



**Consumer Federation of America**

**RISING GASOLINE PRICES AND RECORD HOUSEHOLD EXPENDITURES**

**WILL POLICYMAKERS GET SERIOUS ABOUT ENDING OUR "ADDICTION TO OIL" BY  
SUPPORTING A 60 MILE PER GALLON FUEL ECONOMY STANDARD?**

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## **EXECUTIVE SUMMARY**

The last seven Presidents have declared that reducing U.S. dependence on foreign oil is critically important to America's economic, political and environmental well-being. Even George W. Bush, a Texas oilman, declared that our "addiction to oil" was a serious problem. Unfortunately, in spite of this widespread Presidential concern, little progress has been made. Today, a decade of dramatically increasing gasoline prices has made the need for new policies even more urgent. The place to begin is with the largest user of this foreign oil, the vehicles we need to carry on our daily lives.

This report shows that the Obama administration has a unique opportunity to change the trajectory of U.S. oil consumption by adopting standards that cut in half the gasoline used by America's cars and trucks by doubling their miles per gallon requirements by 2025.

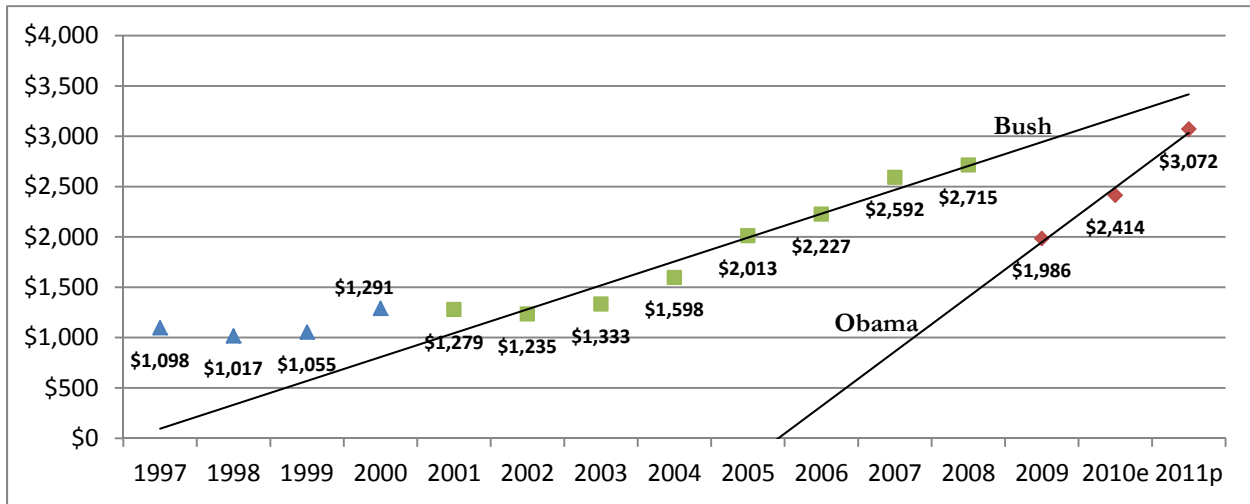
Four important factors have surfaced that make this goal both reasonable and advisable:

- Great public concern about gasoline prices and Mid-East oil dependence that has led Americans to strongly support higher fuel economy standards.
- The availability of fuel savings technology that can achieve the goal in a cost effective, consumer-friendly manner.
- Clear evidence that the historical resistance of automakers to adding fuel saving technology has weakened, while public willingness to buy that technology has increased.
- A new regulatory landscape that gives federal and state governments more power and flexibility to set standards and unleashes vigorous competition to meet the standards.

### **The Cost of Gasoline is Dominating Household Expenditures**

Rising gasoline prices over the past decade have taken a huge bite out of household budgets, growing by 250% from just over \$1200 in 2002 to just under \$3100 projected for this year. Measured in constant dollars, they have doubled. The following table indicates that the trajectory of rising gas prices on household expenditures has increased during the past three years.

**EXHIBIT ES-1: AVERAGE ANNUAL HOUSEHOLD EXPENDITURES ON GASOLINE (Current \$)**

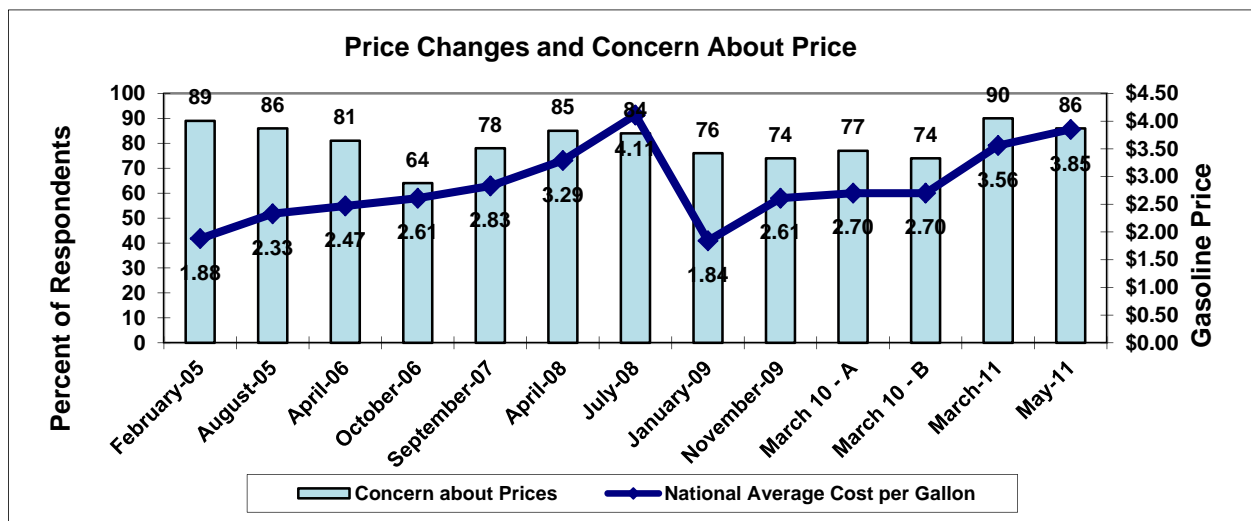


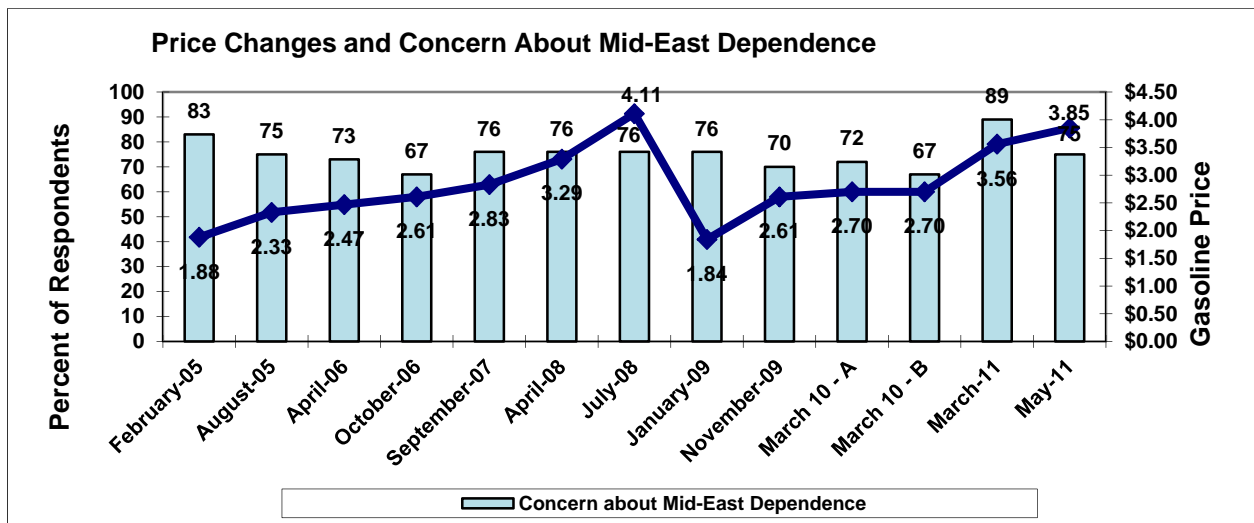
Sources: Consumer Expenditure Survey, various years. 2010 and 2011 estimate based on Energy Information Administration data base on gasoline prices and trends. A short-run elasticity of demand is included in the projections of -.244, based on the elasticity of household demand implicit in the CES data for 1997 - 2009. The price of gasoline for 2011 is set at \$3.72, which was the average price for April. Over the past five years, the April price has been the best predictor of the average annual price.

**Public Concern About Gas Prices is Very High**

Given the dramatic increase in household gasoline expenditures, it is not surprising that CFA has found that the overwhelming majority of consumers are concerned about gasoline prices and Mid-East oil dependence. In fact, in a dozen surveys conducted over the past six years (see Exhibit ES-2), concern this year is at the highest level surveyed by CFA.

**EXHIBIT ES-2: TRENDS IN PRICES AND CONSUMER CONCERNS**



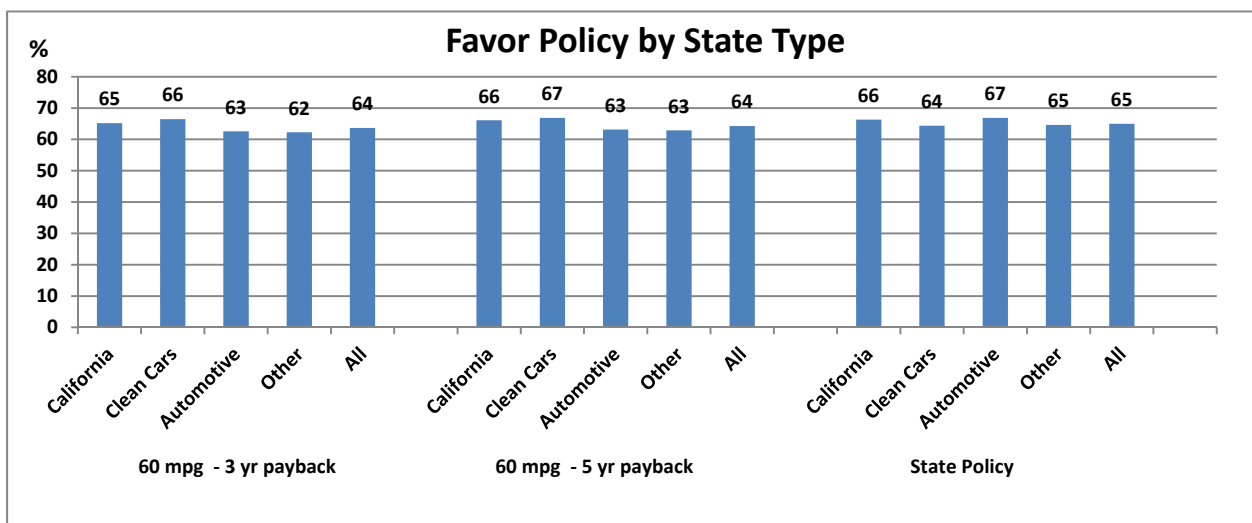


### The Public Supports Fuel Economy Standards

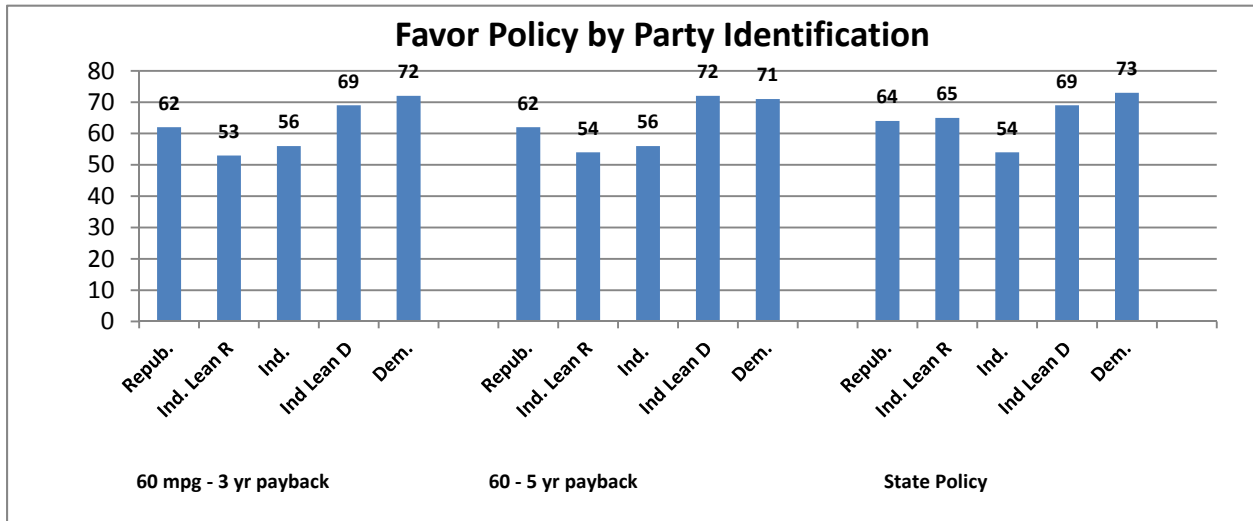
The strong concern about gasoline prices and Mid-East oil dependence translates into support for the reduction of U.S. oil and gasoline consumption. Over 80% of respondents think it is important to reduce oil consumption and believe that increased vehicle fuel economy is the best way to do so. To determine if consumers were willing to pay for increased fuel economy, we checked their support of 60 mpg standards that required a 3 or 5 year payback and support exceeds 60 percent (see Exhibit ES-3).

This support is strong across different types of states, including traditional auto belt states (MI, OH, IN), “clean car” states, and California. There is also widespread support for allowing states to set emission standards, which have the effect of increasing fuel economy.

### EXHIBIT ES-3: SUPPORT FOR A 60-MPG STANDARD AND STATE INVOLVEMENT IN SETTING EMISSIONS STANDARDS



Very significantly, the 60 mpg requirement by 2025 receives majority support across the political spectrum.



### 60 mpg is Economically Feasible

Since the National Academy of Sciences concluded in 2002 that technologies exist to increase fuel economy at manageable costs, the public policy debate has been about how far and how fast the fuel

economy of the vehicle fleet can be raised. CFA's independent analysis concluded that a 60 mile per gallon target was technically feasible, economically practical and consumer-friendly. As Exhibit ES-4 shows, the EPA/NHTSA analysis of a 6% per year improvement in fuel economy until 2025, which results in a standard of 62 miles per gallon, corroborated our findings. On average, the payback period for new vehicles sold in 2020 under the 6%

improvement standard is just over 2 years and the net consumer savings is over \$4,000 per vehicle. On average, the payback period for new vehicles sold in 2025, under the 6% scenario, is 3.8 years with a net consumer savings of nearly \$6,500 per vehicle.

#### Exhibit ES-4: Consumer and National Benefits of 6% per Year Improvement (average across all potential paths)

	2020	2025
Standard Level (MPG)	45	62
Payback (Years)	2.1	3.8
Net Lifetime Savings	\$4,156	\$6,475
Gasoline Savings (Billion Gallons)	25.2	54.6
Greenhouse Gas Reductions (Million Metric Tons)	306	560

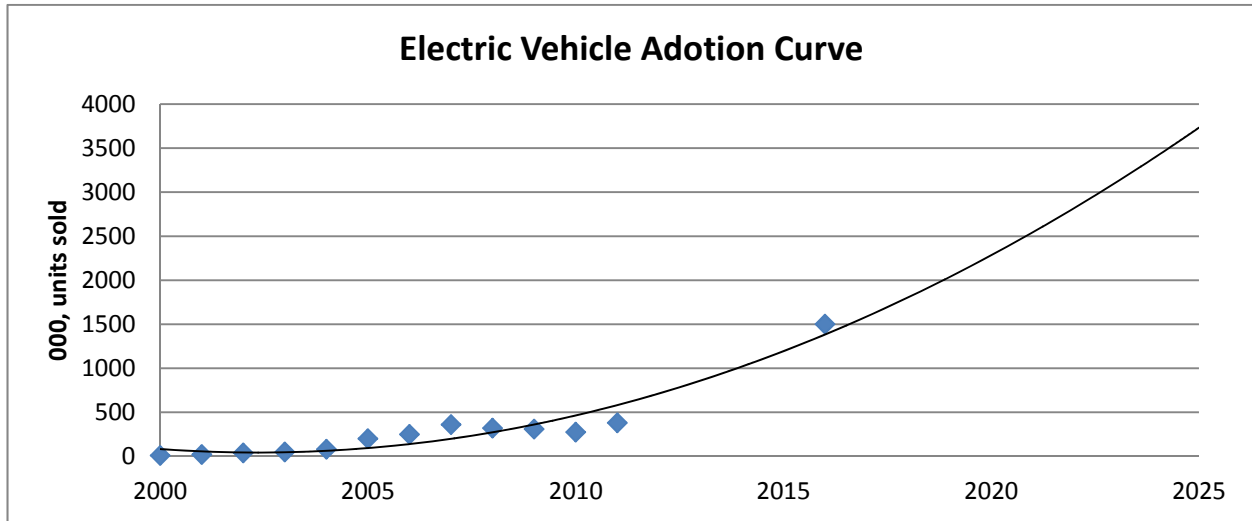
**Source: Environmental Protection Agency, Department of Transportation, Notice of Joint Rulemaking to Establish 2017 and Later Model Year Light Duty Vehicle GHG Emissions and CAFE Standards, Tables 6.5-1, 6.5-3., Table 6.5-12, 6.5-14.**

### Marketplace Changes on the Road to 60 MPG

Achieving 60 mpg by 2025 will require a significant increase in electric vehicles and substantial improvements in the fuel economy of gasoline powered vehicles. Both changes are eminently possible.

Already today there are 30 models using different approaches to electric power including hybrids, plug-ins, hybrid plug-ins and extended range plug-ins. These “electrics” cover the full range of models that consumers drive; compacts, sedans, large cars, SUVs and pickups. J.D. Power and Associates projects that there will be 159 models by 2016 and electric vehicles will account for almost 10% of the market. Placing these data points from the early days of hybrids into an innovation adoption framework, one can project millions of units being sold annually by 2025 (see Exhibit ES-5).

**EXHIBIT ES-5: THE DEVELOPMENT OF ELECTRIC VEHICLES**



Sources: Rudi Halbirght, Max Dunn, *Case Study: The Toyota Prius, Lessons in Marketing Eco-Friendly Products*, March 3, 2010, [http://www.hybridcars.com/hybrid-sales-dashboard/...](http://www.hybridcars.com/hybrid-sales-dashboard/) Various years, J.D. Power and Associates, *Despite Rising Fuel Prices, the Outlook for “Green” vehicles Remains Limited for the Foreseeable Future*, April 27, 2011.

There is also great and immediate potential for the improvement of gasoline powered vehicles. More efficient engines and transmissions, improvements in body design, reduced rolling resistance and the use of high-strength, lighter materials have allowed gas-powered cars to get over 40 mpg today and compete with hybrids. Technologies are in hand, or soon will be, to get 50 mpg or more in gasoline powered cars.

**Consumers Have Demonstrated a Willingness to Change**

While consumers have demonstrated great concerns about fuel economy, more importantly they have demonstrated a willingness to change and buy more fuel efficient vehicles. This is in spite of the protests of the car companies who say consumers don’t care.

- Between 2004 and 2010, the percentage of all cars sold that had 6-cylinders dropped from 41% to 26%, while the percentage of 4-cylinder cars increases from 50% to 67%. In the SUV category, the percentage 8-cylinder SUVs dropped from 32% to 14% while the percentage of 6-cylinder SUVs increased from 11% to 30%.
- For new cars, average fuel economy increased by 4 mpg between 2004 and 2010. Three quarters of that (3 mpg) was due to the increase in the fuel economy of the vehicles. One-quarter (1 mpg) was due to the shift from 6-cylinder to 4-cylinder cars.

- For SUVs, average fuel economy increased by 4.75 mpg between 2004 and 2010. Of that, 2.75 mpg was due to the increase in the fuel economy of the vehicles, and 2 mpg was due to the sharp decline in 8-cylinder market share and the sharp rise in 4-cylinder market share (likely people shifting from 8 to 6 and from 6 to 4).

### **The Opportunity for Regulatory Policy to Respond to the Public Majority**

The fact that consumers want higher fuel economy underscores the need for responsive standard setting. Our analysis of the auto market shows that there are numerous factors on both the supply-side and the demand-side of the auto market that cause it to produce less fuel economy than it should. Setting standards is a reasonable and responsible way to address the market imperfections that hinder necessary improvements in the fuel economy of our nation's vehicles. The current federal approach to standards has set the stage for a national approach to improvement.

- The Energy Independence and Security Act of 2007 redesigned the Corporate Average Fuel Economy (CAFE), not only to set higher standards, but also to set standards in a technology-neutral and product-neutral way. This new approach to standard setting accommodates consumer preferences by setting different standards for different sized vehicles. This sensibly responds to technical challenges inherent in larger vehicles, but insures that every vehicle class will be required to improve at a fast pace.
- The current standard setting environment has demonstrated that reasonable requirements will effectively point the industry in the right direction. The decision of California, and over a dozen other states, to adopt a Clean Cars program forced automakers to reduce the emission of pollutants from automobiles and offer electric vehicles. The Obama administration supported the state's rights to set standards for emissions and ordered the EPA and NHTSA to coordinate with each other and the clean cars states.
- This is the first time that policy makers are considering long-term standards. The long-term nature of this opportunity gives the industry and the public time to adjust and reduces the market risk of investing in new technologies.

Our analysis makes it clear that the stage has been set to establish reasonable and achievable fuel economy standards with plenty of opportunity to improve performance at a reasonable pace. To squander this opportunity would have tragic consequences for consumers, the economy, the environment and our nation's security.



## **INTRODUCTION: THE CHALLENGE AND THE OPPORTUNITY IN FUEL ECONOMY STANDARDS**

Seven Presidents have declared the goal of reducing U.S. dependence on oil, with George Bush, an oilman from Texas, lamenting the national addiction to oil.<sup>1</sup> In the past decade, the urgency of this challenge has increased dramatically, as gasoline prices mounted, the burden of gasoline expenditures on households' budgets grew and the implications of our over-reliance on hostile states and the impacts of oil price volatility on our national economy became clearer. Unfortunately, little progress has been made toward achieving this goal.

But that situation could change over the course of this spring and summer. The U.S. has an opportunity to dramatically change the trajectory of national oil consumption. Decision makers in Washington and Sacramento are working together to draft standards that could double the fuel economy of the cars and trucks that Americans drive by 2025. The unique opportunity arises from the intersection of a number of dramatic developments over the past decade.

- Rising gas prices and household expenditures on gasoline get the attention of the public and policymakers and build strong support for much higher fuel economy standards.
- The decision of California and over a dozen other states to adopt a Clean Cars program under the leadership of the California Air Resources Board (CARB) forced automakers to reduce the emission of pollutants from automobiles, which has the side effect of increasing fuel economy; cleaner cars consume less gas.
- The passage of the Energy Independence and Security Act of 2007, which redesigned the Corporate Average Fuel Economy (CAFE) administered by the National Highway Traffic Safety Administration (NHTSA), not only to set higher standards, but also set standards in a technology and product-neutral way.
- A Supreme Court decision upheld the authority of the U. S. Environmental Protection Agency (EPA) to regulate greenhouse gasses as a pollutant strengthened federal authority.
- The federal government supported the Clean Cars program and the courts upheld state authority.
- The White House issued an executive order that required EPA and NHTSA to coordinate with each other and CARB, coordination that immediately led to increases in the standard that will save consumers over \$35 billion in the 2012-2015 period alone.

This study presents the consumer view of fuel economy standards from the perspective of their impact on consumer pocketbooks and consumer opinions about gasoline consumption, fuel economy and fuel economy standards. A proper consumer analysis must recognize that consumers bear the burden of higher fuel economy standards

because the cost of the technologies to achieve higher fuel economy are recovered by automakers in the sticker price of the vehicle and that consumers are the primary beneficiaries of higher fuel economy standards because they can consume and spend less on gasoline.

Because gasoline is such an important consumer issue, the Consumer Federation of America (CFA) regularly examines the issue of fuel economy and mileage standards (Corporate Average Fuel Economy or CAFE standards) of cars and light trucks as well as the price of gasoline from the point of view of economics, technology and public opinion. In the past, we have found that consumers understand the trade-off and support higher fuel economy by a wide margin. With gasoline prices at record levels, we are not surprised to find more widespread support than ever for higher fuel economy.

This report examines several of the most important factors that have created the unique opportunity to achieve the goal of reduced dependence on oil.

First, we briefly examine gasoline prices and household expenditures. These are the daily facts of life that affect the consumer. Second, we examine consumer attitudes toward gasoline – concerns and support for policy responses. Third, we examine several aspects of the pocketbook economics of fuel economy, as they relate to the decisions that are on the table. Finally, we briefly examine indications of change in the auto market.

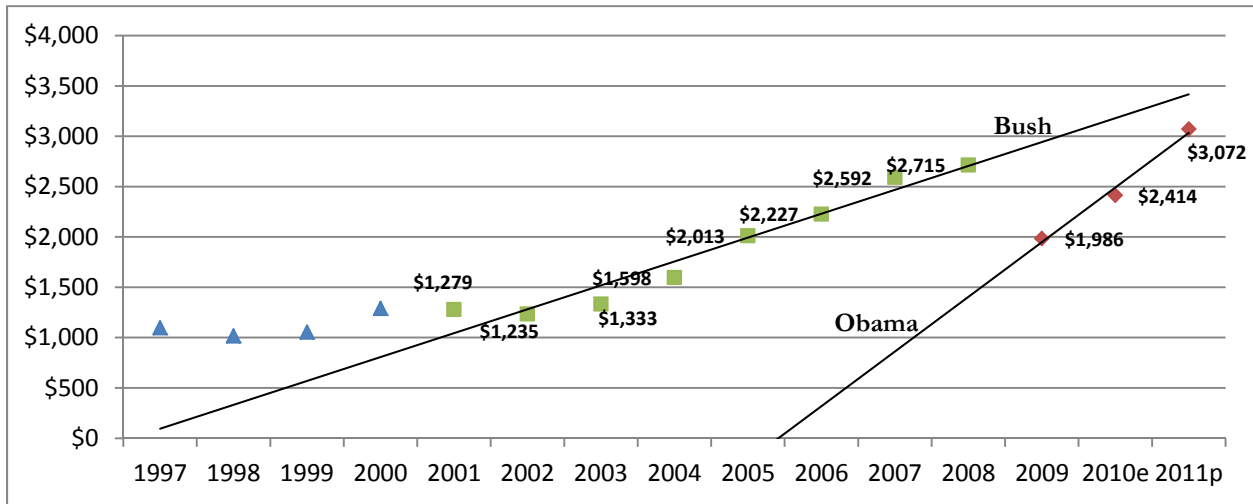
## **I. A LONG-TERM VIEW OF GASOLINE PRICES AND HOUSEHOLD EXPENDITURES**

The recent run-up in gasoline prices repeats a pattern that has become all too familiar for American gasoline consumers. Prices spike unexpectedly, taking a huge bite out of the household budget, then decline, leaving consumers to worry about the inevitable next price spike. Consumers have good reason to be frustrated by the experience in the gasoline market in the past decade. With the exception of the recession years (2001-2002, 2009-2010), household expenditures on gas have set records each year in nominal and real dollars. Given the pattern of prices thus far, this year, we project that the average household will spend almost \$3100 on gasoline this year, another record, as shown in Exhibit I-1.

Recessions are not an acceptable solution to the gasoline price problem and with the severe pain at the pump, loud cries go out for quick fixes, like gasoline tax holidays to ease the pain or a drawdown of the strategic petroleum reserve to dampen speculation in the crude oil market. While these quick fixes might alleviate some short-term pain, they only divert attention from the more important and fundamental long-term causes of and solutions to the problem.

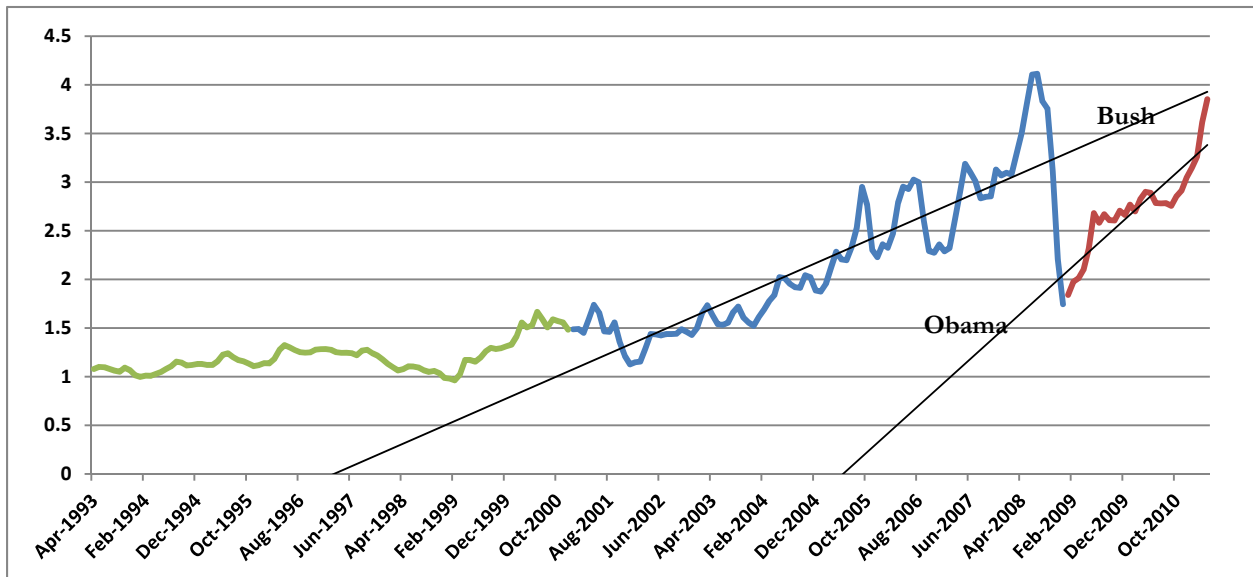
As shown in Exhibit I-2, the gyrations of monthly prices take place around a strong upward trend. The trend started after the end of the 2001-2002 recession, and it persisted through the entire presidency of George W. Bush. Now that the great recession appears to be ending, President Barack Obama is confronting the same problem.

### EXHIBIT I-1: AVERAGE ANNUAL HOUSEHOLD EXPENDITURES ON GASOLINE (Current \$)



Sources: Consumer Expenditure Survey, various years. 2010 and 2011 estimate based on Energy Information Administration data base on gasoline prices and trends. A short-run elasticity of demand is included in the projections of -.244, based on the elasticity of household demand implicit in the CES data for 1997 - 2009. The price of gasoline for 2011 is set at \$3.72, which was the average price for April. Over the past five years, the April price has been the best predictor of the average annual price.

### EXHIBIT I-2: AVERAGE MONTHLY GASOLINE PRICE (CURRENT \$/GALLON)



Source: Energy Information Administration data base on gasoline prices

Our analysis of the oil market,<sup>2</sup> the auto market,<sup>3</sup> household gasoline expenditures<sup>4</sup> and the consumer economics of fuel economy standards<sup>5</sup> over the past several decades has led us to conclude that the cornerstone of an effective long-term response to the gasoline price problem is to increase the fuel economy of the vehicle fleet. Lowering consumption would, obviously, ease the pain of future price spikes and, if the cut is large enough, it might even moderate those price spikes because the U.S. is, by far, the largest consumer of oil and gasoline in the world.<sup>6</sup>

## II. CONCERN ABOUT PRICES AND MID-EAST DEPENDENCE

Our surveys of consumer attitudes over the past six years,<sup>7</sup> which encompasses the worst of the price spikes, show that consumers are willing to address the long term trend. They support policies to reduce oil consumption by increasing the fuel economy of the vehicle fleet. This report adds several key dimensions to that body of analysis.

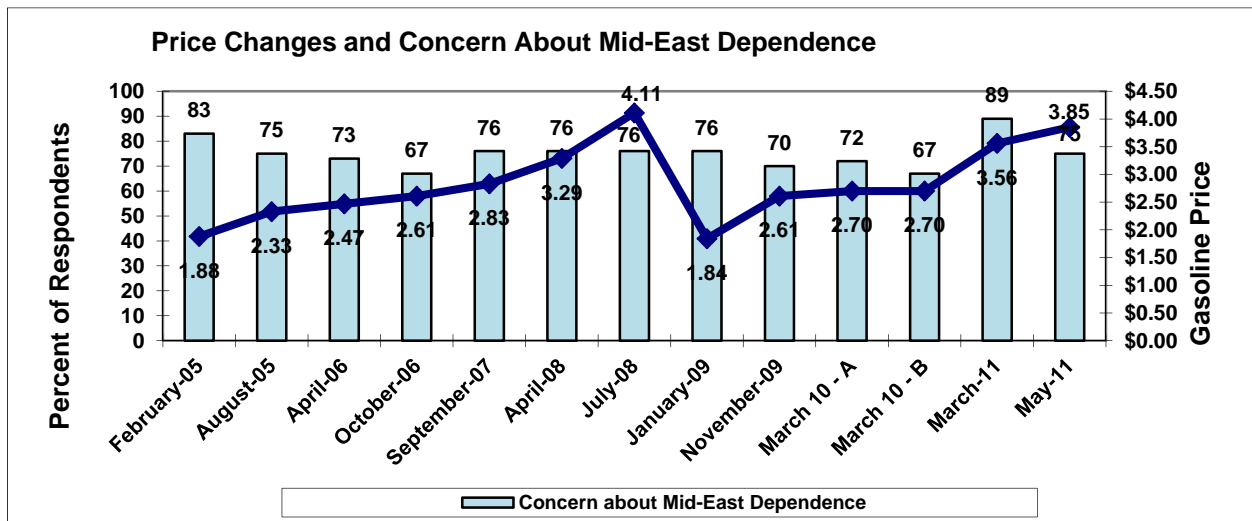
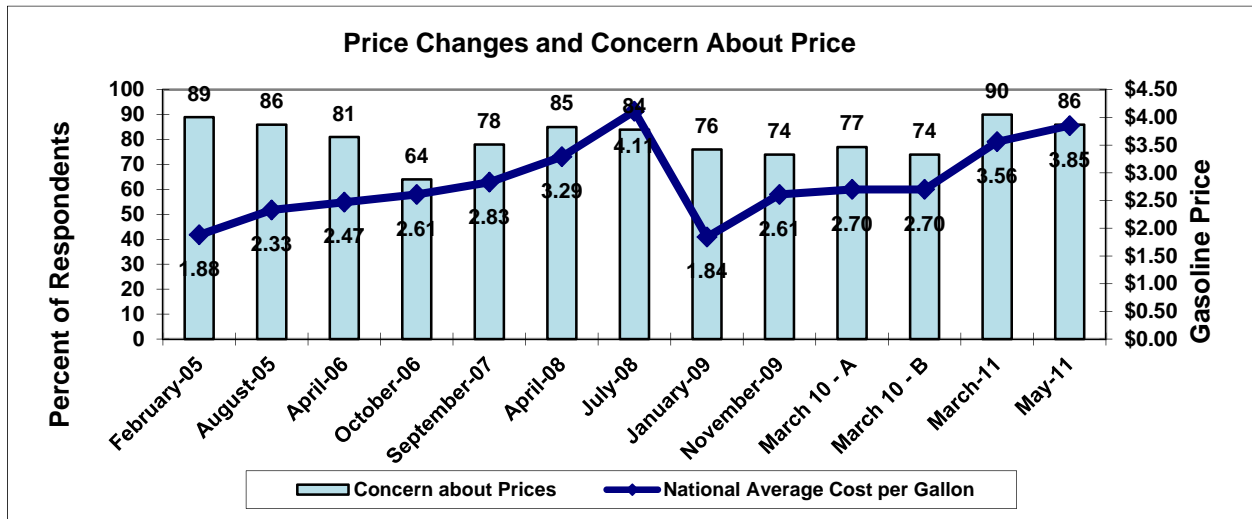
Exhibit I-2 shows responses to a standard question CFA has asked on concerns about gasoline prices and Mid-East oil dependence for the past six years.

Thinking about the NEXT FIVE YEARS, how concerned, personally, are you about the following issues? Please use a scale of 1 to 5, where 1 means no concern and 5 means great concern.

(1) No concern (1), (2), (3), (4), (5) Great concern (5), DON'T KNOW (99)

- A. Gasoline prices
- B. U.S. dependency on Mid-Eastern oil

**EXHIBIT II-1: TRENDS IN PRICES AND CONSUMER CONCERNS**



As shown in Exhibit II-1, we have discovered that consumers express a great deal of concern about prices and Mid-East imports. Even when prices were around \$2.00 per

gallon, approximately three quarters of the respondents expressed concern about prices. Today, with prices above \$3.50 per gallon, the concern has grown to 86%. Concern about Mid-East imports has generally been somewhat lower, but never less than two-thirds of respondents, and today, concern stands at three-quarters.

In the most recent survey, we doubled the sample size so we could examine whether attitudes were different in different groups of states. We have identified four categories of states. California is not only the largest state in the nation, but it has also been a leader in the effort to address concerns about the environmental impact of automobiles. California does not regulate fuel economy, but it does regulate emissions from vehicles. Standards that reduce pollution from automobiles often have the effect of increasing fuel economy. The double sample yields just fewer than 200 respondents in California.

California's leadership role was reinforced by thirteen states (and the District of Columbia) who have adopted the 2016 tail pipe emissions standards authored by California. These fourteen jurisdictions (plus California) are the "Clean Cars States." In our double sample, there are over 500 respondents in the "Clean Cars States" other than California.

Michigan, Ohio and Indiana are identified as automotive states. They have a level of employment in the automobile manufacturing industry that is at least twice as large as the fourth ranked state, and five to ten times as high as the national average. These are states where automobile production is a uniquely important part of the economy. In our double sample, there are over 200 respondents in the "Automotive States."<sup>8</sup>

All respondents who do not reside in states that fall into one of the above three categories are categorized as "other States." In our sample, there were about 1100 respondents.

Exhibit II-2 shows that there is very little difference in concern about gasoline prices between the groups of states. There are no statistically significant differences between the four groups of states. Approximately 90% of respondents express concern about prices. Exhibit II-3 shows that there is very little difference in the concern about Mid-East oil dependence across the states. Approximately 80% of respondents express concern about dependence on Mid-East imports.

### **III. IMPORTANCE OF REDUCING OIL CONSUMPTION**

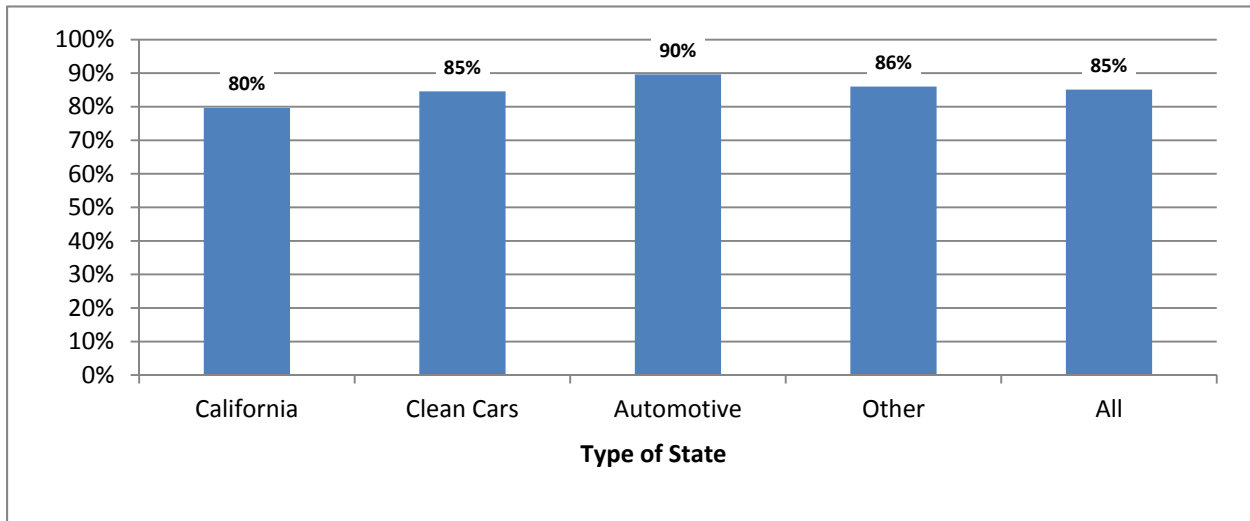
Concerns about gasoline prices and Mid-East oil dependence translate into support for the reduction of U.S. oil and gasoline consumption. In the most recent survey, we asked several questions about this issue. We asked separate questions about whether it is a good idea, in general, to reduce gasoline consumption and then we asked how important increases in fuel economy were in accomplishing the goal of reduced consumption.

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

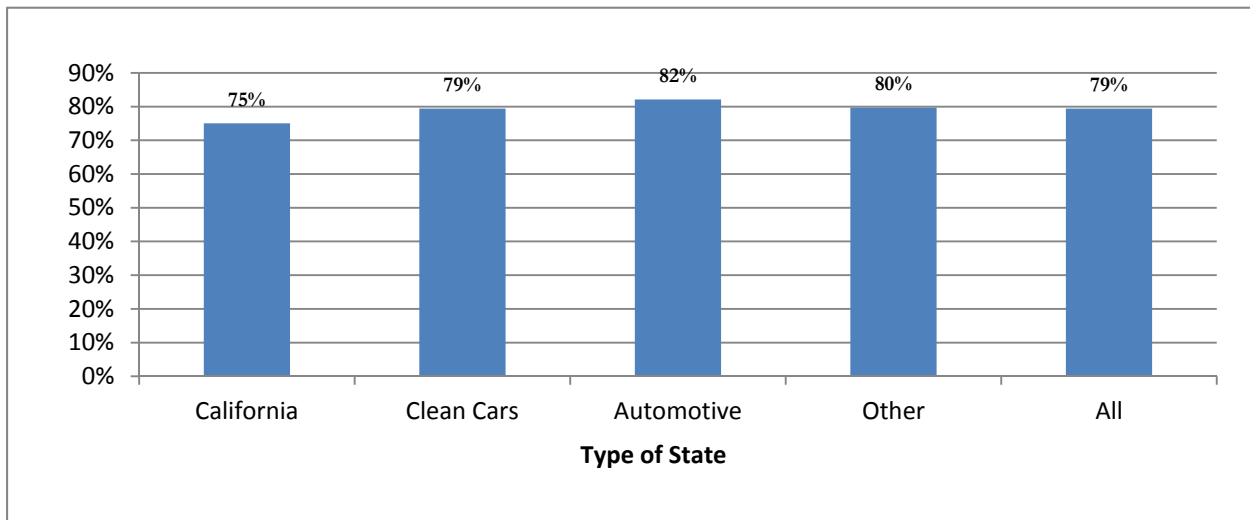
**(1) Very important, (2) Somewhat important, (3) A little important, (4) Not at all important**

**99 DON'T KNOW**

## EXHIBIT II-2: CONSUMERS CONCERNS ABOUT GASOLINE PRICES



## EXHIBIT II-3: CONCERNS ABOUT MID-EAST OIL DEPENDENCE



**How important is it to you, in order to limit oil consumption, that the fuel economy of motor vehicles increases? Is it:**

**(1) Very important, (2) Somewhat important, (3) A little important, (4) Not at all important  
99 DON'T KNOW**

In examining this, and subsequent issues, we have introduced a second categorization of respondents (in addition to the type of state in which they reside). We created a four point scale that reflected their level of concern about gasoline prices and Mid-East oil dependence.

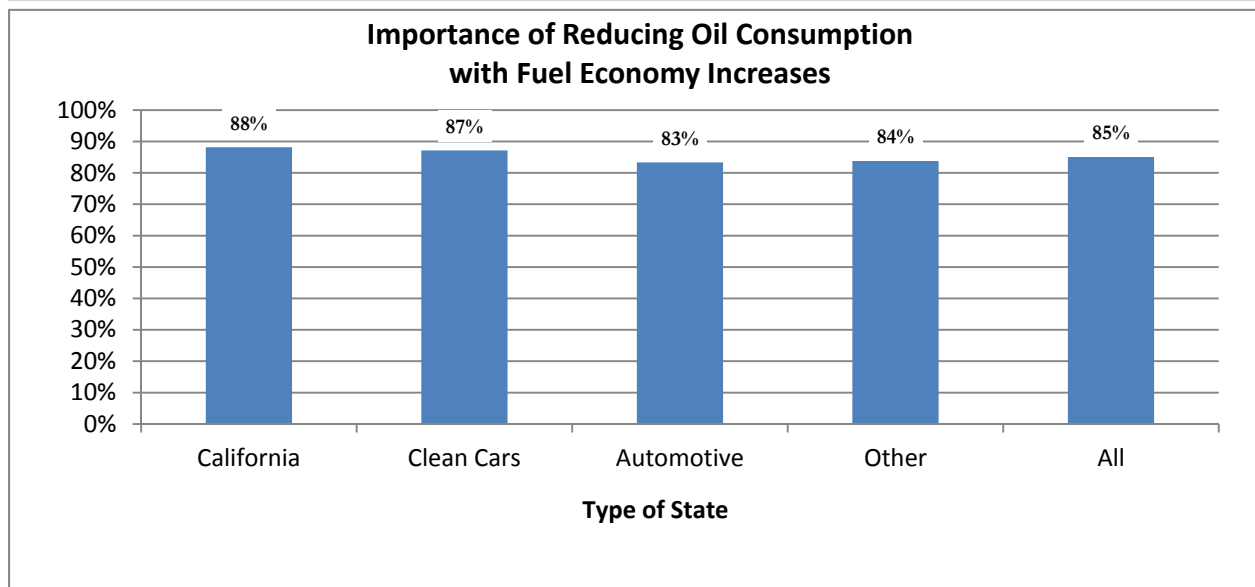
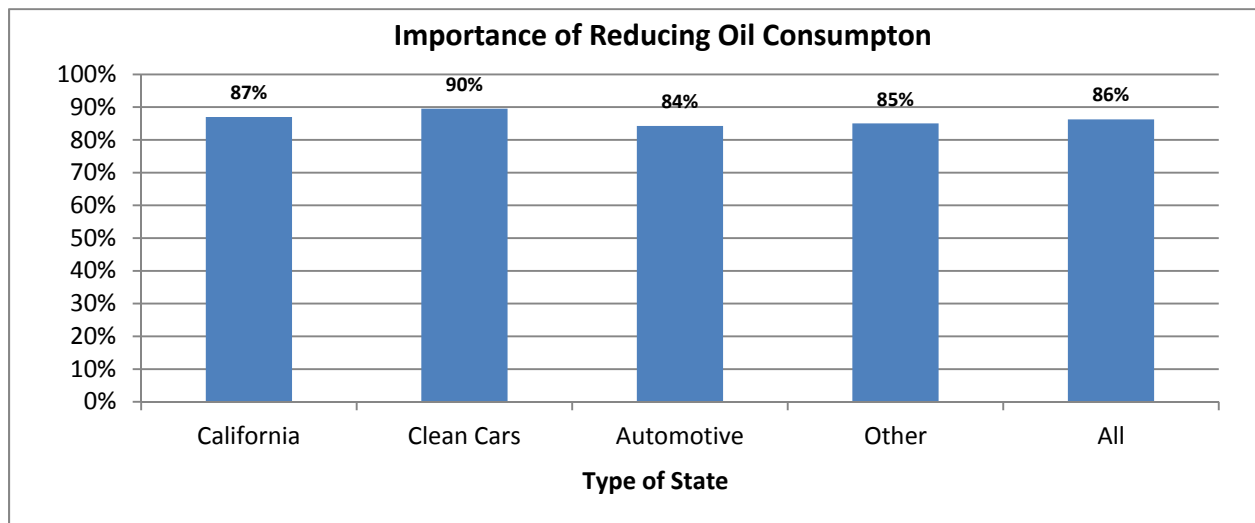
- Approximately 11% of the respondents said they were concerned about neither of these issues.
- Approximately 8% of the respondents said they had some concern about both of these issues.

- Approximately 25% of the respondents said they are greatly concerned about one of these issues.
- Finally, about 56% of the respondents are greatly concerned about both of these issues.

We would expect that those who express greater concern would be more supportive of policies to address the underlying problem.

As shown in Exhibit III-1, we found high levels of support for the proposition that reduced oil consumption is important and that increased fuel economy is important in accomplishing that goal.

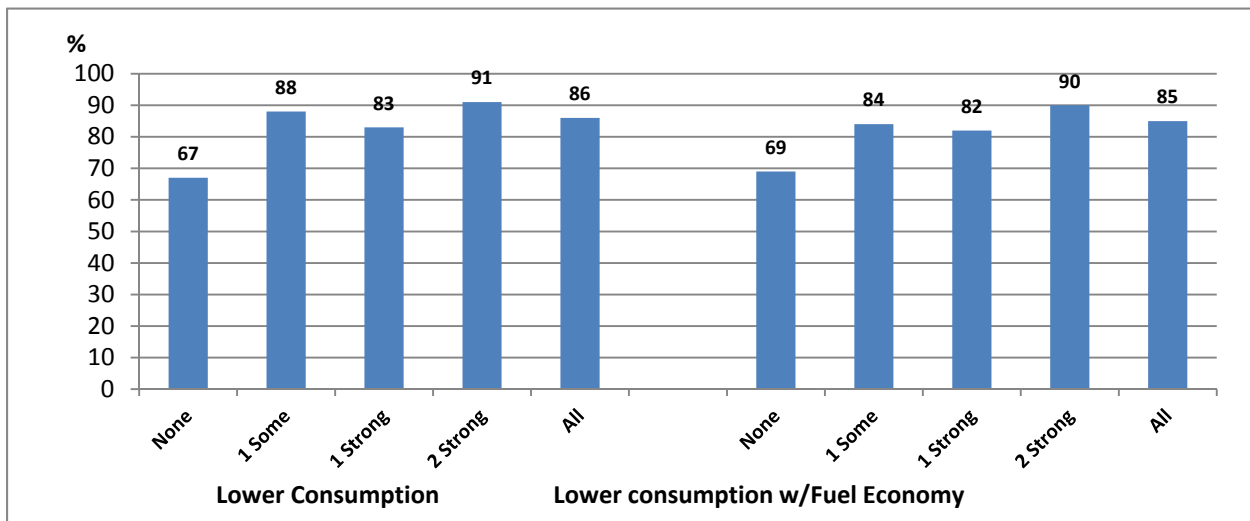
**EXHIBIT III-1: REDUCING OIL CONSUMPTION**



- Over 80% of respondents think it is important to reduce oil consumption - (about 60% strongly agree).
- The importance of reducing oil consumption through fuel economy increases receives similar levels of agreement.
- The differences between respondents in the various types of states are small.

However, as shown in Exhibit III-2, we do observe some large differences with regard to the importance of reducing oil consumption depending on the level of concern about prices and Mid-East oil dependence. Respondents who expressed no concern about prices or Mid-East imports were much less likely than others to agree that it is important to reduce consumption of oil. Respondents who express great concern about both prices and Mid-East oil dependence believe reduced consumption is more important.

**EXHIBIT III-2: LEVEL OF CONCERN AND ATTITUDES ABOUT REDUCING OIL CONSUMPTION**



#### IV. SUPPORT FOR FUEL ECONOMY STANDARDS

In order to gauge support for fuel economy standards, over the years, we have asked questions in a number of ways. A question on general support for fuel economy standards typically receives the most positive response.

Do you support or oppose the federal government requiring auto companies to increase the fuel economy of the vehicles they manufacture? Would you say you...

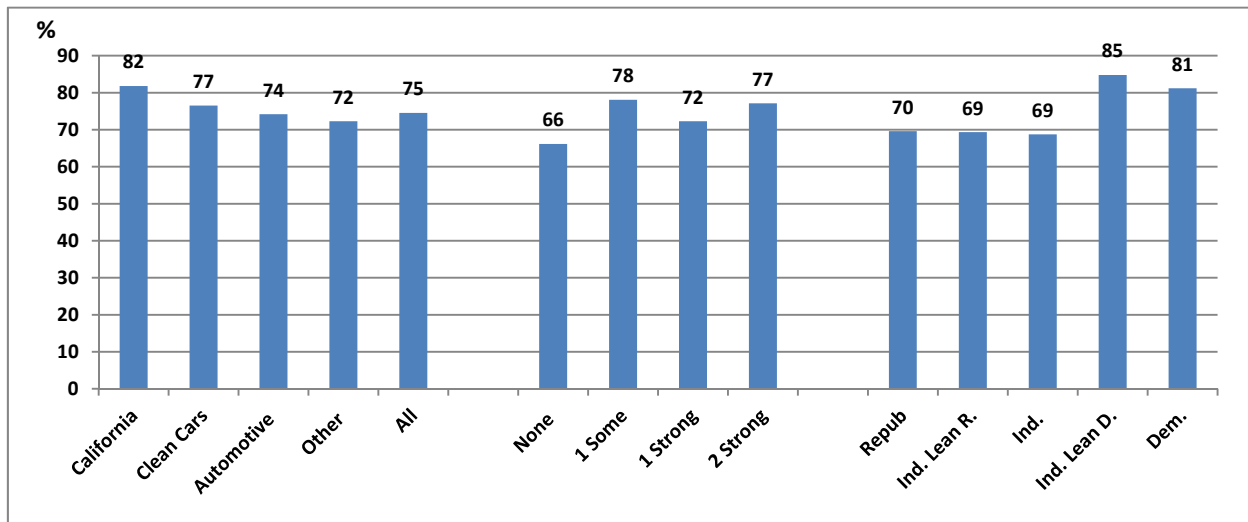
- (1) Support strongly, (2) Support somewhat, (3) Oppose somewhat, (4) Oppose strongly  
99 DON'T KNOW

As Exhibit IV-1 shows, three quarters of the respondents express support, with somewhat lower support among those who are not concerned about prices or Mid-East dependence and Democrats expressing somewhat higher support.



In the current survey, we asked a general question about support for fuel economy standards as well as whether they support a standard of 60 miles per gallon (mpg). For the

**EXHIBIT IV-1: GENERAL SUPPORT FOR FUEL ECONOMY STANDARDS**



latter question, we asked about support depending on how long the fuel saving technology would take to pay for itself. We asked about a 3-year, 5-year and 10-year payback period.<sup>9</sup>

The federal government has recently required automobile manufacturers to increase the fuel economy of their motor vehicle fleets from an average of 25 miles per gallon today to 35 miles per gallon by 2016.

Do you think the government should increase this standard to an average of 60 miles per gallon by 2025?

- 01 YES
- 02 NO
- 99 DON'T KNOW

Now suppose increases in the fuel economy of motor vehicles increased their purchase price but reduced the cost of using them. If these price increases were offset by reduced gasoline costs over the following time periods, would you favor or oppose these fuel economy increases?

Would you favor strongly, favor somewhat, oppose somewhat or oppose strongly?

(1) Favor strongly, (2) Favor somewhat, (3) Oppose somewhat, (4) Oppose strongly

99 DON'T KNOW

- A. 3 years
- B. 5 years
- C. 10 years

Given the critical role that the “Clean Cars” program played in moving the standard to a more consumer-friendly level in the past decade, we asked respondents whether they supported a continued role for the states in setting policies that have the effect of raising fuel economy.

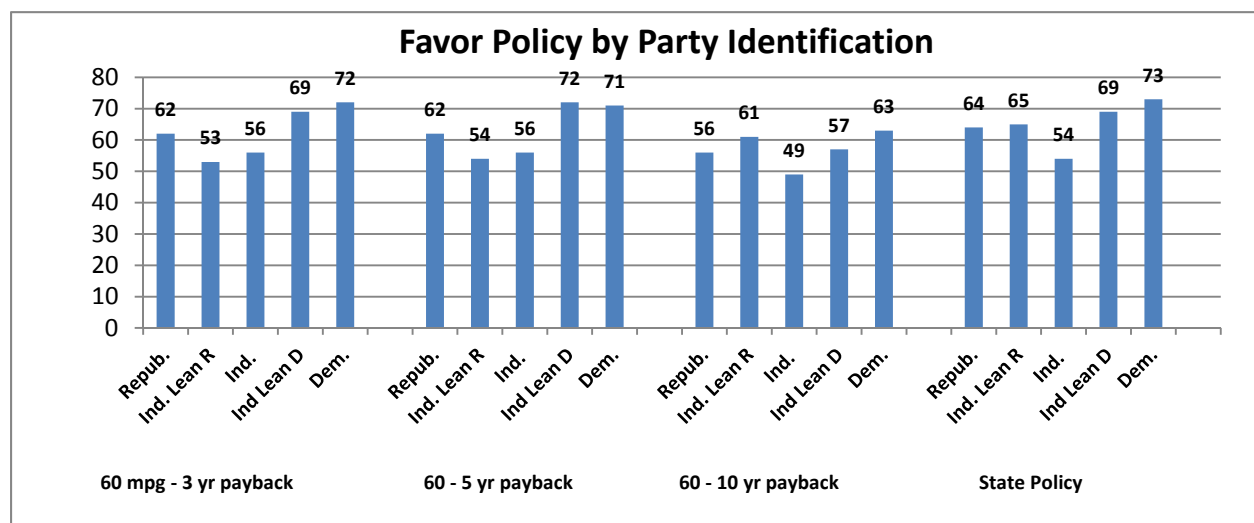
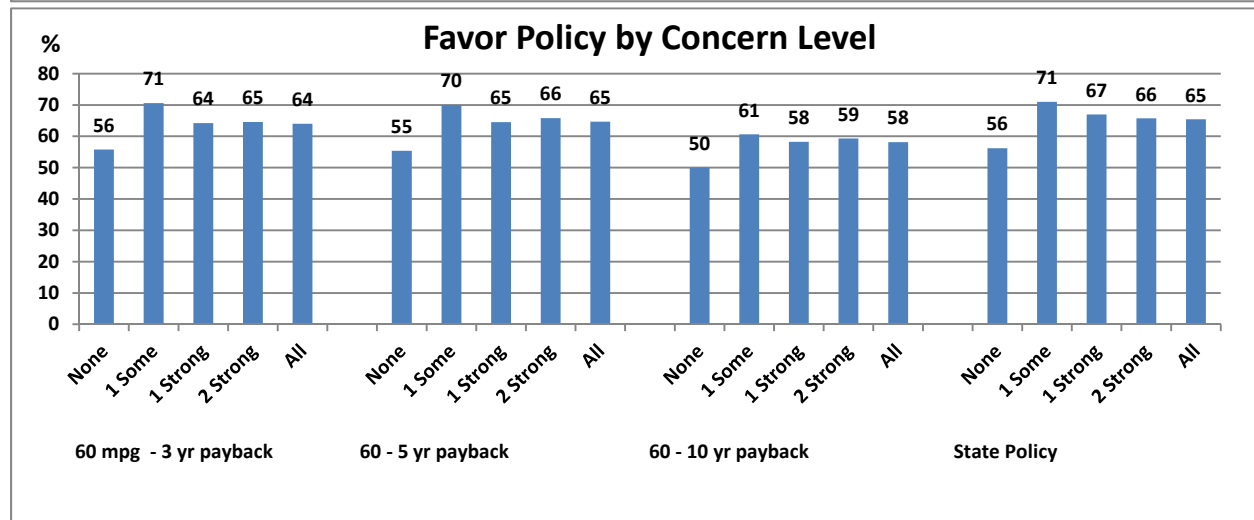
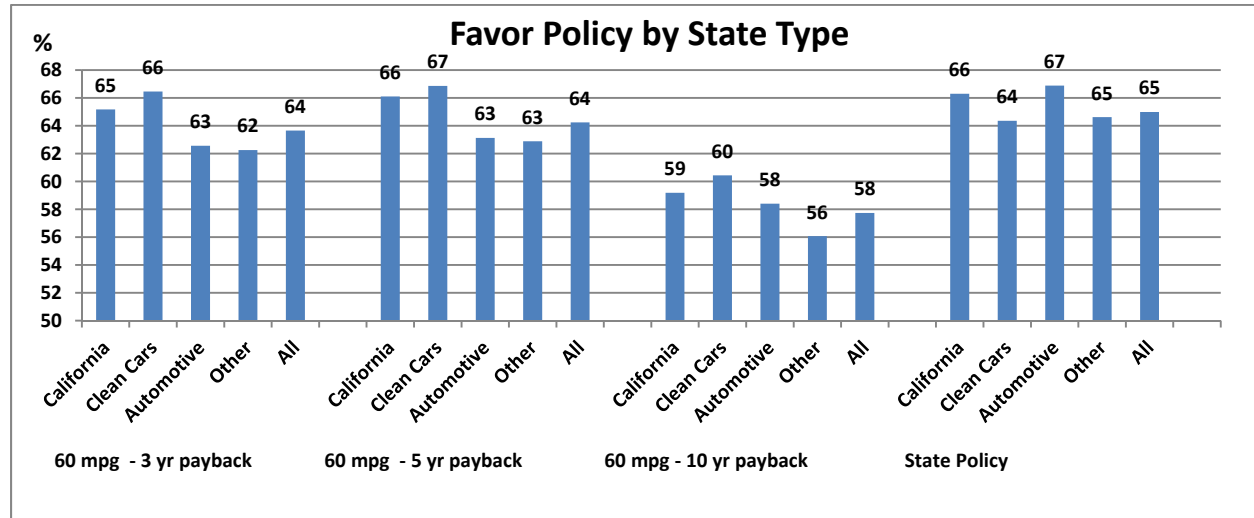
Do you think that state governments should be allowed to continue setting tailpipe emission standards that, as a result, increase fuel economy for motor vehicles? Would you say you. .

(1) Favor strongly, (2) Favor somewhat, (3) Oppose somewhat, (4) Oppose strongly

99 DON'T KNOW

Exhibit IV-2 shows substantial support for fuel economy standards. The general concept is supported by over 70% of the respondents across all four categories of states.

**EXHIBIT IV-2: SUPPORT FOR A 60-MPG STANDARD AND STATE INVOLVEMENT IN SETTING EMISSIONS STANDARDS**



The specific target of 60 mpg is supported by over 60% of respondents with payback periods of three and five years. This support declines to the high 50% range with a ten year payback period.

The continued involvement of the states is supported by about two-thirds of the respondents. State involvement does not vary by state categories, although there is less support among those with no concern about gasoline prices or Mid-East oil dependence and Independents with no leaning.

When the respondents are broken down by their level of concern, we find that those who express no concern about prices or Mid-East oil dependence are less likely to support fuel economy standards in general and at all levels of payback. About two-thirds of those who express concerns about prices or Mid-East oil dependence, support fuel economy standards. About 60% of these respondents favor fuel economy standards, even with a 10-year payback. Respondents who have concerns are also more likely to support continued state involvement in setting policy in this area.

Responses across categories of political identification are also informative. Although those who are self-identified as Democrat or leaning Democrat are clearly more supportive of the policy, in every case, a majority of those who are Republican or lean Republican also supports the policy. Among Democrats or those who lean Democrat, over 80% favor the fuel economy standards and 70% favor a 60 mpg standard with a 3 or 5 year payback, and 70% favor continued state involvement. Among those who are Republican, two-thirds support the general concept of fuel economy standards and over half support the 60 mpg level. Continuing state involvement in standard setting receives the same level of support as 60 mpg with a 3 year payback.

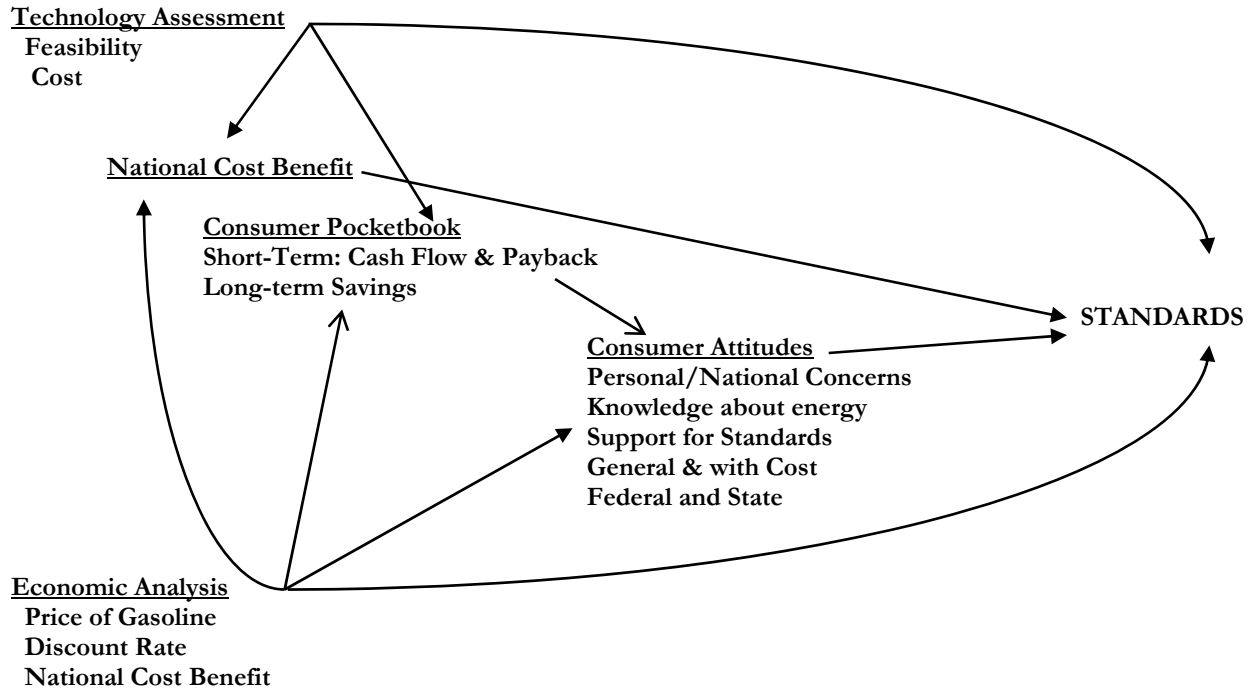
## **V. CONSUMER VIEW OF SETTING THE GOALS FOR FUEL ECONOMY**

### **Analytic Approach**

The choice of the level of the fuel economy standard around which we focus the questions in our survey is not random. CFA has analyzed the economics of fuel economy and monitors the development of fuel economy standards in an effort to ensure that we ask the public about levels of the standard that are directly relevant to the ongoing decision making process. We believe that policy should set a standard that is good for consumers and the nation, and we want to know how the public feels about the standard, as well as where education is needed.

CFA's analysis of fuel economy standards incorporates four factors. As discussed above, our surveys have examined public attitudes about gasoline consumption, support for fuel economy standards and willingness to pay (see Exhibit V-1). Our consumer pocketbook impact analysis has looked at the economic costs and benefits for consumers in terms of the pocketbook impact – near term cash flow, payback periods, and longer-term benefits (net savings at the end of the auto loan and vehicle-life net benefits). The consumer pocketbook analysis reflects the nature of the technologies and key economic factors, like the price of gasoline and discount rates.

## EXHIBIT V-1: CONSUMER ANALYSIS OF FUEL ECONOMY STANDARDS

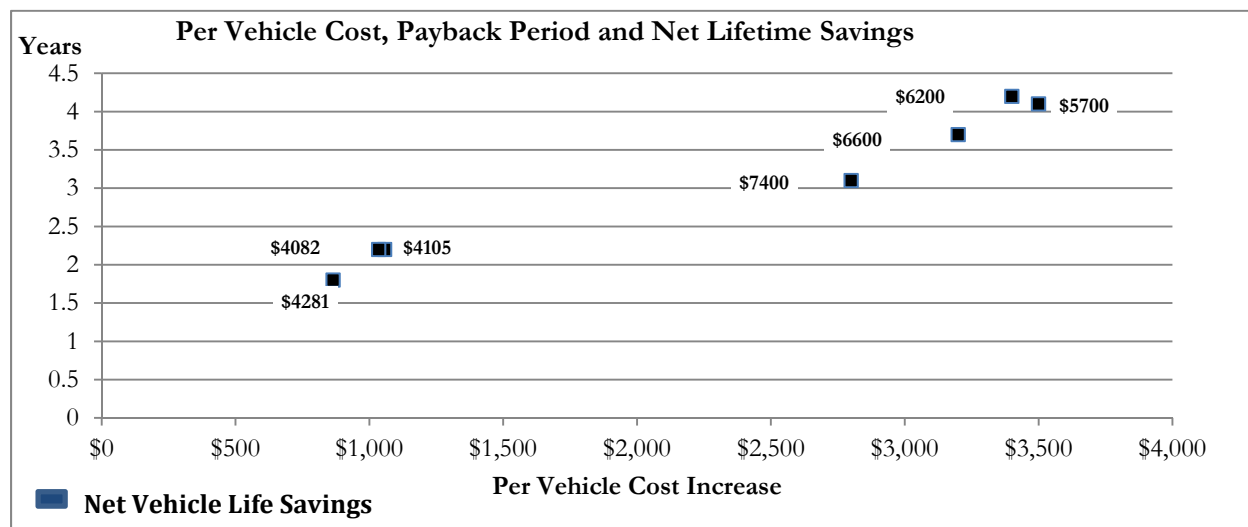


This approach was taken to evaluate the data provided by the EPA and the NHTSA in their initial analysis of standards for 2020 and beyond.<sup>10</sup> Because these agencies are proposing to establish long-term goals for the first time, they define the approach in terms of rates of improvement. The 6% scenario results in fuel economy targets for cars and light duty trucks combined average of 45 mpg in 2020 and 62 mpg in 2025. The highest level considered by EPA and NHTSA in beginning the process of long term planning was a 6% per year improvement. A 6% rate of improvement results in a rapid increase in fuel economy and reduction in greenhouse gas emissions from new vehicles. CFA had examined a 60 mpg target earlier and found it to be consumer-friendly. The EPA/NHTSA analysis corroborated our earlier findings.<sup>11</sup>

### Why 6% per year (60 mpg by 2025) is Good for Consumers?

As Exhibit V-2 shows, under the assumptions of the analysis, the EPA/NHTSA 6% approach is consumer friendly. EPA/NHTSA identified several paths to achieving a 6% per year improvement; all of them yield positive results for consumers and the nation. On average, the payback period for new vehicles sold in 2020 under the 6% improvement standard is just over 2 years and the net consumer savings is over \$4,000 per vehicle. On average, the payback period for new vehicles sold in 2025 under the 6% scenario is 3.8 years, and the net consumer savings is almost \$6,500 per vehicle. The clear consumer and national benefits, which corroborated CFA's independent analysis, led us to use the 60 mpg level in our survey.

## EXHIBIT V-2: THE ECONOMICS OF THE 6% IMPROVEMENT POLICY



### Consumer and National Benefits of 6% per Year Improvement in New Vehicle Fuel Economy (average across all potential paths)

	2020	2025
Standard Level (MPG)	45	62
Payback (Years)	2.1	3.8
Net Lifetime Savings	\$4,156	\$6,475
Gasoline Savings (Billion Gallons)	25.2	54.6
Greenhouse Gas Reductions (Million Metric Tons)	306	560

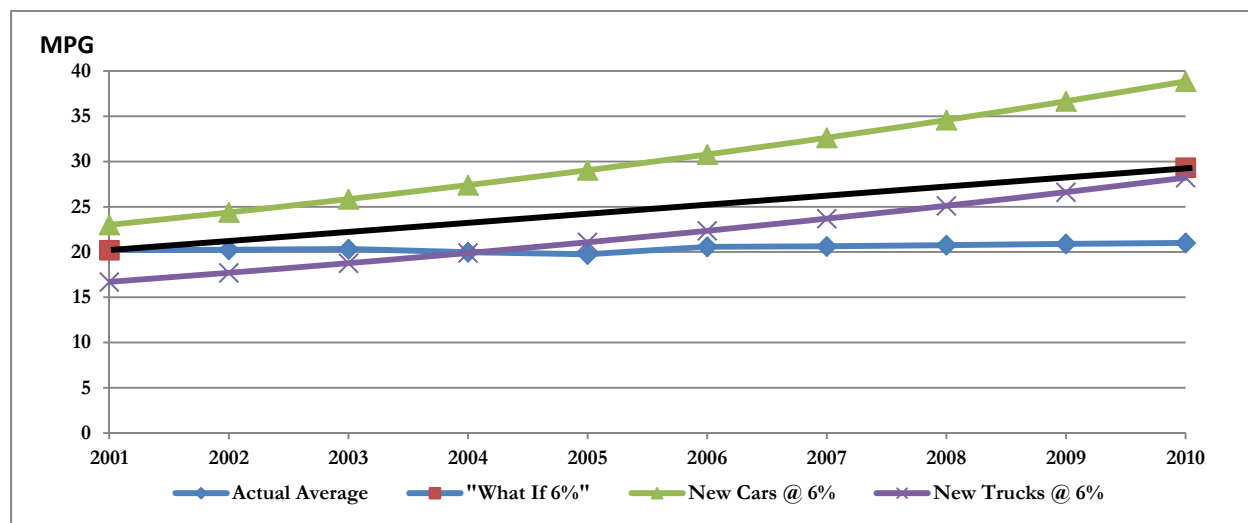
Source: Environmental Protection Agency, Department of Transportation, Notice of Joint Rulemaking to Establish 2017 and Later Model Year Light Duty Vehicle GHG Emissions and CAFE Standards, Tables 6.5-1, 6.5-3, Table 6.5-12, 6.5-14.

### “What if” We Had Set Higher Standards a Decade Ago?

While these projections indicate positive consumer and national benefits, they do not convey the full impact of better fuel economy on household budgets. To get a better feel for the impact of fuel economy standards as a long-term response to increasing gasoline prices, we undertook a “what if” analysis. “What if” the industry had gotten on a path of 6% percent per year improvement in fuel economy ten years ago in 2001, where would we be today?

As shown in Exhibit V-3, assuming the average mix of cars and trucks for the past twenty years (57% cars/43% trucks), the average fuel economy in 2011 would have been about 29 mpg compared to the actual level of 21 mpg.

**EXHIBIT V-3: "WHAT IF" FUEL ECONOMY HAD IMPROVED 6% PER 2001-2010**



Sources: Average mileage from Energy Information Administration, *Motor Vehicle Mileage, Fuel Consumption and Fuel Economy*; New vehicle mileage from Environmental Protection Agency, *Light Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2010*, November 2010, Table 1.

Assuming an average number of miles driven per vehicle of 12,000,<sup>12</sup> an increase in fuel economy from 21 to 29 mpg would lower gasoline consumption by about 13 gallons per month. At the annual average price projected above for gasoline in 2011 (\$3.72/gallon), the savings would be about \$50 per month or \$600 per year. The burden on the household budget would be cut by one-fifth. The cost of the vehicles would have been higher, but there would have been a substantial net benefit to consumers of about \$30 per month.<sup>13</sup>

**VI. HOW DO WE GET THERE FROM HERE?**

At least since the National Academy of Sciences concluded in 2002 that technologies exist to increase fuel economy at manageable costs,<sup>14</sup> the public policy debate has been about how far and how fast the fuel economy of the vehicle fleet can be raised. A goal of 60 mpg may sound high, even for 2025, but Toyota and General Motors have already said they could comply. To achieve that goal, the market will have support a significant increase in the sale of electric vehicles and substantial improvements in the fuel economy of gasoline powered vehicles. There is mounting evidence that such a change is possible.

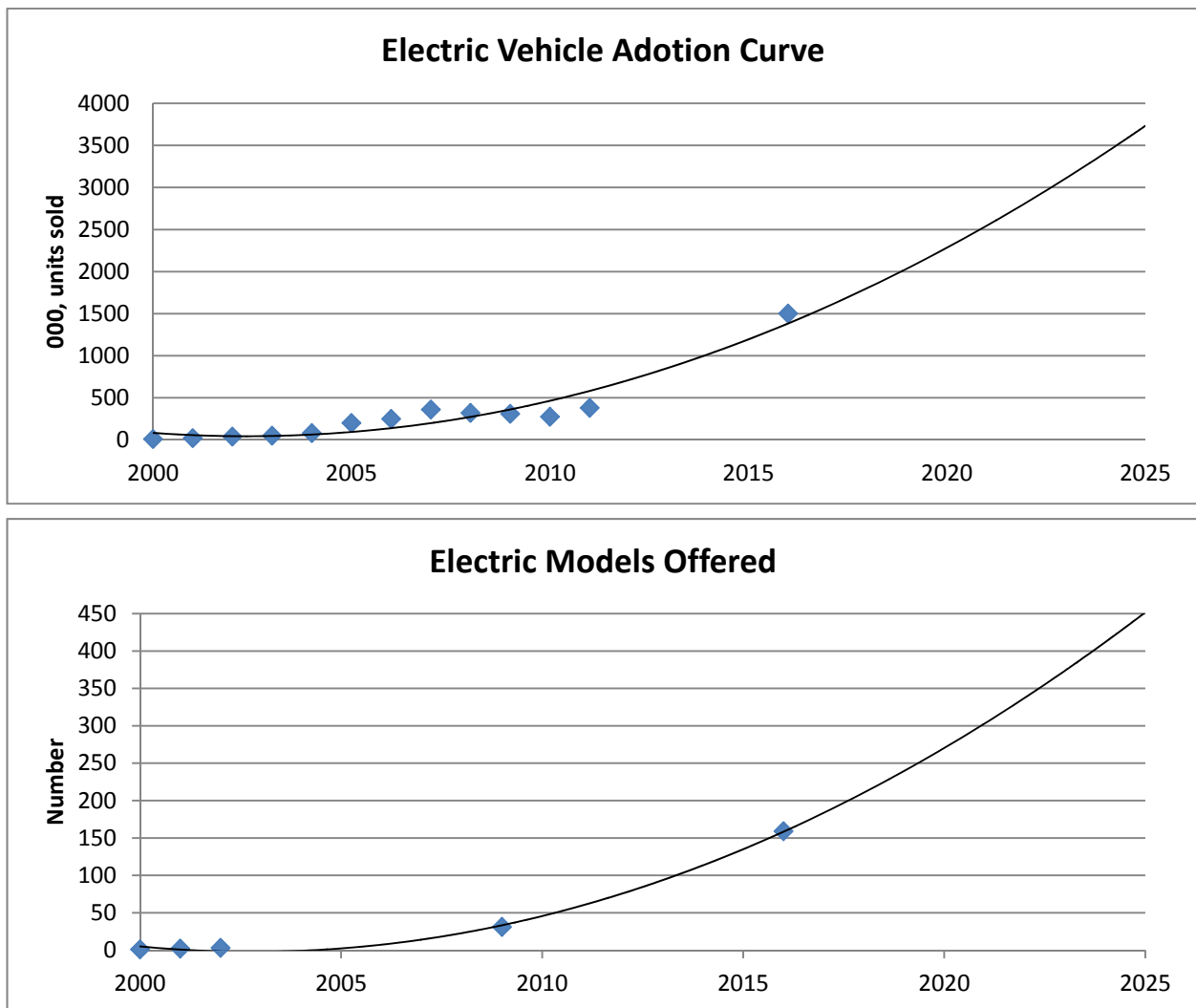
**Electric Vehicles**

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. The standards made it inevitable that electric powered vehicles would play an important part in the future of the automobile in California. Automakers resisted strenuously, claiming it could not be done. However, 13 states and the District of Columbia adopted the Clean Cars program, creating a market that ranks in the top five in the world.<sup>15</sup> The automakers could not ignore such a market.

Today, automakers now offer 30 models of electric vehicles. All of the major, mass market automakers are offering electrics using different approaches to power including hybrid, plug-ins, hybrid plug-in and extended range plug-in, and they sell hundreds of thousands of units in the U.S. They are offering vehicles across the full range of models that consumers drive – compacts, sedans, large cars, SUVs and pickups. J.D. Power and Associates project that there will be 159 models by 2016 and that electric vehicles will account for almost 10% of the market.<sup>16</sup>

Placing these data points from the early days of hybrids into an innovation adoption framework, as shown in Exhibit VI-1, one can project millions of units being sold annually by 2025.

**EXHIBIT VI-1: THE DEVELOPMENT OF ELECTRIC VEHICLES**



Sources: Rudi Halbirght, Max Dunn, *Case Study: The Toyota Prius, Lessons in Marketing Eco-Friendly Products*, March 3, 2010, <http://www.hybridcars.com/hybrid-sales-dashboard/>... Various years, J.D. Power and Associates, *Despite Rising Fuel Prices, the Outlook for "Green" vehicles Remains Limited for the Foreseeable Future*, April 27, 29011.

## Gasoline Engines

And, the gasoline engine is not done yet. More efficient engines and transmissions, improvements in body design, rolling resistance and the use of high-strength, lighter materials have allowed gas-powered cars to get over 40 mpg today and compete with hybrids. Technologies are in hand, or soon will be to get 50 mpg or more in gasoline powered cars.<sup>17</sup>

Consumers have also demonstrated a concern about fuel economy and a willingness to change (see Exhibit VI-2). Exhibit VII-2 uses 2004 as the base year for comparison with recent years because prices began to spike and began to gyrate around the upward trend in 2004. Our earlier econometric analysis and the analysis of others shows that consumer behavior reflected this quickly but auto makers were slow to notice or understand it and react to the changing market.<sup>18</sup>

### EXHIBIT VI-2: VEHICLE CHOICE AND FUEL ECONOMY

	2004	2010
<b><u>Cars</u></b>		
Avg. # Cylinders	5.12	4.74
% 4-Cylinder	50	67
% 6 Cylinder	41	26
% 8 Cylinder	7	5
Average mpg	28.8	32.9
<b><u>SUVs</u></b>		
Avg. # Cylinders	6.4	5.68
% 4-Cylinder	11	30
% 6 Cylinder	56	56
% 8 Cylinder	32	14
Average mpg	21.0	25.8

**Source: Environmental Protection Agency, *Light Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2010*, November 2010, Appendix J.**

Between 2004 and 2010, the percentage of all cars sold that had 6-cylinders dropped from 41% to 26%, while the percentage of 4-cylinder cars increases from 50% to 67%. In the SUV category, the percentage 8-cylinder SUVs dropped from 32% to 14% while the percentage of 6-cylinder SUVs increased from 11% to 30%.

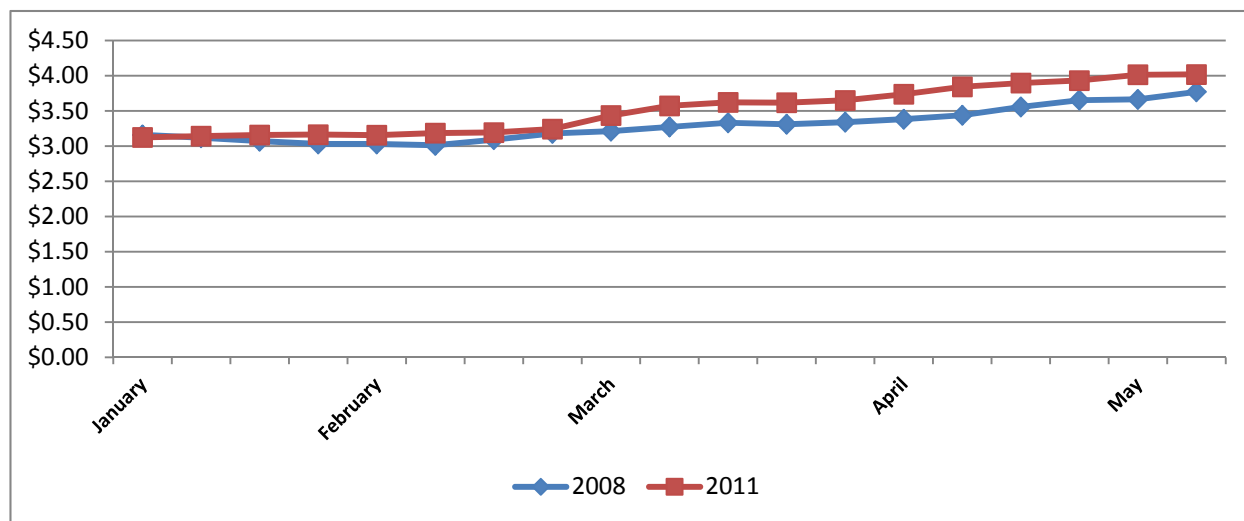
For new cars, average fuel economy increased by 4 mpg between 2004 and 2010. Three quarters of that (3 mpg) was due to the increase in the fuel economy of the vehicles. One-quarter (1 mpg) was due to the shift from 6-cylinder to 4-cylinder cars.

For SUVs, average fuel economy increased by 4.75 mpg between 2004 and 2010. Of that, 2.75 mpg was due to the increase in the fuel economy of the vehicles, and 2 mpg was due to the sharp decline in 8-cylinder market share and the sharp rise in 4-cylinder market share (likely people shifting from 8 to 6 and from 6 to 4).



These recent changes underscore the fact that any policy to change the trajectory of automobile purchasing patterns and gasoline consumption will require change on both the supply-side and the demand-side. A particularly revealing demonstration of this point can be made by examining the models available and purchased the last time gasoline prices hit \$4 per gallon. Gasoline prices were at four dollars in the first two weeks of June 2008. The price trajectory over the first part of the year was similar in 2009 and 2011.

**EXHIBIT VI-3: GASOLINE PRICES IN EARLY 2008 AND 2011**

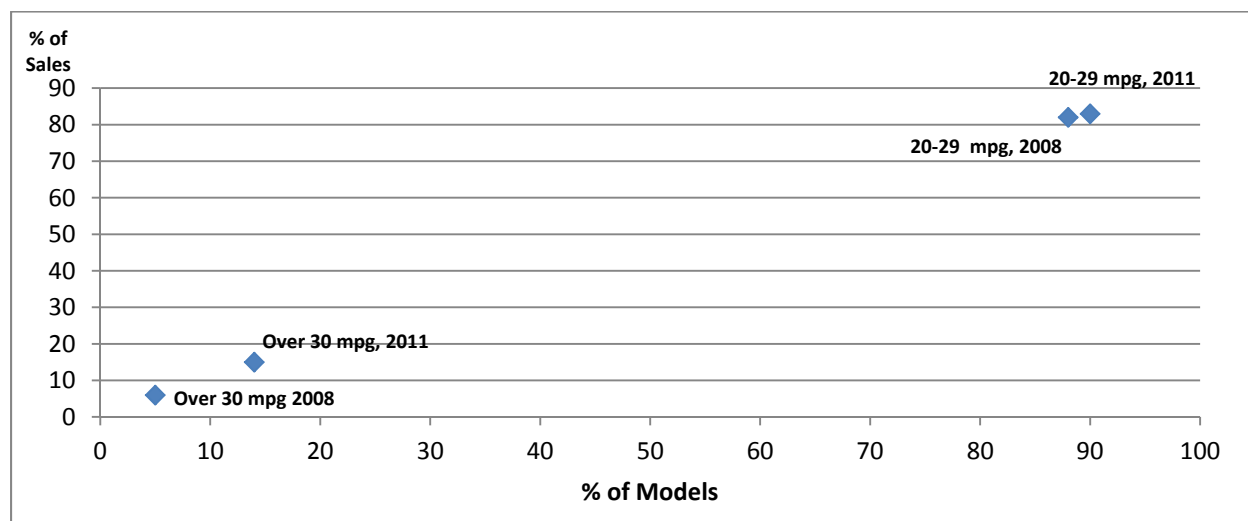


Source: Energy Information Administration, Petroleum Data Base, Prices.

The vehicles in the showrooms were less fuel efficient, but consumers tend to buy what is available. For cars and trucks, the number of models with 30 mpg or better quadrupled, from 14 to 60. The number of models with mileage below 20 mpg declined precipitously from 686 to 500. Models getting 20-29 mpg increased from 516 to 589. Sales among the top 100 models moved in a similar direction, with models getting less than 20 mpg, declining and models getting more than 20 mpg, increasing. For cars, the change was even more dramatic, as shown in Exhibit VI-4. The number of models and sales for vehicles getting 20-29 mpg remained constant, while the share of vehicles getting 30 mpg or more, tripled.

Even though prices declined in 2009 and 2010, more fuel efficient vehicles are available in the market today. We believe that this is partly the result of the fact that the new law had gone into effect and the standard setting process was ongoing. This kept automakers on track to offer higher mileage vehicles. Without the standards process unfolding, they might have slipped back into their old ways of forgetting about fuel economy, when gasoline prices dipped sharply 2009 and 2010. Thus, the role of standards is to set a steady course to the future.

## EXHIBIT VI-4: FUEL ECONOMY OF CARS: MODELS AND SALES



Sources: EPA, Fuel Economy Data and Auto News Sales.

### CONCLUSION

The fact that the market has shifted toward higher fuel economy is encouraging, but not a basis for abandoning standard setting. Our analysis of the auto market shows that there are numerous factors on both the supply-side and the demand-side of the auto market that cause it to produce less fuel economy than it should.<sup>19</sup> Standards are an excellent way to address many of the market imperfections that hinder the development of fuel economy. We believe that the standards played a large part in pointing the industry in this direction and without standards, the market will not go far enough, fast enough.

Setting standards that solidify and cement industry changes plays a vital role in supporting the transition to a more fuel efficient vehicle fleet. Setting a high standard for the next fifteen years is intended to foster and support a long-term perspective for automakers and the public, by reducing the marketplace risk of investing in new technologies. The long-term view gives the automakers time to re-orient their thinking, retool their plants and help re-educate the consumer. The industry spends massive amounts on advertising and expends prodigious efforts to influence consumers when they walk into the show room. By adopting a high standard, they will have to expend those efforts toward explaining why higher fuel economy is in the consumer interests. Consumers need time to become comfortable with the new technologies.

There are two keys to a successful standards program. First, it has to be long term. The automakers need time to change the industry, and consumers need time to embrace those changes. Second, it must accommodate consumer preferences, not try to negate them. The new approach to standards is based on the footprint (size) of the vehicles and recognizes that SUVs cannot get the same mileage as compacts. Standards for larger vehicles will be more lenient, but every vehicle class will be required to improve at a fast

pace. This levels the playing field between auto makers and removes any pressure to push consumers into smaller vehicles.

Technology-neutral and product-neutral standards unleash competition around the standard. It ensures that consumers get a wide range of choices at that lowest cost possible, given the level of the standard.

Over the past decade, whenever gasoline prices spiked, loud calls for short-term measures to reduce the pain at the pump are heard. Quick fixes, like gasoline tax holidays or releases from the strategic petroleum reserve may provide some short-term relief, but treating the symptom, rather than the cause is not going to solve the underlying problem. And, after a difficult decade there can be no doubt that there is a serious long-term problem. Our research shows that, while the public is certainly justified in demanding immediate relief, it also understands what the long term solution is. Over the course of the decade, federal and state policymakers have cobbled together the building blocks with which to provide a meaningful long term solution.

The most effective response to the long-term problem of rising and volatile gasoline prices is to dramatically lower the consumption of gasoline. California and the “Clean Cars” states started in that direction first. They should continue to drive these consumer-friendly policies forward by working for an emissions standard that reinforces federal fuel economy standards and puts the U.S. on the path to doubling fuel economy by 2025. It would be extremely harmful to consumers, the economy, the environment and national security if policymakers squander this opportunity.

## Endnotes

<sup>1</sup> "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](http://articles.cnn.com/2006-01-31/politics/sotu.energy_1_oil-prices-oil-imports-big-oil?_s=PM:POLITICS)

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<sup>2</sup> **U.S. OIL MARKET FUNDAMENTALS AND PUBLIC OPINION: CONSISTENT CONCERNS AND SUPPORT FOR POLICIES: TO REDUCE CONSUMPTION DESPITE WILD PRICE SWINGS, MAY 2010,**  
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<sup>3</sup> **2010 MODELS DON'T MAKE THE FUEL ECONOMY GRADE: NEW LABELS CAN INCREASE AUTOMAKER MILEAGE PERFORMANCE THE SAME WAY THE CRASH TEST RESULTS IMPROVED SAFETY PERFORMANCE,** September 15, 2010,  
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[http://www.consumerfed.org/elements/www.consumerfed.org/file/energy/nhtsa\\_comments.pdf](http://www.consumerfed.org/elements/www.consumerfed.org/file/energy/nhtsa_comments.pdf)

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<sup>4</sup> **THE IMPACT OF RISING PRICES ON HOUSEHOLD GASOLINE EXPENDITURES, SEPTEMBER 2005**  
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<sup>5</sup> **ISSUE BRIEF: SETTING THE NEXT ROUND OF FUEL ECONOMY STANDARDS: CONSUMERS BENEFIT AT 60 MILES PER GALLON (OR MORE), AUGUST 2010,** [http://www.consumerfed.org/pdfs/60mpg\\_Study090210.pdf](http://www.consumerfed.org/pdfs/60mpg_Study090210.pdf)

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<sup>6</sup> Energy Information Administration International Petroleum Data base.

<sup>7</sup> CFA Surveys Reveal Record Public Concern About Gas Prices and Dependence on Oil Imports, 03/16/11. [\(PDF\)](#)  
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New Report Shows Nearly Three-Quarters of Americans Concerned About Future Gas Prices, 09/01/05. [\(PDF\)](#)

<sup>8</sup> Platzer, Michela, D. and Glennon J. Harrison, **THE U.S. AUTOMOTIVE INDUSTRY: NATIONAL AND STATE TRENDS IN MANUFACTURING EMPLOYMENT**, congressional Research Service, August 3, 2009, refers to the "traditional auto Belt, Table 4.

<sup>9</sup> Using a payback period to assess fuel economy is actually a fairly "demanding" approach, since most consumers purchase autos with loans that last a relatively long period (with the majority being 5-year loans). In the auto loan framework, the relevant comparison is the cash flow. When a consumer buys a vehicle with more fuel saving technology, the cost of the vehicle increases and the monthly loan payment goes up. However, monthly expenditures on gasoline go down, since the consumer can drive as far on less gasoline. If the savings on gasoline exceed the increase in the loan payment, the consumer is better off from the beginning.

<sup>10</sup> **ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF TRANSPORTATION, NOTICE OF JOINT RULEMAKING TO ESTABLISH 2107 AND LATER MODEL YEAR LIGHT DUTY VEHICLE GHG EMISSIONS AND CAFE STANDARDS**

<sup>11</sup> **ISSUE BRIEF: PUBLIC SUPPORT FOR A 60 MILE PER GALLON FUEL ECONOMY STANDARD, SEPTEMBER 2010,**  
[http://www.consumerfed.org/pdfs/Cooper\\_Consumer\\_Saving092710.pdf](http://www.consumerfed.org/pdfs/Cooper_Consumer_Saving092710.pdf)

**SHIFTING FUEL ECONOMY STANDARDS INTO HIGH GEAR, November 24, 2009,**  
<http://www.consumerfed.org/elements/www.consumerfed.org/file/NPRM%20EPA%20NHTSA%20Analysis%20Cooper%2011-24-09.pdf>

<sup>12</sup> This is for all vehicles on the road, not just new vehicles that have much higher mileage in the early years of driving.

<sup>13</sup> New cars would achieve 38 mpg as compared to 25.8 and new trucks would achieve 28 mpg as compared to 19.1, which are adjusted "real world," numbers. The cost of sustaining a 6% scenario depends on the starting level and the time period. NHTSA estimated the cost of a 6% scenario for the period from 2010 -2016 at about \$2,000 per vehicle. EPA/NHTSA put the cost of sustaining a 6% scenario in the period from 2016-2020 at \$1,000 per vehicle in the period from 2016-2025 at \$3,200. At the end of the ten year period, more than half the vehicles are owned outright, so there is no monthly payment. Assuming a cost of \$2,000 and that half the vehicle owners are still making payments on a 5-year loan at 4 percent, yields an average monthly payment across all households of \$20.

<sup>14</sup> **COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT OF AKPIRG, ARIZONA CONSUMERS COUNCIL, ARIZONA PIRG, CALPIRG, CITIZENS' UTILITY BOARD OF OREGON, CONSUMER ACTION, CONSUMER ASSISTANCE COUNCIL OF CAPE COD, CONSUMER FEDERATION OF AMERICA, CONSUMER FEDERATION OF THE SOUTHEAST, CONSUMERS FOR AUTO RELIABILITY AND SAFETY, CONSUMERS UNION, DEMOCRATIC PROCESSES CENTER, EMPIRE STATE CONSUMER ASSOCIATION, FLORIDA CONSUMER ACTION NETWORK, FLORIDA PIRG, ILLINOIS PIRG, MARYLAND CONSUMER RIGHTS COALITION, MARYLAND PIRG, MASSACHUSETTS CONSUMERS COUNCIL, NEW JERSEY CITIZEN ACTION, NEW MEXICO PIRG, NYPIRG, THE CONSUMER ALLIANCE, USPIRG, UTILITY CONSUMERS ACTION NETWORK, VICTIMS COMMITTEE FOR RECALL OF DEFECTIVE VEHICLES, VIRGINIA CITIZENS CONSUMER COUNCIL, VPIRG, WISCONSIN CONSUMERS LEAGUE, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION NOTICE OF PROPOSED RULEMAKING; DOCKET; AVERAGE FUEL ECONOMY STANDARDS, PASSENGER CARS AND LIGHT TRUCKS; MODEL YEARS 2011-2015, ) NHTSA 2008-0060, August 18, 2008**  
<http://www.consumerfed.org/elements/www.consumerfed.org/file/DEIS%20group%20comment%20and%20report%2008-18-08.pdf>

<sup>15</sup> 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 THE UNITED STATES** [http://www.census.gov/compendia/statab/2006/transportation/motor\\_vehicle\\_registrations/](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,

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<sup>16</sup> J.D. Power and Associates, **DESPITE RISING FUEL PRICES, THE OUTLOOK FOR “GREEN” VEHICLES REMAINS LIMITED FOR THE FORESEEABLE FUTURE**, April 27, 29011.

<sup>17</sup> **COMMENTS OF THE CONSUMER FEDERATION OF AMERICA, BEFORE THE ENVIRONMENTAL PROTECTION AGENCY DEPARTMENT OF TRANSPORTATION 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**, <http://www.consumerfed.org/pdfs/CFA-NOI-Comments-10-29-10.pdf>

<sup>18</sup> **2010 MODELS DON'T MAKE THE FUEL ECONOMY GRADE: NEW LABELS CAN INCREASE AUTOMAKER MILEAGE PERFORMANCE THE SAME WAY THE CRASH TEST RESULTS IMPROVED SAFETY PERFORMANCE**, September 15, 2010  
<http://www.consumerfed.org/pdfs/New-Fuel-Economy-Grades-PR-9-15-10.pdf>

**STUCK IN NEUTRAL:: AMERICA'S FAILURE TO IMPROVE MOTOR VEHICLE FUEL EFFICIENCY**

**1996-2005, November 2006**[http://www.consumerfed.org/pdfs/CAFE\\_and\\_Auto\\_Sales.pdf](http://www.consumerfed.org/pdfs/CAFE_and_Auto_Sales.pdf)

**STILL STUCK IN NEUTRAL: AMERICA'S CONTINUED FAILURE TO IMPROVE MOTOR VEHICLE FUEL ECONOMY A LOOK AT THE CHANGES IN TOP SELLING MODELS 2005-2007, July 2007**

[http://www.consumerfed.org/elements/www.consumerfed.org/file/Still\\_Stuck.pdf](http://www.consumerfed.org/elements/www.consumerfed.org/file/Still_Stuck.pdf)

<sup>19</sup> **COMMENTS OF THE CONSUMER FEDERATION OF AMERICA, BEFORE THE ENVIRONMENTAL PROTECTION AGENCY DEPARTMENT OF TRANSPORTATION 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, CHAPTER 3**

<http://www.consumerfed.org/pdfs/CFA-NOI-Comments-10-29-10.pdf>

**COMMENTS OF THE CONSUMER FEDERATION OF AMERICA PROPOSED RULEMAKING TO ESTABLISH ENVIRONMENTAL PROTECTION AGENCY LIGHT-DUTY VEHICLE GREENHOUSE GAS EMISSION STANDARDS AND CORPORATE AVERAGE FUEL ECONOMY STANDARDS 40 CFR PARTS 86 AND 600 DEPARTMENT OF TRANSPORTATION 49 CFR PARTS 531,633, 537, ET AL., November 27, 2009**

<http://www.consumerfed.org/elements/www.consumerfed.org/file/CFA-NHTSA2009Comments11-27.pdf>