and Energy at General Motors. I'm pleased to be able to speak to you today regarding GM's plans for advanced technologies that reduce dependence on petroleum and provide energy diversity. In addition, I will comment on the effectiveness of the CAFE program.

Today's automotive industry provides more in the way of opportunities and challenges than we've seen in its entire history. On the challenge side, there are serious concerns about energy supply and availability that collectively we refer to as energy security. The key is energy diversity, which can help us displace substantial quantities of oil that are consumed by U.S. vehicles. This is a huge assignment, but it's also an extraordinary opportunity. By developing alternative sources of energy and propulsion, we have the chance to mitigate the many issues surrounding energy availability. This means we must continue to improve the efficiency of today's vehicles. But it also means we need to dramatically intensify our efforts to displace petroleum-based fuels by building more vehicles that run on alternative fuels and by significantly expanding and accelerating our commitment to the development of electrically driven vehicles.

First, let me speak about biofuels. Last year, we committed to double our production of vehicles capable of running on renewable fuels by 2010, and, further, to make fully half of our annual production biofuel-capable by 2012, provided there is ample availability and distribution of E85. But, as you know, flex-fuel vehicles alone will not get the job done. So, we're partnering with government, fuel providers, and fuel retailers to help grow the E85 ethanol infrastructure. Since May of 2005, we've helped add 200 E85 fueling stations in 13 states.

But there's equally exciting opportunity for the future of our products, electrification of the automobile. There's a continuum of electrification of vehicles, and we're working on the entire range. For example, there are what most people think of as "electric vehicles," pure battery-powered vehicles. Then there are gas-electric hybrids, which are not, *per se,* electric vehicles, but which are, in part, electrically driven.

For 2007, GM currently has available—the Saturn VUE Green Line and we will be introducing four additional hybrids later this year, the Saturn Aura Green Line, the Chevy Malibu hybrid, and the Chevy Tahoe and GMC Yukon, with GM's two-mode hybrid system. Another variant of the hybrid is the so-called plug-in hybrid, which will be a conventional hybrid vehicle with a much more advanced battery capability, significantly more energy reduced, and, of course, be able to plug it in to your standard 110-volt outlet. The result will be significantly better fuel economy, based on the petroleum consumption of the vehicle and the ability to use diverse energy sources. Given what we know today, it's pretty clear that it will take several years to see if the battery technology will let us bring to market such a plug-in hybrid, because it must meet all the requirements that are necessary in the marketplace.

In the meantime, we are working on engineering two different systems for plug-in hybrids. One takes the form of our Saturn VUE hybrid and the other unveiled is the Chevy Volt at the auto show in Detroit that we heard from Senator Carper. There are other types of electrically driven vehicles that we expect to see in the future, as well, including hydrogen fuel-cell vehicles.

So, the technology front in automotive development and design looks very exciting. And as we pursue these technologies, and we think that Government also has a role to play. First, the Government should fund a major effort to increase advanced battery R&D and to develop domestic production of these batteries here in the United States. Second, biofuels production and infrastructure should be significantly expanded. Third, Government funding should expand development and demonstration of hydrogen and fuel cells. Fourth, Government purchasing should set the example. And, finally, there should be further incentives for advanced automotive technologies so they can be adopted by consumers in very large numbers.

Having focused on advanced technology vehicles and renewable fuels as the answer to displacing and diversifying U.S. fuel sources, let me share our view on what we don't think is the answer.

Over-reliance on CAFE is not the answer to U.S. oil dependence. Now, don't misunderstand what I'm saying here. We agree with the need to reduce Americans' dependence on petroleum, and we are

committed to doing our part. But, despite dramatic increases in vehicle and fuel economy over the last 30 years, its original goals—reducing U.S. oil consumption and oil imports—have not been met. Of the four factors that drive U.S. light-duty gasoline consumption—one, purchasing decisions of American consumers, the sales mix; two, total vehicle miles traveled; three, the size of the overall fleet; and, finally, four, individual fuel economy—CAFE only affects one factor. Data from the Government's own Energy Information Administration shows that CAFE requirements alone cannot overcome the increases in petroleum demand which are driven largely by the continued increase in vehicle miles traveled and the increasing size of the fleet.

We understand, of course, that increasing vehicle fuel economy does play an important role. As competitive automakers looking to win consumer purchase of vehicles in the marketplace, we look for opportunities to increase the fuel economy of our new products each time they are introduced. But many of the recent legislative proposals to increase CAFE requirements are not based on any realistic measure of what is technically achievable and economically practical.

Rather than having Congress try to pick an arbitrary rate of increase for CAFE standards, we believe that the regulatory process of the Department of Transportation should be used. That way, the agency can collect and review confidential and proprietary company product plans and can consider the opportunities to increase the fuel economies level—fuel economy levels consistent with consumer demands, choices, competitive implications, vehicle and highway safety, and the impact on U.S. jobs. This administration has twice undertaken such rulemakings for light truck CAFE levels and now has set in place increases for 7 consecutive years. These challenging increases in the CAFE requirements allow the automakers to make the progress they can with conventional technologies and still focus increasingly on the advanced technology systems in vehicles that can really make a difference in addressing U.S. gasoline consumption.

In addition, before any increases are undertaken for the passenger car fleet, the agency should be given the authority to establish a reformed or attribute-based system similar to what was done for the light truck CAFE system. This will help reduce the competitive disparities, as well as avoid other consequences of raising fuel economy levels, like vehicle mass and size reductions that can adversely affect vehicle and highway safety.

In summary, we believe tomorrow's automobiles must be flexible enough to accommodate many different energy sources. We need to all work together on a national energy strategy that helps promote these changes and, thus, more effectively address U.S. dependence on petroleum.

Thank you very much, and I'd be pleased to answer any questions.

[The prepared statement of Ms. Lowery follows:]

PREPARED STATEMENT OF ELIZABETH A. LOWERY, VICE PRESIDENT, ENVIRONMENT AND ENERGY, GENERAL MOTORS

Good morning. My name is Elizabeth Lowery and I am Vice President for Environment and Energy at General Motors. I am pleased to be able to speak to you today regarding GM's technology plans for the future.

Today's automotive industry provides more in the way of opportunities—and challenges—than we have seen in its entire history. On the challenge side, there are serious concerns about energy supply, energy availability, sustainable growth, the environment, and even national security issues that, collectively, have come to be called "energy security." And the fact of the matter is that it is highly unlikely that oil alone is going to supply all of the world's rapidly growing automotive energy requirements. For the global auto industry, this means that we must—as a business necessity—develop alternative sources of propulsion, based on alternative sources of energy in order to meet the world's growing demand for our products. The key is energy diversity, which can help us displace substantial quantities of oil that are consumed by U.S. vehicles today.

This is a huge assignment. But it's also an extraordinary opportunity. By developing alternative sources of energy and propulsion, we have the chance to mitigate many of the issues surrounding energy availability. We will be able to better cope with future increases in global energy demand. We will minimize the automobile's impact on the environment.

This means that we must continue to improve the efficiency of the internal combustion engine, as we have for decades. But, it also means we need to dramatically intensify our efforts to displace petroleum-based fuels by building more vehicles that run on alternatives, such as E85 ethanol, and, very importantly, by significantly expanding and accelerating our commitment to the development of electrically driven vehicles.

First let me speak about bio-fuels. One of the greatest opportunities for displacing U.S. gasoline is to ramp up the usage of bio-fuels. There are already over 6 million E85 capable vehicles on America's roads. If all flex-fueled vehicles on the road today ran on E85, we would displace the need for over 3.8 billion gallons of gasoline annually.

Last year, we committed to double our production of vehicles capable of running on renewable fuels by 2010. That's almost one million E85 capable vehicles a year by the end of the decade Late last year, we also said that we are prepared to make fully half of our annual vehicle production biofuel-capable by 2012—provided there is ample availability and distribution of E85, as part of an overall national energy strategy. If all of these flex-fueled vehicles ran on E85, by 2017 we would displace the need for over 22 billion gallons of gasoline annually. As a nation, we need to be developing the necessary sources of these bio-fuels to make sure we can produce the volumes that can have this dramatic an impact.

But as you know, flex-fuel vehicles alone will not get the job done. Right now, there are about 170,000 gas stations in the United States, but only slightly more than 1,100 E85 pumps. So, we are also partnering with government, fuel providers, and fuel retailers across the U.S. to help grow the E85 ethanol fueling station infrastructure. Since May of 2005, we've helped add 200 E85 fueling stations in 13 states with more to come.

Now let me turn to potentially the even more exciting opportunity for the future of our products—electrification of the automobile. Over the last few months, GM has made several announcements related to our commitment to electrically driven vehicles. The benefits of electricity include the opportunity to diversify fuel sources "upstream" of the vehicle. In other words, the electricity that is used to drive the vehicle can be made from the best local fuel sources—natural gas, coal, nuclear, wind, hydroelectric, and so on. So, before you even start your vehicle, you're working toward energy diversity. Second, electrically driven vehicles—when operated in an all-electric mode—are zero-emission vehicles. And when the electricity itself is made from a renewable source, the entire energy pathway is effectively greenhouse gas emissions free. Third, electrically driven vehicles offer great performance—with extraordinary acceleration, instant torque, and improved driving dynamics.

There is a continuum of electrification of vehicles—and we are working along that entire range. For example, there are what most people think of as "electric vehicles"—pure battery-powered vehicles, such as GM's EV1. The EV1 ran solely on electricity that was generated outside the vehicle and was stored onboard the vehicle, in lead-acid and nickel-metal-hydride batteries.

Then there are gas-electric hybrids—which are not, per se, electric vehicles—but which are, in part, electrically driven. This type of conventional hybrid vehicle has both an internal combustion engine and an electric drive. And, it can be powered

by both systems simultaneously or by either system independently. The electric energy in a conventional hybrid vehicle is generated by the vehicle itself and stored onboard in a battery.

We have several kinds of hybrid vehicles, either on the road or under development—from the heavy duty hybrid that is used in more than 550 transit buses—to the Saturn VUE and Aura Green Line models (which use our high-value "belt alternator starter" system)—to our advanced "two-mode" hybrid system (which will begin to show up on our full-size SUVs and pickups later this year).

At the Los Angeles auto show, we announced work on another type of hybrid, the Saturn VUE "plug-in hybrid." A plug-in hybrid will be a conventional hybrid vehicle with an important difference—the battery will be much more advanced—storing significantly more energy and, of course, being able to be plugged into a standard outlet to recharge it. The result will be significantly better "fuel economy"—based on the petroleum consumption of the vehicle—and the ability to use diverse energy sources.

No major OEM has built a plug-in hybrid for retail sale because the required battery technology doesn't yet exist. In fact, given what we know today, it's pretty clear that it will take several years to see if the battery technology will occur that will let us bring to market a plug-in hybrid that will meet the expectations and real-world performance standards that our customers expect—things like safety, reliability, durability, driving range, recharge time, and affordability.

The Saturn VUE plug-in hybrid will use an advanced battery, like lithium-ion. Production timing will depend on battery technology development. But, based on our work with EV1 and our different conventional hybrid-electric vehicles, we already have a lot of experience developing and integrating advanced battery technology into our vehicles, and we're already working today with a number of battery companies to develop the technology necessary to build a plug-in hybrid. The technological hurdles are real, but we believe they're also surmountable. I can't give you a date certain for our plug-in hybrid, but I can tell you that this is a top priority program for GM, given the huge potential it offers for oil consumption improvements.

Earlier this year, we unveiled the Concept Chevrolet Volt at the North American International Auto Show in Detroit. The Chevrolet Volt is designed to be powered by GM's next-generation electric propulsion system, the E-flex System. The E-flex System can be configured to produce electricity for mechanical propulsion from gasoline, ethanol, biodiesel or hydrogen. The Volt uses a large high energy battery pack and a small, one liter turbo gasoline engine to produce electricity.

The Concept Chevrolet Volt can be charged by plugging it into a 110-volt outlet for approximately 6 hours each day. When the advanced lithium-ion battery pack is fully charged, the Volt is expected to deliver 40 city miles of pure electric vehicle range. When the battery pack is close to depletion, the small engine spins at a constant speed to create electricity and replenish the battery pack.

One technological breakthrough required to make this concept a reality is the large lithium-ion battery pack. This type of electric car, which the technical community calls an "EV range-extender," would require a battery pack that weighs nearly 400 pounds.

There are other types of electrically driven vehicles that we expect to see in the future as well, including hydrogen fuel cell vehicles, such as the Chevrolet Sequel concept vehicle. A hydrogen fuel cell vehicle is, in fact, an electric vehicle. It drives on electricity that is created by the fuel cell. The fuel cell is little more than a battery that stores electricity in the form of hydrogen. The beauty of a fuel cell vehicle like the Sequel is that the electricity is generated onboard the vehicle without using petroleum-based fuel, and without emissions. And like electricity, hydrogen can be made from diverse energy sources before it ever powers a vehicle. As part of a comprehensive deployment plan dubbed Project Driveway, we are building more than 100 next-generation Chevrolet Equinox Fuel Cell vehicles that will operate and refuel with hydrogen in California, New York, and Washington, D.C.

GM is developing a prototype fuel cell variant of the Chevy Volt that mirrors the propulsion system in the Chevrolet Sequel (fuel cell vehicle). Instead of a big battery pack and a small engine generator used in the Volt concept vehicle, we would use a fuel cell propulsion system with a small battery to capture energy when the vehicle brakes. Because the Volt is so small and lightweight, we would need only about half of the hydrogen storage as the Sequel to get 300 miles of range. In fact, we continue to make significant progress in this area, and we continue to see fuel cells as the best long-term solution for reducing our dependence on oil.

Since I have mentioned that advanced technology vehicles that can promote the development of biofuels and electrification are "the answer" to displacing and diversifying U.S. fuel sources—let me share our view on what is not the answer. Over reliance on CAFE is not the answer to U.S. oil dependence. Now don't misunder-

stand what I am saying here. We agree with the need to reduce the Nation's dependence on petroleum. And the objectives for the original CAFE program were to: (1) reduce U.S. gasoline consumption and (2) reduce U.S. imports of petroleum. But despite dramatic increases in vehicle and fleet fuel economy over the 30 year existence of the CAFE program, U.S. gasoline consumption and oil imports have not declined.

Since the CAFE program was enacted, U.S. consumption of gasoline has increased by 60 percent and U.S. imports of petroleum have increased from 35 percent of our supplies to over 70 percent of our supplies. At the same time, new vehicle fleet fuel economy has more than doubled for passenger cars and increased 60 percent for light trucks. But these increases have been overwhelmed by the increases in the size of the vehicle fleet and the number of miles traveled by Americans annually.

There are four factors that drive U.S. light duty gasoline consumption: (1) purchasing decisions of American consumers—sales mix, (2) total vehicle miles traveled, (3) size of the overall fleet, and finally (4) individual vehicle fuel economy. CAFE only affects one of these four factors—only vehicle fuel economy. Data from the government's own Energy Information Administration shows that CAFE requirements alone cannot overcome our increases in petroleum demand—due to the continued increase in vehicle miles traveled and the increasing size of the fleet. Even so, increases in CAFE standards continue to be one of the major focuses of how to address energy security issues.

We understand, of course, that increasing vehicle fuel economy does play a role in helping address U.S. gasoline consumption. As competitive automakers looking to win consumer purchases of vehicles in the marketplace, we look for opportunities to increase the fuel economy of our new products each time they are introduced. But many of the recent legislative proposals to increase CAFE requirements (by 4 percent or more) are not based on any realistic measure of what is technically achievable and economically practicable.

Rather than having Congress try to pick an arbitrary rate of increase for CAFE standards, we believe that the regulatory process at the Department of Transportation should be used. That way, the agency can collect and review confidential and proprietary company product plans and consider the opportunities to increase the fuel economy levels consistent with consumer needs and choices, competitive implications, vehicle and highway safety, and the impact on U.S. jobs. This Administration has twice undertaken such rulemakings for the light truck CAFE levels. The most recent fuel economy rule for light trucks has now set in place increases for 7 consecutive years (2005–2011)—increasing the standards by 16 percent (about 2 percent per year) and for the first time adding to the regulated fleet the largest SUV's in the market. These challenging increases in the CAFE requirements allow the automakers to make the progress that they can with conventional technology vehicles, and still focus increasingly on the advanced technology systems and vehicles that can really make a difference in addressing U.S. gasoline consumption.

In addition, before any increases are undertaken for the passenger car fleet, the agency should be given authority to establish a reformed, or attribute-based system, similar to what was done for the light truck CAFE system. This will help reduce the competitive disparities as well as avoid other consequences of raising fuel economy levels—like vehicle mass and size reductions that can adversely affect vehicle and highway safety.

Technology, biofuels and energy diversity are the best answers to oil security concerns. And, as we pursue these technologies—and more energy diversity—there are steps the government can take to help.

- First, the government should fund a major effort to strengthen domestic advanced battery capabilities. Advanced lithium-ion batteries are a key enabler to a number of advanced vehicle technologies—including plug-in hybrids. Government funding should increase R&D in this area and develop new support for domestic manufacturing of advanced batteries.
- Second, biofuels production and infrastructure should be significantly expanded. The market response to renewable fuels is encouraging, but it needs to reach a self sustaining level that is not lessened when gasoline prices fall. Steps to increase the availability of biofuels should help increase its use. Government should continue incentives for: the manufacture of biofuel-capable flex fuel vehicles; increases in biofuels production; increases for R&D into cellulosic ethanol; and increased support for broad-based infrastructure conversion.
- Third, government funding should continue and expand development and demonstration of hydrogen and fuel cells. Tremendous progress has been made this decade on fulfilling the promise of hydrogen powered fuel cells. The U.S. needs to stay the course on the President's hydrogen program and begin to prepare

for the 2010–2015 transition to market phase. Funding should continue for hydrogen and fuel cell R&D and demonstration activities at DOE. The government should also commit to early purchases by government fleets and support for early refueling infrastructure in targeted locals in the 2010–2015 timeframe.

- Fourth, government purchasing should set the example. Government fleets can help lead the way to bringing new automotive technology to market and bringing down the cost of new technologies. The government should continue to purchase flex fuel vehicles; demand maximum utilization of E85 in the government flex fuel fleets; use Federal fueling to stimulate publicly accessible pumps; provide funding to permit purchase of electric, plug-in and fuel cell vehicles into Federal fleets as soon as technology is available.
- Finally, there should be further incentives for advanced automotive technology so that these technologies may be adopted by consumers in large numbers to help address national energy security. Well crafted tax incentives can accelerate adoption of new technologies and strengthen domestic manufacturing. Consumer tax credits should be focused on technologies that have the greatest potential to actually reduce petroleum consumption and provide support for manufacturers/suppliers to build/convert facilities that provide advanced technologies.

In summary, we believe tomorrow's automobiles must be flexible enough to accommodate many different energy sources. And a key part of that flexibility will be enabled by the development of electrically driven cars and trucks. From conventional gasoline and diesel fuel—to biofuels that can displace them, like E85 and biodiesel—to electricity—whether it is stored or generated on the vehicle, with an internal combustion engine or a hydrogen fuel cell—we see a logical journey from standalone, largely mechanical automobiles to vehicles that run on electricity.

Senator PRYOR. Thank you.

Dr. Greene?

STATEMENT OF DAVID L. GREENE, CORPORATE FELLOW, ENGINEERING SCIENCE AND TECHNOLOGY DIVISION, OAK RIDGE NATIONAL LABORATORY

Dr. GREENE. Good afternoon, Mr. Chairman and all the guests.

Today, our transportation system faces serious energy challenges, reducing our dependence on oil, reversing the trend of increasing greenhouse gas emissions, and developing sustainable energy sources for an increasingly mobile world. Fuel economy standards alone cannot solve these problems, but increasing fuel economy must be the cornerstone of any effective policy strategy. Today, fuel economy improvements driven primarily by past fuel economy standards save American motorists more than 50 billion gallons of gasoline every year. In my opinion, proven cost-effective technologies exist to increase passenger car and light truck fuel economy by one-third to one-half over the next 10 to 12 years. No reduction in vehicle power or size would be necessary, and, at current and projected gasoline prices, the value to consumers of the fuel saved would exceed the cost of the necessary fuel-saving technologies.

You are presently considering bills requiring higher fuel economy standards. One calls for an increase to 40 mpg for passenger cars by 2017; the other, an increase to 35 mpg for passenger cars and light trucks combined. Both targets are within the range of what can be achieved cost-effectively. But solving our oil dependence problem and reducing greenhouse gas emissions will require a sustained commitment. I urge you to look beyond 2017 to a goal of increasing light-duty vehicle fuel economy by 75 to 100 percent by 2030.

Effective fuel economy standards can take many forms. Japan and China have mandatory weight-based standards. The EU has

voluntary industrywide carbon emission standards. And we have the mandatory Corporate Average Fuel Economy standards. Critics of the CAFE system have raised many objections to it over the past 30 years. Two criticisms have been especially potent in preventing progress. One, CAFE is unfair to domestic manufacturers. Two, CAFE is unsafe. The first is correct, but often exaggerated. The second is incorrect.

I have addressed the fact that CAFE has not affected highway safety in other testimony and other publications, but, regardless of one's viewpoint on these two issues, the Reformed CAFE standard adopted by the National Highway Traffic Safety Administration for light trucks nullifies both criticisms. It adjusts each manufacturer's standard according to the size mix of vehicles it produces. It removes any incentive for downsizing that the unreformed CAFE system might create. At the same time, it keeps nearly all significant fuel economy technologies in play. It also creates the opportunity to finally eliminate the distinction between cars and light trucks in a unified set of footprint-based standards.

I congratulate the staff of NHTSA for this important innovation. However, NHTSA should have done a thorough automotive engineering analysis of the potential for a footprint-based standard to have unintended consequences. If you decide to proceed with a footprint-based fuel economy standard, I urge you to require that this study be done.

In 1975, Congress set ambitious standards for passenger cars and left the establishment of standards for light trucks to the NHTSA. The result was less ambitious standards for light trucks. On the other hand, over the past few years NHTSA has raised the light truck standards twice by modest, but meaningful, amounts, and has instituted an important change in the reform of the standards. Congress has not raised the passenger car standard in more than 30 years.

I don't claim to know who will do the best job in the future, but I do have two observations. One, it seems more than likely that we will be struggling with the problem of climate change for decades. In my view, this argues for locating the authority over fuel economy, or, alternatively, greenhouse gas emissions standards, with the agency that has the greatest interest, and responsibility for, addressing climate change, unless the Congress opts to set the fuel economy standards itself. And here, I would note, with some sympathy toward the NHTSA Administrator, that the National Academies Committee also had a very difficult time deciding on the values of things like greenhouse gas emissions reductions and the values of energy security. And I think we asked the Congress for their judgment on those matters.

I believe there is an effective market-based alternative to fuel economy standards, however, that is worth considering. That alternative is called "feebates." Feebates give a rebate to purchasers of low-fuel-consumption vehicles and impose a fee on the buyers of high-fuel-consumption vehicles. Feebates create a continuing incentive to adopt energy-efficient technologies and use them to increase fuel economy.

Fuel economy is the cornerstone of a meaningful policy strategy for addressing transportation's oil dependence, greenhouse gas

emissions, and need for sustainable energy. But higher fuel economy is not sufficient. It's a necessary step.

To achieve oil independence, for example, we will need to address all uses of petroleum throughout our economy, including heavy trucks, aircraft, home heating with distillate fuel, and even petroleum use in industry. And we will need to continue increasing energy efficiency and domestic energy production after 2017, as well. The good news is that oil independence does not mean we have to stop using oil, or even stop importing oil, and that once we implement effective policies, we will see steady improvement. Achieving oil independence, mitigating climate change, and securing sustainable energy for transportation are problems that require a comprehensive and sustained strategy.

I thank this committee for its efforts to meaningfully address these very important issues and for this opportunity to offer my views for consideration. And I look forward to any questions.

Thank you.

[The prepared statement of Dr. Greene follows:]

PREPARED STATEMENT OF DAVID L. GREENE, CORPORATE FELLOW, ENGINEERING SCIENCE AND TECHNOLOGY DIVISION, OAK RIDGE NATIONAL LABORATORY

Good afternoon. Thank you for inviting me to discuss the Corporate Average Fuel Economy Program and its current and prospective effectiveness. The views I express today will be entirely my own and do not necessarily reflect the views of Oak Ridge National Laboratory or the Department of Energy.

Energy Challenges

Our nation and our world face crucial energy challenges. Our nation's oil dependence costs our economy hundreds of billions of dollars each year and undermines our national security (Greene and Ahmad, 2005). The threat to the global environment from human induced climate change fed by increasing emissions of carbon dioxide from the combustion of fossil fuels becomes clearer with each passing day. With demand for mobility growing rapidly around the world, sustainable sources of energy for the world's growing mobility demands must be found. There is no quick, easy solution. Strong, comprehensive, sustained policies are required. Significant technological advances are also essential. The fuel economy policies we address today are by themselves not enough to solve these energy challenges. But they are the cornerstone of any sufficient strategy.

We Can Do This

Fuel economy standards have been successful in the past, not just in this country but around the world. They can take many forms. The EU has industry-wide voluntary standards. Japan and China have mandatory weight-based standards. The United States has mandatory Corporate Average Fuel Economy (CAFE) standards. What all these standards have in common is that they have successfully raised the energy efficiency of motor vehicle fleets and saved enormous amounts of energy without significant negative side effects. Our own CAFE standards brought about a 50 percent increase in on-road fuel economy over a period of 20 years. This improvement saves American consumers more than 50 billion gallons of gasoline every year (Figure 1).

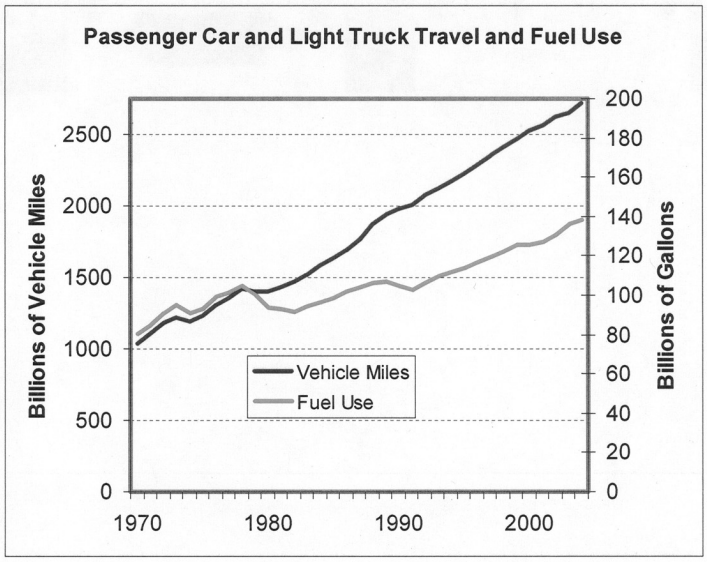


Figure 1. U.S. CAFE Standards Decoupled Fuel Use and Vehicle Travel
Source: U.S. DOT/FHWA (2004)

How High Should We Go?

Fuel economy standards should be set at a level consistent with the urgency of our energy problems, at or an appropriate distance beyond what can be achieved cost-effectively with proven technologies that do not require significant changes in the size and performance of light-duty vehicles. Timing is also an important consideration. Manufacturers should be given sufficient lead time to redesign their entire product lines (approximately 10 years). In this way the full impact of proven fuel economy technologies can be realized and manufacturers can be given a clear, long-term goal around which to plan.

The National Research Council (NRC) Committee on the Impacts and Effectiveness of CAFE Standards, on which I was privileged to serve, defined the "cost-efficient" level of fuel economy as the level at which the marginal present value of fuel savings to the consumer of the next increment in fuel economy exactly equals the marginal cost of technology added to the vehicle to produce those savings (NRC, 2002). Further, the Committee's definition allowed no change in the size, weight, or performance of vehicles over a base year level. In my opinion, fuel economy standards should be set at least as high as the cost-efficient level but not a great deal higher. Figure 2 illustrates for an average passenger car the trade-off between increased price as a result of adding fuel economy technologies and the present value of fuel savings, based on the National Academies' panel's assessment. The difference between the value of savings and increased price, the net value, is what an efficient market would maximize (all other things equal). The difference between the lines graphed in Figure 2 and the NRC Committee's cost effective analysis is that a higher price for gasoline, $2.00 per gallon, is assumed in Figure 2. The cost-efficient level, the maximum net value to the consumer, is reached at 36 miles per gallon (MPG), 28 percent higher than the base year passenger car fuel economy.

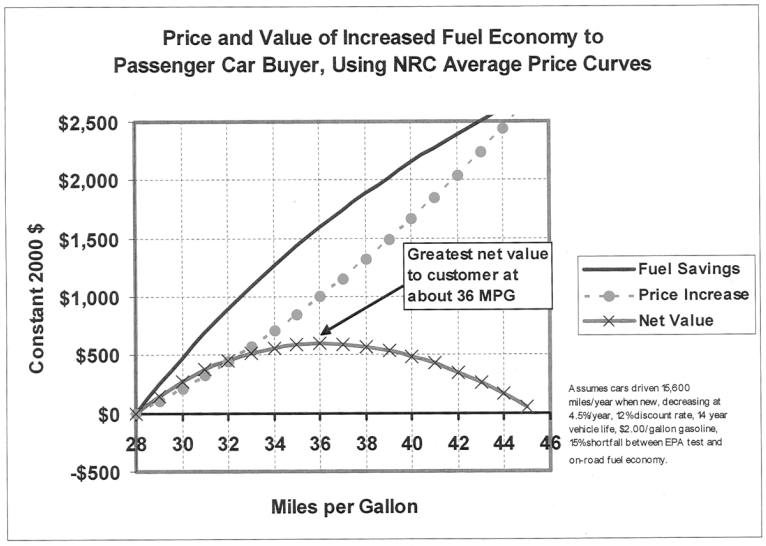


Figure 2. The Trade-off between Fuel Economy and Purchase Price Based NRC (2002)

Why doesn't the market produce this level of fuel economy without being compelled by fuel economy standards? I addressed this question in my January 7, 2007 testimony to the Senate Energy Committee. Like the market for most other energy using consumer durable goods, the market for automotive fuel economy is not efficient. At the time of vehicle purchase, consumers do not fully value future fuel savings and therefore manufacturers, in general, do not make vehicles as energy efficient as they would if the market itself were efficient. It is more effective to sell cars based on other features that excite car buyers. And, of course, few new car buyers will voluntarily and on their own initiative pay more for the public benefits of reduced U.S. oil dependence or greenhouse gas emissions.

Figure 2 also shows that it is possible to push beyond 36 MPG, to 40 or even 42 MPG with little loss of net value ($100 to $300 per vehicle). This range of 36 to 42 MPG, approximately a 30 percent to 50 percent increase in fuel economy, is where judgment about the importance of reducing oil use and carbon dioxide emissions should be exercised.

In June of 2006, in response to a request from Senators Obama, Lugar and Biden, I calculated cost-efficient levels of light-duty vehicle fuel economy increases at higher gasoline prices than assumed in the NRC (2002) report. The results are summarized in Table 1 below. I used the NRC "average" fuel economy cost curves for all the numbers presented in Table 1. Cost and savings estimates are in 2005 dollars. The calculations in Table 1 apply to passenger cars and light trucks combined, unlike Figure 2 which applies only to passenger cars.

Table 1. Summary of Fuel Economy Calculations Using NRC Cost-Efficient Methodology at Higher Fuel Prices

Light-duty Vehicles (Passenger Cars and Light Trucks Combined)					
Cost of Gasoline	Fuel Economy MPG	Fuel Economy Increase (%)	Consumer Savings at the Pump	New Vehicle Price Change	Net Consumer Savings
Base 1999 Vehicle	24.0	0%	$0.00	$0.00	$0.00
$2.50	33.9	41%	$4,173	$1,835	$2,338
$3.05	36.0	50%	$4,698	$2,310	$2,387
$3.55	*37.6*	*57%*	*$5,913*	*$2,723*	*$3,190*
$4.05	*39.2*	*63%*	*$7,170*	*$3,120*	*$4,050*
$5.05	*41.9*	*75%*	*$9,784*	*$3,877*	*$5,907*

Costs and savings are in current dollars.
Total gasoline taxes are assumed to be $0.45 per gallon.
Fuel economy increases at $3.55 per gallon are just beyond the upper limit of the NRC technology cost curves, and fuel economy increases at $4.05 and $5.05 per gallon are beyond the upper limits of the NRC cost curves.

As with all such analyses, there are some caveats. The NRC study is now 5 years old, and there have been significant technological developments since its publication. Some of the technologies used to construct the NRC fuel economy cost functions have already been adopted in existing vehicles but have been used to increase power and weight rather than fuel economy. On the other hand, important new technologies have also been developed. Second, at fuel costs above $3.50 per gallon the indicated cost-efficient fuel economy levels are beyond the range of what could be achieved using the fuel economy technologies considered by the NRC study. These numbers are printed in italics in Table 1.

The cost-efficient analysis assumes constant light-duty vehicle weight and performance. Fuel economy technology can also be used to increase horsepower and weight while holding fuel economy constant. Setting fuel economy standards involves an implicit judgment about the importance of having even heavier and more powerful vehicles than we have today versus reducing oil dependence and mitigating greenhouse gas emissions.

The cost efficient analysis is limited to existing, proven fuel economy technologies. There is no doubt that technological advances will be made over the next 10 years. This fact allows decisionmakers to have greater confidence that the targets set can be achieved without harm to the automobile industry or to motorists. Indeed, when the NRC committee finished its study just 5 years ago, it concluded that neither hybrid nor clean diesel engines could be considered proven technologies. Today there are a dozen hybrid models to choose from and clean diesels will soon be available. The cost-efficient method does not rely on technological progress but it does expect it.

Market-based Alternatives to CAFE

Fuel economy standards are not the only effective way to realize greater fuel economy. Feebates are a way to emphasize the value of reducing petroleum via the purchase price of vehicles rather than future fuel savings. Feebates give a rebate to purchasers of low fuel consumption vehicles and impose a fee on buyers of high fuel consumption vehicles. While feebate systems can take many forms, perhaps the most appropriate formulation bases the rebate or fee on fuel consumption (gallons per mile), thereby giving equal value to every gallon of fuel saved.

Feebate systems consist of a pivot point and a rate. Vehicles whose fuel consumption is below the pivot point receive a rebate while vehicles with fuel consumption above the pivot point are charged a fee. There can be a single pivot point or different pivot points for different types of vehicles. The rate specifies the additional value of saving fuel. Feebate rates on the order of $1,000 to $1,500 per 0.01 gallons per mile should achieve fleet average fuel economy improvements of 30 percent to 50 percent (Greene *et al.,* 2005). The feebate rate determines the incentive to use fuel economy technology to increase fuel economy. The pivot point determines which vehicles gain (receive a rebate) and which vehicles lose (pay a fee).

Feebates have two important advantages over fuel economy standards. First, they are a continuing incentive to adopt energy efficient technologies and use them to increase fuel economy. Once a fuel economy standard has been met, there is no additional incentive for manufacturers to increase fuel economy beyond the value of future fuel savings to consumers. A feebate system (especially if indexed for inflation) provides a continuing added incentive. There is always a rebate to be gained or a fee to be avoided. Second, feebates put a cap on the costs manufacturers will have to incur to increase fuel economy. Manufacturers are required to meet fuel

economy standards regardless of the cost.[1] There is no reason why a manufacturer would spend more to gain a rebate or avoid a fee than its value. Thus, the feebate rate puts a cap on the economic costs that might be incurred to increase fuel economy.

The chief disadvantage of feebate systems is that they do not guarantee that a desired level of fuel economy improvement will be achieved. Feebates depend on manufacturers and consumers efficiently trading off the higher cost of fuel economy technology and the value of rebates or fees. Since both affect the purchase price of a vehicle, there is good reason to expect markets to respond efficiently, but there is no guarantee.

Today, we have half of a feebate system for passenger cars in the form of the Gas-Guzzler Tax. There is no comparable policy for light trucks. I can think of no good reason for taxing inefficient passenger cars but not light trucks. Furthermore, half of a feebate system is less than half as effective as a full feebate system. I urge you to consider a complete well formulated feebate system for all light-duty vehicles. Should you decide not to implement a complete feebate system, I would urge you to abolish the gas-guzzler tax for passenger cars in favor of higher fuel economy standards for all light-duty vehicles.

What Form?

Critics of the CAFE system have raised many objections to it over the past thirty years. Two criticisms have been especially potent in preventing progress: CAFE is unfair. CAFE is unsafe. The first is accurate. The second is incorrect. I have addressed the safety issues in other testimony and other publications (Greene, 2005; Greene and Keller, 2002; Greene, 2007). Regardless of one's viewpoint on these two issues, the reformed CAFE standard adopted by the National Highway Traffic Safety Administration (NHTSA) for light trucks nullifies both criticisms. It adjusts each manufacturer's standard according to the size mix of vehicles it produces. It removes any incentive for downsizing that an unreformed CAFE system might create. At the same time, it keeps nearly all significant fuel economy technologies in play. It also creates the opportunity to finally eliminate the distinction between cars and light trucks in a unified set of footprint-based standards. I congratulate the staff of NHTSA for this important innovation.

However, there is one loose end that needs to be tidied up. The NHTSA should have done a careful automotive engineering analysis of the potential for a footprint-based standard to have unintended consequences. Is it likely to cause design changes that could be undesirable with respect to safety, consumer satisfaction, or roadway geometry? I doubt it. But prudent regulation requires that such possibilities be expertly examined. And so, if the Senate decides to proceed with a footprint-based fuel economy standard, I urge you to require that such a study be done.

Let me add that feebates can take as many forms as fuel economy standards. There is no reason, for example, why a footprint-based feebate system could not be implemented. Instead of basing the feebate rate on gallons per mile, it would be based on gallons per footprint mile (square feet $\times$ miles)

Who Should Decide?

An important issue that has received too little analysis is who should set the fuel economy standards? Should it be the Congress or the Executive Branch? If it is the Executive Branch, should it be the Department of Transportation, the Department of Energy or the Environmental Protection Agency? In 1975, Congress set ambitious standards for passenger cars and left the establishment of standards for light trucks to the NHTSA. The result was less ambitious standards for light trucks. Yet over the past few years, NHTSA has raised the light truck standards twice by modest but meaningful amounts and has instituted important changes in the form of the standards. Congress has not raised the passenger car standards in more than 30 years. In my opinion, a one time increase in fuel economy standards will not be adequate to address the problems of climate change and of oil dependence. A 50 percent increase in fuel economy by 2020 would need to be followed by an increase of 100 percent over current levels by 2030.

I don't claim to know who should set fuel economy standards but I do have some observations that I believe are relevant. First, oil dependence is a problem that we "solved" temporarily and incompletely twenty years ago. And when we "solved" the problem we seemed to lose interest in the policies necessary to keep it solved. And

[1] Fuel economy standards may include flexible provisions to limit excess costs. For example, the CAFE standards allow the NHTSA to grant a measure of relief to manufacturers by temporarily reducing the fuel economy standards in the event that unanticipated circumstances make it especially difficult to meet the CAFE requirements.

so it has come back. We will be struggling with the problem of climate change, in my opinion, for decades, much as we have done with urban air pollution. Indeed, climate change appears to be even more difficult and has a much longer time horizon. Twenty years from now, I think that it will still be clear that we have not solved the problem of climate change and that we must keep working at it. In my view, this argues for locating the authority over fuel economy standards with the agency that has the greatest interest in and responsibility for addressing climate change.

Congressional Guidance Is Needed

If Congress elects not to set fuel economy targets itself, it is absolutely critical that Congress give clear and strong guidance about the importance of fuel economy standards to addressing the problems of oil dependence, greenhouse gas emissions and sustainable energy for transportation. There are many ways that strong guidance could be given. It could take the form of statements about the importance of the problems fuel economy standards help solve. It could be in the form of recommended targets.

Regardless of the form of its guidance, Congress should clearly express to the regulating agency how important increasing fuel economy is to solving our oil dependence problem, mitigating carbon dioxide emissions to reduce the probability of dangerous climate change, and developing sustainable energy sources for transportation. Congress' guidance should be clear and emphatic enough to sustain progress when some might think the oil dependence problem is solved. It should give clear direction to regulators about the importance of mitigating greenhouse gas emissions versus continuing the horsepower race. As the 2002 NRC report pointed out, Congress has both the authority and responsibility for establishing the priority of these societal goals.

Thank you for this opportunity to present my views. I hope they are helpful as you pursue your important work. I look forward to your questions.

References

Greene, D.L. 2007. "Policies to Increase Passenger Car and Light-Truck Fuel Economy," testimony to the U.S. Senate Committee on Energy and Natural Resources, January 30.

Greene, D.L. 2005. "Improving the Nation's Energy Security: Can Cars and Trucks be Made More Fuel Efficient?" Testimony to the U.S. House of Representatives Committee on Science, February 9, Serial No. 109–3, U.S. G.P.O., Washington, D.C.

Greene, D.L. and S. Ahmad. 2005. *Costs of U.S. Oil Dependence: 2005 Update*, ORNL/TM–2005/45, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Greene, D.L. and M. Keller. 2002. "Dissent on Safety Issues: Fuel Economy and Highway Safety" in National Research Council's *Impacts and Effectiveness of Corporate Average Fuel Economy (CAFE) Standards*, National Academies Press, Washington, D.C.

Greene, D.L., P.D. Patterson, M. Singh and J. Li. 2005. "Feebates, Rebates and Gas-Guzzler Taxes: A Study of Incentives for Increased Fuel Economy," *Energy Policy*, vol. 33, no. 6, pp. 721–827.

(NRC) National Research Council. 2002. *Impacts and Effectiveness of Corporate Average Fuel Economy (CAFE) Standards,* National Academies Press, Washington, D.C.

(U.S. DOT/FHWA) U.S. Department of Transportation, Federal Highway Administration. 2004. *Highway Statistics 2004*, table VM–1, Washington, D.C.

(U.S. EPA) U.S. Environmental Protection Agency, Office of Transportation and Air Quality. 2006. *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2006*, EPA420–R–06–011, Ann Arbor, Michigan.

Senator PRYOR. Thank you.

Mr. Stricker?

STATEMENT OF TOM STRICKER, DIRECTOR, TECHNICAL AND REGULATORY AFFAIRS, TOYOTA MOTOR NORTH AMERICA

Mr. STRICKER. Thank you, Senator Pryor, and good afternoon.

Toyota believes that reducing America's reliance on petroleum requires a coordinated national strategy that addresses the challenge at every opportunity. From a vehicle perspective, there is no single fuel or technology solution. Simply put, there is no silver bullet.

This is why Toyota is pursuing multiple technology paths, including advanced gasoline/diesel engines, hydrogen fuel cells, and ethanol-capable vehicles. Underpinning all of this is our hybrid electric power-train strategy, which is a core strategy for Toyota in the future. And we are actively researching plug-in hybrids.

As of January of 2007, we've sold over 866,000 hybrids globally, including 472,000 here in the U.S. But hybrids still represent only about 2 percent of new vehicle sales in this country.

Some have characterized hybrid technology as an interim approach. We view hybrids as an integral approach of our vehicle strategy for the long term, and we intend to incorporate it across our product line when and where it makes sense.

Toyota supports increasing both car and truck CAFE standards in a way that balances our need to reduce oil consumption with the practical realities of technology development, product cycles, consumer behavior, and a level competitive playing field. We believe NHTSA is best suited to evaluate these issues and set future CAFE standards.

By moving to a size-based system, where each manufacturer has its own target for CAFE based on the vehicles it sells, NHTSA has eliminated concerns about the competitive impact of CAFE for trucks. Further, no longer can downsizing, which many claim may have negative safety consequences, be used as a compliance tool. The net result is that improving CAFE will require every manufacturer to apply technology across every type of vehicle. We support Congress giving NHTSA the authority to consider a similar attribute-based reform for cars.

What else can Congress do? First, the administration's requested authority for a credit-trading system among auto manufacturers. We believe the likelihood of manufacturers trading among one another is much lower than a manufacturer trading within its own regulated fleet of vehicles. Trading within a manufacturer's own fleets would likely provide—would likely prove more useful, so we encourage Congress to consider both of these options as you move forward.

Second, Congress should continue to reject any form of CAFE standards that discourage early compliance. For example, requiring a uniform percentage increase in CAFE penalizes early compliance by locking manufacturers with higher CAFE into higher standards, precluding them from competing in certain market segments even if their products in those segments are more fuel efficient. The National Academy of Sciences has repeatedly rejected UPI as a counterproductive approach to fuel savings.

Another way Congress can incentivize early compliance is to extend the life of earned CAFE credits from the current 3 years to something longer, perhaps 5 years. Again, this would not only reward early compliance, but would provide another tool for manufacturers to cope with CAFE increases.

Finally, Toyota was pleased that Congress recognized the need to bring consumers into the equation by passing the consumer tax credits contained in EPAct 2005. Indeed, these credits helped to move and strengthen the market for hybrid vehicles. As you know, the amount of the credit available to consumers begins phasing out after a manufacturer sells 60,000 eligible vehicles. We urge Con-

gress to lift the cap on eligible—vehicles eligible for the credit in order to stimulate even greater demand and bring the cost of new technology down.

While we urge you to consider these potential enhancements, we continue to believe that NHTSA is best equipped to weigh the various tradeoffs inherent in setting the level of CAFE standards.

One real challenge in setting future fuel-economy requirements is understanding the pace at which available technology can be added in the context of product cycles. Once we commit to a technology strategy for a given model, it's generally a 4- to 6-year commitment. Unfortunately, this means we can't add technology every year to every model, even if the technology is, quote, "on the shelf." To put this into perspective, the recent 2 percent rate of increase established by NHTSA for trucks would require an 11 percent fuel economy improvement in every model every time it was redesigned. By the same token, a 4 percent increase would require a 20 percent improvement in every vehicle model every time it was redesigned as a result of 4- to 6-year product cycles.

In closing, Toyota has a strong record of bringing advanced fuel economy technology to market and achieving leading levels of fuel economy. We've always exceeded CAFE standards. In fact, over their lifetime, the past 10 model years of Toyota vehicles sold in the U.S. will consume 11 billion fewer gallons of gasoline than what the law would have allowed. These same vehicles will emit over 100 million metric tons less CO_2 than if we had simply met the CAFE standards. Our core philosophy is one of continuous improvement. This will drive us to pursue additional technology advances in the years to come.

Thank you, once again, and I look forward to your questions.

[The prepared statement of Mr. Stricker follows:]

PREPARED STATEMENT OF TOM STRICKER, DIRECTOR, TECHNICAL AND REGULATORY AFFAIRS, TOYOTA MOTOR NORTH AMERICA

Good morning Mr. Chairman and Members of the Committee. My name is Tom Stricker. I am Director of Technical and Regulatory Affairs for Toyota, and I appreciate the invitation to share Toyota's views on the Corporate Average Fuel Economy program.

We believe that in order to reduce America's reliance on petroleum and reduce CO_2 emissions, we must develop a coordinated national strategy that addresses the challenge at every opportunity, including all oil-consuming sectors of the economy, consumers, the fuels themselves, and of course, improved vehicle fuel efficiency.

While we should not understate the importance of a multi-faceted approach, I will focus my remarks today on vehicle efficiency and the CAFE program.

From a vehicle perspective, there is no single fuel or technology that can, by itself, solve these challenges. Simply put, there's no silver bullet. This is why Toyota is pursuing multiple technology paths, including advanced gasoline and diesel engines, hydrogen fuel cells, and ethanol-capable vehicles. Underpinning all of this, our hybrid-electric powertrain has become a core technology for Toyota, and we are actively researching plug-in hybrids.

As of January 2007 we have sold over 866,000 hybrids globally, including 472,000 in the U.S., where we offer six hybrid models covering a wide range of vehicle types and buyers. In spite of these numbers, hybrids still represent only about 2 percent of U.S. new vehicle sales.

Some have characterized hybrid technology as an interim approach—a bridge to fuel cells. In our view, this underestimates the value of the hybrid system. The fuel cell vehicles we are testing in the United States are themselves hybrids and, in fact, use many of the same components found in our current hybrid vehicles. We view hybrids as an integral approach to our vehicle strategy for the long-term and we

intend to incorporate it across our product line when and where it makes sense to do so.

While CAFE may not be a perfect system, it appears it will remain a key part of the solution to improving fuel economy for the foreseeable future. To that end, Toyota supports increasing both car and truck CAFE standards, in a way that balances our need to reduce oil consumption with the practical realities of technology development, product cycles, consumer behavior and a level competitive playing field. We believe NHTSA is best suited to evaluate these issues and determine future CAFE standards.

The recent reform by NHTSA of the light-truck CAFE standards is a good example of changes that can be made *within* the CAFE program to enhance its effectiveness and address some of the key criticisms of the past.

By moving to an attribute-based system, where each manufacturer has its own CAFE target based on the vehicles it sells, concerns about the competitive impacts of CAFE for trucks have been eliminated. Further, no longer can downsizing, which many claim may have negative safety consequences, be used as a compliance tool. The net result is that improving CAFE will require application of technology across every type of vehicle. While Toyota remains comfortable operating in either the old CAFE system or the new reformed system, we support Congress giving NHTSA the authority to consider attribute-based CAFE reform for cars. It is not clear sitting here today what would be the appropriate attribute for cars, but NHTSA should to be given authority to examine a range of options.

We think there is even more that Congress can do to improve the CAFE program: First, as standards are increased, one way to help industry meet higher standards is to increase compliance flexibility. The Administration has requested authority for a credit trading system among auto manufacturers. We believe the likelihood of manufacturers trading *among each other* is much lower than a manufacturer trading *within its own regulated fleets*—that is, between its own car and truck fleets, and between its own import and domestic car fleets. Although not included in the Administration's request, trading within a manufacturer's fleets would likely prove more useful, and we would encourage you to consider both of these options as you move forward. CAFE is by definition an averaging program—some vehicles are above the standard while others are below, but the overall target must still be met. This same thinking should apply not just across vehicle models, but also across regulated fleets. It is less important whether energy savings and emissions reductions are achieved in one fleet or the other, so long as overall reductions are achieved.

The second area where Congress can help is through incentives for early compliance. To this end, Congress should continue to reject *any form* of CAFE standards that would discourage early compliance. One example that would have such perverse impacts is a requiring a uniform percentage increase in manufacturer's CAFE. UPI—as its known—clearly penalizes early compliance by locking manufacturers with higher CAFE into higher standards. This has the practical result of precluding them from competing in certain market segments, even if their products in those segments are more fuel efficient. The National Academy of Sciences has repeatedly rejected UPI as a counterproductive approach to fuel savings.

Another way Congress can incentivize early compliance is to extend the life of earned CAFE credits from the current 3 years to something longer, perhaps 5 years. Again, this would not only reward early compliance but would provide another tool for manufacturers to cope with CAFE increases.

The final area involves the consumer. Actions to stimulate consumer demand for more efficient vehicles are a key part of any comprehensive approach to reducing petroleum use and CO_2. In addition, consumer purchasing decisions directly impact a manufacturer's compliance with CAFE standards.

Toyota was pleased that Congress recognized the need to bring consumers into the equation by passing the consumer tax credits contained in EPAct 2005. Indeed, these credits helped to move and strengthen the market for hybrid vehicles. As you know, the amount of the credit available to consumers begins phasing-out once a manufacturer sells 60,000 eligible vehicles. We urge Congress to lift the cap on vehicles eligible for the credit in order to stimulate greater demand and bring the cost of new technology down.

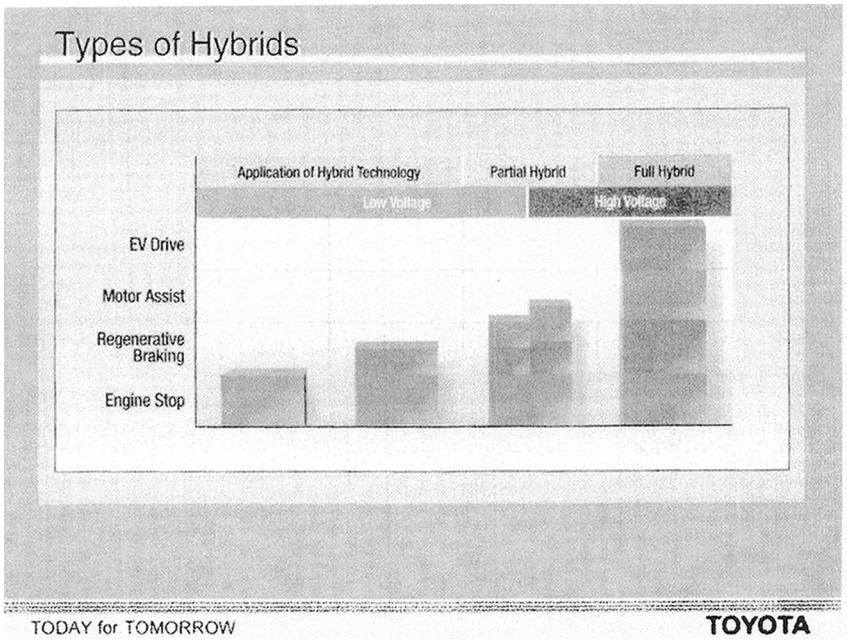
While we urge Congress to consider these potential legislative enhancements to the CAFE program, we continue to believe that NHTSA is best equipped to weigh the various trade-offs inherent in setting *the level* of future CAFE standards, such as manufacturers' confidential product plans, product design cycles, technology cost, technology availability, and other factors. In our view, the real challenge in targeting future fuel economy potential is the pace at which technology can be developed, its cost, fuel prices, consumer preferences, and perhaps most importantly—the extent to which available technology can be added in the context of product cycles.

When we design a vehicle, we have to predict what our customers will want some 4–6 years into the future in order to complete development, testing and re-testing, production preparation, supplier development, government certification, and ultimately, production. Once we commit to a technology strategy for a given model, it is generally a 4 to 6 year commitment. Unfortunately, this means we cannot add technology to every vehicle every year, even if technology is "on-the-shelf".

To put this into perspective, the 2.2 percent annual truck increase promulgated by NHTSA for seven consecutive model years—if continued into the future—would require about an 11 percent fuel economy improvement in every model, every time it was redesigned. This is a significant challenge given the often competing demands by consumers. By the same token, a 4 percent annual increase would require about a 20 percent improvement in every model, every time as a result of 4–6 year product cycles.

Targeting future fuel economy improvements hinges on many factors that require detailed analyses that NHTSA is best suited to evaluate.

In closing, Toyota has a strong track record of bringing advanced fuel economy technology to market and achieving leading levels of fuel economy. We've always exceeded CAFE standards—in fact, over their lifetime, the past ten model years of Toyota vehicles sold in the U.S. will consume 11 billion fewer gallons of gasoline (or nearly 265 million fewer barrels of oil) than what the law would have allowed. These same vehicles will emit over 100 million metric tons less CO_2 than if we had simply met the CAFE standards. Our core philosophy of "continuous improvement" will drive us to pursue additional technology advances in the years to come. Thank you once again, and I'd be happy to answer any questions.



Toyota & Lexus Hybrid Offerings

Toyota

Prius – Midsize 5 Door

Camry Hybrid – Midsize 5 Door

Highlander Hybrid – Midsize SUV

Lexus

RX400h – Luxury SUV

GS450h – Premium Sport Sedan

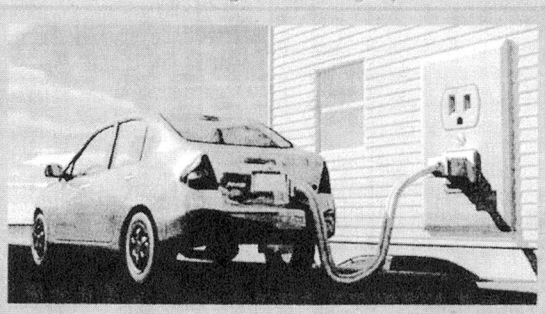
LS600h – Flagship (Available Spring 2007)

TODAY for TOMORROW **TOYOTA**

Plug-in Hybrid Vehicle Concept

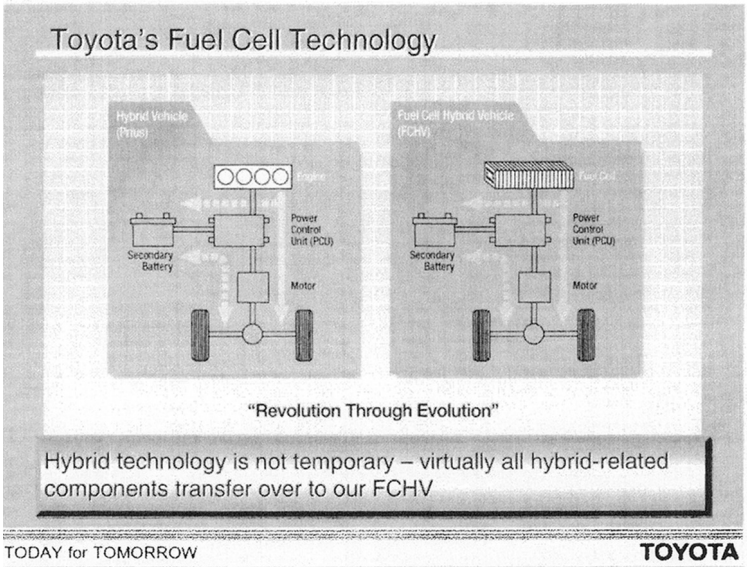
Battery can be recharged from external source to extend the electric motor-enabled EV (electric vehicle) driving range

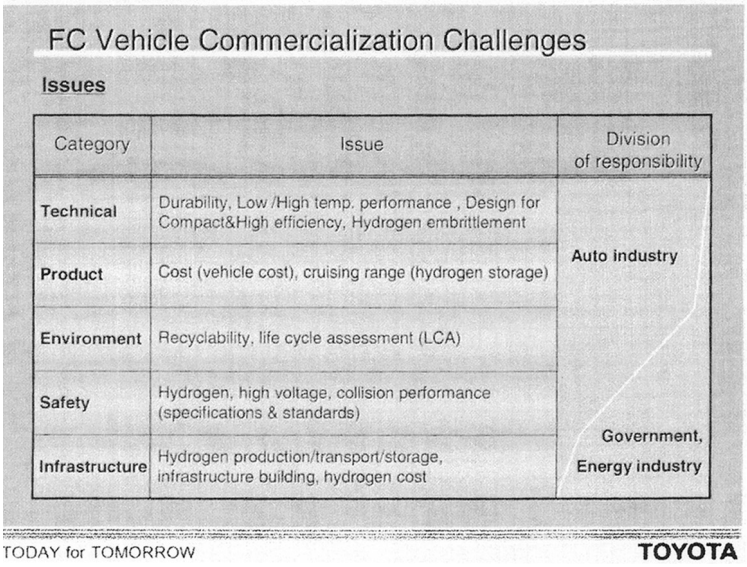
- Short EV drive trips are possible using electric power of recharged battery alone
- Engine and electric motor used for long distances, high speed and hill climbing



Plug-in hybrids represent a promising approach to using electricity in everyday vehicles

TODAY for TOMORROW **TOYOTA**





Senator PRYOR. Thank you.

Mr. Alan Reuther?

STATEMENT OF ALAN REUTHER, LEGISLATIVE DIRECTOR, INTERNATIONAL UNION, UNITED AUTOMOBILE, AEROSPACE & AGRICULTURAL IMPLEMENT WORKERS OF AMERICA (UAW)

Mr. REUTHER. Mr. Chairman, my name is Alan Reuther. I am the Legislative Director for the UAW. We appreciate the opportunity to testify at this hearing on the CAFE program.

UAW believes that global warming and our Nation's dependence on foreign oil are serious problems that need to be addressed by Congress and the Bush administration. However, it is important to recognize that the CAFE program, by itself, cannot solve these problems. UAW supports the establishment of an economy-wide, mandatory, tradable permits program that will reduce greenhouse gas emissions. We believe this type of cap-and-trade program should be done on an upstream basis in order to minimize regulation and to assure that all sectors of the economy participate in a proportionate manner.

The UAW also believes Congress should pursue initiatives to promote the use of alternative fuels in motor vehicles. We would support legislation mandating that a certain percentage of all vehicles sold in the U.S. by each automaker must be flex-fuel capable by specified dates. We also believe there is a need for incentives to overcome bottlenecks in the production and distribution networks for alternative fuels.

In addition, the UAW urges Congress to use tax and other incentives to encourage domestic production of advanced technology vehicles, the hybrids and diesels, and their key components. As was demonstrated by a November 2004 study by the University of Michigan, this type of approach would create thousands of automotive jobs in this country, while reducing global warming emissions and our dependence on foreign oil.

The Bush administration has requested the authority to establish an attribute-based CAFE system for passenger cars similar to the system that NHTSA has already implemented for light trucks. The UAW recognizes that this approach would eliminate the discriminatory impact of the current passenger car CAFE rules against full-line producers. However, it would also enable auto manufacturers to offshore all of their small car production and jobs. Over 17,000 American workers are currently employed in five U.S. assembly plants that produce small passenger cars. Almost 50,000 American workers produce parts for these vehicles. To prevent companies from offshoring these jobs, and to prevent companies from subverting the objective of any new CAFE system by upsizing many of their vehicles, resulting in worse overall fuel economy, the UAW urges Congress to impose an anti-backsliding requirement on any new CAFE rules. This requirement should specify that both the domestic and foreign passenger car fleets for each auto manufacturer would still have to meet or exceed the CAFE standard under the current system.

Some Members of Congress have put forward proposals to increase CAFE to 35 mpg for the combined passenger car and light truck fleets, or to 40 mpg for passenger cars, or to require 4 percent annual increases in the CAFE standards. The UAW is deeply concerned about the economic feasibility of these proposals. In light of the extremely serious financial conditions of GM, Ford, and DaimlerChrysler and the disparate burdens they face in retiree health care legacy costs, the UAW believes that the imposition of CAFE increases of this magnitude could lead to calamitous results. This could include the closing of additional facilities and the loss of tens of thousands of additional automotive jobs, as well as the

loss of health coverage for 500,000 retired workers and their families.

In order to meet higher CAFE standards, the auto manufacturers will have to incur significant retooling costs. But the companies do not have a level playing field, in terms of their ability to shoulder these retooling costs. Thus, the UAW believes that any proposals for CAFE increases must also include measures that will help to level the playing field in the automotive industry and provide struggling manufacturers with the resources needed for any retooling efforts. Such assistance should be tied to investments in domestic production that will generate jobs for American workers and help the U.S. economy. It should also be structured in a manner that recognizes and helps to address the fundamental imbalance in the auto industry related to retiree health care legacy costs.

Rather than simply turn to the CAFE program, the UAW urges Congress to consider other mechanisms for improving vehicle efficiency that might be more consistent with economy-wide efforts to reduce oil consumption and greenhouse gas emissions. For example, Congress should explore whether it would be better to establish carbon reduction requirements that each auto manufacturer would have to meet. This approach might be more effective in achieving the desired objectives of greenhouse gas reductions and oil savings, and it would also avoid some of the gaming and other complications that have plagued the CAFE program.

In conclusion, the UAW looks forward to working with this committee in fashioning measures that will enable the U.S. to make progress in addressing the climate change and energy security issues while protecting jobs and benefits for American workers and retirees.

Thank you.

[The prepared statement of Mr. Reuther follows:]

PREPARED STATEMENT OF ALAN REUTHER, LEGISLATIVE DIRECTOR, INTERNATIONAL UNION, UNITED AUTOMOBILE, AEROSPACE & AGRICULTURAL IMPLEMENT WORKERS OF AMERICA (UAW)

Mr. Chairman, my name is Alan Reuther. I am the Legislative Director for the International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW). The UAW appreciates the opportunity to testify before this Committee at this oversight hearing on the Corporate Average Fuel Economy (CAFE) program.

The UAW represents over one million active and retired workers across the country, many of whom work or receive retirement benefits from auto manufacturers or auto parts companies. We were deeply involved in the original enactment of the CAFE program, and continue to have a very strong interest in this program because of its impact on automotive production and employment in this country and the jobs and benefits of our members.

Interest in the CAFE program has recently been heightened by a number of factors. This includes the national security implications of our Nation's dependence on foreign oil. It also includes rising concerns about global warming and the need to limit greenhouse gas emissions.

The UAW believes that these are serious problems that need to be addressed by Congress and the Bush administration. We urge Congress to pursue initiatives that will deal with these issues in an integrated and balanced manner.

Need for Economy-Wide Energy Policies

It is important to recognize that the CAFE program, by itself, cannot solve these problems. All light duty vehicles (passenger cars and light trucks) in the United States only account for 16.3 percent of greenhouse gas emissions. The CAFE program only affects new vehicles sold each year, which represent a very small percent-

age (about 7 percent) of the total vehicle stock on the road. It takes about 14 years for the U.S. vehicle fleet to completely turn over. Thus, by definition any changes in CAFE can only have a modest short-term impact on reducing our greenhouse gas emissions and dependence on foreign oil.

To address these problems in a meaningful way, the UAW believes we need broader, comprehensive energy policies. In our judgment, these policies should require all sectors of the economy to come to the table and help to reduce our Nation's oil consumption and greenhouse gas emissions. Each sector should be required to contribute to these objectives in proportion to the oil consumption and greenhouse gas emissions of that sector. No sector should enjoy a free ride. No sector should be required to bear a disproportionate burden, or to shoulder costs that would have a devastating impact on production and employment in specific industries.

To be sure, the auto industry has an important role to play in addressing the energy security and climate change issues. The UAW is prepared to support legislation that requires the industry to do its share, so long as this is part of broader measures that also require other sectors to share proportionately in the burdens that will be required to meet these challenges.

Specifically, the UAW strongly supports the establishment of an economy-wide mandatory tradable-permits program that will gradually slow the growth of, and eventually reduce, greenhouse gas emissions in the United States. We believe this type of "cap-and-trade" program should be done on an "upstream" basis in order to minimize regulation and to ensure that all sectors of the economy participate in a proportionate manner. We also believe such a program should include a "safety valve" cost cap to ensure that no sector is hit with unacceptable burdens that would have a negative impact on economic growth and jobs. In addition, this program should include measures to ensure that our businesses and workers are not placed at an unfair competitive disadvantage with U.S. trading partners and developing countries.

The UAW believes that this type of "cap-and-trade" program could make a major contribution to reducing greenhouse gas emissions and our dependence on foreign oil.

Promotion of Alternative Fuels

At the same time, the UAW recognizes the need for additional measures to reduce oil consumption and greenhouse gas emissions from the automotive sector. But, to be successful, it is essential that this effort focus on two interrelated factors: (1) the fuels that go into vehicles; and (2) the efficiency of these vehicles themselves.

The UAW believes it is critically important for Congress to pursue a range of initiatives to promote the use of alternative fuels in motor vehicles. This can make an enormous contribution to reducing greenhouse gas emissions and our reliance on foreign oil.

Obviously, there is a need to promote the production of vehicles that are capable of running on alternative fuels. The technology required to make vehicles flex fuel capable is relatively inexpensive—about $150 per vehicle. GM, Ford and DCX have already voluntarily committed to making 50 percent of their fleets flex fuel capable by 2012. The UAW would support legislation mandating that certain percentages of all vehicles sold in the U.S. by each automaker must be flex-fuel capable by specified dates. Meanwhile, to avoid any counterproductive disincentive, the CAFE credit for flex fuel vehicles should be extended and expanded to cover bio-diesel.

To expand the use of alternative fuels, there is also a need to overcome bottlenecks in the production and distribution networks. Thus, the UAW supports the continuation of existing incentives for the production of bio-fuels. We also support additional incentives to encourage the conversion of existing filling stations so they have the capability to distribute alternative fuels. We welcome the Bush administration's proposal to increase the renewable fuels mandate. And we believe that the fuels carbon cap that was recently proposed by Governor Schwarzenegger represents a thoughtful approach that is worth examining on a Federal level.

Vehicle Efficiency—Tax Incentives, CAFE, and Other Approaches

In addition to pursuing measures to increase the use of alternative fuels in motor vehicles, the UAW believes that Congress should consider initiatives that will make vehicles more efficient, and reduce their consumption of oil and emission of greenhouse gases. There are a number of possible approaches to achieve these objectives.

A. Tax Incentives

The Federal Government currently provides tax credits to consumers who purchase certain advanced technology (hybrid, diesel, fuel cell) vehicles. These incentives are designed to encourage consumers to purchase more fuel-efficient vehicles. However, the tax credits are available regardless of where the vehicles and their

key components are built. They are not tied to domestic production. Unfortunately, many advanced technology vehicles currently are assembled in other nations. Even worse, virtually all of the key components (hybrid electric motors; diesel engines) for these vehicles are built overseas, including the key components for vehicles assembled in this country, as well as those assembled in other countries. As these advanced technology vehicles gain a larger share of the market, this means we are replacing vehicles with higher domestic content with vehicles that have much lower domestic content. As a result, the consumer tax credits effectively wind up subsidizing the movement of automotive jobs overseas. For this reason, we believe it would be a major mistake for the Federal Government to rely solely on these consumer tax credits to encourage the expansion of advanced technology vehicles. Certainly, these tax credits should not be expanded by lifting the cap on the number of qualifying vehicles.

Some persons have proposed the establishment of a so-called "fee bate" system, under which the Federal Government would provide tax incentives for more fuel-efficient vehicles, without any link to specific technologies. Because most of these proposals involve a tax credit for the consumer, the UAW believes they suffer from the same defect as the consumer tax credit for advanced technology vehicles. In the end, this could subsidize the offshoring of automotive production and jobs. In addition, depending on how any "fee bate" system is constructed, it could have a negative impact on sales, production and jobs at particular companies.

Instead of these flawed approaches, the UAW urges Congress to use tax and other incentives to encourage *domestic production* of advanced technology vehicles and their key components. As was demonstrated by a November 2004 study conducted by the Office for the Study of Automotive Transportation (OSAT) of the University of Michigan Transportation Research Institute, and commissioned by the bipartisan National Commission on Energy Policy, this type of approach would help to maintain and create tens of thousands of automotive jobs in this country. At the same time, it would help to accelerate the introduction of these advanced technology vehicles, and thereby reduce global warming emissions and our dependence on foreign oil. Moreover, in light of the highly competitive nature of the U.S. auto market, any savings realized by the auto manufacturers and parts companies would inevitably be translated into cost reductions for consumers, and thereby encourage sales of these more efficient vehicles. Significantly, the OSAT study indicated that the increased tax revenues for Federal, state and local governments generated from the jobs created for American workers would more than pay for the costs of such manufacturer incentives.

The UAW was pleased that this type of proposal for a manufacturer's tax credit to encourage domestic production of advanced technology vehicles and their key components was included in a number bipartisan bills that were introduced in the last Congress. We urge this Committee to include this proposal in any energy legislation that is considered the 110th Congress.

B. CAFE

The Bush administration has proposed a number of changes in the CAFE program. In particular, it has requested the authority to establish an attribute-based CAFE system for passenger cars, similar to the system that the National Highway Traffic Safety Administration (NHTSA) has already implemented for light trucks. In addition, the administration has proposed that auto manufacturers be permitted to trade CAFE credits. It has also proposed that NHTSA be prohibited from adopting any CAFE system based on a uniform percentage improvement (UPI) formula.

The UAW recognizes that moving to an attribute-based CAFE system for passenger cars similar to the system for light trucks would have the benefit of eliminating the discriminatory impact of the current passenger car CAFE rules against full line producers. We would strongly applaud this development. The UAW has long complained that the structure of the current passenger car CAFE rules does not take account of differences in the product mix of the various auto manufacturers. As a result, it imposes a heavier, unfair burden on companies that have a product mix more oriented toward larger passenger cars. Moving to an attribute-based CAFE system for passenger cars would correct this problem, and require all companies to make similar efforts to improve fuel economy across their entire line of vehicles.

However, as the UAW indicated in our testimony on May 9, 2006 before the Subcommittee on Surface Transportation and Merchant Marine of the Senate Commerce Committee, moving to an attribute-based CAFE system for passenger cars would also have the major down side of enabling auto manufacturers to offshore all of their small car production. Under the existing passenger car CAFE program, the combination of the fleet wide averaging and the two-fleet (domestic and foreign)

rules ensures that full line auto manufacturers must maintain small car production in North America. This is because the production of smaller, more fuel efficient vehicles is needed to offset the production of larger, less fuel efficient vehicles.

As a matter of national energy policy, the UAW believes it is vital that the U.S. retain domestic production of smaller, more fuel efficient passenger cars. As we have all witnessed, sharp increases in gas prices can lead to shifts in consumer demand toward smaller, more fuel efficient vehicles. Unless we retain domestic production of such vehicles, consumers interested in this segment of the market could be forced to purchase foreign-made vehicles.

Over 17,000 American workers are currently employed in seven U.S. assembly plants that produce small passenger cars. This includes GM, Ford, DCX, and NUMMI plants in Lordstown (Ohio), Spring Hill (Tennessee), Wayne (Michigan), Belvidere (Illinois), and Fremont (California). Almost 50,000 American workers produce parts for these vehicles. The jobs of these workers would be directly threatened by any CAFE proposals that undermine fleet wide averaging and/or the two-fleet rule for passenger cars. The loss of these jobs would inevitably have a negative ripple effect on the rest of the economy.

Some commentators have tried to dismiss concerns about the loss of small car production by arguing that the companies will simply substitute large car or light truck production at these facilities, leaving the overall production and employment levels unchanged. This ignores the harsh reality that there currently is significant over capacity in the auto industry. The real-world impact is that certain companies would take advantage of any shift to an attribute-based CAFE system for passenger cars to further downsize their operations by closing their small car facilities. The net result is that tens of thousands of automotive jobs would be lost, without any compensating replacements with large vehicle production and jobs. Because of the high multiplier effect of auto industry employment, this also would lead to a net loss of hundreds of thousands of jobs in the overall economy.

As the UAW testified last year, there is an easy way to obtain the benefits of moving to an attribute-based CAFE system for passenger cars, while avoiding the down side of losing our small car production and jobs. Specifically, the UAW urges Congress to impose an "anti-backsliding" requirement on any new CAFE rules that NHTSA would be authorized to promulgate for passenger cars. This requirement should specify that both the domestic and foreign passenger car fleets for each auto manufacturer would still have to meet or exceed the CAFE standard under the current system (*i.e.,* the 27.5 flat MPG fleet wide standard). This "anti-backsliding" benchmark should be increased in line with the overall fuel economy improvements required under any attribute-based passenger car CAFE system.

The adoption of this type of "anti-backsliding" requirement would prevent companies from offshoring all of their small car production and jobs. This would protect the jobs of tens of thousands of American workers, and guarantee that we would continue to maintain domestic production capacity for smaller, more fuel efficient vehicles.

This type of "anti-backsliding" requirement also would ensure that the auto manufacturers cannot subvert the objective of any new CAFE system by "up-sizing" many of their vehicles, resulting in worse overall fuel economy. It would guarantee that the companies will actually improve fuel economy across the entire range of their passenger cars, and that consumers and our Nation will indeed receive the benefits of more fuel efficient vehicles.

The imposition of this type of "anti-backsliding" requirement would not be burdensome for the auto manufacturers. It could be structured in a manner that still allows the companies to obtain the benefits of moving to a CAFE system that takes into account product mix differences between the companies. If the companies are genuinely taking steps to improve fuel economy across their entire range of passenger vehicles, and if they do not shift small car production overseas, they should easily be able to meet this requirement.

Thus, the UAW would support legislation authorizing NHTSA to establish an attribute-based CAFE system for passenger cars, *provided this is coupled with an "anti-backsliding" requirement that protects small car production and jobs in this country*. If this type of "anti-backsliding" requirement is not included, then we would vigorously oppose such legislation.

The UAW believes that the establishment of a "credit trading" system that would allow auto manufacturers to buy and sell CAFE credits for passenger cars and/or trucks would also have the effect of undermining the two fleet rule and/or fleet wide averaging. As a result, it would inevitably jeopardize the continuation of small car production. It could also aggravate the uneven playing field that currently exists between foreign and domestic auto manufacturers. For these reasons, we oppose the

proposals put forward by the Administration and others for such "credit trading" systems.

The UAW also strongly objects to the administration's proposal to prohibit NHTSA from adopting a uniform percentage increase (UPI) approach to CAFE improvements. We have long maintained that the UPI approach would be the fairest means of implementing fuel economy improvements. It would require all companies to improve the fuel economy of their fleets. At the same time, it would take into account existing differences between the companies based on their product mixes. We find it particularly ironic that the administration would tout the administrative expertise of NHTSA in setting CAFE standards, while at the same time attempting to circumscribe their discretion and expertise by outlawing a UPI approach.

One of the key issues in any discussion of the CAFE program is the stringency of and timeframe for any proposed increases in the fuel economy standards. In his State of the Union address, President Bush estimated that the CAFE changes advocated by the administration would save 8.5 billion gallons of gasoline by 2017. Back-up materials provided by the administration indicated that this assumes a 4 percent annual increase in CAFE standards for both passenger cars and light trucks. However, so far the administration has not produced any documents or analyses explaining the basis for its estimates and assumptions. We understand that NHTSA has indicated that it does not have any basis for such projections. A number of Members of Congress have also put forward proposals to increase CAFE to 35 mpg for the combined passenger car and light truck fleets (S. 357), to 40 mpg for passenger cars (S. 183), or to require 4 percent annual increases in the CAFE standards.

The UAW remains very skeptical about all of these proposals. We question whether increases of this magnitude are technologically feasible. In our view, the study by the National Academy of Sciences in 2002 does not support increases of this magnitude.

Even more importantly, the UAW is deeply concerned about the *economic feasibility* of these proposals. Specifically, in light of the extremely serious financial conditions of GM, Ford and DCX, and the disparate burdens they face in retiree health care legacy costs compared to their competitors, the UAW believes that the imposition of CAFE increases of this magnitude could lead to calamitous results. This could include the closing of additional facilities and the loss of tens of thousands of additional automotive jobs in this country. It could also include the loss of health coverage for 500,000 retired workers and their families.

In the past 2 years, we have already seen these companies post shattering losses. In response, they have announced unprecedented plans to downsize their operations, involving the closing of numerous automotive facilities and buyout programs that could result in the loss of almost 90,000 jobs. Meanwhile, speculation continues about further industry restructuring that could lead to more plant closings and job loss.

The difficulties in the U.S. automotive industry extend beyond GM, Ford and DCX. Overall, the industry has lost over 310,000 jobs since the last employment peak in February 2000. These losses have occurred in both the auto parts and the assembly sectors. A number of parts companies have filed for bankruptcy, including Delphi. In addition to the enormous loss of jobs in the auto parts sector, there has been tremendous downward pressure on the wages and benefits for the workers that remain.

The UAW submits that any consideration of CAFE increases must take into account the terribly difficult and precarious financial situation for a large part of the U.S. automotive industry. Regardless of one's views on the technological feasibility of any CAFE increase, there is no dispute that meeting higher standards would necessarily entail significant retooling costs for the auto manufacturers. It is also apparent that there is not a level playing field among the companies in terms of their ability to shoulder these retooling costs. The recent profit/loss situations at GM, Ford and DCX are very different than Toyota or Honda. In addition, because they have been operating for a long period of time and have many retirees, GM, Ford and DCX have very substantial retiree health legacy costs. In contrast, Toyota and Honda have few retirees from their operations in this country, and the health care costs from their Japanese facilities are heavily subsidized through a national health care system.

Thus, the UAW believes that any proposals for CAFE increases must also include measures that will help to level the playing field in the automotive industry, and provide struggling manufacturers with the resources needed for any retooling effort. Such assistance should be tied to investments in domestic production that will generate jobs for American workers and help the overall U.S. economy. It should also be structured in a manner that recognizes and helps to address the fundamental imbalance in the auto industry related to retiree health care legacy costs.

The Federal Government already provides substantial subsidies to agri-business to promote alternative fuels. In our view, it makes equal sense to provide comparable assistance to the auto manufacturers to promote greater vehicle efficiency.

C. Other Approaches to Improving Vehicle Efficiency

Rather than blindly turn to the CAFE program, the UAW urges Congress to also consider other mechanisms for improving vehicle efficiency that might be more consistent with economy-wide efforts to reduce oil consumption and greenhouse gas emissions. For example, Congress should explore whether it would be better, in lieu of increasing CAFE standards, to establish carbon reduction or oil savings requirements that each auto manufacturer would have to meet. Such approaches might be more effective in achieving these desired objectives, and might also avoid some of the gaming and other complications that have plagued the CAFE program. These approaches could also provide a mechanism for raising the revenue that would be needed help struggling companies with retooling and retiree health legacy costs. The UAW is prepared to work with Congress in exploring these innovative approaches.

We recognize that any assistance to the auto manufacturers must be tied directly to measures that will guarantee public benefits through a reduction in carbon emissions and oil consumption from the light duty automotive fleet. As previously indicated, we also believe any assistance should be structured in a manner that promotes domestic production and jobs and protects retiree health care benefits.

By structuring assistance in this manner, Congress can simultaneously achieve a number of critically important objectives. It can require auto manufacturers to produce vehicles that are more efficient, and reduce our consumption of foreign oil and emission of greenhouse gases. At the same time, it can create tens of thousands of jobs for American workers, and ensure that the U.S. will be producing the vehicles of the future. It can also help to foster a level playing field in the automotive industry, while protecting hard earned health care benefits for retirees and their families.

Conclusion

In conclusion, the UAW appreciates the opportunity to testify before the Senate Commerce Committee at this oversight hearing on the CAFE program. We look forward to working with this Committee in fashioning measures that will enable the U.S. to make progress in addressing the climate change and energy security issues, while protecting jobs and benefits for American workers and retirees.

Senator PRYOR. Thank you, Mr. Reuther.

Let me start with you, if I may, Mr. Reuther, just for point of clarification. Do you oppose higher CAFE standards?

Mr. REUTHER. No. We think the CAFE program could be increased, but we think, at the same time that is being done, that the Federal Government should help provide the——

Senator PRYOR. Right.

Mr. REUTHER.—resources to the struggling manufacturers, and help to provide a level playing field in the industry.

Senator PRYOR. Right. And do you believe that Congress should set the target or the goal, or do you think we should leave that to NHTSA's discretion?

Mr. REUTHER. We're agnostic on that issue. We supported the original CAFE law, when Congress set the standard. We've supported NHTSA in their light truck standard. We think the real issue is, what is the standard that we're talking about—not who is going to be deciding it.

Senator PRYOR. And you mentioned a level playing field. Do you—is that, in your mind, a difference in domestically produced autos and foreign produced autos? Tell me what you mean by "level playing field."

Mr. REUTHER. Well, it refers to two things. One, that there's obviously a very great different right now in the financial conditions of GM, Ford, and DaimlerChrysler, compared to Toyota and Honda. That affects the ability of the companies to afford the retooling

costs. Also, underlying that, there's a huge imbalance in the industry, in terms of the retiree health care burdens. GM, Ford, and DaimlerChrysler, because they've been in operation so long, have hundreds of thousands of retirees that they're paying health care for. Toyota of America, Honda of America, have virtually no retirees. At their facilities in Japan, those health care costs are subsidized by national health care systems. So, you have this fundamental imbalance in health care burdens, and that will impact on the ability of the companies to afford the retooling costs.

Senator PRYOR. And are you saying that CAFE factors into the automakers decision on where they build their vehicles?

Mr. REUTHER. If there was a move toward an attributed-based passenger car system, if that is not coupled with an anti-backsliding rule, we will see the loss of all the domestic small car production, and the parts production that goes into that. That would be a very significant job loss for this country. So, we think some mechanism, such as an anti-backsliding rule, should be included to prevent that result.

Senator PRYOR. All right. Connect those dots for me. Why would—if we don't have the anti-backsliding—which, by the way, I'm not necessarily opposed to—but if we don't have that, why do our domestic manufacturers of small cars go away? Why is that?

Mr. REUTHER. Right now, the current CAFE structure is a fleetwide average and a two-fleet requirement. You have to meet the fleetwide average for your domestic fleet, and meet it separately for your foreign fleet. Anything that changes either the fleetwide average requirement or the two fleet requirement would jeopardize small car production. Right now, companies have to keep small car production in this country to balance out the bigger cars that they produce here. Moving to an attributed-based system gets rid of the fleetwide average requirement. Companies would, therefore, no longer have to keep the small cars here to balance out the larger ones they produce here.

Senator PRYOR. OK.

Now I have questions for the two scientists. First, I'd just like to get your general impressions of NHTSA. And the reason I'm asking this is, I think there's a suspicion, in some quarters at least, that NHTSA, under this administration, is very reluctant to be aggressive on new CAFE standards. And I would like to hear from the two scientists your impressions. I know you're not tied to NHTSA in any way, and you deal in this world a lot. So, Dr. Greene, do you want to just take that?

Dr. GREENE. Well, I think my answer is, sort of, "on the one hand/on the other hand," I'm afraid. NHTSA has, of its own initiative, raised the light truck fuel economy standards twice. That's more than happened previously, when they were not allowed to even enter into rulemakings. So, they have shown some initiative. But I think, as we saw in the first panel's discussion, a bureaucratic agency has a great deal of difficulty in deciding on the values of things. And, in particular, our discussion this morning focused on the value of greenhouse gas emissions. And I think the criticism was absolutely justified, that there—you cannot assign a zero value to increasing greenhouse gas emissions. But I think what we saw is that, in the face of great uncertainty, this was exactly the solu-

tion that the agency decided on. To do something else is to stick your neck out, in a sense, and say, "Well, I think it's $25 a ton of CO_2." And then someone will criticize you for that. I think we could have had the same discussion around the national defense—the foreign policy values of reducing oil dependence, where, similarly, essentially, there was no value given. So, I think this poses a very difficult problem for an administrative agency to decide on these values. And my view would be that, if the Congress does not, itself, want to set a specific fuel economy target, then the Congress will need to give very strong guidance to an administrative agency about the values of reducing greenhouse gas emissions and the value it attaches to reducing oil dependence.

Senator PRYOR. Mr. Friedman?

Mr. FRIEDMAN. Thank you, Mr. Chairman.

I think that NHTSA has strengths and weaknesses when it comes to dealing with fuel economy standards. I think one place that is—one job that's appropriate, and very appropriate for NHTSA, is to figure out the details once Congress sets a target, of how to get there; what the structure should look like, how to balance differences between manufacturers, based on product plans that they can get from those automakers. However, Congress is best situated both to really translate the concerns and the will of the American people, in terms of how much to value these important issues, such as climate change and global warming pollution, not to mention the significant lack of choice consumers face in the marketplace today.

Congress has the ability, and has called, for example, on the National Academy of Sciences, to provide them with guidance to make sure that they can set a standard that is not arbitrary, that is, in fact, based in science and based on how far the technologies can go. Once Congress sets this goal, as it did in 1975, NHTSA is definitely a good place to figure out exactly how to get there, between what mix of vehicles, what mix of standards, and what are the appropriate rules.

Senator PRYOR. Well, Mr. Friedman, it sounds like you're comfortable with the National Academy of Sciences and their ability to come up with science-based findings. Is that fair to say?

Mr. FRIEDMAN. I think that in evaluating the technological potential, the previous National Academy of Sciences panel did a very good job. If you look at the fleet that could be made from all the technologies in that report, it could reach up to 37 miles per gallon based on the fleet mix they analyzed. That has changed a little bit over time, but I think that is very clear and very useful input to Congress so that they can avoid making any arbitrary standards. I would argue they were actually conservative, and, maybe with updating that analysis, they will go even farther.

Senator PRYOR. Getting back to NHTSA just for a second, do you believe that NHTSA has the capability in-house to analyze all the data, whether it be from NAS or from the auto manufacturers or whatever, and pull that together and come up with the right kind of CAFE standards?

Mr. FRIEDMAN. I think that, historically, NHTSA was starved of staff and of funding. I think that has started to change. But I do think there is a role for increased funding for NHTSA so that there

can be additional staff to help analyze these problems. But, as Dr. Greene said, at the end of the day there are some questions NHTSA cannot answer, and that is the role of Congress.

Senator PRYOR. Dr. Greene, do you have a comment?

Dr. GREENE. I would like to add one more thing. I think, historically, we can see that NHTSA has set standards over a relatively short time period into the future. And this is also true with the standards they just recently set for light trucks. This is—they don't look 10, 12, 15 years ahead. And I think that prevents them from setting a higher level of standard in the future, because, as Mr. Stricker pointed out, it takes time for the manufacturers to redesign all of their product lines. And so, this is, I think, a reflection of the difficulty of dealing with risk. It's hard to look very far into the future. There are market risks, there are technology risks, and so on. And I think NHTSA has had a difficulty in, let's say, being bold enough to set standards for a decade or more in the future.

Senator PRYOR. Dr. Greene, let me ask one last question to you about greenhouse gases. We've talked about how, when NHTSA looks at it, there's a value of zero. I think most people would think that when reducing greenhouses gases, there ought to be some value attached. But how does that factor into a CAFE standard? How would you quantify a reduction in greenhouse gases? And how does that work into the formula or become a credit in the CAFE world?

Dr. GREENE. Right. As—NHTSA did this in much the same way that the National Academies did, they looked at the marginal costs of improving fuel economy and the marginal benefits. So, the marginal costs are essentially the costs of the technologies that must be added. And they try to find a level at which the last increment of cost and fuel economy is equal to the value of the fuel saved. Well, part of the value of the fuel saved is the actual price you pay for the fuel minus the taxes, because the tax would be a transfer payment. Then they have to add, on top of that, the social value. And that's where we get into difficulty. What is the social value of reducing greenhouse gas emissions? What is the social value of reducing oil dependence? And there's a great deal of uncertainty about those. And so, they have to come up with some number. Is it 25 cents a gallon that's the social value of reducing greenhouse gas emissions and oil dependence, or is it 50 cents a gallon? And this can make quite a bit of different in determining where you set the level of fuel economy.

Senator PRYOR. Dr. Greene, you have a number on that?

Dr. GREENE. Do I have a—it's like the joke, I have lots of them, yes.

Senator PRYOR. OK. But you don't see a—sort of a recognized or a consensus number out there where you think it ought to be set?

Dr. GREENE. I think—in the case of greenhouse gas emissions, you heard that it might be $25 a ton of CO_2, it might $100 a ton of CO_2, and that's likely to change over time, as well. I think the problem is, what exactly is going to happen as a result of climate change? And there's still great uncertainty about that. And so, it's very difficult for a scientist to tell you what exactly is the value of reducing a ton of carbon dioxide.

On the national defense side, it's extremely controversial, for example, to say, "Well, this much of our military budget, or this much of our expenses on national defense, or due to our dependence on oil." It's extremely difficult, technically, and highly controversial. And so, there, you know, you just can't find—I mean, people have tried to do it, but there is no consensus.

Senator PRYOR. OK. And that makes it understandable why NHTSA has not been able to—or not willing, at least, to set a number.

Mr. FRIEDMAN. Senator, I just wanted to make two more comments, because I think this discussion of global-warming pollution is extremely important. I think one of the things that we have to remember—as Dr. Greene said, there is a lot of uncertainty here with global-warming pollution, but we know it's—we know global-warming pollution is there, we know humans are causing this problem. And what we've also found, from scientists' findings over the last several years, is, each time we think that we've figured out how bad the problem is, the science usually tells us it's worse. Glaciers are melting quicker than we thought, tropical diseases are potentially moving quicker than we thought as a result. So, I would argue, at a minimum, for a precautionary principle, when it comes to global-warming pollution, when we look at these numbers.

I would also add that—Dr. Greene talked about costs, maybe $25 or $50 per ton of carbon dioxide. This really points out one of the challenges with addressing car and truck pollution from cap-and-trade systems. UCS strongly supports cap-and-trade systems for the entire economy. But if carbon dioxide is valued at $25 to $50 per ton, you're talking about effectively increasing gasoline prices by tens of cents, maybe half a dollar, on the more extreme. If we look at what's happened over the past several years, gas prices have more than doubled, at times, and we've seen very little response from consumers. We cannot expect a cap-and-trade system, an economy-wide cap-and-trade system, to adequately deal with the global-warming pollution from our cars and trucks. This is where something like a national system to control that global-warming pollution from those vehicles, or CAFE standards, has to come into play. We do need an economywide cap-and-trade system, but it's not going to effectively deal with our cars and trucks.

Senator PRYOR. I'd like to hear, very quickly from General Motors and Toyota, about whether they think a greenhouse gas emissions factor should be included in CAFE standards. Do you all have a position on whether you should factor in greenhouse gas emissions when you're looking at CAFE?

Ms. LOWERY. Either one of us can go first.

I mean, CAFE standards regulate CO_2 now. I mean, basically that's what you're doing, you're having fuel economy regulated through CAFE. So, I'm not exactly sure, with respect to the question, other than you're asking, what would the value be if you do the cost-benefit analysis? And, I think, as people have noted, it's very uncertain what that value is. And I think there needs to be more research and more work done in that area.

Senator PRYOR. Toyota?

Mr. STRICKER. I think I would probably agree and echo what Ms. Lowery said. I—you know, not being an economist, myself, I'm not

sure exactly how you value the various different kinds of externalities, such as Dr. Greene mentioned, in terms of energy security or CO_2, et cetera. And—at the end of the day, though, I think that, no matter what, if such a factor were included, it doesn't change the sort of fundamental pace of technology, and progress that we can make in technology, to put on the vehicle side.

Senator PRYOR. OK.

We've been joined by Senator Thune.

Senator Thune?

STATEMENT OF HON. JOHN THUNE, U.S. SENATOR FROM SOUTH DAKOTA

Senator THUNE. Thank you, Mr. Chairman. It is down to you and me.

[Laughter.]

Senator THUNE. I'm sorry I missed—I've had three hearings going at the same time today. But I appreciate the panels and their testimonies and their patience.

Just a couple of questions, if I could, fairly quickly here. And maybe this is direct and I know we have a couple of panelists who are from the scientific community, but what do you think the goal of the CAFE program should be? Should it be to reduce U.S. oil consumption? Should it be used to reduce U.S. consumption of foreign sources of oil? Should it be used to reduce greenhouse gas production? Should there be some other goal? I guess my question is, what do you see as the overriding goal of CAFE standards? Anybody want to take a stab at that?

Mr. FRIEDMAN. You want to go first, David? I'll follow up.

Dr. GREENE. I think there are, chiefly, three goals, and you've stated two of them. One is to reduce dependence on oil. But dependence on oil, of course, goes beyond light-duty vehicles. And it goes beyond fuel economy, as Ms. Lowery has pointed out, to alternative fuels. So, in that sense, CAFE is a part of a comprehensive strategy, but not the whole strategy, in and of itself. And it's probably the most important part of a comprehensive strategy.

Also, CAFE helps to reduce greenhouse gas emissions, and that's an important goal. And, I think, finally, we haven't talked about it much, but we are nearing the point where we will begin to make a transition—and, in fact, in some senses, we already have begun to make a transition from conventional oil to alternative sources of energy for transportation. These might be oil sands, heavy oil, oil shale, coal to liquids, gas to liquids, something like that. But as the countries outside of OPEC find it more and more difficult to increase oil production in order to meet increasing mobility demands for the world, we're going to bring on other fuels. I think that CAFE also helps us postpone that—slow down that process of transition, because the choices we make are going to be choices that remain with us for a long time, and if we choose to go to high carbon sources, like coal to liquids, like oil sands and oil shale, then we have a very serious problem of how to mitigate those carbon emissions.

Senator THUNE. Mr. Friedman?

Mr. FRIEDMAN. In general, I would agree with what Dr. Greene said. Originally, of course, fuel economy standards were focused on reducing our oil addiction. And they have clearly had that impact. If we—if our cars and trucks were stuck at the fuel economy levels they were back in the 1970s, we would be consuming 50 to 80 billion gallons of additional gasoline. That's hundreds of billions of dollars that consumers would be paying today if we didn't have the CAFE standards we have right now.

Of course, if those standards had continued to increase, consumers would be saving a lot more money. So, I would argue, definitely fuel economy standards should have as a goal reducing total oil consumption, because whether you're reducing imports or domestic oil use, you're reducing the impacts that our oil addiction will have on our economy and our environment.

Fuel economy standards will definitely help reduce global-warming pollution, but, as Dr. Greene said, you also need fuel standards, cleaner fuel standards in order to deal with that, as well as finding ways to get consumers to reduce their amount of travel.

And finally, fuel economy standards can save consumers money. That is one of the most impressive things about these technologies. It's an investment up front, by both the automakers and by consumers, but, at the end of the day, consumers are going to save thousands of dollars on gasoline. And if you're not sending that money to—exported to other countries, it's being spent here in this country, it's creating new jobs, it's helping the auto industry, and it's helping consumers.

Senator THUNE. I appreciate the fact that it has been reduced in terms of billions of gallons. I don't like the fact that 30 years later we're still at 60 percent—I remember as a kid when I was growing up in the 1970s, and we had the gas lines and the gas wars, and everybody said, "We've got to get less dependent upon foreign energy," and, at that time, we were about 50 percent dependent upon foreign energy, and today we're still getting 60 percent. Now, that being said, of course, the economy's grown dramatically, and obviously on a relative scale or level, we still have an awful long ways to go to get away from energy dependence. I know that this is just one component part of that. And there are lots of other things we need to be doing, including shifting away from some of our traditional historic energy sources toward renewables and alternative energy sources.

And that's what I want an answer for—I guess, for the car manufacturers who are here. There have been some who have raised the concern about the 1.2 mile per gallon CAFE credit that automakers receive for selling flex-fuel vehicles, arguing that the credit doesn't help decrease oil consumption, because too many flex-fuel vehicles are purchased in areas with little or no E85 availability, and, therefore, never run on anything but unleaded gasoline. Now, that's a problem with our infrastructure. And I've—as many of you know, have introduced legislation, along with Senator Salazar, to try to help solve that infrastructure problem. I guess the basic question is, do you agree that our E85 infrastructure and other alternative fuel infrastructures need to be strengthened? And, second, does the bill I've introduced with Senator Salazar take us in the right direction?

Ms. LOWERY. Thank you, Senator.

I do think it's very important that we focus on the infrastructure. So, with respect to the E85 flex-fuel credit for vehicles, my view, and the company's view, is that the incentive worked. We have more than 6 million vehicles on the road today as an industry that can run on flex fuels. And so, what needs to happen is, we need to have incentives for the infrastructure. We think it's very important that we do have this integrated approach. So, while we've had a lot of discussion today about fuel economy, that is a piece of it, it certainly is not the whole answer, and we need to make sure that we talk about the fuel piece, the consumer piece, and definitely, on flex fuels, the infrastructure piece. GM alone has more than 2 million vehicles on the road that run on flex fuels. We also have worked in 13 different states, and will have more coming, where you put together partnerships to help that infrastructure, to take advantage of some of the incentives that were passed in the energy bill and other incentives that could be in the marketplace. But we need to get the fuels to the customers.

Senator THUNE. Mr. Stricker?

Mr. STRICKER. Yes, thank you, Senator.

Toyota does not yet, in the U.S., make a flexible-fueled vehicle. We've announced plans for our Toyota Tundra V8 model to be flexible-fuel in late 2008 as a 2009 model year vehicle. Clearly, as Ms. Lowery said, the flexible-fuel vehicle credit appears to have been very effective in getting FFVs into the market. And clearly, as she said, as well, the challenge is really to get the fuels out there into the market. That's one of the reasons that we haven't been in the market up to this point, is that there really hasn't been a market, so to speak.

But, in addition to expanding the infrastructure, which, of course, would be necessary to expand the volume of fuel, the—we think one of the other real challenges is to increase the volume of alternative fuels that are available in the marketplace. And to do that, we probably need to move beyond current production methods for some of these alternative fuels. There is really—we're not agricultural folks, but our understanding, based on a lot of studies and a lot of discussion with folks, is that, with the current production methods, maybe 15 billion gallons of ethanol a year might be a feasible number—some are higher estimates, some are a little bit lower—that we can get from current sources of production. And with a large volume of ethanol going toward E10 blending, basically gasohol, not E85, there's but so much additional ethanol available that can go into fueling an E85 fleet. So, really we think that one of the key challenges to making the E85 equation work long term is to move toward some sort of cellulosic process, or even other kinds of biofuels, that can extend and expand the volume of these fuels that would be available. And, of course, they're going to have to be cost-competitive with gasoline on a per-mile basis. That's a big challenge. And I think a lot of research still needs to be done in that area.

Senator THUNE. Well, and that's happening. The transition from corn-based to cellulosic is from other biomass materials already taking place. And so, I think and I hope that your company will begin to manufacture flex-fuel vehicles, and that, when you do, you

will get an interest in agriculture, and that I'm sure you all will want to endorse the Thune-Salazar refueling station bill when that happens, as well.

But I do think these are all things that have to be married up. You've got the production side of this, and, in my state, you know, we've got 11 ethanol plants, five under construction. We'll, by the year 2008, be producing about a billion gallons of ethanol in South Dakota alone, and we stand, I think, positioned well for the next wave of that, which is making it out of switchgrass or bluestem or cornstover. But, that being said, I don't think we can do enough. And I was glad to see the President in his State of the Union address, set that goal out there at 35 billion gallons by the year 2017. That's very ambitious. But I think that we can get there although it is going to take a concerted effort. And I know that we're going to need to have the infrastructure, we're going to need to have the market, obviously, and we're going to have to have the production. And all these things have to come together. But it's the right direction, in my view, to go. And so, I encourage your continued support and willingness to work with us as we try to achieve that goal.

Mr. Chairman, thank you very much.

Senator PRYOR. Thank you.

Senator THUNE. Thank the witnesses.

Senator PRYOR. Thank you for your joining us.

I really just have a couple more questions, really for the auto manufacturers. And I know we've gone much longer than we thought we would, but it's been a good hearing, and very interesting and informative.

I have a couple of questions, about batteries, for the auto manufacturers. There was a brief mention—I believe it was by the NHTSA Administrator today—that maybe the batteries catch fire. You know, I've heard that here and there. I know most of these batteries, if not all of them, are not manufactured in the U.S., they're manufactured overseas. Is there a problem with current battery technology? I think Senator Carper, if I recall, mentioned allocating more dollars in the budget to do battery research. What is the challenge with battery technology? Toyota, can——

Mr. STRICKER. OK, certainly, thank you.

Let me just make one point clear at the outset, is that there is not a concern with fire in current hybrid vehicles that are on the road, in the battery technology. The batteries that are currently out there are nickel-metal-hydride batteries. The—I think the reference to fires was in regards to some of the consumer electronics issues that have cropped recently with lithium-ion batteries. And, granted, the future wave for battery technology in vehicles may very well be lithium-ion technology, as well. There are different chemistries that you can use to deal with thermal management issues, which is how we refer to them.

But the challenge with plug-in hybrid vehicles, electric vehicles, is, indeed, the battery. That's the A-number-1 obstacle right now in getting that kind of vehicle into market. The current—on the current Prius, with a nickel-metal-hydride battery, we have to keep the state of charge—you know, we can't have a completely discharged battery or a completely full battery—we have to maintain the state of charge of that battery in a very narrow range of per-

haps 70 to 90 percent state of charge. You can't charge the battery all the way up, and you can't discharge it all the way down, like we all do with our BlackBerrys and our cell phones. That damages the battery very quickly. And, you know, you have big warranty problems then. So, basically, we have to manage the state of charge of the battery in a very narrow window. So, you can't use that kind of battery technology, let's say, on a plug-in type application, where you want a much longer range of operation, let's say, without the internal combustion engine charging the battery. So, we have to move to a different kind of battery technology.

When you have lithium-ion batteries, you can have a much broader range of state of charge of the battery, and you also are able to determine the state of charge of the battery much more easily with a—the current nickel-metal-hydride batteries, one of the other reasons we have to keep the state of charge narrow is that, just because of the battery technology, it's difficult to tell what the state of charge is. So, we have to narrow it even further. With a lithium-ion battery, it's much easier to tell what the charge of the battery is, and you can charge and discharge it further.

But to move into plug-in applications, much more work is going to need to be done. First, we have to get to lithium-ion. Then we have to be able to increase the capacity, the energy output, reduce the cost and the size of the battery. You know, it has to be able to fit in the back of the vehicle.

Do you want to add something?

Ms. LOWERY. No, I agree with those challenges. I also agree that every product we put on the road would not have any issue with respect to thermal-management issues, as raised from a battery standpoint.

We certainly are working hard. We have a couple of codevelopment agreements with some battery companies to get to the next level of lithium-ion batteries, because we do believe that electrification of the vehicle, the plug-in hybrids, eventually fuel cells, all that's very important. The reference was the fact that there isn't any battery manufacturing technology here in the U.S., and also, we could have more funding from the U.S. Government with respect to the research and development for that technology for automotive application. So, lithium-ion batteries are in wide applications, but not for automotive, at this point in time.

Senator PRYOR. Right. Ms. Lowery, let me ask, would one advantage of lithium-ion maybe be that it's lighter? Does that help?

Ms. LOWERY. With respect to—well, go ahead.

Mr. STRICKER. It helps. You—what you can do is, you can get more—you can get more charge——

Senator PRYOR. Work or——

Mr. STRICKER.—out of the batteries, so——

Senator PRYOR. Yes, pound or whatever.

Mr. STRICKER.—to get the equivalent amount of work, you don't need a battery that's the same——

Senator PRYOR. Right.

Mr. STRICKER.—size. You can have a smaller battery.

Senator PRYOR. Lighter. And is there an environmental hazard with either the manufacturer or the disposal of these batteries?

Mr. STRICKER. No. The—there are—you know, every manufacturing process has its own challenges. One of the issues with batteries, of course, is we need a system for recycling the batteries. We've set up such a system for the nickel-metal-hydride batteries in the current Toyota and Lexus hybrid products, and generally that's a recycling program that's put in place for when there are accidents and the vehicle is totaled or whatever, and you have this extra battery sitting there. We have not run into situations where people's batteries have just stopped working, you know, from a durability perspective, so we're not recycling batteries, for that reason, but mainly from when they're in an accident.

Ms. LOWERY. I would say that all those issues are manageable, so, just like we would—with the lead acid batteries, came up with a system for recycling, then—and nickel-metal-hydride—I'm sure, with lithium-ion, as that—technologies develop for automotive application, we'll deal with those issues, as well.

Senator PRYOR. That's why I asked, because, you know, sometimes when you have this great solution, there are these other sort of hidden challenges that come with it. In fact, someone was telling me, last night—I didn't know this—about the little fluorescent bulbs you can buy now. Apparently they have just a trace amount of mercury in them, and, you know, the theory would be when millions and millions and millions of those come out on the market, that little trace amount of mercury could be a real problem.

Well—I'm sorry, did you want to——

Mr. FRIEDMAN. I'm sorry, Senator Pryor. Thank you very much.

I just wanted to note I'm actually—I'm very excited about these plug-in hybrids. I'm very excited about the potential of cleaner biofuels. I actually helped build a plug-in hybrid about 10 years ago, with a team of students. It was very exciting. These technologies have huge promise, and they're basically the equivalent of hitting home runs. The problem is, sometimes even your best home-run hitter strikes out. And we need to make sure that, while we're focusing on these long-run high-risk technologies, that we absolutely are going to need in the next 20–30 years, that we also do the basics, that we get the singles, we get the doubles, we increase fuel economy with the simple technologies that automakers already have. This isn't about a focus, as even Toyota said, about silver bullets. We need to take a comprehensive approach, and that means the simple steps, with more efficient engines, better transmissions, high-strength materials—that's like singles or doubles; and yes, ultimately we want some of those home runs. We're going to need some of those home runs if we're going to kick our oil addiction and tackle climate change.

Senator PRYOR. Good.

Well, listen, I want to thank the panel. Y'all have been very, very patient. And I will put you on notice that Senators can submit questions over the next couple of weeks, so it's possible you'll get some written questions. And the staff will work with you on that. And, like I said, if y'all have your statements to put in the record, Senators will put their statements in the record. And I just want to thank you for doing this and being here today.

And the hearing is adjourned.

[Whereupon, at 1:50 p.m., the hearing was adjourned.]

A P P E N D I X

SPEECH GIVEN BY JIM PRESS, PRESIDENT, TOYOTA MOTOR NORTH AMERICA ON JULY 18, 2006

National Press Club Luncheon, Washington, D.C.

Thanks Jonathan and good afternoon everyone.

With a name like mine . . . being here . . . at the National PRESS Club . . . in the National PRESS building . . . with members of the National PRESS . . . is not only a dream come true . . . it feels like a big family reunion! . . . so thank you for making me feel so welcome.

According to my watch, in exactly 468 days . . . 11 hours . . . and 30 minutes . . . Toyota will celebrate its 50th anniversary in America.

And because we've made many great strides here, a lot of people think we've always been a highly successful company.

But like America itself . . . Toyota comes from humble beginnings and had its share of hard times.

It may surprise you to know that Toyota actually started out as a textile loom company. In 1924 . . . after watching his mother's frustration with broken threads while weaving fabric . . . our founder, Sakichi Toyoda, created a revolutionary automatic loom that shut down if it detected a broken thread . . . saving time and materials.

Later, Sakichi sold the patent for the loom and gave the proceeds to his son to start an automobile company.

The year was 1937 . . . and the company became Toyota Motor Corporation.

Sakichi passed on more than the legacy of his company, however. He also passed on key principles that still form the central values of Toyota to this day.

One is a fundamental belief in balancing business needs with the needs of society. In fact, our vision has always been "to enrich society through building cars."

Two other key values are respect for people and "kaizen" . . . the drive for continuous improvement.

Over the years, these values have served us well . . . but like all companies . . . we've had our ups and downs.

Toyota may be profitable today, but we almost went bankrupt in the early 1950s . . . and our first product in America was a real dud.

It's true.

During a recession in early 1950, Toyota experienced severe financial problems and was forced to lay off some workers . . . the lowest point our business ever experienced.

Shortly thereafter, however, the company began its comeback by supplying powerful, all-terrain utility vehicles to the U.S. Army for use in Korea. That highly popular vehicle went on to become the Toyota Land Cruiser . . . still one of the most admired motor vehicles on earth.

Toyota learned from these difficult times . . . and has tried to stay responsive ever since. It also realized it needed to be a business of the world to survive long-term.

So, Toyota came to America in 1957, opening a showroom/office in Hollywood, California, the same year Elvis sang "All Shook Up" and the Russians launched Sputnik.

With high hopes and a post-war boom creating the need for a second family car, Toyota launched a sturdy sedan with a strange name . . . the Toyopet Crown. Don't ask me why . . . I was still in grade school at the time.

Although the Toyopet had some remarkable features for its time, it was badly underpowered and drove like a tank. That's because it was originally designed for the roads of Japan where it was used extensively as a taxi . . . not the wide-open . . . high-speed . . . highways of America.

After a year . . . the company had sold just 287 Toyopets and one Land Cruiser.

Sales peaked a year later at just over 1,000 and then dropped off until 1961 . . . when we withdrew the Toyopet from the U.S. market. We survived by selling our Land Cruiser . . . the only model we've sold continuously in America for nearly 50 years.

This failure taught us a key lesson . . . you have to design and build products that people want and will fulfill their needs . . . not factory needs.

So, we spent the next 5 years studying the needs of American consumers and returned in 1965 with an all-new Corona, a compact sedan that was powerful, economical and dependable. It became an overnight sensation and we've never looked back. Today, Toyota has the Number 1-selling passenger car in America . . . Camry . . . the Number 1-selling luxury line in America . . . Lexus . . . and the Number 1 gas/electric hybrid . . . the Prius.

Our Corolla compact sedan . . . now in its 9th generation . . . is the world's best-selling passenger car of all time . . . and is built in the U.S., Canada and a dozen other countries.

We've also become a big manufacturer in America with 9 major vehicle and parts plants across the nation, and the 10th set to open this fall in San Antonio. We're also adding a new Camry production line and 1,000 new jobs to a Subaru plant in Indiana.

Having key manufacturing plants in 8 states . . . and one each in Canada and Mexico . . . means nearly 3 out of 5 vehicles we sell here are made . . . here . . . in North America.

In fact, we directly employ 32,000 Americans . . . more than General Mills . . . Texas Instruments . . . or Cisco Systems . . . and our dealers and suppliers create another 177,000 jobs.

When you add other spin-off employment resulting from our presence, the Center for Automotive Research estimates Toyota is responsible for a total of nearly 400,000 American jobs . . . roughly equivalent to a city the size of Miami.

Toyota also purchases $28 billion in parts, materials and services annually from 400 suppliers in 35 states, led by Michigan.

And, we're proud of the fact that we're ranked No. 1 in the industry for supplier and dealer relationships . . . a tribute to our belief that . . . if we help them be more successful . . . we will be more successful.

In addition, we're building a new North American research and development complex in Ann Arbor, Michigan on land six times the size of Disneyland. It will house 1,100 engineers and designers and serve as the hub for all our efforts to design cars and trucks by Americans . . . for Americans.

So we've come a long way in 50 years . . . and we plan to keep moving forward.

Toyota's philosophy is to build cars where we sell them . . . and our global chairman . . . Fujio Cho . . . is asking those of us in North America to take on even greater responsibility for designing, building, selling and servicing vehicles in this, the world's Number 1 automotive market.

At the same time, we're also trying to live up to our vision of contributing to American society through our business practices and community work. And, we're equally proud of those results.

During our first half century here, Toyota has made significant contributions to American business and culture, including: new fuel economy, safety and hybrid technologies . . . lean manufacturing processes . . . kaizen improvements . . . trustworthy relationships with dealers and suppliers . . . close cooperation with government agencies . . . and community education programs like family literacy centers.

Underlying all this success, however, are the fundamental principles that Sakichi Toyoda instilled in our organization three-quarters of century ago.

I come to Washington today with THAT spirit of optimism . . . determination . . . and cooperation.

I truly believe Toyota CAN BE part of the solution to the great issues of our times . . . issues like energy independence . . . air pollution . . . health care . . . safety . . . and global warming.

And that's what I want to talk about today . . . the state of the auto industry . . . the contributions it makes to America . . . and how it can play a leading role in helping solve some key issues of society.

Despite some of today's headlines, the automotive industry is alive, well and expanding.

Globally, sales are rising because people in major developing countries like China, India, Russia and Brazil are gaining a higher standard of living and discovering the freedom that cars provide. In some ways, they are like America was in the Roaring 20s.

Here in the United States, business is steady . . . and as America's population approaches 300 million . . . the future is full of promise.

The U.S. auto industry is coming off its third best year in history, and sales so far this year are nearly on the same pace.

General Motors and Ford are taking bold steps to recover, and there are signs good things are starting to happen. Both were profitable in Asia, Europe and Latin America in the first quarter and their sales have doubled so far this year in China . . . rapidly becoming the world's second largest auto market.

I firmly believe GM and Ford will both come back stronger than ever and be very successful. And that's important because they are vital to our industry and our national economy.

What we're seeing is not the demise of the U.S. auto industry . . . but rather its globalization. Companies are re-structuring and re-deploying resources to meet the needs of markets all around the world.

In fact . . . last year . . . for the first time in its long history, General Motors sold more vehicles OUTSIDE the United States than it did in America. And we'll see more of that in the future . . . it's the way of life in the 21st Century.

That's one of the reasons behind the proposed GM-Nissan-Renault alliance.

All major companies are looking for creative ways to meet the challenges of increasing competitive pressures and the escalating costs of developing new technologies.

Toyota has had a good working alliance with General Motors for more than two decades, sharing operations at the only West Coast auto plant and doing some joint research on advanced technology.

I can't speculate on what will happen if GM and Nissan come together, but it does illustrate just how tough and expensive it is to compete on a global basis as well as the constant need for efficiency in operations.

It also points to the fact that international auto companies are helping change the face and direction of the auto industry.

Here in the United States, international automakers like Toyota, Honda and BMW are building new plants and adding jobs to the economy almost as fast as GM and Ford are shedding them to meet the new realities of the global market.

In fact, international automakers have contributed almost ALL OF THE GROWTH in the U.S. motor vehicle industry for the past 10 years, according to a 2005 study by the Michigan-based Center for Automotive Research.

The end result is still the same . . . a healthy and resilient auto industry . . . it just looks a bit different than it did 20 years ago.

Challenges remain, of course . . . volatile gas prices . . . rising interest rates . . . and increasing raw material costs . . . but overall . . . the industry is successfully responding to the market and is still growing.

At Toyota, we expect U.S. industry sales of about 17 million this year, up just a hair over 2005. That would make 2006 one of the top three or four in automotive history.

For the long term, annual industry sales of 20 million vehicles . . . 3 million higher than now . . . are within reach during the next decade . . . and the whole industry will benefit from the rising tide.

So . . . where's the boom coming from?

First, people are living longer and driving longer. CNW Research found that 7 vehicles—more than half of the 13 cars the average American buys over a lifetime—are purchased AFTER the head of the household turns 50.

Sixty percent of the U.S. population will be 50 or older in the next 5 years, and Baby Boomers won't reach the peak of their spending power until 2009, so there are enormous opportunities for growth ahead.

Generation X is maturing and moving in to their prime income earning years. As a result, they're buying more than a fifth of all new cars and starting to purchase cars for their children.

And . . . the 63 million people of Generation Y . . . the second-largest generation of all time . . . have come of age and are starting to flex their spending power. By 2010, they'll be buying one of every four new cars.

All these trends converging at once will create a unique opportunity because . . . during the next 19 years . . . the U.S. population will increase by 70 million . . . roughly the populations of California, New York and New Jersey COMBINED!

Market drivers are on our side too. Our gross domestic product is growing . . . consumer spending is positive . . . jobs are increasing . . . and productivity is rising.

This period has all the makings of a new "Golden Era" for the auto industry . . . a time of prosperity for auto companies to develop new designs . . . technology . . .

and safety measures . . . that will excite people, save lives and help cars live more in harmony with the earth.

Now that we know the future is bright, I think it's important to understand why having a thriving auto industry is SO vital to America.

If you study history, you know that just about every leading developed country in the world grew under the wings of mighty industries . . . with the auto industry leading the way.

The United States . . . Great Britain . . . Germany . . . Italy . . . and Japan . . . all rose to prominence by fostering a strong automotive industry. That's why you see countries like China, Korea, Russia and India now plowing money into their fledgling auto industries.

They know the auto industry is a powerful economic engine that not only provides mobility for people and commerce, but also creates long-term prosperity.

And while the auto industry has taken some hits in the U.S., it's still a massive contributor to America's economy.

For instance:

—It's the largest manufacturing industry in the Nation . . . responsible for one out of every 10 American jobs

—It generates nearly 4 percent of the Nation's GDP

—The U.S. auto industry spends more than $15 billion on Research & Development . . . more than any other manufacturing industry

—We buy more metals, plastics, rubber and textiles than any other business . . . including more computer chips than even the computer industry!

—And my personal favorite . . . all the top 12 American Fortune 500 . . . AND Global Fortune 500 companies . . . are either automakers or support the auto industry in some significant way

But the auto industry is more than just big . . . it also makes a positive difference in people's lives . . . everyday.

Cars arouse our aspirations . . . tug at our emotions . . . and stimulate our desires.

They free us . . . please us . . . give us privacy . . . and provide nearly unlimited possibilities.

That's why we love them so much and why they're still one of the most popular products on earth.

Today, I believe the time is right to enlist the immense talent and might of our industry to help solve some of the key issues resulting from a car-loving world . . . namely . . . oil dependency . . . air pollution . . . traffic accidents . . . and global warming.

And the good news is . . . the auto industry is starting to make some positive progress in meeting those challenges. At Toyota, alone, we're spending an average of $22.7 million PER DAY on research and development.

Through the industry's use of lighter materials, advanced engine and transmission technology along with cleaner fuels, conventionally powered cars are cleaner today than they've ever been.

In fact, today's vehicles are 99 percent cleaner in smog-forming emissions than their counterparts from the 1970s. And today's light trucks produce fewer smog-forming emissions than cars did in 1993.

In California . . . more than 20 car models offered by 12 automakers . . . including our Camry and Prius . . . are rated Partial Zero Emission Vehicles. They're not only the cleanest gasoline engines ever produced, they're built to maintain near zero emissions throughout their entire life on the road.

But that's not enough . . . so we're inventing a new wave of powertrain technologies. Right now . . . this day . . . more than 40 hybrid or alternative fuel vehicles are for sale in the United States and 8 million are on the road. Plus, another 35 models will be introduced in the next 12 months.

I'm extremely proud that Toyota introduced the world's first mass-produced gas/electric hybrid car . . . the Prius . . . nearly 10 years ago.

Today's Prius has the room of a mid-size sedan, delivers about twice the mileage of conventional cars and produces 70 percent less smog-forming emissions than the average new car today.

It's been so popular that we can't keep it in stock. There's still a two-month wait to get one . . . nearly 3 years after we started selling the current model.

And Prius was just the beginning.

Currently, we sell five Toyota or Lexus hybrids, including a Camry hybrid that will be built at our Kentucky plant. And . . . early next year . . . we'll offer a sixth one . . . the world's first V–8 hybrid in our flagship Lexus LS sedan.

In total, we've sold more than 351,000 hybrids in the United States.

It's a great business for us. We're making money, saving gas and helping the environment . . . all at once. In fact, we've sold more U.S. hybrids so far this year than Cadillac . . . Buick . . . or Mercedes Benz . . . has sold cars.

And more will follow because they are making a difference.

We estimate that all the hybrids we have sold in America have saved more than 155 million gallons of gas . . . enough to fill FIVE tanker ships . . . not to mention eliminating more than 3 BILLION pounds of greenhouse gases.

But the real beauty of all hybrids is that they are available right NOW. Americans can pick one up at a dealer today and don't have to make any major sacrifices to drive them.

Even better, hybrid technology can be teamed with every other promising technology to make it even more efficient and fuel-stingy . . . whether its high-tech gas engines . . . clean diesels . . . bio-diesel . . . ethanol . . . plug-in hybrids . . . or hydrogen fuel cells.

Make no mistake about it, hybrids ARE the technology of the future and WILL PLAY a starring role in the automotive industry during the 21st century . . . no matter what fuel we use or cars we drive.

That's why Toyota is NOT backing off its strong commitment to hybrids. We know they are absolutely essential to the future success of this industry.

So we're working hard to bring down hybrid premiums significantly by reducing the size of components by up to 75 percent and costs by half.

Our target is to offer hybrid options throughout our entire lineup of cars and trucks.

And we're not alone in our confidence about hybrids.

Honda has three and plans to add a fourth . . . Ford has two and plans to add three more . . . and nearly every other automaker . . . from Hyundai to Porsche . . . plans to introduce hybrids in the very near future.

Why?

Because . . . increasingly . . . Americans realize hybrids are a simple way to make an important difference in curtailing foreign-oil dependence . . . air pollution . . . and greenhouse gases . . . all at once . . . plus . . . they're a heck of a lot of fun to drive.

Being able to thumb your nose at gas stations on a regular basis is icing on the cake. As good as hybrids are . . . however . . . we're not stopping there.

Our global president . . . Katsuaki Watanabe . . . recently challenged all of us to redouble our efforts to contribute to society in our work.

He told of us of his dream to create cars of the future that can travel across the United States on one tank of fuel . . . clean the air while they are being driven . . . and prevent accidents and injuries.

It's a dream at this point, but that's where we are headed . . . and Mr. Watanabe has committed to vigorously promoting the research and development needed to get us there.

In traffic safety . . . the auto industry is already making tremendous strides by using computers . . . sensors and other advances to ensure people are better protected and cars are smarter in avoiding and handling crashes.

Today, global automakers are offering more safety features than ever . . . including energy absorbing crumple zones . . . headlights that swivel to better light turns . . . lane departure warnings . . . cruise control that can stop a car in city traffic . . . and air bags for nearly every body part . . . including my favorite . . . dual-stage knee bags!

And it's working. Traffic fatalities on U.S. roads today are the lowest since the government began tracking them in 1966 . . . 40 years ago.

So . . . overall . . . there are many good things happening in our industry today, but a lot more needs to be done.

And when we talk about being part of the solution, those of us in the auto industry realize it's a challenging time because we operate in a market where half of all the vehicles bought by Americans are trucks, vans or SUVs. They love the utility.

We can't disregard the needs of our earth . . . nor can we afford to ignore the needs of our customers.

So we have to strike a balance in our lineups between big trucks and SUVs to gas/electric hybrids . . . clean diesels . . . flex-fuel vehicles . . . plug-in hybrids . . . and eventually . . . hydrogen fuel cells.

And we'll have to help develop ways to produce and distribute a wide array of alternative fuels needed to supplement gasoline.

To make this happen, it will take monumental cooperation among all key players . . . automakers . . . oil companies . . . suppliers . . . labor . . . government . . . educators . . . NGO's . . . communities . . . and other industries.

I know all of these thorny issues seem daunting at first glance, but the time is right and the stakes are too high for us to ignore them.

Our customers . . . readers . . . viewers . . . and constituents . . . want us . . . and expect us . . . to come together for the greater good of society. We must heed that call.

And I think it starts with the auto industry being more proactive. It's time for us to stop being the "against" industry . . . and to come out strong "for" something important . . . like a better earth and a better quality of life.

Automakers need to work with government to set reasonable goals to improve fuel economy standards and reduce greenhouse gases in a way that doesn't severely damage the health of one of America's most vital industries. Reasonable people may disagree, but they can also compromise . . . find common ground . . . and move forward.

That's what I will be working on in the future . . . with the full backing of a company founded by an inventor who wanted to help people and contribute to a better world.

Today, I'm happy to announce two key American developments from Toyota that have been highly anticipated. . . .

First . . . Toyota is strongly considering introducing a flex-fuel vehicle program in the United States in the near term. We're already developing vehicles that can operate in ethanol-rich Brazil and we're optimistic that we can offer similar vehicles to American consumers.

And . . . second . . . we are pursuing a "plug-in" hybrid vehicle that can travel greater distances without using its gas engine . . . conserving more oil AND slicing smog and greenhouse gases to nearly imperceptible levels.

Both projects will help to solve some of the key issues facing society . . . as well as encourage other automakers to keep moving forward.

Well, I hope . . . that in the past few minutes . . . I've helped re-kindle some of that unbridled spirit of optimism . . . determination . . . and cooperation I spoke of earlier.

At Toyota, we pledge to do our part . . . to lend a hand . . . and to work hard with the rest of the world to help create real solutions to the problems we all face.

That's how we spent our first half-century here . . . and that's how we'll spend our next 50 years in America.

Because . . . in the end . . . that relentless pioneer fortitude to improve and make life better . . . not only drives America . . . it also drives Toyota . . . and if we let it . . . will drive us all to new heights of prosperity in the 21st Century.

○