



Consumer Federation of America

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**A KEY STEP TO ENDING AMERICA'S OIL ADDICTION:
POLICYMAKERS, CONSUMERS AND AUTOMAKERS ARE SHIFTING
NEW VEHICLES TO HIGHER FUEL ECONOMY**

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EXECUTIVE SUMMARY

Pain at the Pump & a Major Shift in the American Automobile Market

The American automobile market is in the midst of a major evolution that is good for consumers and the nation because it will lessen our oil dependence while saving consumers money. The fuel economy of new vehicles is increasing faster than at any time since the oil price shocks of the 1970s.

The consumer damage caused by wildly fluctuating gas prices in recent years has been unique and unprecedented. Household gasoline expenditures set a record last year, reaching an average of over \$2,850 per year.

Pain at the pump, along with the country's oil import dependence, has produced a remarkable consensus for higher fuel economy standards, spanning the political spectrum and including the automobile manufacturers themselves. This consensus has sparked policy action and the major shift we are now observing in the automobile market.

Building on progress made via California's Clean Cars Program and the Bush administration's Energy Independence and Security Act of 2007, the Obama administration is proposing an increase in U.S. fuel economy standards to 54.5 miles per gallon (mpg) by the year 2025. These standards are expected to be adopted later this summer.

Automakers, auto workers, consumers, autoworkers, health experts, national security leaders, and environmental groups all support the proposed 54.5 mpg standard. The Bush and Obama Administrations and the state of California have set the stage for what will likely be one of the most important energy policies in a quarter century. The political consensus around this important consumer protection measure comes as a result of strong consumer support, which drives bipartisan political support, and automaker ability to meet these goals.

Consumer Attitudes Support Shift to Higher Standards

Consumers clearly support requiring more miles per gallon. The Consumer Federation of America conducted a poll of 1000 adults in May 2012 with a margin of error of three percentage points. Respondents were asked a number of questions pertaining to fuel economy.

Top findings of our polling include:

- **The expectations of consumers when it comes to fuel economy are consistent with the standards that have been adopted.** Consumers who intended to buy a new vehicle in five or more years expected to get 34.5 mpg. Interestingly, the standard for 2016 has been set at 35 mpg.
- **Having a more fuel-efficient vehicle reinforces the preference for higher fuel economy. Therefore, as more fuel-efficient vehicles penetrate the market, we would expect the preference for higher fuel economy to strengthen.**
- **Respondents overwhelmingly supported the view that the U.S. should reduce oil consumption.** 88 percent said it is important, including 52 percent who said it is "very important."

- **Belief that the U.S. should cut back on oil consumption is associated with the desire for higher fuel economy.** The more important a given respondent thinks cutting U.S. oil consumption is, the higher the gas mileage he or she wants to get.
- **Consumers support the 55 mpg standard.** Respondents were asked for reactions to the proposed 2025 standard of 55 mile per gallon for motor vehicles. Three quarters (74 percent) said it was a good idea.
- **Even if it meant a higher sticker price, consumer said they still support the standards.** When presented with an economic evaluation of the costs and benefits of the 2025 standard of 55 mpg, 66 percent think it is a good idea. CFA’s evaluation shows a three-year payback on any higher initial vehicle costs associated with higher gas mileage. It also shows positive cash flow starting immediately for buyers taking out an average auto loan: the savings at the pump that come from higher gas mileage exceed any increase in monthly loan payment.

New Analysis: Consumer Benefits And Costs Of Fuel Economy Technology

Using Bureau of Labor Statistics data on the constituent parts of vehicle price increases, CFA has conducted a new analysis to determine how much fuel economy technology has historically cost—and benefitted-- consumers. For a variety of models, we calculated the portion of the price increase that was due to increased fuel economy, and compared it to the fuel savings consumers have enjoyed as a result of these technological advances. See Table ES-1 below.

This analysis shows that gasoline savings have far outweighed the cost of fuel efficiency technology. In fact, fuel economy savings were found to be up to eight times higher than fuel economy technology costs.

TABLE ES-1: PAYING MORE FOR FUEL EFFICIENCY PAYS OFF

Vehicle	MSRP		Fuel Costs
Kia Rio 2002	\$9,970	2002	\$2,100
2012	\$14,265	2012	\$1,544
Price Increase	\$4,295	Annual Savings on Fuel	\$556
Investment in Fuel Efficiency	\$1,074	Fuel Savings More Efficient Vehicle	\$3,335
Ford F-150 Pickup 2002	\$18,540	2002	\$3,281
2012	\$22,340	2012	\$2,386
Price Increase	\$3,800	Annual Savings on Fuel	\$895

Investment in Fuel Efficiency	\$950	Fuel Savings More Efficient Vehicle	\$5,369
Chevrolet Malibu 2002	\$19,965	2002	\$2,500
2012	\$21,358	2012	\$2,019
Price Increase	\$1,393	Annual Savings on Fuel	\$481
Investment in Fuel Efficiency	\$348	Fuel Savings More Efficient Vehicle	\$2,885

Table ES-2 presents another approach to this consumer pocketbook analysis. It shows examples of similar current model pairs. In each pair, one of the models has a price premium for increased fuel efficiency that is more than offset by fuel cost savings within the first two years of ownership.

TABLE ES-2: THE COST OF INCREASED FUEL EFFICIENCY IS QUICKLY OFFSET BY FUEL SAVINGS

Model	Fuel Economy	Price	Difference in Price	Annual Fuel Cost Savings	Years to Break Even
Honda Civic	33.5	\$15,805	\$110	\$243	0.45
Mitsubishi Lancer	29	\$15,695			
Scion iQ	36	\$15,265	\$55	\$235	0.23
Mazda 2	31	\$15,210			
Chevrolet Cruze	32	\$16,720	\$225	\$234	0.96
Volkswagen Jetta	28	\$16,495			
Nissan Juke	29.5	\$19,770	\$475	\$454	1.05
Jeep Compass	23.5	\$19,295			

Source: The Car Book 2012

Based on this new analysis, we can conclude that choosing fuel efficiency does not mean changing vehicle types.

Automakers and the New 54.5 mpg Standard

Automakers agree that the proposed standard is achievable, and they are already making progress toward it. Some current vehicles already meet the 2025 standard.

From 1985 until 2007, there were no required improvements in fuel efficiency. In 2008¹, when the standards for 2011-2016 were announced, automakers quickly began to offer more fuel-efficient vehicles. Consumers responded by buying those vehicles, and the actual fleet average fuel economy began exceeding the requirement—the fleet was more fuel-efficient than the official standard required. CFA analyzed the fuel economy of 2012 models compared to the performance of previous years. The result: the number of vehicles getting over 30 mpg (a 9 or 10 EPA rating) has more than quadrupled in the last 5 years, moving from 12 models to 52.

In Conclusion

This paper shows that the primary force that has changed the direction of U.S. fuel economy policy and the glue that holds this consensus together is the favorable economics of increasing fuel economy. Consumers want relief from the gasoline price spiral. Automakers want to produce quality products that consumers will buy, and fuel economy has become a primary determinant of overall vehicle quality. Automakers and auto workers know that the future will be brighter if the U.S. auto industry is technologically progressive and globally competitive and fuel economy is a key factor in global auto sales. Consumers, labor and automakers recognize that a flexible, forward looking, long-term standard plays an important role in smoothing the path to higher fuel economy by reducing the risk associated with developing and marketing technologies that increase fuel economy.

Current progress makes it clear that meeting the proposed 54.5 mpg by 2025 standard is well within the reach of automakers. Fully implementing the standard will pave the way to consumer savings and financial protections, reduced dependence on foreign oil, and both the economic and health benefits of a cleaner environment.

The Consumer Federation of America considers the 54.5 mpg standard to be one of the most important consumer protection measures to be adopted on the federal level in decades.

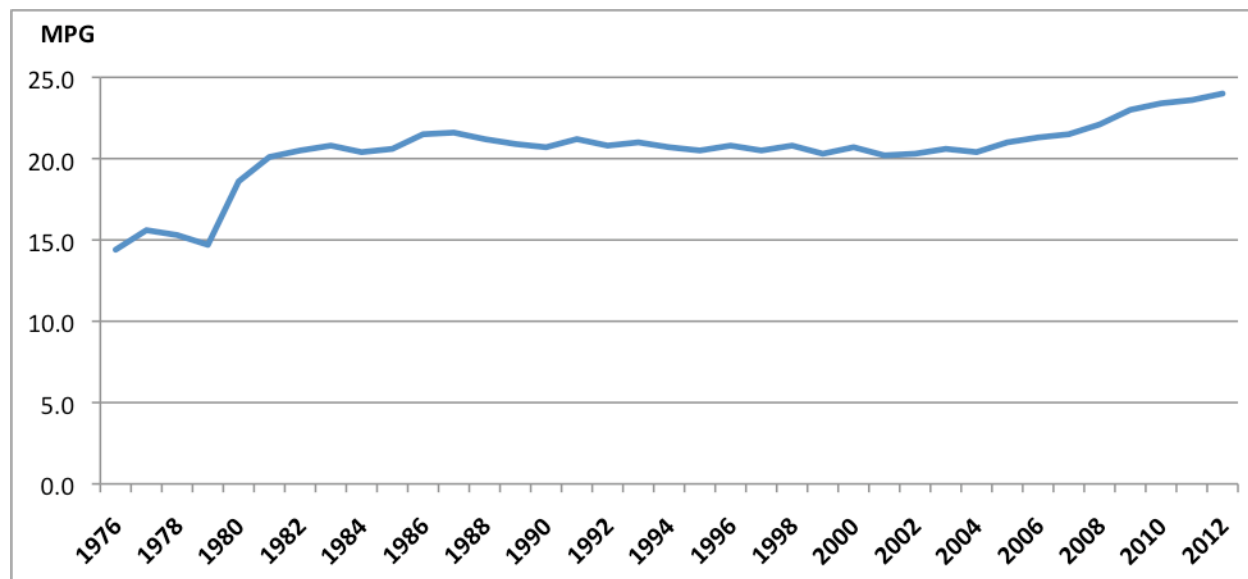
¹ The final rule governing "Average Fuel Economy Standards Passenger Cars and Light Trucks Model Years 2011-2016" was announced May 2008

I. INTRODUCTION

PURPOSE

The automobile market is like a massive aircraft carrier. It carries a huge amount of momentum and requires an immense amount of effort to change direction, but once it is headed in a specific direction, it is a potent force. Over the past five years, the U.S. auto market has made a major change in direction that is good for consumers and the nation. The fuel economy of new vehicles is increasing faster than at any time since the oil price shocks of the 1970s, as shown in Figure I-1.

FIGURE I-1: SALES WEIGHTED AVERAGE FUEL ECONOMY OF NEW LIGHT DUTY VEHICLES



Sources: U.S. Environmental Protection Agency, *Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2011, 2012*; University of Michigan Transportation Research Institute, Gas mileage, CAFE performance up 20 percent since late 2007, April, 12, 2012.

Just like an aircraft carrier, it has taken powerful forces to shift the direction of the auto market. We believe three factors have converged to accomplish the task: 1) gasoline prices went on a wild spiral, increasing dramatically and becoming much more volatile, which got the attention of consumers and policy makers; 2) policy makers acted to require major improvement in fuel economy by reforming and restarting the standard setting program that has been dormant for a quarter of a century, and 3) automakers have responded to the policy and market signals by bringing new fuel economy models to their showrooms.

Seven Presidents have declared the goal of reducing U.S. dependence on oil,² but little progress has been made. Statements at the public hearings held by the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) on the recently proposed auto standards for 2017-2025 indicate a remarkable shift in the policy landscape.³ Automakers, autoworkers, consumer advocates, public witnesses, national security experts and environmentalists all supported the proposed standards, signaling the emergence of an

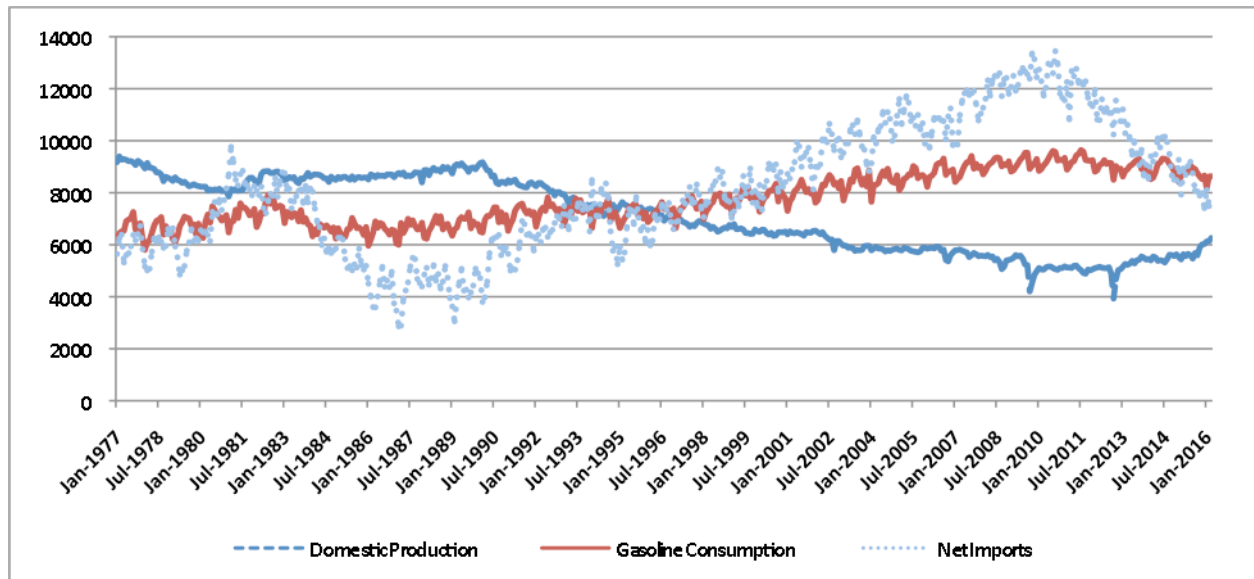
² http://en.wikipedia.org/wiki/Project_Independence

³ <http://www.nhtsa.gov/Laws+&+Regulations/CAFE+&+Fuel+Economy/Public+Hearings+on+DEIS+and+NPRM+Scheduled>

unprecedented consensus in support of fuel economy standards. The standards proposed would double the efficiency of new cars and trucks in less than two decades and dramatically reduce oil consumption and imports.

Declining gasoline consumption has played a key role in the first major reduction in oil imports in a quarter of a century (see Figure I-2).

FIGURE I-2: NET IMPORTS, GASOLINE CONSUMPTION AND DOMESTIC U.S. PRODUCTION



Source: U.S. Energy Information Administration, Database

This paper shows that the primary force that has changed the direction of U.S. fuel economy policy and the glue that holds this consensus together is the favorable economics of increasing fuel economy. Consumers want relief from the gasoline price spiral. Automakers want to produce quality products that consumers will buy, and fuel economy has become a primary determinant of overall vehicle quality. Automakers and auto workers know that the future will be brighter if the U.S. auto industry is technologically progressive and globally competitive and fuel economy is a key factor in global auto sales. Consumers, labor and automakers recognize that a flexible, forward looking, long-term standard plays an important role in smoothing the path to higher fuel economy by reducing the risk associated with developing and marketing technologies that increase fuel economy.

OUTLINE AND METHODOLOGY

As shown in Attachment 1, the Consumer Federation of America has been analyzing the gasoline market and fuel economy intensively over the past decade. We have concluded that the performance of the auto market is influenced by three factors – what consumers want, what automakers make available, and the incentives that public policy creates. This report analyzes all three of these underlying forces for change with new data on consumer and auto maker attitudes and behaviors.

The report is divided into four sections. In the next section (II), we briefly review the public policy context that has contributed to the shift in the market. We examine the pattern of gasoline prices and household expenditures that has gotten the attention of the public and policy makers.

We then recount the key events that changed the direction of policy. Finally, we review the characteristics of the new regulatory regime that have attracted the support of a broad and diverse set of interests.

Section III presents evidence on consumer attitudes based on surveys conducted in May 2012. The primary source of survey evidence is a survey commissioned by CFA and conducted by ORC. This is the 14th survey we have conducted dealing with fuel economy standards since early 2006. We have covered a wide range of issues including concerns about gasoline prices and imports, attitudes toward fuel economy standards, and knowledge about the U.S. oil resources, as well as support for various policies to address national energy policy goals. The recent survey focused on the impact of high gasoline prices on consumers and consumer attitudes toward fuel economy. The responses to our questions reaffirm many of our earlier findings.

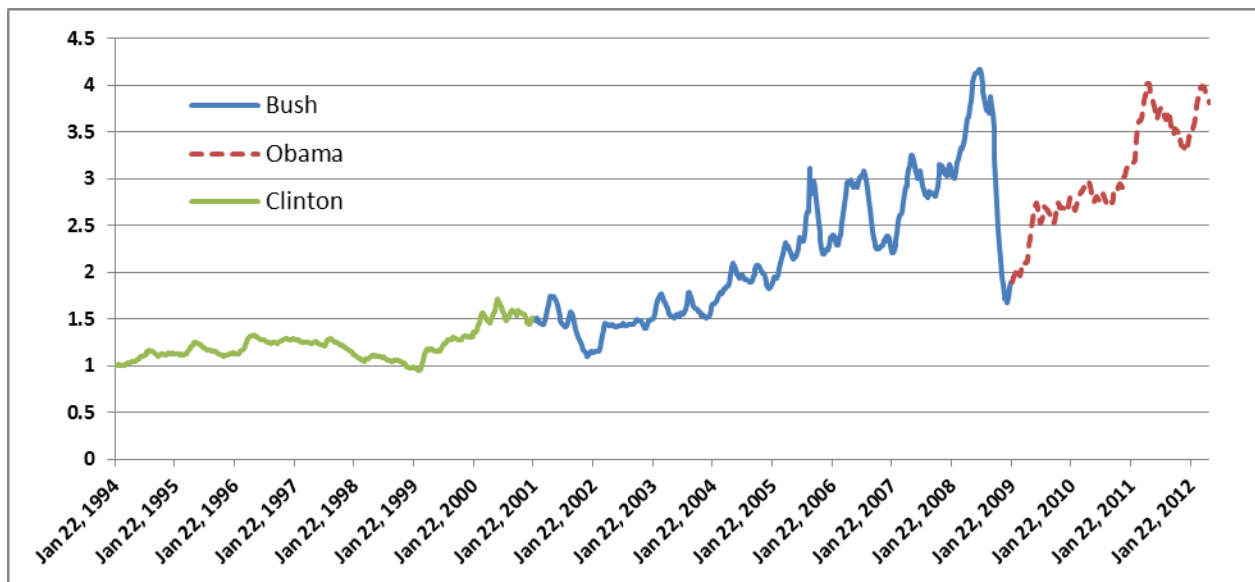
Section IV discusses the impacts and benefits for consumers of higher fuel economy in the context of the models offered by automakers and the costs associated with improvements in fuel economy and the automaker response to the demand for greater fuel economy. CFA has been examining this automaker behavior at this level of detail for about as long as we have been analyzing consumer behavior.

II. THE POLICY CONTEXT

PAIN AT THE PUMP

Over the past decade, gasoline prices have gyrated wildly around a strong upward trend. Gasoline prices set a record high in 2011 averaging \$3.53 per gallon (see Figure II-1). The average price for the first quarter of 2012 was the highest on record for the first quarter of any year. The past decade has been a nerve wracking, budget busting roller coaster ride for American gasoline consumers, as shown in the figure below. Between January 2002 and July 2012, gasoline was below \$2.00 per gallon for 170 weeks (54 below \$1.50); it was above \$3.00 per gallon for 145 weeks (81 above \$3.50).

FIGURE II-1: GASOLINE PRICES SPIRAL DURING THE BUSH AND OBAMA ADMINISTRATIONS



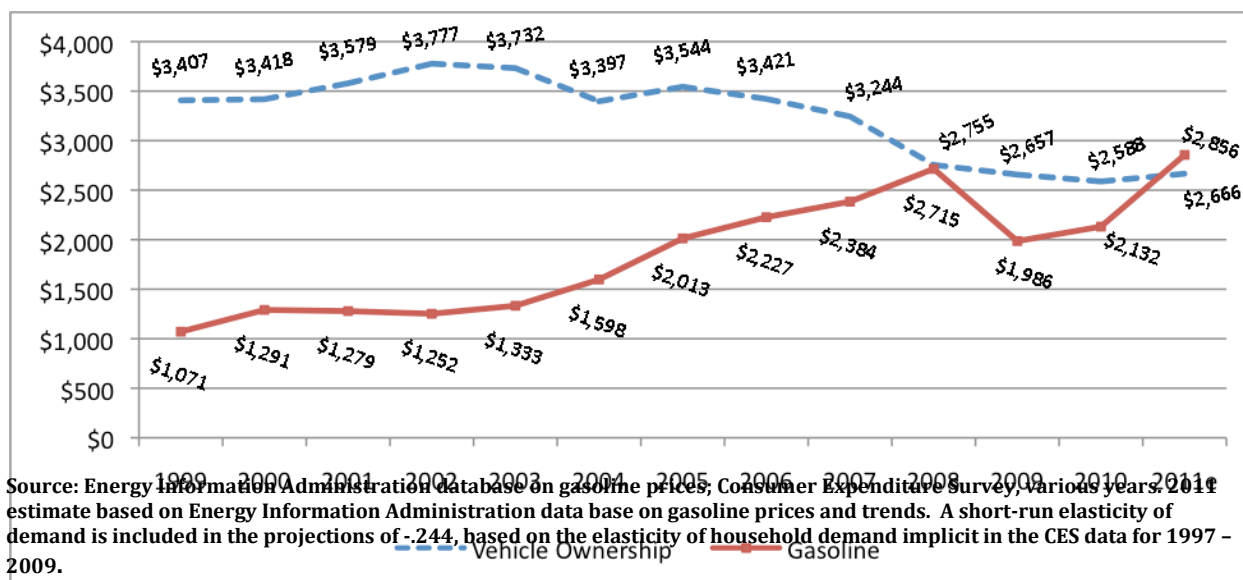
Source: U.S. Energy Information Administration, *Weekly Gasoline Prices*

We highlight the Bush and Obama presidencies in Figure II-1 by using the week of the State of the Union Address to underscore the fact that both have been confronted with significant price volatility (in contrast to Clinton). **The challenge facing consumers and these two presidents is unique and unprecedented.**⁴

Since driving and gasoline are basic needs of daily life in the United States, the gas pump roller coaster is wreaking havoc on household budgets both in terms of the increasing cost and in terms of the volatility of gasoline prices. Figure II-2 shows the average annual expenditure on vehicle ownership (new and used vehicles) compared to the expenditure on gasoline, as reported in Bureau of Labor Statistics' annual Consumer Expenditure Survey (CES).

⁴ The price shocks of the 1970s were larger in a shorter period, but did not exhibit the volatility of recent years. The uncertainty associated with volatility makes the recent price spirals particularly difficult for consumers, auto makers and the economy to deal with.

FIGURE II-2: AVERAGE ANNUAL EXPENDITURES ON VEHICLE OWNERSHIP AND GASOLINE



Rising gasoline prices have changed the structure of the cost of driving. In 2011, the cost of gasoline equaled or exceeded the cost of owning a vehicle for the first time.

- Household gasoline expenditures set a record last year, reaching an average of over \$2,850 per year.
- Ten years ago, the average cost of owning a vehicle was the largest single component of the cost of driving. Today, the average cost of owning a vehicle has come down approximately 20 percent and the cost of gasoline has tripled.
- In 2011, gasoline expenditures were 40 percent higher than expenditures on home energy (electricity, natural gas and heating oil); ten years ago, they were 13 percent lower.

THE POLICY RESPONSE

Over the course of a decade, the growing public concern about gasoline and its burden on household budgets have driven a policy consensus in support of higher standards. This consensus includes not only almost all of the stakeholders in the industry, as noted above, but it also crosses the federal and state levels, all branches of government, and both political parties.

Although the gasoline price spike of 2000-2001 proved to be a blip, compared to later developments, it got the attention of the public and policy makers. In 2002, the National Academy of Sciences concluded that technologies exist to dramatically increase fuel economy at manageable costs.⁵ Since then, the public policy debate has been about how far and how fast the fuel economy of the vehicle fleet can be raised.

⁵ The original study (Committee on the Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards Board on Energy and Environmental Systems Division on Engineering and Physical Sciences, Transportation Research Board, National Research Council, *Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards*, National Academy Press, 2002), was updated and reached even stronger conclusions at the end of the decade (National Research Council of the National Academy of Science, *America's Energy Future*, Washington, D.C.: 2009)

In the early 2000s, California exercised its authority under the Clean Air Act to propose new standards to cut emissions from automobiles, which have the effect of also increasing fuel economy.⁶ When 13 states and the District of Columbia adopted the Clean Cars Program, they created an auto market that ranks in the top five in the world and gave a big push to raising standards.⁷ The automakers resisted this policy, but they could not ignore such a market. **The Clean Cars Program became a leading edge and test bed for fuel economy technologies.**

The much more dramatic price spikes in the middle of the past decade moved concerns about gasoline consumption to center stage, so much so that President Bush made a dramatic statement about it in his 2006 State of the Union Address by declaring, "Here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology."⁸ **Democratic and Republican legislators, federal and state policy makers as well as all three branches soon came together to support a significant increase in fuel economy.**

The Democratically controlled Congress passed and President Bush signed the Energy Independence and Security Act of 2007 (EISA). The law, which both the Bush administration and the Obama administration moved quickly to implement, reformed and improved the approach to fuel economy standards and restarted the process of setting standards, after more than a quarter of a century in which the program had been essentially dormant (See Figure I-1).

The momentum for higher standards was reinforced by the courts and legal action. A Supreme Court decision upholding the authority of the U. S. Environmental Protection Agency (EPA) to regulate greenhouse gasses as a pollutant strengthened federal authority.⁹

The Obama administration supported the Clean Cars Program¹⁰.

The Obama administration used its executive branch authority to improve the overall process.¹¹ The White House issued an executive order that required EPA and NHTSA to coordinate with each other and the California Air Resources Board--coordination that immediately led to increases in the standard that will save consumers over \$35 billion in the 2012-2015 period alone. That cooperation extends to the current proposal to increase the standard over the long-term. The ongoing effort to set a long-term standard responds to the oft-repeated observation that the auto industry needs time to adapt.

THE NEW APPROACH TO STANDARDS IS CONSUMER AND AUTO INDUSTRY-FRIENDLY

Congressional action significantly improved the approach to standard setting in several ways that make it much more consumer and automaker-friendly, laying the foundation for the widespread support for the fuel economy standards. For example, by

⁶ <http://www.calcleancars.org/docs/CleanCarsMilestones.pdf>

⁷ The Clean Cars states (Arizona, Connecticut, Washington D.C., Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, and Washington) account for 40% of U.S. registered vehicles (Bureau of the Census, *Statistical Abstract of United States*; http://www.census.gov/compendia/statab/2006/transportation/motor_vehicle_registrations/) making the market larger than all markets except the rest of the U.S. the European Union and Japan,

⁸ "Here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology," he said, adding that technological advances will help achieve a "great goal: to replace more than 75 percent of our oil imports from the Middle East by 2025." http://articles.cnn.com/2006-01-31/politics/sotu.energy_1_oil-prices-oil-imports-big-oil?_s=PM:POLITICS

⁹ http://en.wikipedia.org/wiki/Massachusetts_v._Environmental_Protection_Agency

¹⁰ <http://www.gpo.gov/fdsys/pkg/FR-2009-02-12/html/E9-2913.htm>

¹¹ <http://www.epa.gov/oms/climate/regulations/420f10014.htm>

requiring NHTSA to set an attribute-based standard, the incentive to downsize the fleet is reduced. Authorizing several forms of flexibility promotes efficiency in meeting the standard. Incentives encourage development of new technologies. **The legislated reforms and the proposed rule recognize the need to keep the standards in touch with reality in several important ways:**

- The standards are set at a moderately aggressive level that is clearly beneficial and achievable.
- The cost estimates are consistent with the results of independent analyses of technology costs made over the past decade.
- The proposed standards are consistent with the rate of improvement that the auto industry achieved in the first decade of the fuel economy standards setting program.

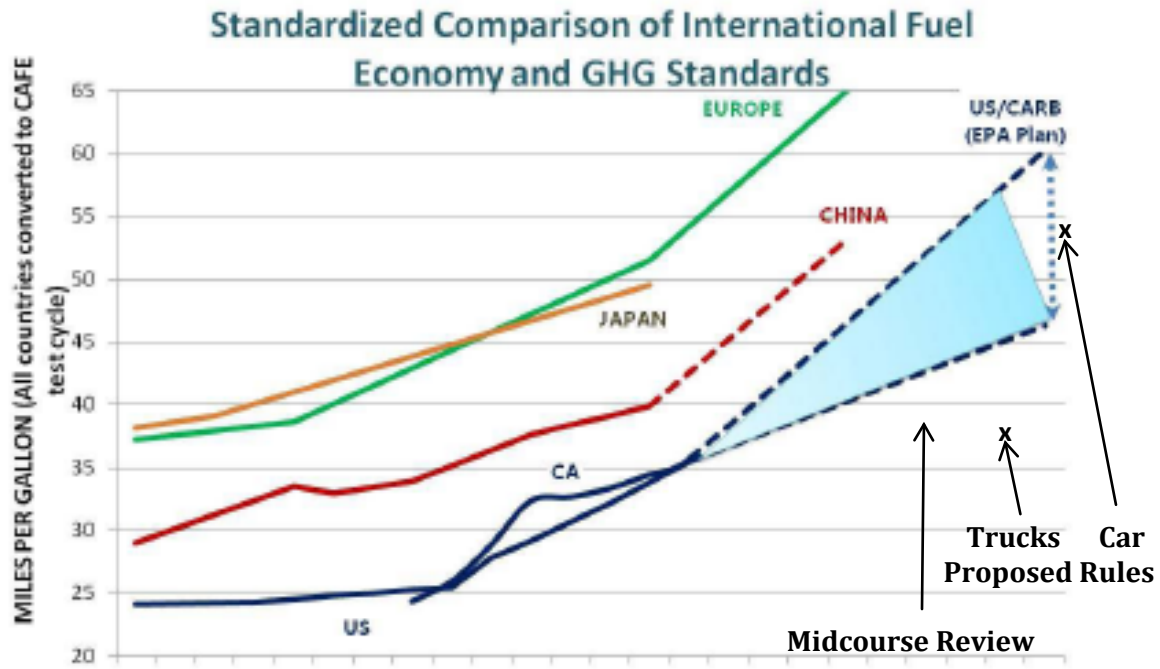
The new approach to setting standards is consumer-friendly and facilitates automaker compliance.

- The attribute-based approach ensures that the standards do not require radical changes in the types or size of vehicles consumers drive; so, the full range of choices will still be available to consumers.
- The standards do not require dramatic shifts in power train technologies or reductions in weight and offer flexibility and incentives for new technologies, and include a mid-term review.
- The setting of a coordinated national standard that lays out a steady rate of increase over a long time period gives consumers and the industry certainty and time to adapt to change.

Globalization of the auto industry means it is no longer possible to be a successful automaker without being able to compete worldwide. **The standards will help U.S. automakers become globally competitive** (see Figure II-3).

- The proposed standard brings U.S. standards up to international levels.
- The proposed standard reduces the supply-side risk of introducing new fuel savings technologies and triggers competition around fuel economy.
- The standards reinforce the underlying direction of the market in which automakers know they can sell quality. Fuel economy is at the top of the list of quality improvements consumers are looking for.

FIGURE II-3: COMPARISON OF PROPOSED STANDARD WITH INTERNATIONAL STANDARDS



Source: Feng An, Robert Early and Lucia Green-Weiskel, *Global Overview of Fuel Economy and Motor Vehicle Emission Standards: Policy Options and Perspectives for International Cooperation* (The Innovation Center for Energy and Transportation (iCET))

III. CONSUMER ATTITUDES AND BEHAVIOR

FUEL ECONOMY AND VEHICLE PURCHASE INTENTIONS

CFA Fuel Economy Questions

What is the gas mileage of the motor vehicle you are CURRENTLY driving? That is, about how many miles to the gallon does this vehicle get?

Please estimate when you are likely to purchase a car or other vehicle in the future. Would you say . . .

1. In the next year... In one to three years... 2. In three to five years... 3. In five to ten years... 4. In more than ten years... 5. or, never... 99. DON'T KNOW

Thinking about the next motor vehicle you will purchase, what is your best guess as to its gas mileage? That is, how many miles to the gallon will it get?

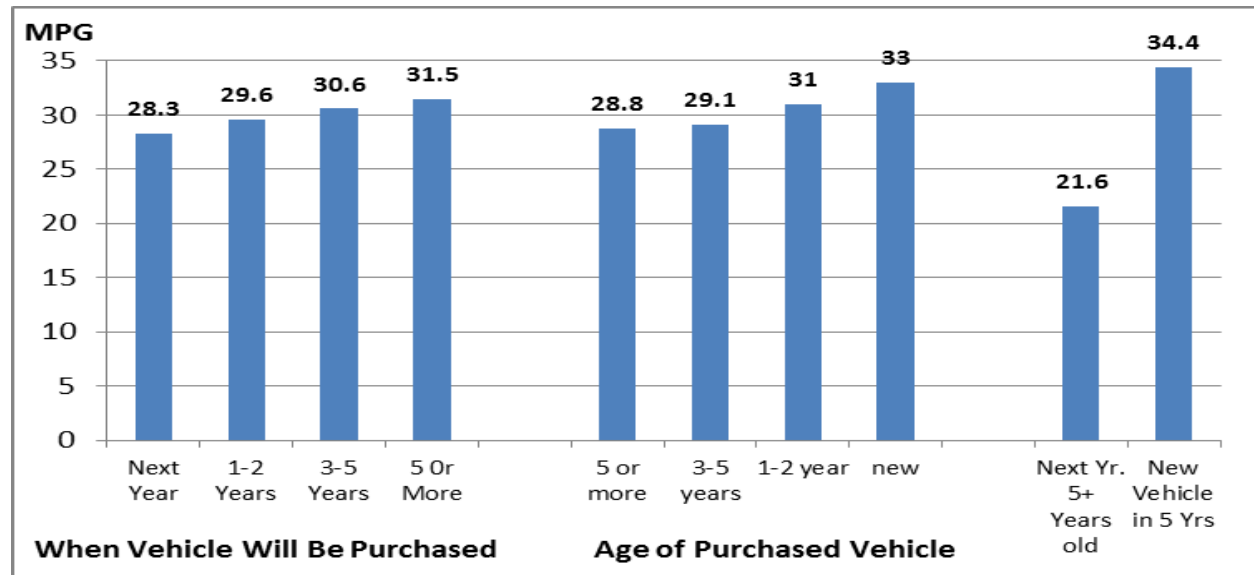
And how old is this vehicle likely to be? Will it be . . . 1. Brand new... 2. 1-2 years old... 3. 3-5 years old... 4. 6-10 years old... 5. Over 10 years old... 99. DON'T KNOW

Because the focal point of this analysis is on future fuel economy, particularly, the fuel economy respondents would like to get in their next vehicle purchase, we begin the analysis with responses to a series of questions about the fuel economy of the vehicles respondents currently own and the fuel economy they would like to get in the next vehicle they purchase.

The average fuel economy of vehicles the respondents say they now own is 24 mpg. This is close to the national average for cars, but well above the value for light trucks. The average fuel economy that respondents intend to get in their next vehicle purchase is just under 31 mpg. In other words, they are looking for a substantial increase in the fuel economy of the vehicles they intend to purchase, almost 7 miles per gallon.

Respondents recognize that the mileage they can expect to get depends on whether they will buy a new or used vehicle and when the intended purchase will take place (see Figure III-1).

FIGURE III-1: INTENDED MPG BY DATE OF PURCHASE AND AGE OF PURCHASED VEHICLE

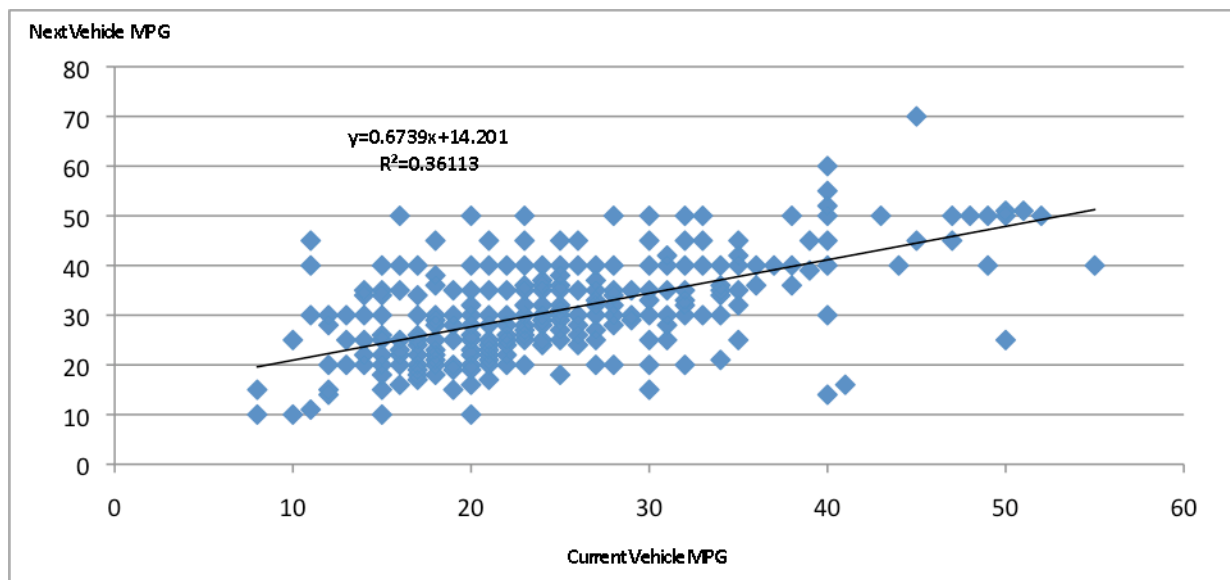


Source: Consumer Federation of America, May 2012 survey

The longer the consumer intends to wait to buy a new vehicle, the higher the expected mileage. Those who expect to purchase in five years or more expect five more miles per gallon than those who expect to purchase in the next year. Those who expect to purchase a new vehicle expect higher mileage, with new vehicles expected to get five more miles per gallon. Combining these two variables, we see a large effect. Respondents who intend to buy a relatively old vehicle (5 or more years) next year expect to get 21.4 miles per gallon. The average fuel economy of vehicles sold in the period between 2003 and 2008 was just over 21 miles per gallon. **Consumers have a good understanding of the mileage of vehicles on the road.** Those who intend to buy a new vehicle in five or more years expect to get 34.5 miles per gallon. Interestingly, the standard for 2016 has been set at 35 miles per gallon. **The mid-term expectations are consistent with the standards that have been adopted.**

The intended future fuel economy is also correlated with the current fuel economy, as shown in Figure III-2. In fact, the current mileage is the best predictor of future mileage, accounting for over one third of the variance in intended future mileage. **Having a more fuel-efficient vehicle reinforces the preference for higher fuel economy. Therefore, as more fuel-efficient vehicles penetrate the market, we would expect the preference for higher fuel economy to strengthen.**

FIGURE III-2: CURRENT AND FUTURE VEHICLE FUEL ECONOMY



Source: Consumer Federation of America, May 2012 survey

These findings are consistent with our earlier survey research on desired levels of future fuel economy and show the movement toward higher fuel economy both in the vehicles consumers currently own and in the mileage they would like to get in the future.¹²

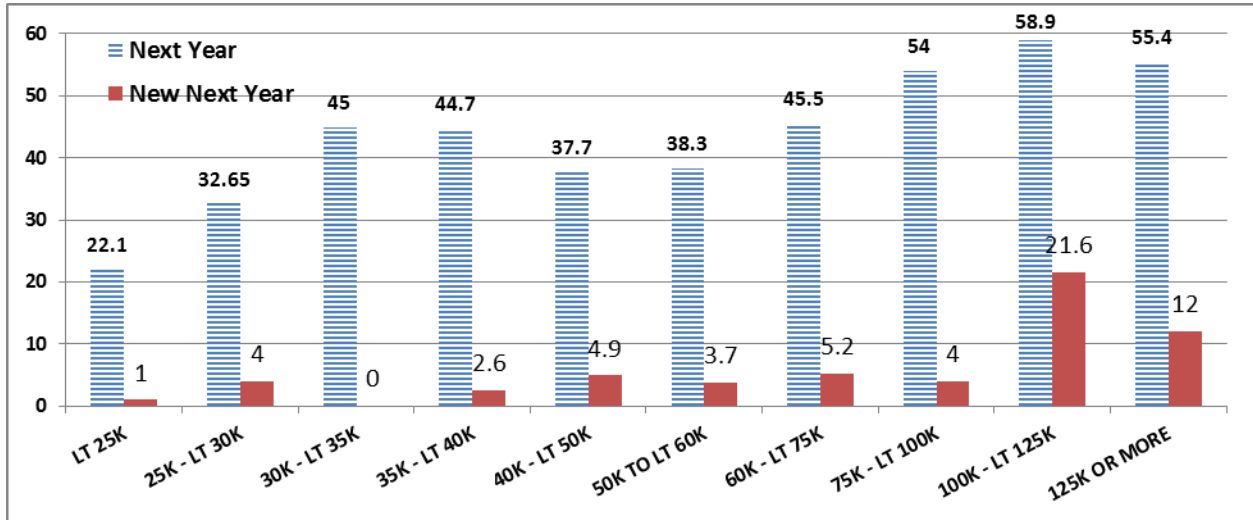
HOUSEHOLD INCOME IS AN IMPORTANT FACTOR THAT AFFECTS ATTITUDES ABOUT FUEL ECONOMY

It is also important to note that the purchase plans are affected by the level of income, as shown in the Figure III-3. Upper income households (income above \$100,000) are more likely to say they plan to purchase a new vehicle (as opposed to a used one) in the next year, and they are

¹² CFA, *Ending America's Oil Addiction*, April 2008.

much more likely to say they are going to purchase a vehicle in the next year. Upper income households are over twenty times as likely to say they intend to purchase a new vehicle in the next year as lower income households. Less than 1 percent of lower income households say they expect to purchase a new vehicle in the next year.

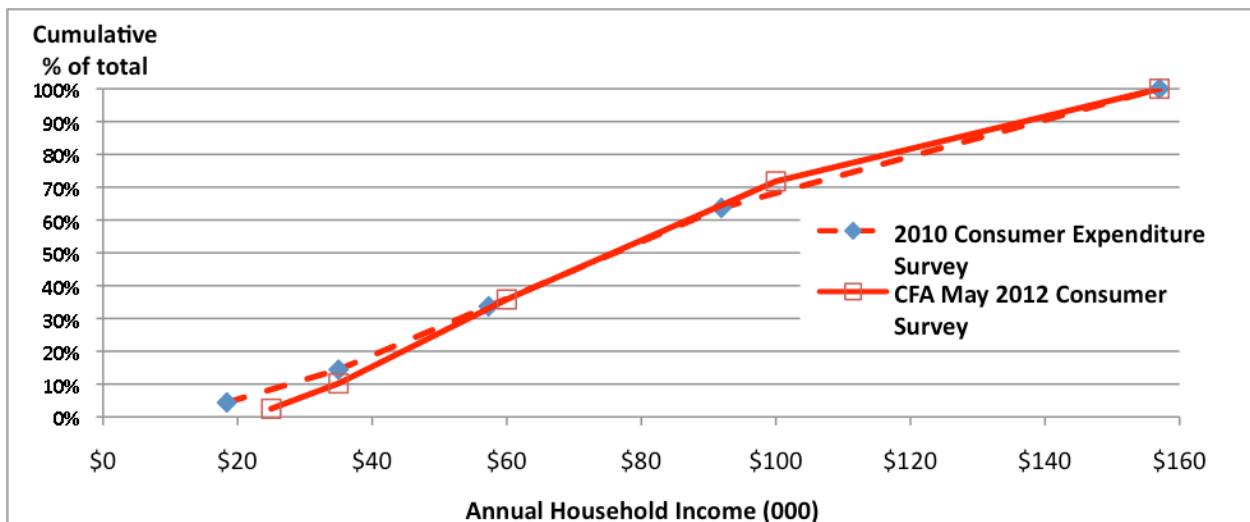
FIGURE III-3: INCOME AND PURCHASE PLANS



Source: Consumer Federation of America, May 2012 survey

The dramatic difference between upper and lower income households in our survey data is consistent with the most recent Consumer Expenditure Survey (CES) data as shown in Figure III-4. We have calculated the percentage of new car payments for each of the quintiles of income in the CES. We show the cumulative percentage across the quintiles from lowest to highest. We juxtapose that against the percentage of respondents who say they intend to buy a new vehicle in the next year. We calculate the percentage of all next year-new car buyers in each income category and cumulate from lowest to highest. We have created income categories in our data that parallel the

FIGURE III-4: INCOME AND NEW VEHICLE PURCHASES



Source: Consumer Federation of America, May 2012 survey; Bureau of Labor Statistics, *Consumer Expenditure Survey, 2010*

income quintiles in the CES. The distributions are almost identical. The conclusion is clear: **income is an important determinant of purchase intentions, and lower income households account for a very small share of the new vehicle market, which explains the ability of the automakers to “upsell” quality in the new auto market (including fuel economy) to consumers with higher income.**

IMPACTS OF GASOLINE COST

Impact of Gasoline Cost Questions

Have gasoline costs imposed any financial hardship on you or your family? Would you say . . .

1. Yes, you drive and gasoline costs have imposed much financial hardship... 2. Yes, some financial hardship
 3. Yes, but only a little financial hardship... 4. You drive, but gasoline costs have not imposed any financial hardship... 98. DON'T DRIVE... 99. DON'T KNOW

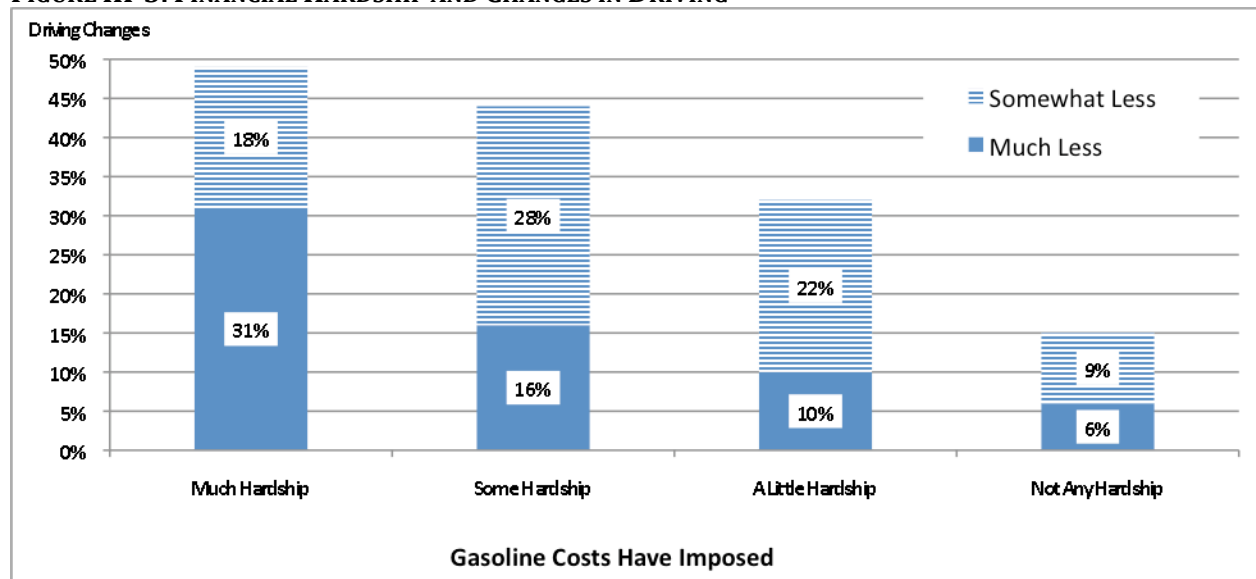
Thinking about how much driving you do, would you say you are driving more, less, or about the same amount as you did a year ago? Would you say . . .

1. Much more... 2. Somewhat more... 3. About the same... 4. Somewhat less... 5. Much less...
 99. DON'T KNOW

The recent survey included two questions on the impact of gasoline costs on the respondents. Of those who drive, one-third said that gasoline costs have imposed much hardship, and another third said they have imposed some hardship. Of those who drive, one third said they were driving less, while one-eighth said they were driving more.

Figure III-5 shows that **respondents who have suffered more hardship as a result of gasoline prices are more likely to have cut back on their driving.** Almost half of the respondents who said gasoline costs imposed financial hardship said they reduced their mileage, while about one-seventh of those who said there was no financial hardship said they reduced their driving. **Those who felt much hardship were more than five times as likely to say they were driving much less.**

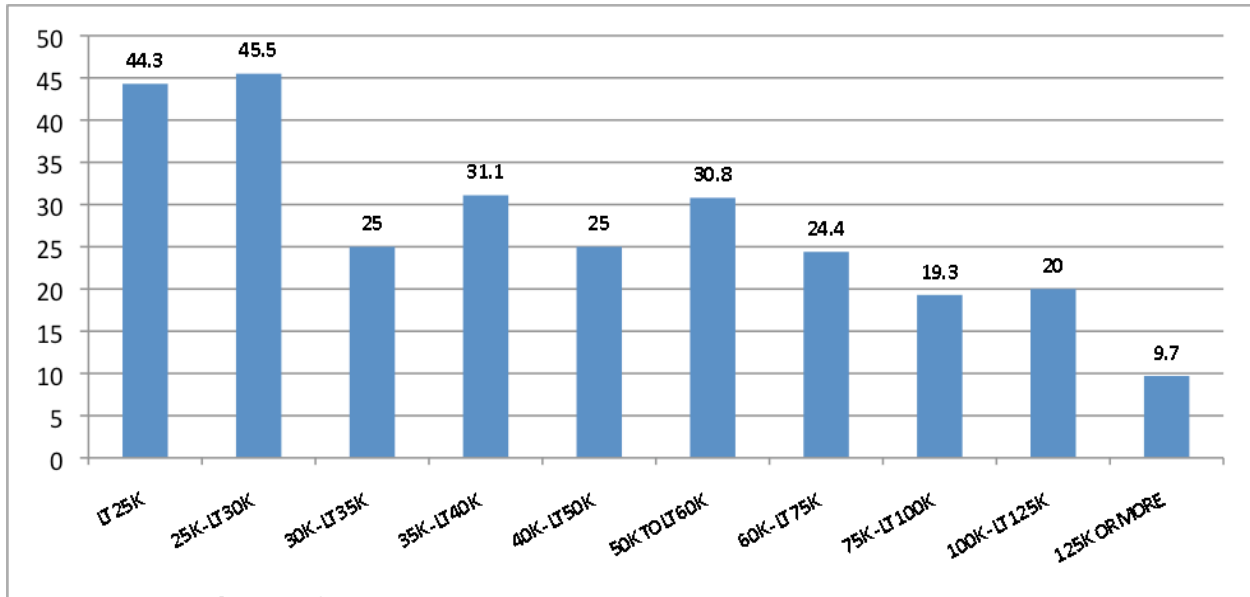
FIGURE III-5: FINANCIAL HARDSHIP AND CHANGES IN DRIVING



Source: Consumer Federation of America, May 2012 Survey

The financial hardship imposed by gasoline costs falls heavily on lower income households. Almost half of those with incomes below \$35,000 say gasoline costs impose much financial hardship, as shown in Figure III-6. For households with incomes above \$75,000, 10 to 20 percent say they suffered much financial hardship. **Higher fuel economy is more important to lower income households but the benefits will occur when more fuel-efficient vehicles reach the used vehicle market.**

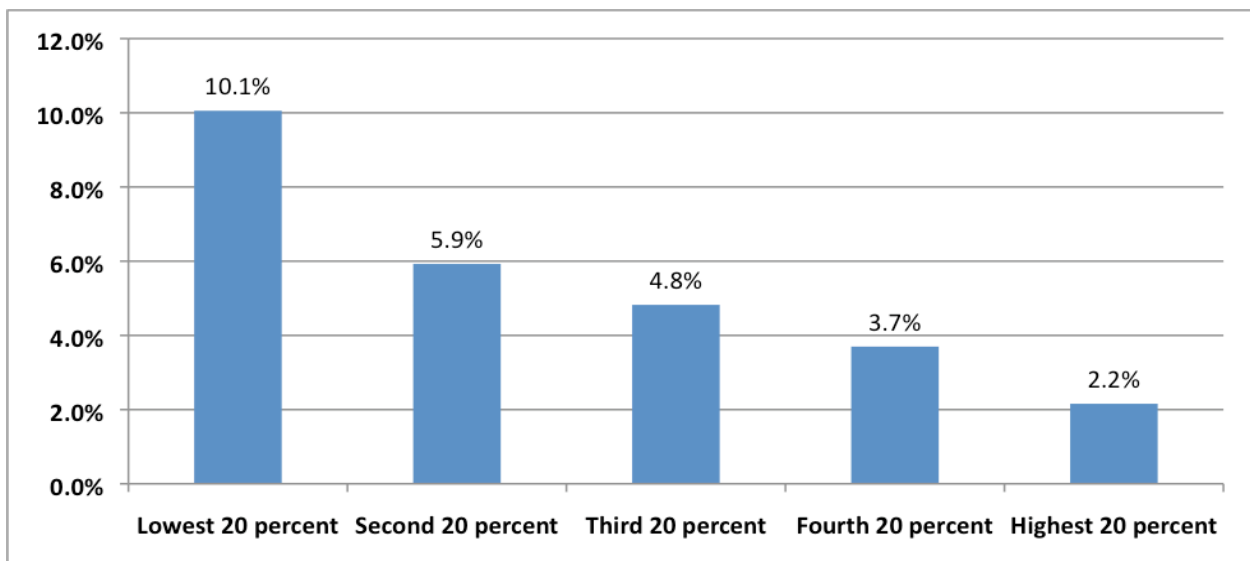
FIGURE III-6: INCOME AND FINANCIAL HARDSHIP (% OF RESPONDENTS SUFFERING “MUCH HARDSHIP”)



Source: Consumer Federation of America, May 2012 Survey

The financial hardship imposed by gasoline costs on lower income households that causes them to cut back on driving reflects the fact that expenditures on gasoline represent a much greater percentage of their income than for upper income households.

FIGURE III-7: PERCENT OF HOUSEHOLD INCOME SPENT ON GASOLINE



Source: Bureau of Labor Statistics, *Consumer Expenditure Survey, 2010.*

ATTITUDES TOWARD REDUCING OIL CONSUMPTION

Questions on Reducing Oil Consumption

How important is it to you that the country reduces its consumption of oil? Is it . . .

1. Very important... 2. Somewhat important... 3. Somewhat unimportant... 4. Very unimportant...
99. DON'T KNOW

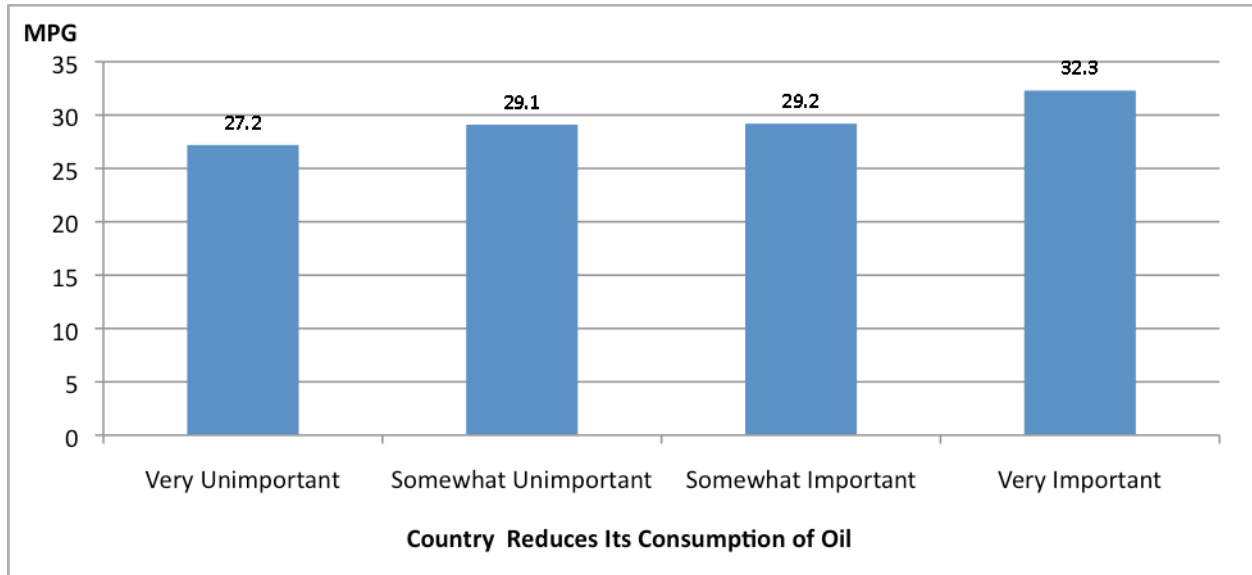
Which of the following, if any, are important reasons for reducing oil consumption?

1. To reduce consumer costs... 2. To reduce dependence on foreign oil... 3. To reduce air pollution...
98. NONE OF THESE... 99. DON'T KNOW

Respondents overwhelmingly support the view that the U.S. should reduce oil consumption with 88 percent saying it is important (52 percent very important). Those who said it was important agreed that it was important to reduce dependence on foreign oil (88 percent), reduce air pollution (87 percent), and reduce consumer cost (86 percent).

Belief that the U.S. should cut back on oil consumption is associated with the desire for higher fuel economy, as shown in Figure III-8. **Those who say it is very important to cut back on oil consumption want to get five more miles per gallon.**

FIGURE III-8: ATTITUDE TOWARD REDUCING CONSUMPTION AND INTENDED MPG



Source: Consumer Federation of America, May 2012 Survey

FUEL ECONOMY STANDARDS

Questions on the 55 MPG Standard

The federal government has proposed requiring automobile manufacturers to increase the fuel economy of their motor vehicle fleets to an average of 55 miles per gallon by 2025.

Do you think this required increase is a good idea?

1. YES... 2. NO... 99. DON'T KNOW

This increase would raise the cost of motor vehicles, but overall, if gasoline were \$4 a gallon, consumers who paid cash for their vehicles would recover this increased cost in three years through gasoline savings, and consumers who financed their vehicles would find that monthly fuel savings were greater than the increase in monthly loan payments.

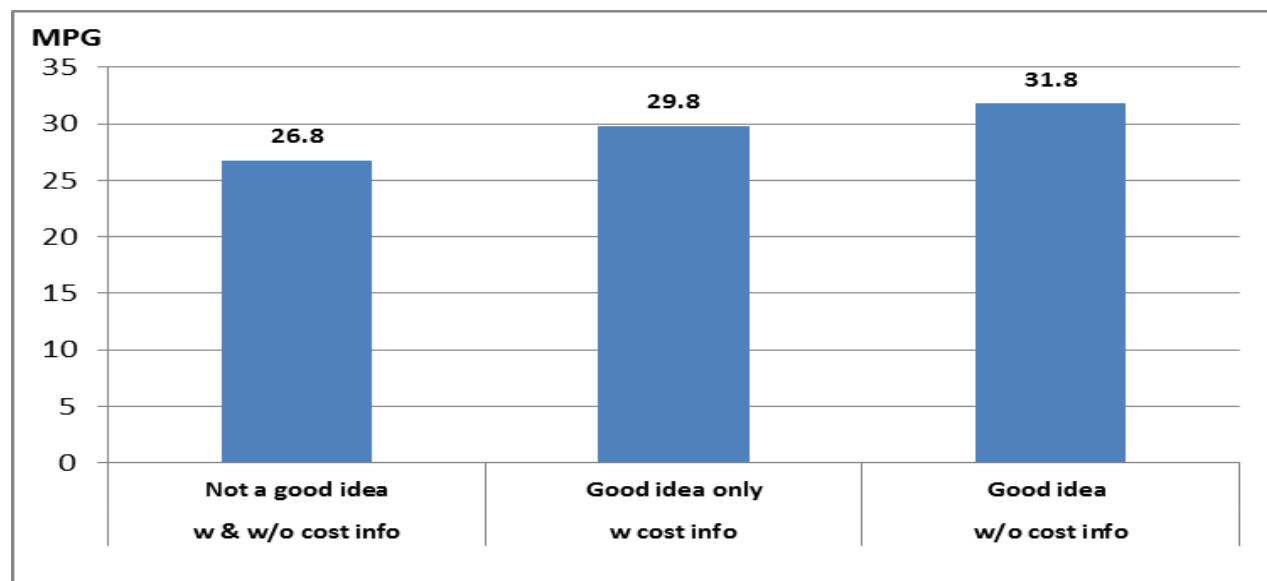
Knowing this, do you think the required increase in fuel economy is a good idea?

1. YES... 2. NO... 99. DON'T KNOW

Respondents were asked for reactions to the proposed 2025 standard of almost 55 miles per gallon for motor vehicles. Three quarters (74 percent) said it was a good idea. When presented with an economic evaluation of the costs and benefits (three year payback or positive cash flow compared to auto loan payments), which CFA has shown would be the actual impact of the standard, two thirds (66 percent) said it is a good idea.

As shown in Figure III-9, the respondents who feel the standards are a good idea want to get five miles per gallon more than those who do not think they are a good idea.

FIGURE III-9: ATTITUDES TOWARD FUEL ECONOMY STANDARDS AND DESIRE FOR HIGHER MILEAGE



Source: Consumer Federation of America, May 2012 Survey

SELECTION CRITERIA AND VEHICLE TYPE PREFERENCES

Questions on Selection Criteria and Vehicle Type Preferences

There are several things that you may consider when shopping for a car. The next time you are in the market for a car, which of the following is the most important factor that will influence your selection?

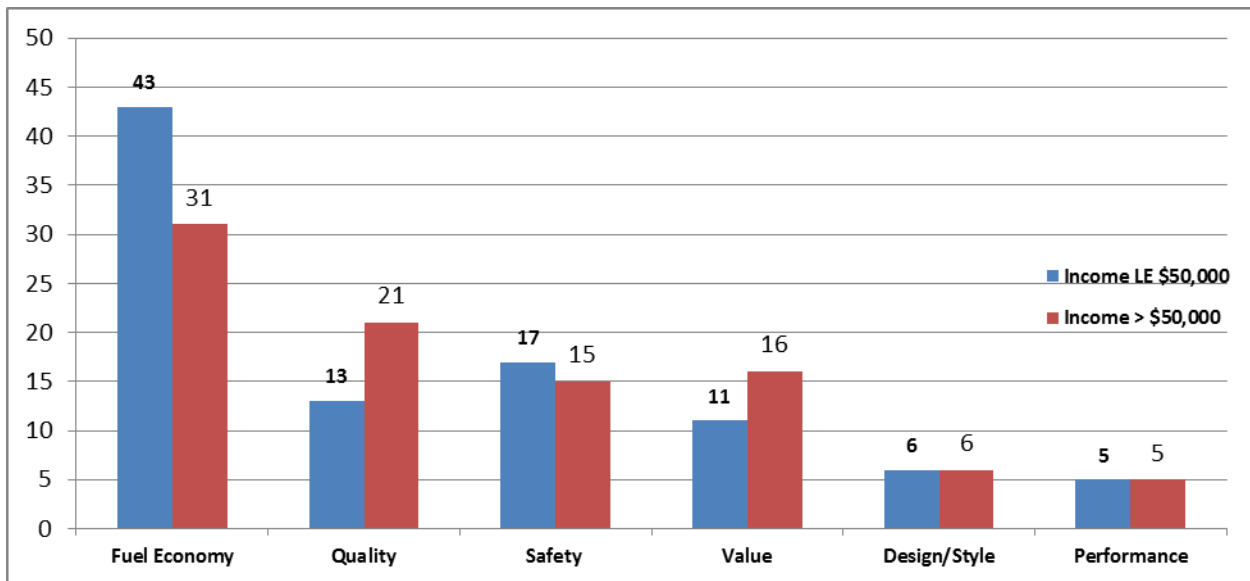
Fuel economy, Quality, Safety Value, Performance, Design or Style, Technology or Innovation

What type of car do you drive most often? Thinking about this next vehicle, what type are you most likely to buy?

Small car, Sedan, Midsize SUV, Pickup, Convertible, Small SUV, Minivan, Sporty Car, Wagon or Large SUV

Consumers Union, the publisher of *Consumer Reports*, conducted a poll of consumers approximately a month before the CFA poll that asked several questions about fuel economy and vehicle choices. They took a more traditional approach and provide results that reinforce the earlier conclusions – **respondents ranked fuel economy as “the most important factor that will influence” selection of the next vehicle.** It was mentioned twice as often as the second choice, quality (37 percent to 17 percent). As shown in Figure III-10, there was a large difference across income groups. Households with incomes below \$50,000 were three times as likely to mention fuel economy as quality and 2.5 times as likely to mention value. Households with income above \$50,000 are 1.5 times as likely to cite fuel economy as quality.

FIGURE III-10: SELECTION FACTORS AND PREFERENCES FOR VEHICLE TYPES

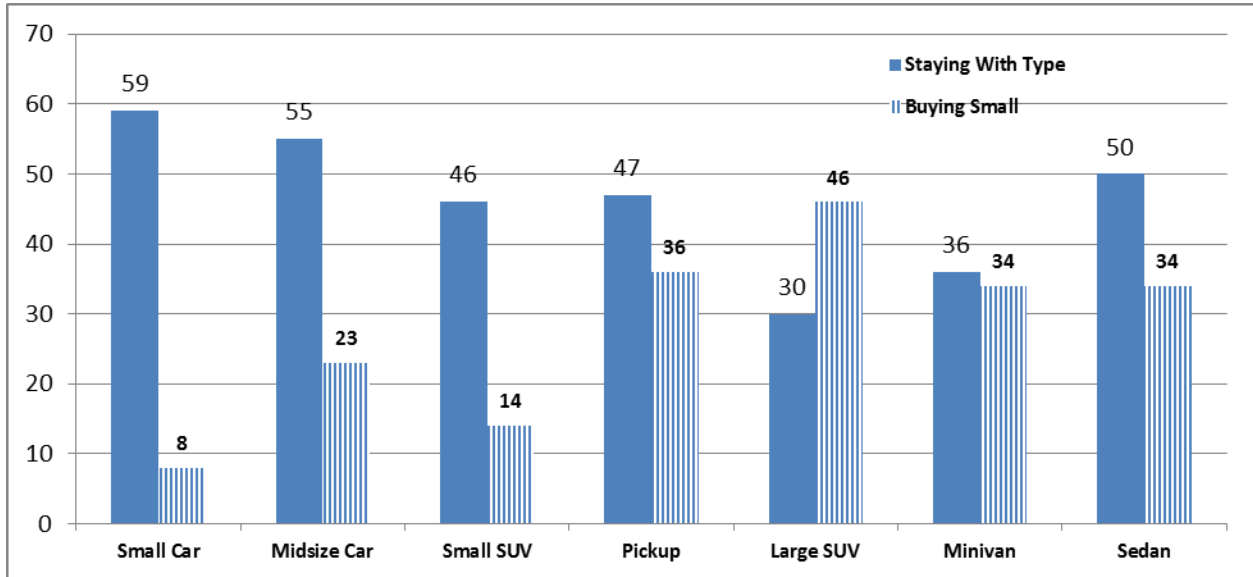


Source: Consumer Reports National Research Center, *Auto Pulse #26: Fuel Economy*, April 26, 2012.

The Consumer Reports study found that two thirds of the respondents expect to purchase vehicles with better fuel economy-- two-fifths expect much better. Whereas CFA approached the analysis of current and new vehicles through the lens of miles per gallon, Consumer Reports approached the issue through the type of vehicle. Higher percentages of respondents said they were likely to purchase small cars, small SUVs, mid-sized cars and pickup trucks than currently

owned. Respondents were most likely to stick with their current type of vehicle, but with each of the larger vehicle types, a large percentage of respondents say they will purchase a smaller vehicle (as shown in Figure III-11).

FIGURE III-11: PREFERENCES FOR VEHICLE TYPES

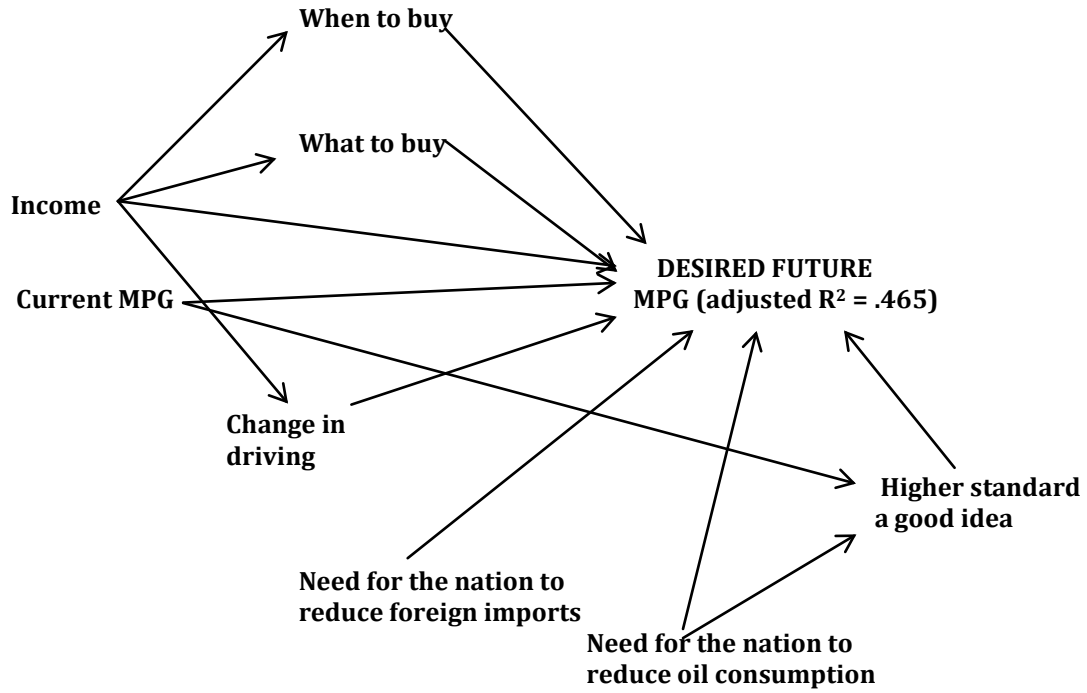


SOURCE: CONSUMER UNION AUTO PULSE #26: FUEL ECONOMY, APRIL 26, 2012

A MODEL OF CONSUMER DEMAND FOR FUEL ECONOMY

The set of factors we have identified as affecting the consumer desire for and willingness to buy more fuel efficient vehicles combines economic and background factors like income, the impact of rising costs on driving patterns, and the timing of purchase, as well as attitudes toward the need to reduce consumptions and the role of standards (see Figure III-12). In our data set, the combination of these factors explains almost half of the variance in the mileage that is desired, which is a very high level for this type of data.

FIGURE III-12: FACTORS AFFECTING CONSUMER DEMAND FOR HIGHER GAS MILEAGE OF NEW VEHICLES



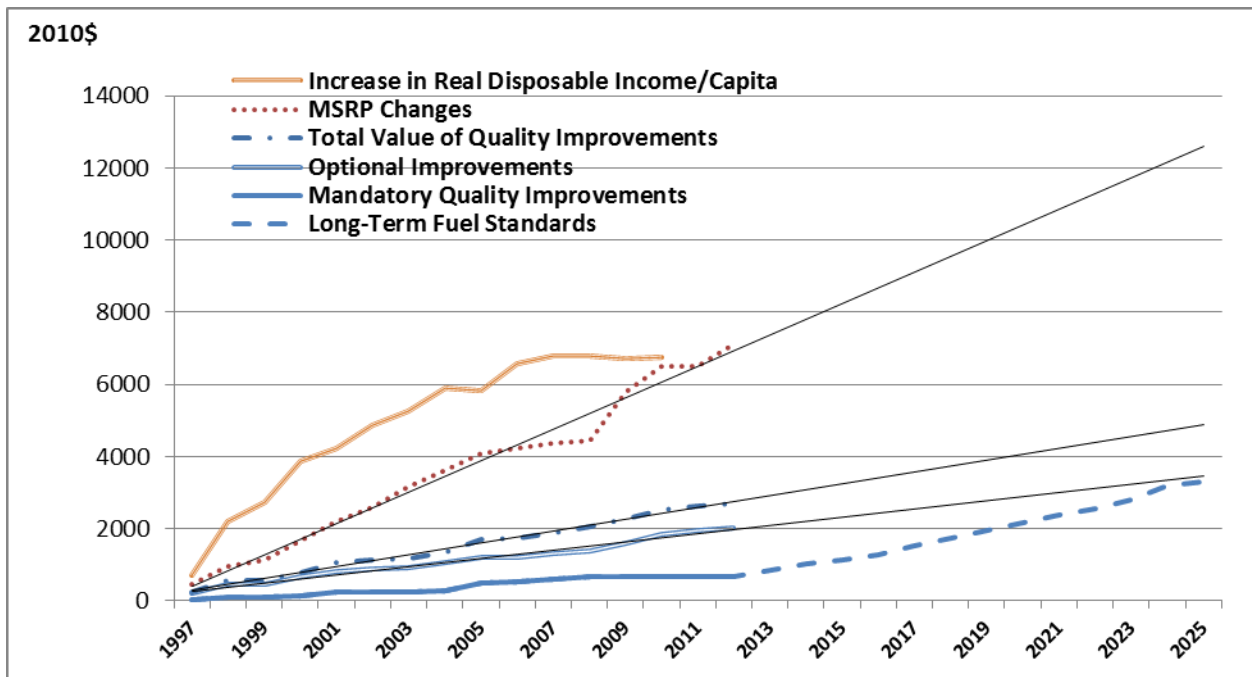
IV – CONSUMER BENEFITS AND COSTS OF FUEL ECONOMY TECHNOLOGY

INVESTMENT IN FUEL EFFICIENCY SAVES CONSUMERS MONEY

Each year, cars get more expensive. Price increases are due to inflation and vehicle improvements including better fuel efficiency. Automakers know they can sell quality. As shown in Figure IV-1, according to statistics compiled by the Bureau of Labor Statistics, which is responsible for the Producer Price Index,

- over the past fifteen years, automakers have added three times as much value (and cost) with optional improvements in quality rather than mandatory (safety and environmental) improvements.
- The overall increase in MSRP tends to track closely to the increase in real disposable income.
- The cost increases that the long-term standards will require over the next 15 years are well below the cost of quality improvements over the past 15 years.
- Automakers adjust MSRP and discounts and auto financing in response to much larger changes in affordability.

FIGURE IV-1: THE INDUSTRY ROUTINELY MAKES COSTLY QUALITY IMPROVEMENTS (Bureau of Labor Statistics Analysis of Quality Changes for Vehicles)



Source: Bureau of Labor Statistics, Quality Changes for Motor Vehicles, various years; Consumer Price Index data base; Sources: Office of Regulatory Analysis and Evaluation, *Regulatory Impact Analysis, Corporate Average Fuel Economy, 2011, 2012-2016, 2017-2025*.

Fuel economy in today's market is a very special kind of quality improvement.

- Unlike most other quality additions, fuel economy improvements deliver pocketbook savings to consumers.

- Fuel economy is a major determinant of vehicle quality that the market can easily absorb.

The positive pocketbook economics of higher fuel economy is the underpinning of the attitudes toward fuel economy and fuel economy standards discussed in the previous section. This section uses a variety of approaches to describe the consumer economics of higher fuel economy in today's market as determined by the technology of fuel economy.

Looking Backward

Using the Bureau of Labor Statistics data on what causes vehicle price increases, we present a series of comparisons of changes in the price and fuel economy of specific vehicles over the past decade. We have very conservatively attributed 25 percent of the price increase, after inflation, to fuel economy improvements. This estimate is likely far more than the actual cost of those increases. We then analyzed some typical vehicles with significant increases in costs over time and significant improvements in fuel economy. Table IV-1 shows a number of popular vehicles, their estimated price increase due to fuel efficiency improvements and their change in fuel economy. Take, for example, the Kia Rio. While the car today costs \$1,074 more than in 2002 due to fuel economy improvements, the typical owner¹³ will save \$3,335 in fuel costs, coming out \$2,262 ahead. **Long term increases in fuel economy over time result in large, net savings for consumers.**

TABLE IV-1: PAYING MORE FOR FUEL EFFICIENCY PAYS OFF

Vehicle		MSRP		Fuel Costs
Kia Rio	2002	\$9,970	2002	\$2,100
	2012	\$14,265	2012	\$1,544
Price Increase		\$4,295	Annual Savings on Fuel	\$556
Investment in Fuel Efficiency		\$1,074	Fuel Savings More Efficient Vehicle	\$3,335
Hyundai Elantra	2002	\$13,299	2002	\$2,188
	2012	\$19,730	2012	\$1,591
Price Increase		\$6,431	Annual Savings on Fuel	\$597
Investment in Fuel Efficiency		\$1,608	Fuel Savings More Efficient Vehicle	\$3,580
Ford F-150 Pickup	2002	\$18,540	2002	\$3,281
	2012	\$22,340	2012	\$2,386
Price Increase		\$3,800	Annual Savings on Fuel	\$895
Investment in Fuel Efficiency		\$950	Fuel Savings More Efficient Vehicle	\$5,369
Chevrolet Tahoe	2002	\$32,954		\$3,500
	2012	\$37,360	2012	\$3,088
Price Increase		\$4,406	Annual Savings on Fuel	\$412
Investment in Fuel Efficiency		\$1,102	Fuel Savings More Efficient Vehicle	\$2,417
Toyota Camry	2002	\$19,800	2002	\$2,500
	2012	\$21,853	2012	\$1,875
Price Increase		\$2,053	Annual Savings on Fuel	\$625
Investment in Fuel Efficiency		\$513	Fuel Savings More Efficient Vehicle	\$3,750
Honda Accord	2002	\$19,690	2002	\$2,100

¹³ Today the average car owner keeps his/her vehicle for 6 years.

2012	\$21,543	2012	\$1,944
Price Increase	\$1,853	Annual Savings on Fuel	\$156
Investment in Fuel Efficiency	\$463	Fuel Savings More Efficient Vehicle	\$933
Chevrolet Malibu 2002	\$19,965	2002	\$2,500
2012	\$21,358	2012	\$2,019
Price Increase	\$1,393	Annual Savings on Fuel	\$481
Investment in Fuel Efficiency	\$348	Fuel Savings More Efficient Vehicle	\$2,885
Honda CR-V 2002	\$18,800	2002	\$2,386
2012	\$21,266	2012	\$2,019
Price Increase	\$2,466	Annual Savings on Fuel	\$367
Investment in Fuel Efficiency	\$616	Fuel Savings More Efficient Vehicle	\$2,203

Models Available in the Market Today

Table IV-2 presents another approach to this consumer pocketbook analysis. It shows examples of similar current model pairs. In each pair, one of the models has a price premium for increased fuel efficiency that is more than offset by fuel cost savings within the first two years of ownership. For example, the 33 mpg Honda Civic priced at \$15,805 when compared to the less expensive 29 mpg Mitsubishi Lancer priced at \$15,695 will pay for itself in gas savings in the first 3 months of ownership and save the consumer an additional \$243 in the first full year. Or, the more expensive Chevrolet Cruze, at \$16,720 and 32 mpg, will pay for itself in just under a year compared to the Volkswagen Jetta at \$16,495 and 28 mpg. **Fuel economy is a good investment today.**

TABLE IV-2: Fuel Savings Quickly Offsets the Cost of Increase Fuel Efficiency

Model	Fuel Economy	Price	Difference in Price	Annual Fuel Cost Savings	Years to Break Even
Honda Civic	33.5	\$15,805	\$110	\$243	0.45
Mitsubishi Lancer	29	\$15,695			
Scion iQ	36	\$15,265	\$55	\$235	0.23
Mazda 2	31	\$15,210			
Chevrolet Cruze	32	\$16,720	\$225	\$234	0.96
Volkswagen Jetta	28	\$16,495			
Nissan Juke	29.5	\$19,770	\$475	\$454	1.05
Jeep Compass	23.5	\$19,295			

SOURCE: THE CAR BOOK 2012

Choosing fuel efficiency does not mean changing vehicles types. Table IV-3 shows another approach to the affordability question. While automakers are on the road to 54.5 mpg by 2025, neither consumers nor car dealers need to fear being forced to buy (or sell) vehicles that don't meet their needs. In our analysis of EPA mileage ratings, there was a great variation in the fuel economy of vehicles in each size class. This means that consumers seeking more fuel-efficient vehicles don't have to consider vehicles that may not meet family transportation needs or personal desires. If a consumer is in the market for an SUV, for example, he or she could choose a Chevrolet

Equinox that gets 26 mpg or a Nissan Pathfinder 4WD that gets 14 mpg. Choosing the Equinox will save the buyer \$1,731, over the course of a year, assuming annual driving of 15,000 miles and the cost of gas at \$3.50 per gallon. The following table provides a sampling of the range of choices available in each size class.

TABLE IV- 3: BUYING FOR FUEL EFFICIENCY DOESN'T HAVE TO MEAN CHANGING VEHICLE TYPES

Size Class	Fuel Economy Ranges within Size Class Comparative Consumer Choices		Annual Gas Savings ¹⁴
Subcompact Cars	Ford Fiesta 33mpg	Nissan Altima Coupe 21mpg	\$900
Compact Cars	Hyundai Accent 34mpg	Subaru Impreza 19mpg	\$1220
Midsize Cars	Hyundai Elantra 33mpg	Chevrolet Malibu 20mpg	\$1034
Large Cars	Hyundai Sonata 28mpg	Chrysler 300 AWD 18mpg	\$1042
Minivan	Mazda 5 24mpg	Toyota Sienna 19mpg	\$575
SUV	Chevrolet Equinox 26mpg	Nissan Pathfinder 4WD 14mpg	\$1731
Pick-up Trucks	Toyota Tundra 18mpg	Chevrolet Silverado 14mpg	\$833

Source: EPA Fuel Economy Estimates

As Table IV-4 shows, two of the more popular size classes, SUVs and compacts, actually offer the largest ranges in fuel economy. **The fuel economy numbers highlighted in bold show that there are a large number of model choices within each vehicle class size that afford the consumer potential fuel economy improvements of five to 10 miles per gallon.** These ranges will continue to grow under the new standard, dispelling the notion that choices will be limited under the new standard. Using the new EPA label to choose the most fuel efficient vehicles will not only help Americans deal with higher gas costs, but put pressure on automakers to step up development of fuel efficient technologies.

TABLE IV-4: FUEL ECONOMY CHOICES WITHIN SIZE CLASSES

Fuel Economy (mpg)		38+	31-37	27-30	23-26	22	19-21	17-18	15-16	13-14	0-12
EPA Rating		<u>10</u>	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
Size Class	Subcompact Cars	1	9	25	30	19	44	8	6	2	0
	Compact Cars	3	26	33	63	9	21	5	1	1	0
	Midsize Cars	4	6	17	31	12	28	7	1	1	0
	Large Cars	0	0	4	6	4	25	16	5	0	0
	Minivan	0	0	0	2	1	8	0	0	0	0
	SUV	2	1	4	51	17	79	38	27	15	4
	Pick-up Trucks	0	0	0	0	1	30	23	25	7	0
Totals		9	37	73	182	60	208	94	63	26	4

Source: EPA Fuel Economy Estimates

Table IV-4 uses the EPA label categories. In addition to the proposed standard, the new EPA labels (2013 models) are one of the reasons we expect progress on fuel efficiency to accelerate at an even faster pace.¹⁵ Not only will consumers be able to vote with their dollars for more fuel-efficient

¹⁴ Annual savings on gas, driving 15,000 miles with gas prices at \$3.50 per gallon.

¹⁵ For the 2013 models, EPA will require a new fuel economy label that will, among other important elements, rate fuel economy on a 1-10 scale.

vehicles, but the labels will provide a powerful market incentive for car companies to improve the efficiency of their offerings as they competitively strive for better ratings. Car companies that offer vehicles with '9' and '10' ratings will soon reap the rewards that come with offering the most fuel-efficient choices. Because of the labels, manufacturers will have a difficult time trying to sell a vehicle with a '1' or '2' rating as gas prices continue to stay relatively high, and consumers can readily see the alternatives.

Looking Ahead

Required fuel economy improvements will not price consumers out of the market.

Surprisingly, the only opponents to the new standard are the car dealers who claim that consumers will not be able to purchase fuel-efficient vehicles. This is in spite of the fact that their own carmakers support the standard, increased consumer demand for more fuel-efficient vehicles is evident in the marketplace, and their customers know that gas prices will continue to be a challenge. Government and consumer groups have acknowledged that new technologies will add to the cost of vehicles, but it has become abundantly clear that any additional costs will be more than offset by savings at the pump. In addition, CFA's analysis of recent fuel economy improvements has found that carmakers have already shown that they can increase fuel economy without adding burdensome price increases.

According to CFA's analysis, the proposed higher fuel economy standards will lower the cost of driving from the first month because the reduction in gasoline expenditures is greater than the increase in the monthly payment to cover the cost of fuel saving technology. Figure IV-2 shows our

calculation of the costs and benefits of the average vehicle covered by the 2025 standard. At the end of the auto loan, the consumer will have saved an estimated average of nearly \$800 by purchasing a new car that meets the standard. By the tenth year, the consumer savings exceed \$3,000, and the original owner is likely to capture most of that value (through a combination of pocketbook savings and higher resale value).

AUTO MAKERS AND FUEL ECONOMY TECHNOLOGY

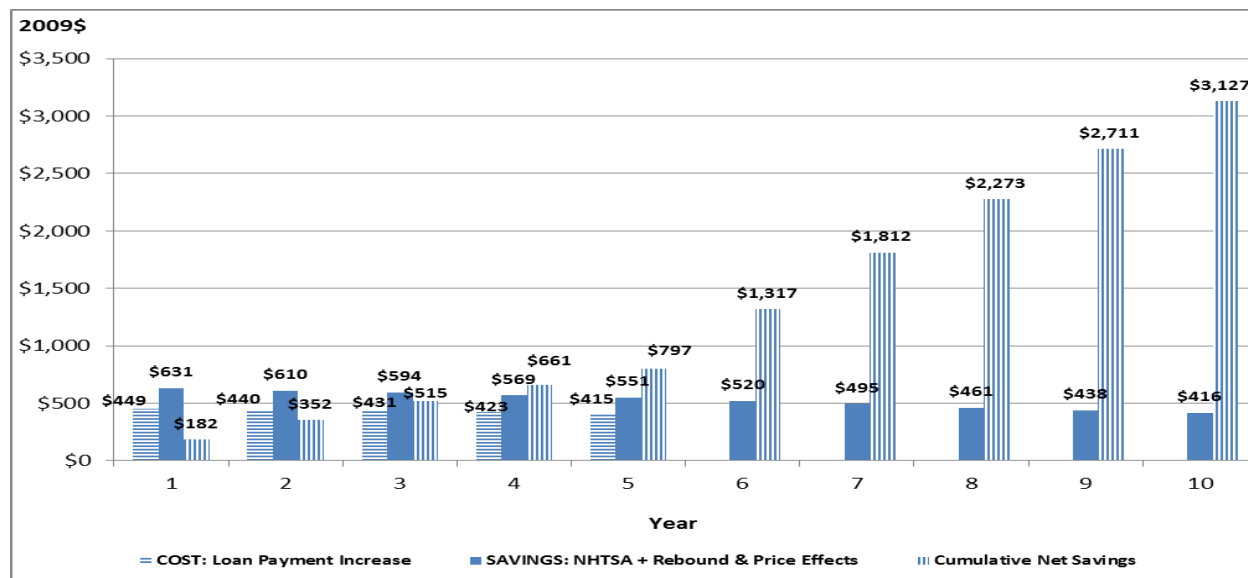
Not only have automakers agreed that the proposed standard is achievable, but they are already making progress toward it with current vehicles that meet future standards.

Fuel Economy Requirements Make a Difference

For years, there have been no required improvements in fuel efficiency. The result—automakers didn't focus on fuel efficiency. For almost two decades, there was little to no improvement in fuel economy (see Figure IV-3). In 2008¹⁶, when the standards for 2011-2016 were announced, the result was quite clear, as the following figures show. Between January 2000 and January 2007, gasoline costs doubled and increases were steady starting in 2002. As noted previously, the report released by the National Academy of Sciences clearly indicated that technologies existed to increase fuel economy at relatively low cost. Increases in fuel economy did not show up in auto models and sales until 2008, when the process of setting higher standards triggered by the Energy Independence and Security Act began to be implemented.

¹⁶ The final rule governing "Average Fuel Economy Standards Passenger Cars and Light Trucks Model Years 2011-2016" was announced May 2008

FIGURE IV-2: CONSUMER POCKETBOOK BENEFITS OF NEW CARS MEETING THE 2025 STANDARD FAR EXCEED THE COSTS



CONSUMER POCKETBOOK ANALYSIS ASSUMPTIONS

Vehicle Attributes

Vehicle Type	Cars
MPG 2025	56
Base year 2016 mpg =	38
Onroad Adjustment Factor	0.8
Onroad mpg 2025	44.8
Onroad mpg base year 2016	30.4

Economic

Incremental Cost	\$2026
Gasoline Cost 2025/gallon	\$3.53
Inflation rate	2%
Discount rate	3%

Financial

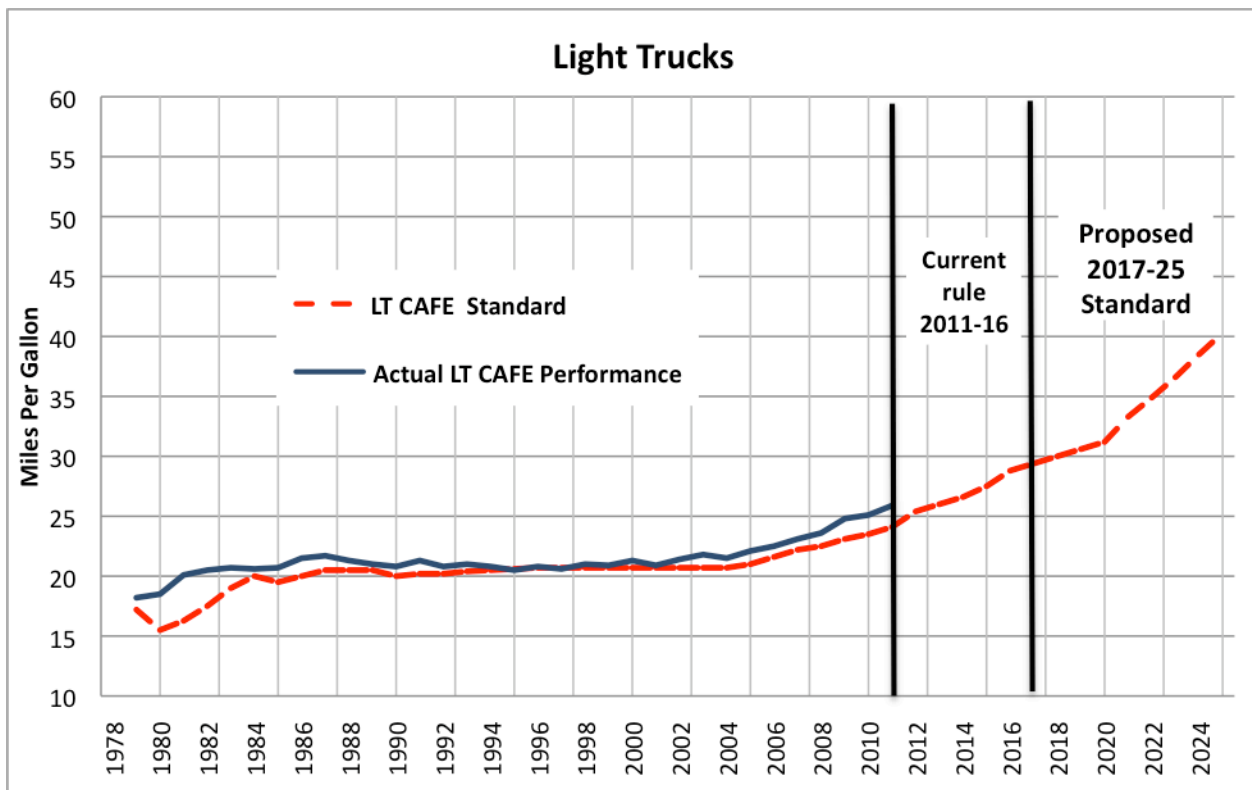
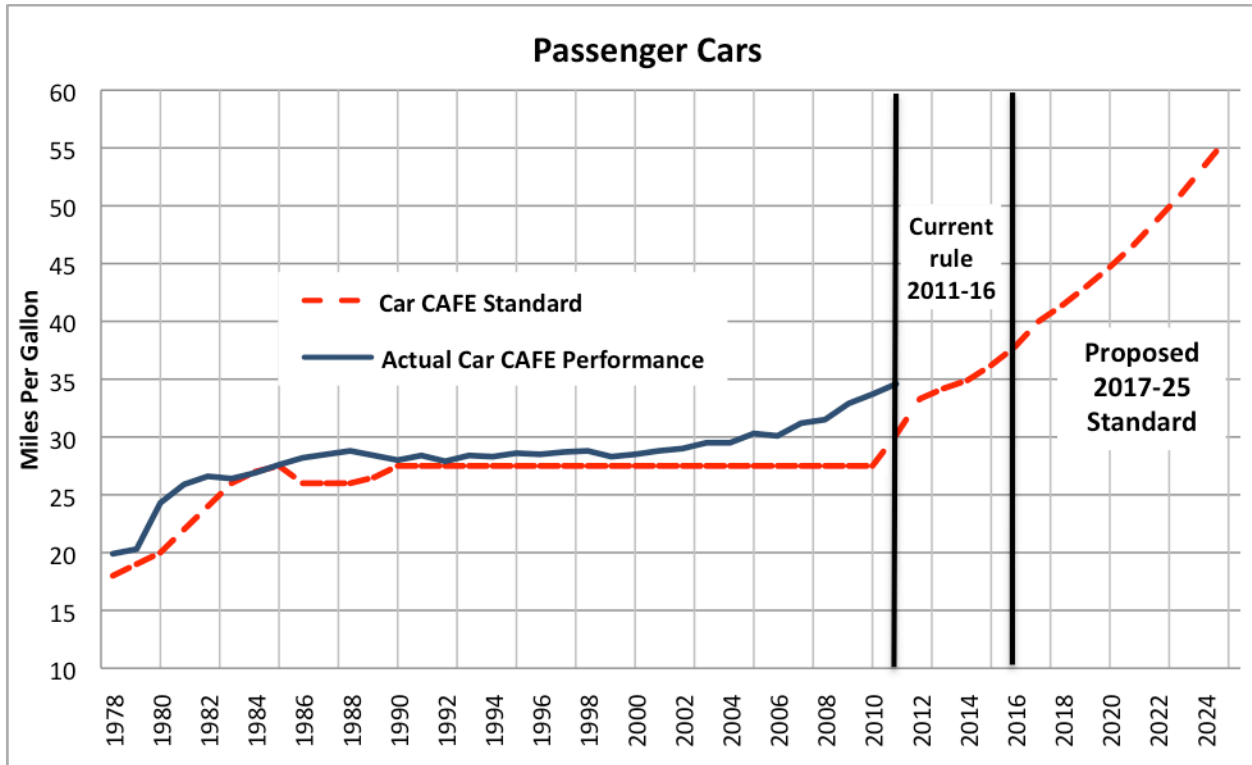
Loan period	5- Years
Interest rate	5%

Source and notes: Office of Regulatory Analysis and Evaluation National Center for Statistics and Analysis, *Preliminary Regulatory Impact Analysis Corporate Average Fuel Economy for MY 2017-MY 2025, Passenger Cars and Light Trucks*, November 2011, CFA pocketbook savings calculated without subtracting the rebound effect and adding \$.25/gallon for the price effect.

Automakers began to offer more fuel-efficient vehicles. Consumers responded by buying those vehicles and the actual fleet average began exceeding the current requirement. The trajectories that light duty vehicles have shifted to are consistent with the long-term goal for both cars and pickup trucks.

Using the soon to be implemented EPA fuel economy label rating scale, CFA analyzed the fuel economy of 2012 models compared to the performance of previous years. Table IV-5 tracks the changes in fuel economy performance from 2002 to 2012, according to the EPA ratings. We note the benchmark of 30 mpg, the standard for 2013. We stress, however, that this is the national average standard for the entire light duty fleet. Individual models would have standards that are higher or lower, depending on their attributes. Large trucks would have lower standards and smaller cars would have higher standards. In order to know whether a specific model meets the standard, we would have to know its size. Comparison to the benchmark gives a general idea how much progress is being made fleet-wide. The dramatic improvement starting in 2008 is apparent.

FIGURE IV-3: LIGHT DUTY VEHICLES CAFE STANDARDS AND ACTUAL MARKET PERFORMANCE



Source: NPRM for 2017 and Later MY Corporate Average Fuel Economy Standards; EPA NHTSA 2012-16 Corporate Average Fuel Economy Standards Final Rule

Table IV-5 shows data on the distribution of miles per gallon across time. The share of the more fuel-efficient models declined from 2002 to 2007, and then began improving. The share of models with fuel economy above 30 mpg increased almost six-fold between 2008 and 2012.

TABLE IV-5: EPA FUEL ECONOMY RATINGS: THE IMPACT OF REGULATORY ACTION ON PERFORMANCE (Percentage of all models)

Grade	Fuel Economy (mpg)	Grade: Fuel Economy (mpg)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
10	38+	10: 38+ mpg	0.7%	0.9%	0.6%	0.6%	0.4%	0.2%	0.2%	0.2%	0.6%	1.0%	1.1%
9	31-37	9: 31-37 mpg	1.1%	0.8%	1.0%	1.0%	0.7%	0.4%	0.8%	1.1%	2.1%	3.2%	4.7%
OVER 30 MPG			1.8%	1.6%	1.7%	1.7%	1.0%	0.6%	1.0%	1.3%	2.7%	4.2%	5.8%
8	27-30	8: 27-30 mpg	2.8	1.6	2.4	2.4	2.4	3.0	3.5	4.4	7.3	7.8	9.2
7	23-26	7: 23-26 mpg	11.2	10.8	10.3	10.3	10.3	10.2	12.8	12.4	18.9	18.3	20.4
6	22	6: 22 mpg	9.3	9.7	8.5	8.5	10.4	10.4	7.2	11.7	8.4	8.0	7.0
5	19-21	5: 19-21 mpg	29.0	27.2	28.9	28.9	28.2	26.5	28.5	27.6	29.2	30.4	26.9
4	17-18	4: 17-18 mpg	15.0	13.4	15.5	15.5	14.7	13.7	14.9	12.5	13.8	12.5	11.3
3	15-16	3: 15-16 mpg	20.8	22.8	23.7	23.7	24.4	24.6	16.6	15.6	11.4	10.3	9.8
2	13-14	2: 13-14 mpg	7.6	8.0	4.9	4.9	5.0	5.9	9.9	8.2	6.7	6.8	7.8
1	0-12	1: 0-12 mpg	2.4	4.9	4.1	4.1	3.5	5.2	5.7	6.4	1.7	1.7	1.8

Source: EPA Fuel Economy Estimates

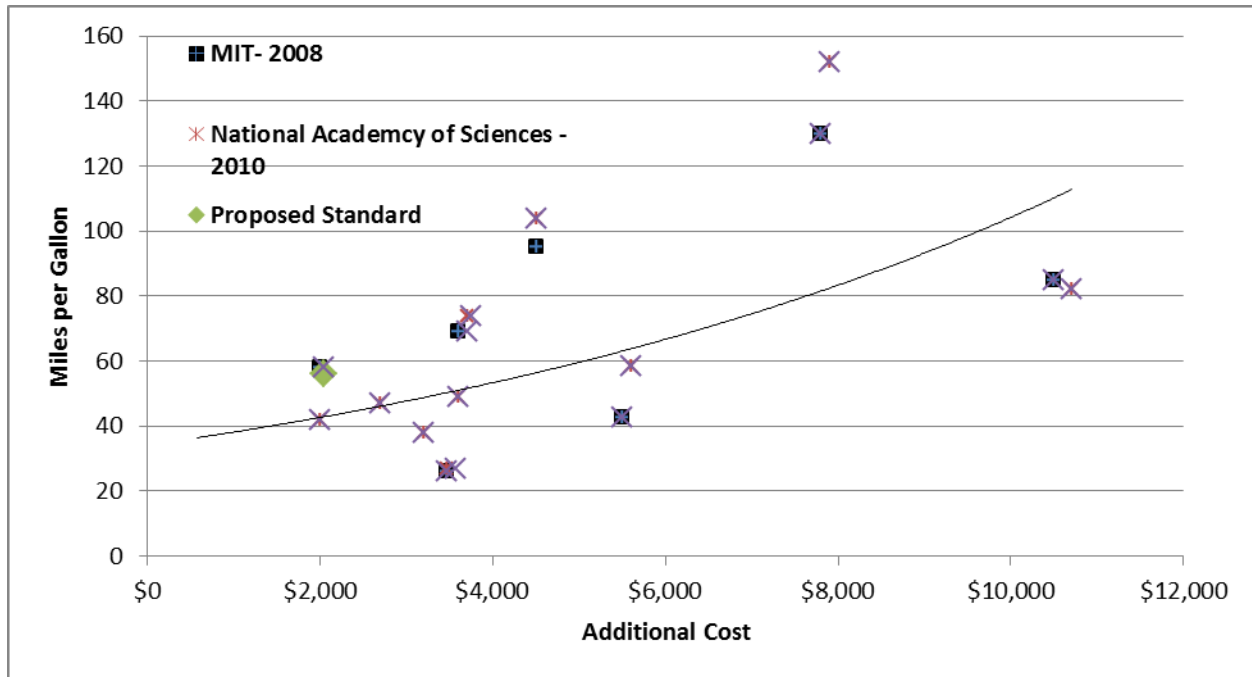
THE TECHNOLOGICAL FOUNDATION OF INCREASING FUEL ECONOMY

The positive economics of higher fuel economy that is reflected in each of the pocketbook assessments and the shift in the numbers of vehicles offered with higher fuel economy reflect a simple underlying fact. The technology to dramatically increase fuel economy is available at costs that are attractive. Those technologies are working their way into the vehicle fleet. As we noted earlier, the technological possibilities were recognized a decade ago by the National Academy of Sciences. We believe the legislation mandating new standards and the swift action by the Bush and Obama administrations to implement the new approach to standards jump-started the industry down the path to higher fuel economy.

Figure IV-4 shows recent technology cost curves that were developed by two major research institutions (MIT and the National Academy of Sciences). It shows the projected costs that would be incurred by including new technologies to raise the fuel economy of the vehicle fleet. Very high levels are possible, but they come at a rising cost. The figure also locates the proposed rule in comparison to the MIT and NAS studies. It is clear that the rule is quite modest in its target.

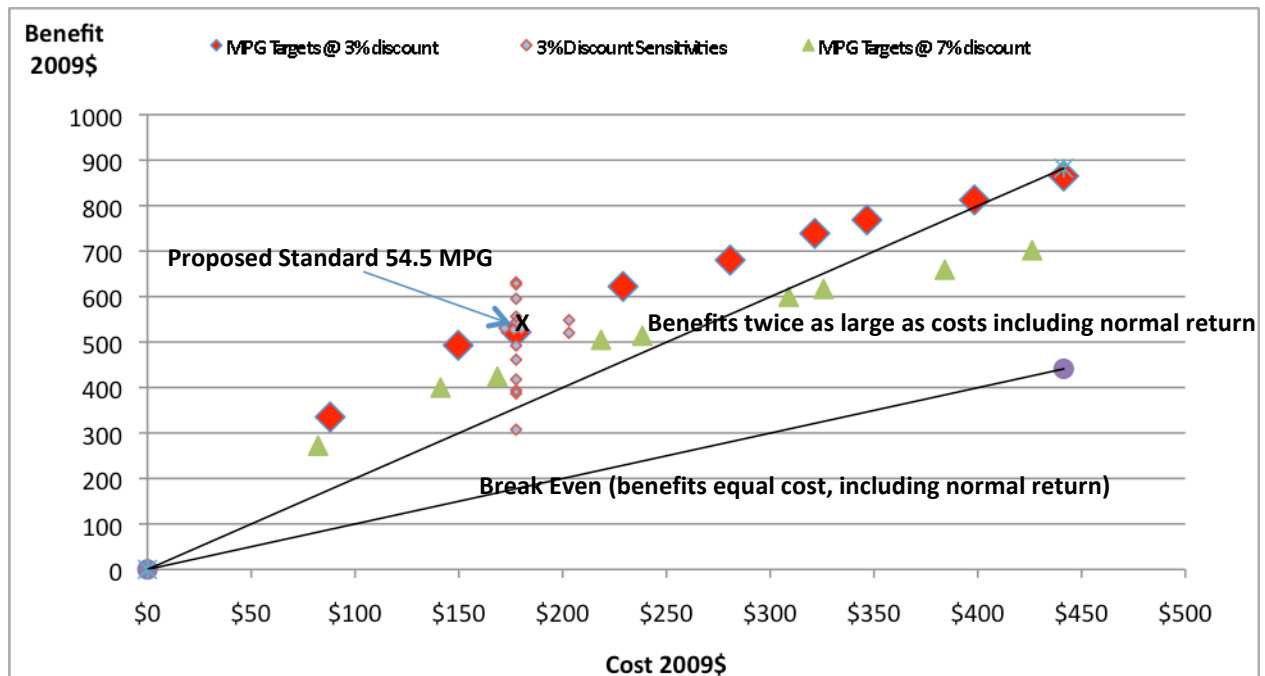
The figure only addresses the cost side of the equation. It does not address the benefit side. The key question is “Does the reduction in fuel consumption reduce gasoline expenditures enough to make them an attractive investment for consumers?” The pocketbook analysis above suggests that the answer is ‘yes’. We have seen this to be the case with several views of the consumer pocketbook impact. The national cost benefit analysis summarized in Figure IV-5, reaches the same conclusion. It shows that the proposed standard is extremely attractive as an economic investment. The benefits are more than twice as large as the costs, even after assuming a substantial return on investment to the nation (discount rate) is included in the cost. The exhibit shows all of the major scenarios and sets of assumptions considered by NHTSA-EPA.

FIGURE IV-4: TECHNOLOGY COST CURVES



NAS -2010, National Research Council of the National Academy of Science, America's Energy Future (Washington, D.C.: 2009), Tables 4.3, 4.4; MIT, 2008; Laboratory of Energy and the Environment, On the Road in 2035: Reducing Transportation's Petroleum Consumption and GHG Emissions Cambridge: July, 2008), Tables 7 and 8.

FIGURE IV-5: NHTSA NATIONAL COST BENEFIT ANALYSIS OF THE 2025 STANDARD



Source: Office of Regulatory Analysis and Evaluation National Center for Statistics and Analysis, Preliminary Regulatory Impact Analysis Corporate Average Fuel Economy for MY 2017-MY 2025, Passenger Cars and Light Trucks, November 2011, Table 2 and Table X-12c.

The large green triangles represent the costs and benefits of progressively higher levels of standards evaluated at a 7 percent discount rate. The large orange diamonds represent the costs and benefits of progressively higher levels of standards evaluated at a 3 percent discount rate. The small grey diamonds represent the sensitivity cases for the proposed standard evaluated at a 3 percent discount rate. The figure also includes two threshold levels, a breakeven line and a line where the benefits are twice the costs. The benefits far exceed the costs; the standard delivers half a trillion dollars of benefits at an investment cost of a little over \$165 billion.¹⁷ Another way to think about the benefit cost ratio is to observe that the \$165 billion spent on technology will save about 159 billion gallons of gasoline. In other words, the cost of increasing fuel economy works out to a little over \$1 per gallon.

THE CONVERGENCE OF POLICY, ECONOMICS AND TECHNOLOGY

The analysis of the automaker response to consumer demand and the new standards complete the triangle of forces that are steering U.S. automakers and auto markets toward higher levels of fuel economy. We believe the combination of technology, economics, and consumer attitudes has pointed policy makers in the direction of higher fuel economy standards which receive widespread support because they are beneficial to consumers, the industry and the nation.

Current progress makes it clear that meeting the proposed 54.5 mpg by 2025 standard is well within the reach of automakers. Fully implementing the standard will pave the way to consumer savings and financial protections, reduced dependence on foreign oil, and both the economic and health benefits of a cleaner environment.

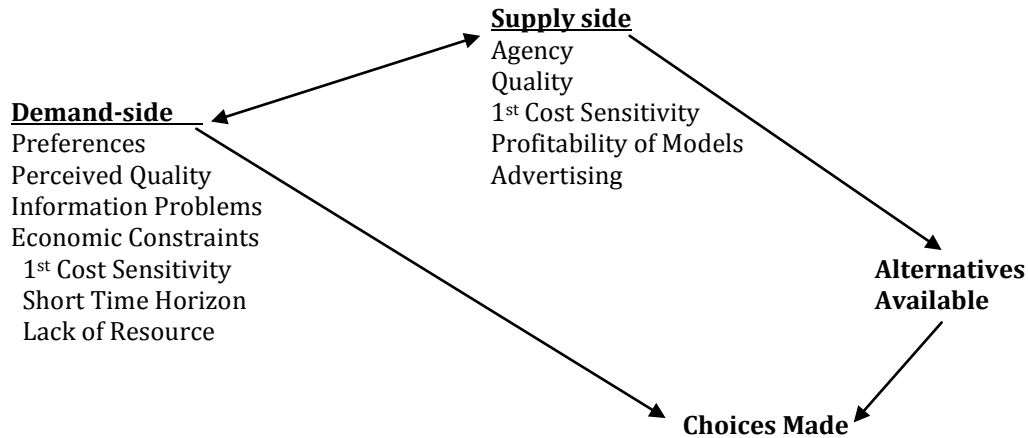
Given the strong movement toward higher fuel economy, the question always arises, why do we need standards? The answer we have offered in this paper is that the standards appear to have provided a needed stimulus for the automakers to move in the direction of higher fuel economy and that they play an important role in reducing risk, providing certainty and enhancing global competitiveness. We have demonstrated throughout our involvement in the analysis of the recent fuel economy proceedings that there is strong evidence over many years that there are significant imperfections that hamper and retard increasing fuel economy in the auto market, imperfections that are addressed by standards.

Figure IV-6, drawn from our earlier comments identifies those imperfections and the role of standards. This paper has provided evidence to support this view of the auto market. In this paper we have presented evidence demonstrating that the demand-side and supply-side factors that affect the auto market are pointing toward higher fuel economy and we have shown the how the introduction of the standards has played an important role in orienting the market toward higher fuel economy.

Automakers, consumers, autoworkers, health experts, national security leaders, and environmental groups all support the proposed 54.5-mpg standard. The Bush and Obama Administrations and the state of California have set the stage for what will likely be one of the most important energy policies in a quarter century. We consider the 54.5 mpg standard to be one of the most important consumer protection measures to be adopted on the federal level in decades.

¹⁷ These are the averages of the 3 percent and 7 percent discount rate analyses.

FIGURE IV-6: CLOSING THE EFFICIENCY GAP IN THE AUTO MARKET IMPERFECTIONS IN THE AUTO MARKET



IMPERFECTIONS ADDRESSED BY STANDARDS

Societal Failures

Externalities
 Information

Behavioral Factors

Motivation
 Perception
 Calculation
 Execution

Structural Problems

Scale
 Bundling
 Cost Structure
 Product Cycle
 Availability

Endemic Flaws

Agency
 Asymmetric Information
 Moral Hazard

Transaction Costs

Sunk Costs, Risk
 Risk & Uncertainty
 Imperfect Information

Source: Imperfections: Comment of the Consumer Federation of America, on National Highway Traffic Safety Administration Notice of Proposed Rulemaking; Docket No. NHTSA 2008-0089, RIN 2127-AK29; Average Fuel Economy Standards, Passenger Cars and Light Trucks; Model Years 2011-2015, July 1, 2008; How Standards Address imperfections, Comments of the Consumer Federation of America, Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Environmental Protection Agency 40 CFR Parts 86 and 600, Department of Transportation 49 CFR Parts 531,633, 537, et al., November 28, 2009.

ATTACHMENT 1:

CFA MATERIALS ON FUEL ECONOMY: 2005-2012

Research Papers:

The Consumer Benefits of the Proposed Fuel Economy Standards: A Preliminary Assessment, 1/12/12

Setting the Record Straight on Increasing Fuel Economy Standards, 06/28/11.

Will Policymakers Get Serious About Ending Our "Addiction to Oil" by Supporting 60 MPG Fuel Economy Standards Report, 5/31/11.

Gasoline Prices and Expenditures Report, 03/16/11.

Public Support for a 60 Mile Per Gallon Fuel Economy Standard, 09/28/10.

Setting the Next Round of Fuel Economy Standards: Consumers Benefit at 60 Miles Per Gallon, 09/02/10

U.S. Oil Market Fundamentals and Public Opinion Report, 05/18/10.

Shifting Fuel Economy into High Gear, 11/24/09

A Boom for Big Oil – A Bust for Consumers: An Analysis of Policies to Meet American Energy Needs, 09/16/08.

Fuel Economy and Auto Sales: Automakers and the National Highway Traffic Safety Administration Ignore Market Signals, 08/04/08.

Ending America's Oil Addiction: A Quarterly Report on Consumption, Prices and Imports First Quarter, 2008, 04/21/08.

A Consumer Analysis of the Adoption of the California Clean Cars Program in Other States: Arizona, 03/12/08.

A Step Toward s Brighter Energy Future: Policymakers Break the Logjam, But Vigorous Implementation Is Crucial, 12/18/07.

A Consumer Analysis of the Adoption of the California Clean Cars Program in Other States: New Mexico, 11/21/07.

No Time to Waste: America's Energy Situation is Dangerous, But Congress Can Adopt New Policies to Secure Our Future, 10/30/07.

Technology, Cost and Timing: An Analysis of Competing Congressional Proposals to Raise Fuel Economy Standards, 07/26/07.

Florida's Stake in the Fuel Economy Battle: An Analysis of the Economic, National Security and Environmental Impacts of Florida's Fuel Consumption and Increasing Federal Fuel Economy Standards, 07/25/07.

Big Oil v. Ethanol: The Consumer Stake in Expanding the Production of Liquid Fuels, 07/23/07.

Still Stuck in Neutral: America's Continued Failure to Improve Motor Vehicle Fuel Economy, 07/17/07

Too Little, Too Late: Why the Auto Industry Proposal to Go Low and Slow on Fuel Economy Improvements is Not in the Consumer or National Interest, 07/12/07.

Greater Fuel Economy Gains in Senate Commerce Bill than Auto Industry Proposal, 06/18/07

Rural Households Benefit More from Increases in Fuel Economy, 06/13/07.

National Cost-Benefit Analysis of Increasing Fuel Economy by 10mpg Over 10 Years, 06/04/07

Stuck In Neutral: America's Failure to Improve Motor Vehicle Fuel Efficiency 1996-2005, 11/13/06

Time to Change the Record on Oil Policy, 08/08/06

A Blueprint for Energy Security: Addressing Consumer Concerns about Gasoline Prices and Supplies by Reducing Consumption and Imports, 05/25/06.

50 by 2030: Why \$3.00 Gasoline Makes the 50 Mile per Gallon Car Feasible, Affordable and Economic, 05/08/06.

2006 Best and Worst Fuel Economy Ratings, 02/27/06.

The Impact of Rising Prices on Household Gasoline Expenditures, 09/01/05

National Random Sample Surveys:

CFA Surveys Reveal Record Public Concern About Gas Prices and Dependence on Oil Imports, 03/16/11.

National Survey Shows that Most Consumers Support 60 MPG Fuel Economy Standards by 2025, 09/28/10.

Americans Strongly Support Cutting Oil Consumption, Increasing Fuel Economy Standards to 50 MPG, 05/18/10.

Large Majority of Americans Remain Concerned About Gas Prices and Oil Imports, 11/24/09.

Despite \$1.90 Pump Price, a Large Majority of Americans Remain Concerned About Gas Prices and Oil Import Dependence, 02/03/09.

Consumers Want Fuel Economy They Can't Find, 04/21/08.

New CFA Report: Consumer Energy Costs Skyrocket; Strong Support for Congressional Action, Poll Shows, 10/30/07.

Americans Alarmed About Dependence on Oil Imports and Resulting High Gas Prices and Funding Terrorism, 05/21/07.

Consumers Still Greatly Concerned About Better Gas Mileage and Oil Imports Despite Falling Gas Prices, 11/13/06.

New Report Shows Nearly Three-Quarters of Americans Concerned About Future Gas Prices, 09/01/05.

Comments and Testimony:

Comments of Consumer Groups: Consumer Federation of America, et al., *Proposed Rule 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, Docket Nos. EPA-HQ-OAR-2010-0799; FRL-9495-2, NHTSA-2010-0131, 2/13/12.

Testimony of Dr. Mark Cooper on the American Energy Initiative before the House Energy and Commerce Committee, 03/17/11

CFA's Comments on Fuel Economy Labels to NHTSA, 11/22/10.

Comment of the Consumer Federation of America, In the Matter of Notice of Upcoming Joint Rulemaking to Establish 2017 and Later Model Year Light Duty Vehicle GHG Emissions and CAFE Standards, Docket ID No. EPA-HQ-OAR-0799, Docket ID No. NHTSA-2010-0131, October 29, 2010

Testimony of Jack Gillis to the EPA and NHTSA on Revisions and Additions to Motor Vehicle Fuel Economy Label, 10/21/10.

CFA Comments on NHTSA's Proposed Rule Establishing Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 11/30/09

Testimony of Dr. Mark Cooper to the EPA on Establishing Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 10/21/09

Consumer Groups' Comments on Tire Efficiency Consumer Information Rulemaking, 8/21/09.

Consumer Groups' Comments to FTC Regarding Fuel Economy Advertising Guidelines, 06/26/09

Comments and Technical Appendices of the Consumer Federation of America, on the National Highway Traffic Safety Administration Notice of Proposed Rulemaking; Docket No. NHTSA 2008-0089, RIN 2127-AK29; Average Fuel Economy Standards, Passenger Cars and Light Trucks; Model Years 2011-2015, July 1, 2008.

SOURCES: AVAILABLE AT WWW.CONSUMERFED.ORG