

**BEFORE THE**  
**DEPARTMENT OF TRANSPORTATION**  
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

**And the**

**ENVIRONMENTAL PROTECTION AGENCY**

<b>The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks</b>	<b>49 CFR Parts 523, 531, 533, 536, and 537, 40 CFR Parts 85 and 86 [NHTSA–2018–0067; EPA–HQ–OAR–2018– 0283; FRL–9981–74–OAR] RIN 2127–AL76; RIN 2060–AU09</b>
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**COMMENTS OF CONSUMER GROUPS:**

**THE CONSUMER FEDERATION OF AMERICA, AKPIRG, ARIZONA CONSUMERS  
COUNCIL FOUNDATION, ARIZONA PIRG EDUCATION FUND, CALIFORNIA  
PUBLIC INTEREST RESEARCH GROUP EDUCATION FUND, CHICAGO  
CONSUMERS COUNCIL, CITIZENS ACTION COALITION OF INDIANA,  
COLORADO PUBLIC INTEREST RESEARCH FOUNDATION, CONNPIRG  
EDUCATION FUND, CONSUMER ACTION, CONSUMERS FOR AUTO  
RELIABILITY AND SAFETY, FLORIDA CONSUMER ACTION NETWORK,  
FLORIDA PUBLIC INTEREST RESEARCH GROUP EDUCATION FUND, ILLINOIS  
PIRG EDUCATION FUND, MARYLAND PUBLIC INTEREST RESEARCH  
FOUNDATION, MASSACHUSETTS PUBLIC INTEREST RESEARCH GROUP  
EDUCATION FUND, MONTANA ORGANIZING PROJECT, NEW MEXICO PIRG  
EDUCATION FUND, NORTH CAROLINA PUBLIC INTEREST RESEARCH GROUP  
EDUCATION FUND, OHIO PIRG EDUCATION FUND, OREGON CITIZENS UTILITY  
BOARD, OSPIRG FOUNDATION, PENNSYLVANIA PUBLIC INTEREST RESEARCH  
GROUP EDUCATION FUND, PIRGIM EDUCATION FUND, POLICY MATTERS  
OHIO, PUBLIC INTEREST RESEARCH FOUNDATION OF NEW JERSEY, TEXAS  
CONSUMER ASSOCIATION, TEXAS PUBLIC INTEREST RESEARCH GROUP  
EDUCATION FUND, U.S. PIRG EDUCATION FUND, VIRGINIA CITIZENS  
CONSUMERS COUNCIL, WASHINGTON PUBLIC INTEREST RESEARCH GROUP  
FOUNDATION, WISPIRG FOUNDATION**

**October 26, 2018**

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## INTRODUCTION

### Fuel Economy is a Major Consumer Issue

The Consumer Federation of America<sup>1</sup> (CFA) and 30 of its member organizations (hereafter Consumer Groups) appreciate the opportunity to provide the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) with comments regarding the Notice of Proposed Rulemaking on the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks. The agencies are proposing to freeze the current CAFE standards at their 2020 levels through 2026 and to revoke California's waiver to set its own emissions standards which can be and has been adopted by other states.

Throughout its 50 years of existence, CFA has been a vigorous and continuous participant in the process of setting regulations to improve the efficiency of energy-using consumer durables and lower the cost of energy borne by consumers.<sup>2</sup> Transportation fuels, the sources of energy most directly affected by DOT regulations are a major household expenditure, representing over 3 percent of total expenditures, one of the 6 largest subcategories listed in the consumer expenditure survey. The overwhelming majority of the benefits of fuel economy (80% or more) and pollution reduction standards are economic, directly yielding consumer pocketbook savings and indirectly stimulating macroeconomic growth.

In these comments we make a simple point, with a great deal of data and analysis. In 2008, NHTSA wrote a standard using many of its old, error ridden assumptions and practices that did not conform to the program as rebooted by the Energy Independence and Security Act of 2007 (EISA). Beginning in 2009 and particularly with the National Program, NHTSA/EPA corrected almost all of those errors. The Technical Analysis Report (TAR) affirmed those corrections. CFA's comments in these proceedings analyzed and affirmed those corrections, although there were still a couple more we would have liked to have seen. Unfortunately, with the 2018 Rollback and Freeze proposal, the agency has tried to go back to the bad old days, re-introducing two dozen errors into its approach. These comments explain why those assumptions and analyses are incorrect and illegal, violating the Administrative Procedure Act and the enabling statutes under which the agencies operate.

Below is a summary of our in-depth comments which provide our analysis of key aspects and reasons for unequivocal opposition to this rulemaking. Based on that analysis, we recommend the following:

- The EPA should affirm its earlier conclusion that the standards set for 2021-2025 are appropriate.

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<sup>1</sup> The Consumer Federation of America is an association of more than 250 nonprofit consumer groups that was established in 1968 to advance the consumer interest through research, advocacy, and education.

<sup>2</sup> The CFA website (<http://consumerfed.org/issues/energy/>) provides links to 140 pieces of testimony and reports published in the past ten years dealing with the efficiency of energy-using consumer durables divided roughly equally between appliances and vehicles.

- There is no need, under the enabling statutes of both NHTSA and EPA, to issue rules for the “out years” beyond 2026 and the agencies should make clear that their recommendation of the 2021-2025 standards, does not address future standards.
- To the extent that the agencies can identify flexibility within the current rules that enable automakers to accomplish essentially the same goals at a lower cost, they should put these proposals out for further comment.

## **Historical Analyses**

To explain why a rollback of the standards is not warranted, CFA analyzed the data and assumptions made by NHTSA since the passage of the Energy Independence and Security Act of 2007 (EISA). This analysis is summarized in Table 1.

The first column identifies the over 40 correctible errors made in the 2008 Rulemaking, as we described them in our comments. Even with these flaws there was clear evidence to support increasing fuel economy levels as dictated by EISA.

The next three columns show how the agencies corrected these errors, again as we say in our comments. Correcting the errors showed that much more improvement in fuel economy was possible under the enabling statutes of both agencies.

The fifth column identifies ways in which EPA/NHTSA have deviated from the improved practice and reintroduced two dozen errors into the proposed rule. The final column shows the magnitude of the impact that these errors have on its cost benefit calculations. The Rollback and Freeze proposal does not have a positive benefit cost ratio, compared to the continuation of the standards set by the National Program; once the errors are corrected, it has a negative benefit cost ratio of -6-to-1.

However, the flaws needed to be corrected in light of the enactment of the Energy Independence and Security Act (EISA). As we show in these comments, rulemakings in 2009-2010 began a transitional process of doing so. A transition was needed because the industry was under extreme pressure, with two of the “big three,” U.S. automakers in bankruptcy and a great deal of regulatory underbrush that had to be cleared away.

The next major step was taken by NHTSA, EPA and the California Air Resources Board (CARB) which collaborated on the National Program to set long-term standards for 2017-2025 Model Year Light-Duty Vehicles in 2012. As these comments show, the 2012 rule corrected the majority of the flaws in the 2008 approach to standards setting, using data supported by historical and current trends. The 2016 Technical Assessment Report (TAR), a collaborative work of NHTSA, EPA and CARB affirmed the approach to standard setting. In these comments, by reference, we incorporate all of the sources identified in Table 1 in the Technical Appendix into the current record. We believe this is appropriate, not only as a matter of general practice, but also because the mid-term review was intended to look at the record and performance of the National Program and the entire hearing record of that proceeding, including, in particular the TAR, which should be the foundation for the review.

**TABLE 1: A DECADE OF EVOLUTION YIELDS A RATIONAL, LEGAL APPROACH TO STANDARD SETTING IN THE POST-EISA ERA**

ISSUES	2008	2010	2012	TAR	2018	Impact on
(correctable errors)	Post-EISA	Transition	Full	Approach	Old/New	B,C = Δ %
	Errors	Correction	Correction	Affirmed	Errors	TAR v. 2018
<b>Underestimating Benefits</b>						
Truncating Benefits					43314	B= + > 30
Rebound Effect Pocketbook	2,8,10,59-60; 8,28	10,27	12,53	5,6	43099-108	B= + 10 to 15
Gasoline Prices	2,8,44,49;2a		53		4299343070	B= + 3
Include All Benefits	2.8.57-58;a6	27,71, 2,16,27	14	2		B= + 50
Macroeconomic	22	8	14	4,6,69-72, App.G	43068	B= + 60
Public Health Co-Benefits	9	3,29,33	7,33	App.H,a4		B= + 33
Non-enviro externalities	2,8	3,6-7, 33-37	7,14,33			B= +
Discount rate (3% v. 7%)	2,40,52-55		55	APP.E	42306	B= + 34
<b>Overestimating Cost</b>						
Technology Cost	3,4,57	1,5,12	8,35,42-43	2,3,APP.D	42993	C= - 50
Tecnology Feasibility	3,10,11,17, 20-21		8,41,12	14,b8	42991	
Payback	53-54,56;a51		29,72	4,59	43255	
emerging technology	9,21	7		2		
Refresh and redesign cycle	11			?		
<b>Misrepresenting safety</b>					43231	
Rebound effect	10					C= - >75
Light-weighting trucks						C = - ?
Technology						C = - ?
<b>Broad Market Issues</b>						
Low income households			12,51	6-7	43227	B = + ?
Pocketbook			12,51	6-7	43105	B = + ?
Public Health				6-7		B = + ?
Clean Cars States					43306-16	
Federalism	Econ. Anal		Federalism	3,4,15,a4	43235-53	B = + ?
Hybrids aand Evs		35		3,15,APP.I,a8-9	43217-22	
<b>Conceptual &amp; Legal Frame</b>						
Economic Assumptions	36,39,65	2,4,21,40-45				
Efficiency Gap/Diffusion	22,33-37,41-42	2,3,22,23 38,39,50,56	12-13,15,54	8,APP.B,C,F, b6-7	43071	B = + ?
Behavioral Economics	36,39,38,41	22-23,31-32,45-46				B = + ?
Legal Balancing Post-EISA	2-3,8,11-13,17;a3-4	3,5,7-8, 19-21, 34,35, 64-66,109	8,15	2-4,12-13, APP. A,G;C6,ATT.SII	43206-16,43309	
<b>Modelling Flaws</b>		5, 19, 110		4,5		
Failure to vet, peer review						
Outdated data	10,11					
Internal inconsistencies	57, 10 VMT				xx scrappage	
<b>Real World Behavior</b>						
Consumers		6,68,70			43070-74	
Attitudes	18;a2,5	76,77				
Support for Stnadards						
Interest in Fuel Economyu		78-79			435216-17	
Payback Periods				5	43255	
Behavior	18,69;a7,30	68, 86-88,96-98	27-29			
marginal value of driving					42991-92	B = + ?
WTP Critique	42	24, 68			43071	B = + ?
Monthly Loan Payment			29	2,4		B = + ?
Automaker behavior	a2,7	71,73-75,91-95	46	2,16, APP.D,b10		
Misrepresenting Consumers	36, 39;a5	71, 58-64	5,20	9,,10,11,a10,12	42993	
preferences			4	3,10		B = + ?
payback	53,60,61	1		2		B = + ?
Advertising (manipulation)						B = + ?
Strategies & Pricing	61, a11	9, 70, 81			42993-4	
Plans & Refresh Cycle	10,11,17, 33,38,41;a3, 33,35,41,59	81	48			C = - ?
Fines, credits	12,33;a11	20				C = - ?
Compliance				3-4,12		C = - ?
<b>Market Performance</b>	4,9,11	15	10	2,17,a4,6	43809-94,43099	
Prices	11			51,7	42993	
Auto sales total	9,43	81-90,99-102		2,b11-13	42995	
Sales of efficient vehicles	11a,			2,b11-13		
<b>Overall Impact of Rollback &amp; Freeze</b>	2,8,14,25,36, 39,65	4,9,17,30,39-41, 70	5,6,8,11	2,5,17,b6	43419	TAR v. CFA = + 10% to 30%

The current SAFE proposal goes backwards by making and expanding upon the flaws found in the 2008 rule. By carefully re-analyzing of the impact of the standards, CFA and 32 other consumer groups show the conclusions drawn from the 2012 rule and 2016 TAR were correct in their assessment of the benefit and costs of the standards. The SAFE analysis both underestimates the benefits of the standards by 10-30%, while also downplaying the harms of not enacting the standards as put forth in the TAR. The bottom line is clear, the Rollback and Freeze Proposal will cost consumers and then nation about six times as much as it saves in auto technology costs.

Thus, the benefit cost ratio is -6 to 1, which violates the enabling statues of both agencies and guidance from the Office of Management and Budget (OMB) on rulemakings. By turning their backs on the current rule without building a record to support it, the about face on standards also violates the Administrative Procedure Act (APA). In these comments we highlight the major conceptual, analytic and quantitative flaws in the Rollback and Freeze Proposal. The Technical Appendix and attachments discuss many more flaws in the proposal and provide empirical evidence that support our conclusions.

One of the main claims by NHTSA/EPA is that there have been fundamental changes in the auto market in the years after the 2012 rule and the TAR (which reaffirmed the findings of the 2012 rule). The fact of the matter is there is no evidence to support this claim, therefore the agencies simply re-interpreted old data in a fashion that recreated the effort of the original 2008 rule, misconstrued the data and made assumptions that that were proven to be incorrect by almost a decade of fact-based analysis and made assumptions that almost a decade of rigorous, fact-based analysis had shown to be incorrect.

### **Consumer Savings**

If the agencies go forward with the rollback of the fuel economy standards, consumers would lose out on over \$145 billion in pocketbook benefits and \$75 billion in overall economic growth. This \$220 billion in lost benefits compares to a paltry \$70 billion in savings if there is a rollback. Public health and environmental benefits would increase the total.

- We have included for the purposes of this analysis the traditional industry approach, which is the sum of pocketbook and environmental benefits. The Freeze and Rollback Proposal has a substantial negative benefit cost ratio (-3 to 1).
- Taking cost reductions and the pocketbook value of the rebound effect into account, the benefit cost ratio is -4.5 to one. As noted above, the cost declines on which this scenario is based are already in evidence and the pocketbook value of the rebound effect is also correct, so this assessment of the economics is likely the best.
- Adding the lost environmental benefits to the adjusted economic benefits would put the negative benefit ratio close to -6 to 1 for freeze and rollback. This is the best estimate of the impact of the attack on fuel economy standards.

### **FUNDAMENTAL FLAWS IN THE NHTSA/EPA ANALYSIS**

The agencies' notice tries to establish general themes that argue that the standards have diminished value and are not needed. There arguments are, at best, unsupported and dubious, and

at worst, they are flat out wrong. Here we provide one example. The Notice tries to argue that fuel economy makes new vehicles unaffordable, hurting the industry and keeping consumers in older, dirtier cars.

### **Missing Benefits**

The Notice claims that the need to conserve energy, embraced by Congress as the overarching goal, has been eliminated by the improvement in our oil situation, but ignores the fact that one-fifth of the recent improvement has been due to improved efficiency and the Rollback and Freeze Proposal will increase consumption by billions of gallons over the next decade. The SAFE analysis also irrationally and unreasonably excluded important benefits, including macroeconomic and public health benefits, benefits that are inextricably tied to the reduction of consumption of fossil fuels. The agencies have also dramatically lowered the public health benefits that are associated with reducing the amount of gasoline used. As there is a clear and obvious link between reducing the use of fossil fuels and lower amounts of pollutants, the benefits of increasing fuel economy have a co-benefit of making the air cleaner and thereby helping decrease any diseases tied with air pollutants. Lower fuel consumption is one of the least cost ways to lower pollution, which not only saves consumers money, but also reduces public health costs.

The Notice claims that as fuel economy rises the diminishing benefit of continuing improvements are no longer justified, but fails to note that in its own example the benefits exceed the costs. Indeed, early in the Notice, we are shown a graph to support the claim of “unaffordability” that is fundamentally flawed by comparing current prices to constant income. Correcting that error, as shown in Figure 1, shows that there has been no significant change in affordability. After the Great Recession, spending on vehicles returned to their pre-standards range. Fuel economy is certainly not to blame for a non-existent problem. The failure of NHTSA/EPA to recognize this reflects a fundamental failure to understand how the new approach to standards setting adopted by EISA works. We call it “command-but-not-control” performance standards setting, which preserves consumer choice and gives automakers flexibility in meeting standards.

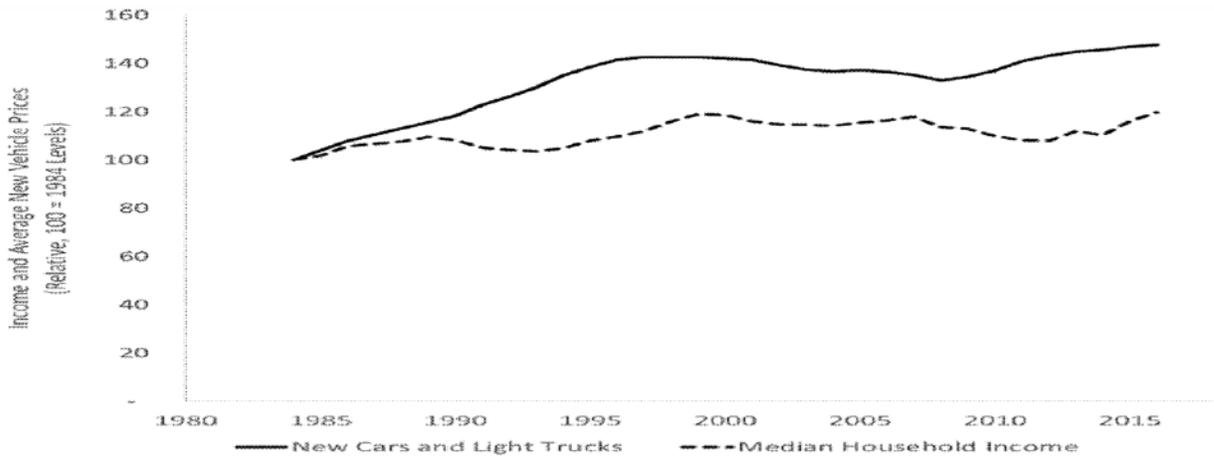
### **Rebound Rate**

The misleading re-interpretation of old data can be found throughout the SAFE analysis. The biggest misleading re-interpretation can be found in doubling the rebound rate, which claims that consumers will drive greater distances thanks to increased fuel economy, thereby negating some of the benefits. In 2012 and 2016, the agencies determined the rebound rate to be 10%, which any reasonable analysis done today would find to be too high. As shown in Figure 2, the agencies in the SAFE analysis have decided to use an incredibly high rebound rate of 20%, which is one-third higher than the already flawed 2008 analysis. By doubling the previous rebound rate, the agencies have dramatically reduced the estimate of the pocketbook benefits to consumers, thereby underestimated the welfare gains consumers enjoy.

### **COSTS**

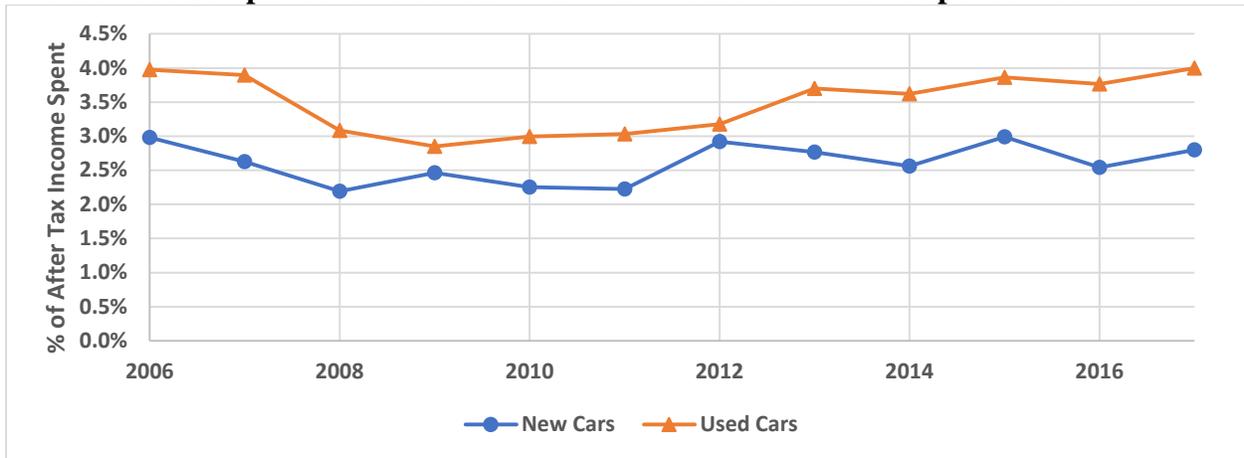
The agencies also increased the costs to comply with the standards by 50-100%, thereby in some cases doubling the compliance costs. By decreasing the options associated with making

**FIGURE 1: AFFORDABILITY OF VEHICLES HAS NOT BEEN UNDERMINED BY FUEL ECONOMY**  
**The Erroneous NHTSA/EPA Comparison, Nominal Prices versus Real Income**



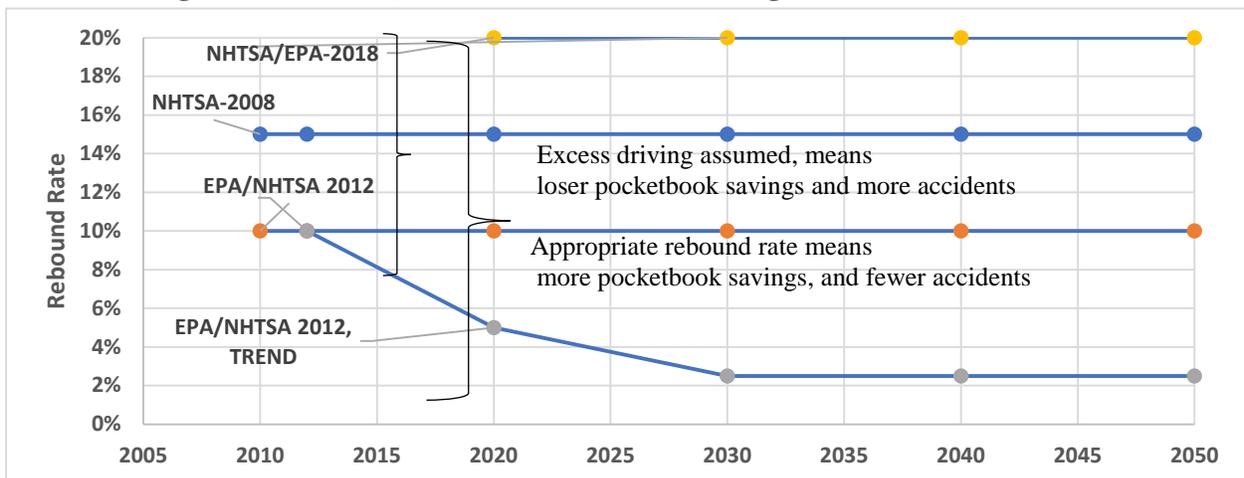
Source: NPRM, p. 22995

**The Correct Comparison: Percent of After-Tax Household Income Spent on Vehicles**



Source: Bureau of Labor Statistics, Consumer Expenditure Survey

**FIGURE 2: EXTREMELY HIGH, EXCESSIVE ASSUMED REBOUND RATE**  
**More Driving and Accidents, Smaller Pocketbook Savings Macroeconomic Benefits**



internal combustion engines to be compliant with the standards, the SAFE analysis forces a significant increase in the penetration of electric vehicles to meet the standards. This re-interpretation of compliance costs goes against the increasing availability of fuel saving technology as well as the historical pattern which shows automakers and the private sector have been decreasing the cost of compliance. In fact, in every analysis (2008, 2012, 2016), the agencies have overestimated the cost of compliance, as automakers are able to produce fuel economy technology at lower cost prices than regulators estimated. A reasonable analysis would have reduced the estimated compliance costs, not increased them, and concluded that the standards set in 2012 and re-affirmed in 2016 are technically feasible and economically viable, as EPA and CARB found in their mid-term reviews.

### **Technology Cost Whiplash**

The whiplash of the current proposal is depicted in Figure III-3. The reasons for the whiplash are the severe constraint on technology choices imposed by the model and the very high markup assumed. By imposing constraint on the use of technologies, ignoring emerging technologies and assuming many more electric vehicles would be necessary, NHTSA has adopted a price that is far above EPA's estimates and those of independent third parties, as shown in the upper graph of Figure 3.

Another way to appreciate this whiplash is to calculate the cost of increasing fuel economy per MPG. As shown in the lower graph of Figure III-3, David Greene, one of the leading experts on fuel economy, recently conducted a review of the literature in which he concluded that an estimate of 27% of the increase in vehicle cost, or about \$150 for every mile per gallon improvement, was too high. He gave two reasons for this.

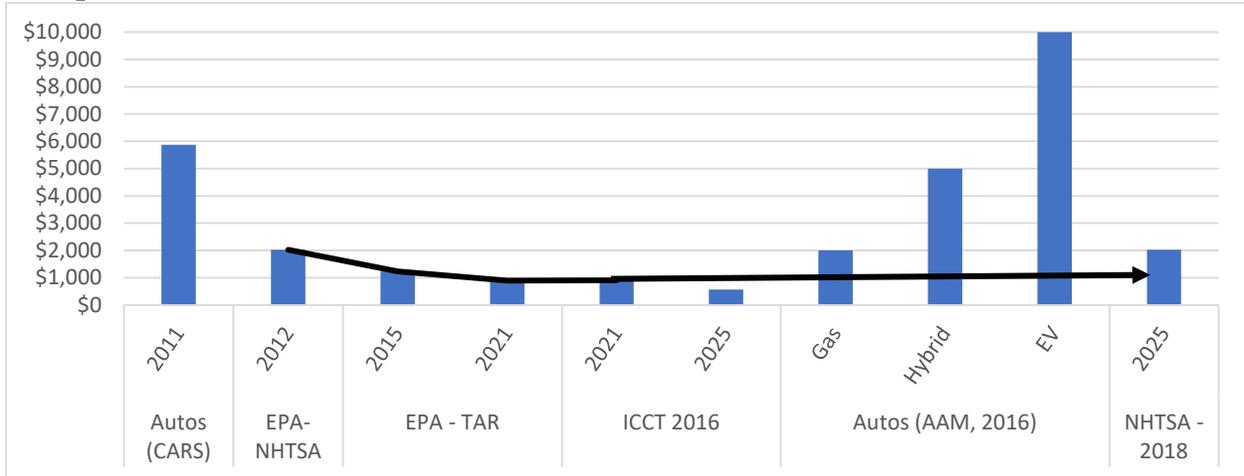
First, backward looking analysis of cost increases that included used vehicles (as his analysis did), were double counting the cost of increasing fuel economy because the sellers of vehicles were capturing a significant part of the capitalized value of better fuel economy equal to about 20% of the estimated cost of efficiency, in their sales price. This factor alone would lower the estimate to 21.6% of the increase in price or to about \$120 for each 1-mile improvement in the MPG. Second, real world experience showed that there was a learning process in which costs fell as automakers gained more experience with increasing fuel economy. Greene suggested that 2% per year was a reasonable estimate. Over the redesign cycle of vehicles (e.g. five years) this learning rate would lower the cost by about 10%. Thus, one might argue that the appropriate numbers would be about 20% per year and \$108 dollars per MPG.

In a subsequent analysis, Greene estimated the cost of improving fuel economy directly with an econometric model that corroborated the above concerns, as shown in the lower graph in Figure 3. The simple adjustment to a constant 20% of total cost moves the estimate much closer to the empirical evidence offered by Greene suggesting costs that are about two thirds of the literature review—about 18% or \$99/MPG.

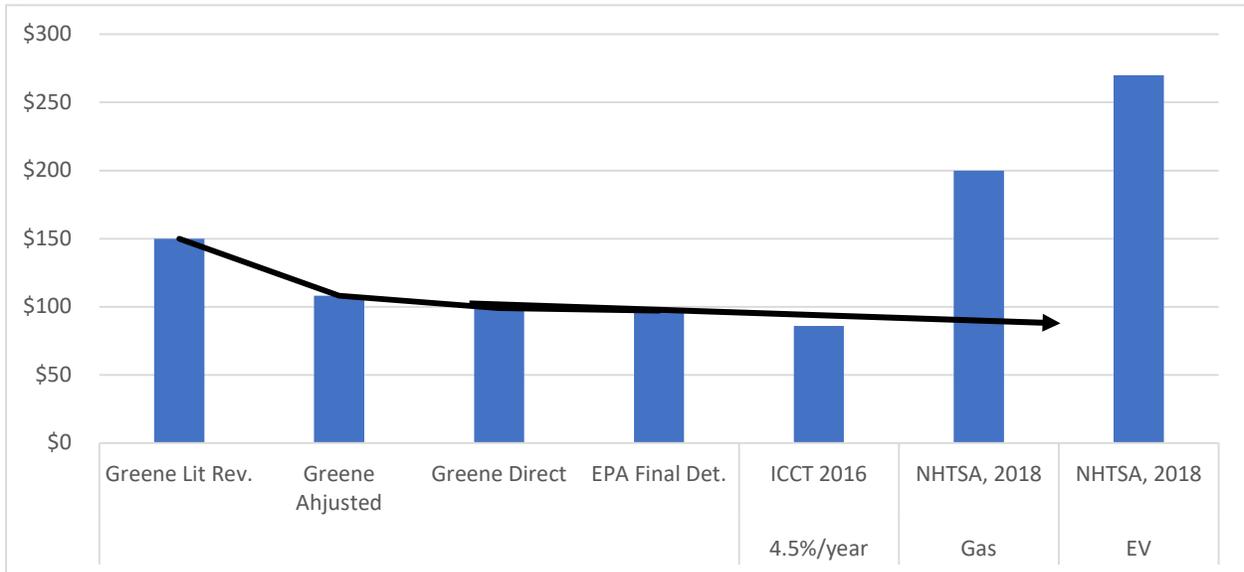
EPA’s analysis of the cost of the National Program in the TAR yields an estimated cost for fuel savings that is similar, \$97/MPG. This estimate reflects considerable technological progress over the early years of the National Program, which is consistent with the historical pattern. A recent study by the ICCT offers an estimate of going forward costs of improvement close to the rate of the National Program (national program = 3.3%, ICCT = 4% per year). The ICCT study also includes continuing technological progress.

**FIGURE 3: THE COST WHIPLASH: PER VEHICLE COST OF MEETING THE 2025 STANDARD**

**Cost per Vehicle**



**Cost Per MPG Increase**



Source: CFA, CARS Memo, NHTSA, 2018, p. 43222

Automakers also regularly state that compliance costs are higher than what regulators estimate, when in fact they comply with efficiency standards at a lower cost than the regulators’ estimates. New car prices for the most part have, since the Great Recession, failed to match the

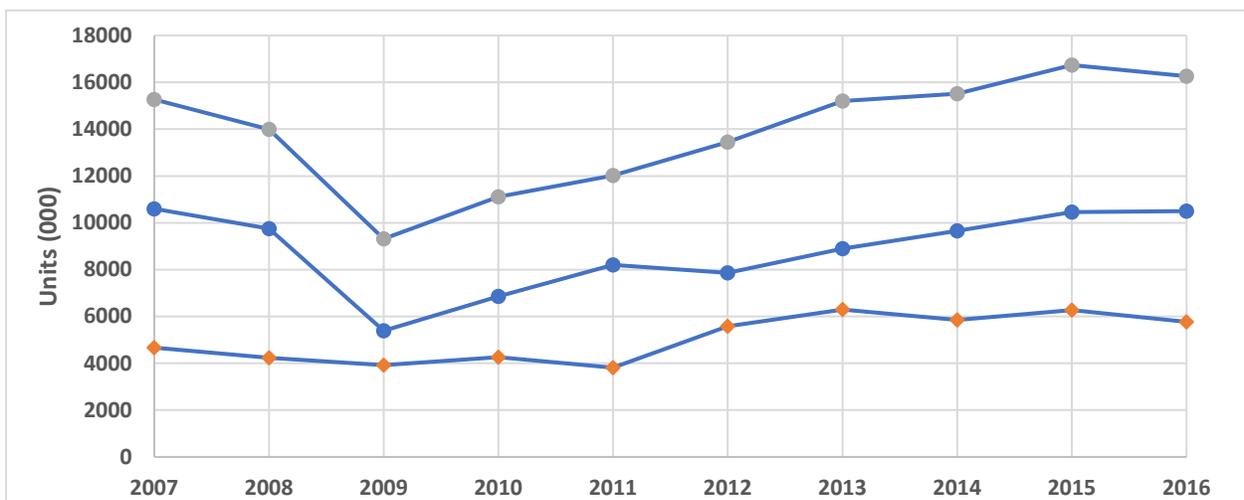
rate of inflation, all the while increasing in fuel economy. While new vehicle prices are indeed rising, this is due to the switch from cars to trucks and SUV's, which have a higher MSRP.

CFA analysis has further shown that after factoring in inflation, a full 27 percent of the “all-new” 2017 vehicles went down in price and increased their fuel economy by 1 to 10 MPG compared to their 2011 counterpart<sup>3</sup>. This is without considering that fuel economy technology is only one of the many different improvements that increase a vehicle’s MSRP, such as safety technology, convenience items and design changes which are all equal or higher drivers to increased vehicle costs. When using historically supported evidence, the best estimate of fuel economy technology costs is about \$100 per MPG of improvement. Using this estimate, 94 percent of the “all-new” 2017 vehicles saw a net positive benefit for the drivers, as the fuel savings exceeded the cost of fuel efficiency technology over the first five years of ownership.

### Technology Deployment

The overarching discussion of technology developments that introduces the NHTSA analysis is fundamentally flawed and infects the entire proposal. NHTSA claims that some options considered in the original order for the National Program have not worked out as EPA/NHTSA anticipated. This is given as a major justification for rolling back and freezing the standards. EPA/NHTSA fail to note that some options have performed better than anticipated and that as the Notice pointed out that there were many alternative routes available to complying with the standards. More importantly, this is what should be expected from the “command-but-not-control” approach embodied in EISA and implemented faithfully in the National Program. The idea is to give the automakers flexibility to meet consumer needs while complying with the standards. EPA/NHTSA fail to accept the fact that the automakers and the auto market have used this flexibility to achieve both goals. Take the example of four-cylinder engines (shown in Figure 4).

**FIGURE 4: 4-CYLINDER ENGINES OUTPERFORM THE REST OF THE MARKET:  
4-cylinder sales withstood the great recession accounting for the increase in sales since 2007**



<sup>3</sup> Jack Gillis and Richard Edelman, entitled, *An Analysis of Consumer Savings and Automaker Progress on the Road to 2025 CAFE Standards Increasing Fuel Economy Saves Consumers Money, Sells Vehicles, Keeps American Companies Competitive and, Most Importantly, is Achievable*, July 24, 2017

Source: EPA, Trends, 2017

The market share of 4-cylinder engines has grown dramatically, thereby improving the average mileage of cars substantially. In part, their popularity reflects the fact that they have more horsepower than earlier 4-cylinder engines. This means that some of the fuel savings that could have been achieved by shifting to smaller engines is “taken back.” That is exactly the objective of a command-but-not-control approach. Automakers make the choices that keep them in compliance while also meeting consumer needs. This balance has worked extremely well. The performance of the auto market does not support the claim that the standards have damaged its functioning. Record numbers of vehicles have been sold and record number of 4-cylinder vehicles have been purchased.

## **Vehicle Safety**

Besides costs, the main argument regarding the current standards that the SAFE analysis puts forward as rationale to roll back the standards, is vehicle safety which the agencies state will be decreased if the current standards were to be implemented. The argument that the standards will result in a dramatic increase in traffic fatalities is wrong for two reasons, theory and reality.

NHTSA’s analysis assumes, contrary to the empirical evidence and literature that an increase in new vehicle prices will increase the number of vehicles on the road and miles driven (VMT). By far the largest change from previous analyses in connection with safety is the change in the rebound rate. By irrationally doubling the rebound rate, the agencies projected increased fatalities due to increased fuel economy by 75%. By incorrectly assuming a massive increase in the number of cars/miles driven, NHTSA concludes there will be a massive increase in fatalities. Since the former will not happen, the latter will not happen.

This assumption of increased fatalities is also inconsistent with real world experience. The agencies underestimate the increasing crashworthiness of vehicles. While the agencies correctly point out that vehicles are becoming lighter to meet the standards, vehicles are also more crashworthy compared to just 7 years ago when the standards went into effect. An analysis<sup>[1]</sup> of all 2018 crash tests show that 71 percent of vehicles weigh less and had better fuel economy than its previously crash tested version. Of these vehicles, 47 percent had a better crash test rating, while the other 53 percent had the same rating. Not a single vehicle in the analysis had a worse crash test rating than its previous version. Outside of the passive nature of crashworthiness, the amount of added safety features that actively help to prevent a crash<sup>[2]</sup> have increased by 60 percent since 2011. These facts can be proven by real-world driving experiences as well. The percentage of crashes that result in a fatality has steadily been decreasing since the standards were enacted, with a full tenth of a percentage decline from 0.61% to 0.51% from 2011 when the standards were enacted, to 2016 (the latest year figures are available).<sup>[3]</sup>

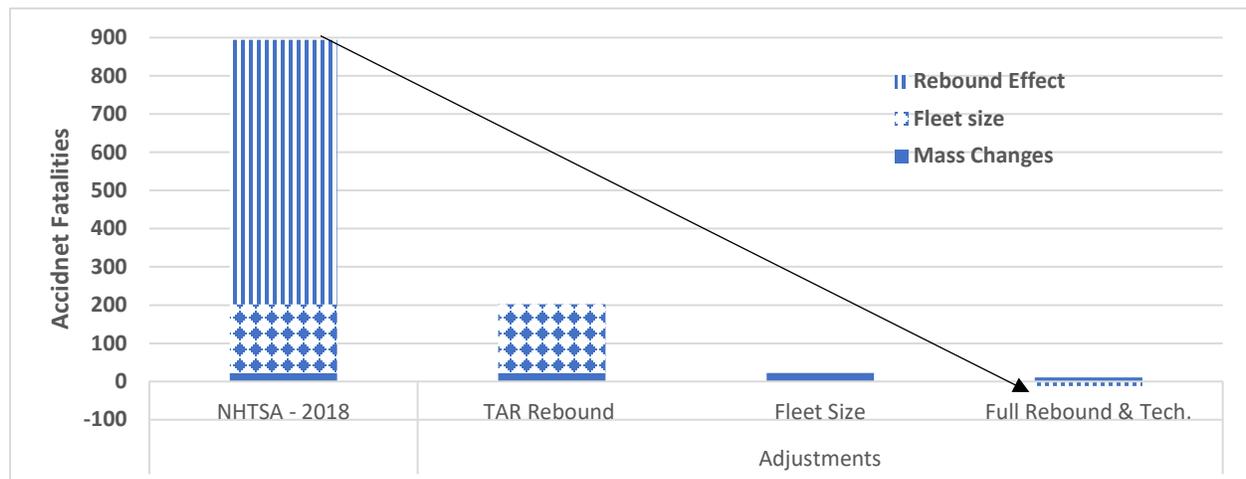
Another argument the agencies put forward to roll back the standards is that due to the increased cost of vehicles, the turnover rate would decrease, meaning there would be more, older less safe vehicle on the road. The agencies ignore the fact that each year for the past five years,

an average of 16.9 million new, safer and more fuel-efficient vehicles (17 million over the last two years) have been added to the fleet, while an average of 13 million older, less safe and less fuel-efficient vehicles have been retired<sup>41</sup>. Even this year, auto sales are up 1.1 percent compared to the same time last year, clearly showing the argument of low turnover rate to be fictional.

Correcting the major flaws in the NHTSA/EPA framework, including the rebound effect, the absence of an increase in the number of vehicles on the road and the failure to recognize technological flexibility for automakers, eliminates any increase in fatalities as a result of the maintaining the standards set by the National Program, as shown in Figure 5. We believe other technological improvements, introduced along with higher fuel economy, further reduce the impact of increased accidents. Given the fact that the rebound rate is well below the level assumed by the TAR and safety technology continues to be added to vehicles, the TAR is likely to have significantly overestimated the increase in fatalities, not underestimated it as NHTSA now claims.

And our national survey conducted in August, 2018 revealed that over three quarters (76%) of Americans rightly reject the assertion that increasing fuel economy standards would lead to more accidents.<sup>151</sup> This rejection is widely bipartisan, with 60 percent of Republicans, 80 percent of independents, and a plurality of 90 percent among Democrats rejecting the argument.

**FIGURE 5: CORRECTING NHTSA ERRORS ELIMINATES ANY INCREMENTAL INCREASES IN FUEL ECONOMY RELATED ACCIDENT FATALITIES**



Source: NHTSA, 2018, PRIA, p. 1080; adjusted by CFA to eliminate excessive rebound effect and overreliance on mass reduction

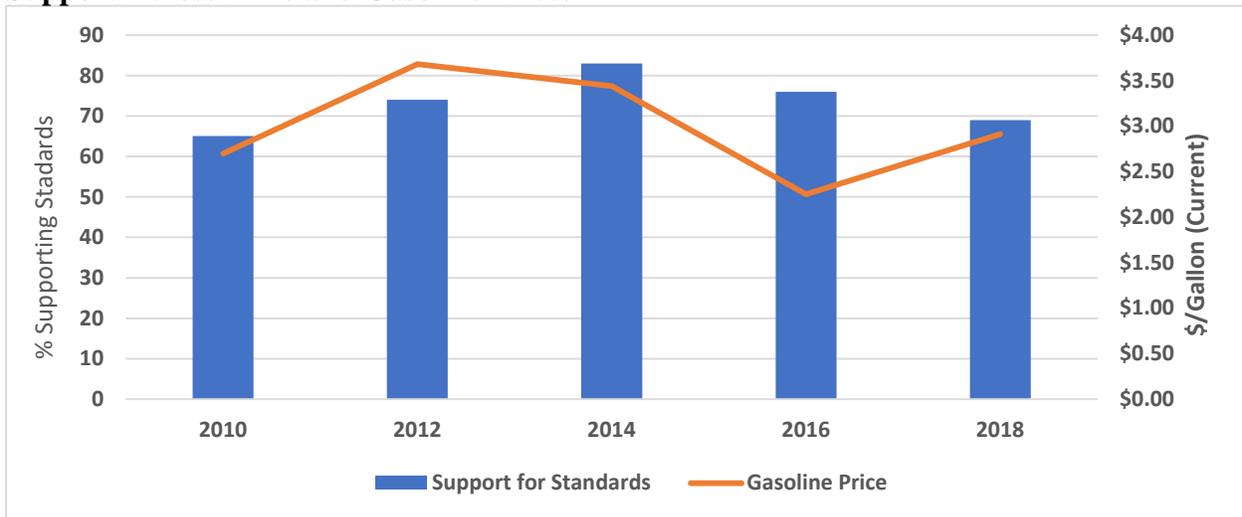
## CONSUMER ATTITUDES

### Public Support for Standards

Over the course of more than a decade, CFA has sampled public opinion about fuel economy standards. We have found consistent large majorities support standards. Support cuts across, geographic areas (Clean Cars states, auto states, other states) and political orientation of respondents. Figure 6 shows the support for standards starting in 2010, when the questions identified substantial increases in fuel economy that were in the range being contemplated by the

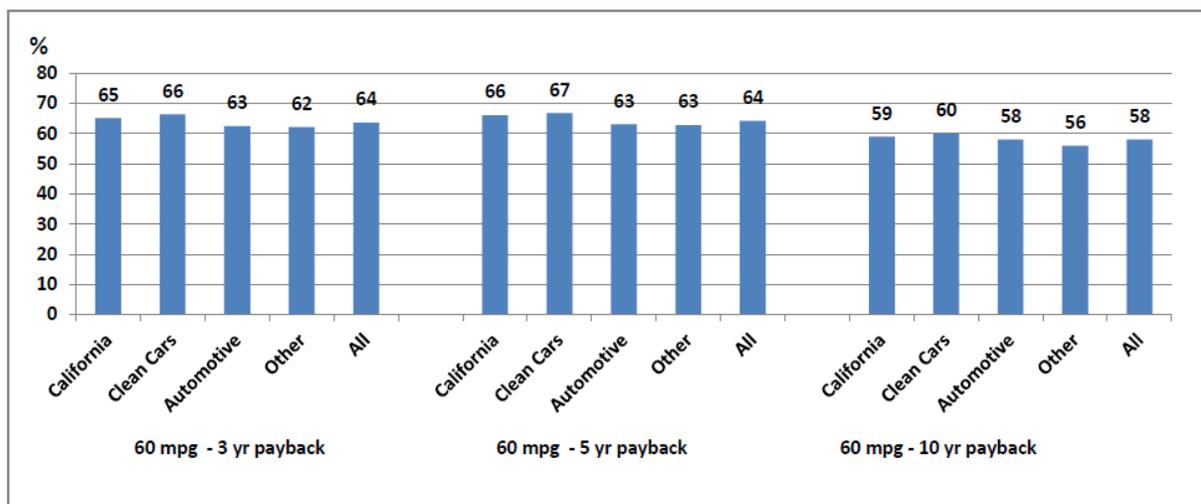
National Program. It also shows gasoline prices in current dollars in the year of the survey. Gasoline prices do not exhibit a strong relationship to prices in this period, which we surmise reflects the fact that consumers expect them to rise and also react adversely to price volatility. This, of course, is one of the primary reasons we have been vigorous advocates of increasing standards.

**FIGURE 6: PUBLIC SUPPORT FOR STANDARDS Support Across Time and Gasoline Prices**



Sources: CFA surveys, EIA database, Gasoline Prices

**Support for Standards by Region and Payback Period**



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

Consumers understand that the technology to increase fuel economy costs money, and therefore may increase the overall vehicle cost. CFA found that three out of five consumers support the standard if they would see a return on their investment in just 3 years. In fact, our previous surveys, that tested various levels of payback periods, found the level of support is

roughly the same at 3 and 5 years and, even at a 10-year payback period there was majority support.

### **Payback Periods and Technology**

Of most direct relevance to the standards setting process, we have asked consumers how they view the potential economic impact of standards. As a general proposition, payback periods are an inferior measure of economic performance that should not be used to drive the economic analysis. In this case, the payback periods are seen as a constraint on market behavior by assuming that people will not buy technologies with a longer payback. The 2.5-year payback period dramatically and inappropriately restricts the technologies that the model can include in its estimation of costs

In the last 2011 survey, in addition to the general question about support for fuel economy standards, we also asked respondents whether they support a standard of 60 miles per gallon.<sup>4</sup> For the 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. The specific target of 60 mpg is supported by over 60% of respondents with payback periods of three and five years. This support remains in the high 50% range with a ten-year payback period. We noted at the time that 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. The analysis arbitrarily restricts technology choices, particularly compared to the TAR.

### **Automaker Misrepresentation of Consumer Attitudes**

Automakers have consistently misunderstood or misrepresented consumer purchasing behavior and attitudes. Of course, automakers spend an immense amount of money to influence public attitudes towards the vehicle on which they make the most profit, but even their own data shows that consumers want more fuel economy that the automakers will not deliver absent standards, as Figure 7 shows.

After the big four attributes, respondents care as much about fuel efficiency as the ability to take long trips and the automakers are working on that too. Beyond these big six attributes, the valuation of others falls off, but efficiency comes next. Even here the message for EVs is positive. Environmental impacts rank a lot higher (8<sup>th</sup> and 9<sup>th</sup>) than powerful engines (13<sup>th</sup>) or engine type (gasoline power =14<sup>th</sup>, electricity = 16<sup>th</sup>). Fitting more than 5 people (15<sup>th</sup>) or hauling boats and campers (ranks dead last) don’t matter much.

### **ADDITIONAL IMPORTANT PUBLIC POLICY ISSUES**

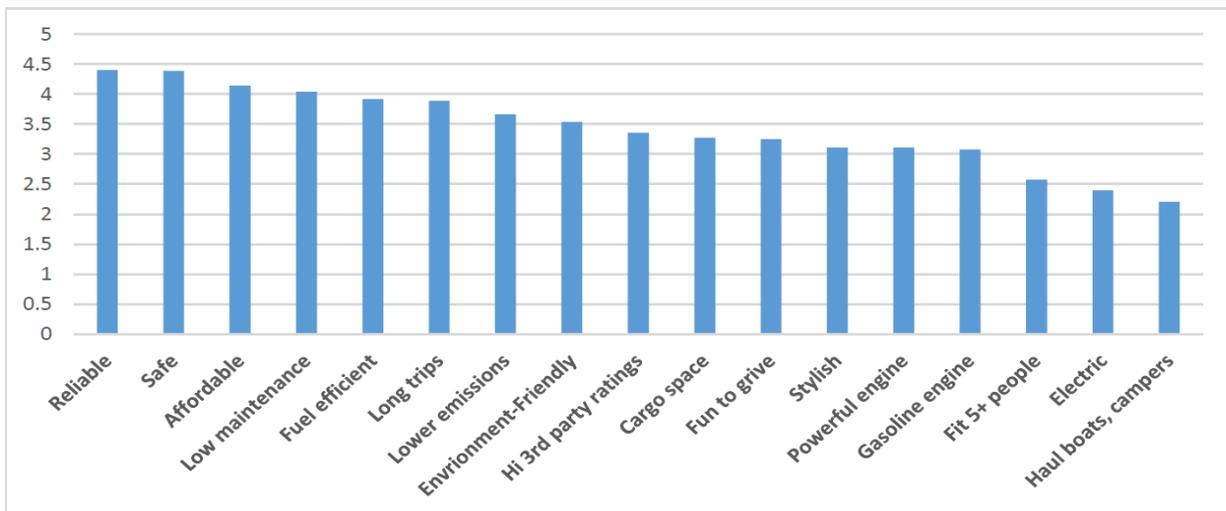
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<sup>4</sup> CFA Consumer Groups Comment, 2012, pp. 24-25.

## Low Income Households

An issue that has been examined in every CAFE analysis is the impact fuel economy standards would have on low-income consumers. The agencies posit that due to increased manufacturers' suggested retail prices (MSRP) from meeting the current standards, lower income households would be driven out of the market. This argument is misleading for the basic fact that low income households are generally not in the new car market. In fact, due to operating costs being a much larger share of the cost of driving for low-income drivers, having higher standards would help them rather than hurt them. Also, the fact that the economic value of future fuel savings is only partially reflected in the resale price of used vehicles. Low income consumers get a disproportionate share of the operating cost reduction thanks to increased fuel economy.

**FIGURE 7: RANK ORDER OF IMPORTANCE OF VEHICLE CHARACTERISTICS**



**Source and Notes:** Mitch Bainwol, President and CEO, Alliance of Automobile Manufacturers, *Consumers & Fuel Economy*, CAR Management Briefing Seminars, Traverse City, Michigan, August 2016, p. 10. The winter related question, specific to the North East, has been discarded. It would rank 12<sup>th</sup> of 18, low in California, high in New England)

## Clean Cars States Waiver

The agencies also propose repealing California's ability to set a different, higher fuel economy standard compared to the federal standard. This policy was founded on the fundamental principle of the American political system, wherein federalism allows the national and state levels of governments to pursue different pathways to solve a similar problem, as the problems and solutions to those problems can vary quite frequently depending on location.

Currently 13 states and Washington DC, which collectively represent 113 million Americans and over a third of the automotive market have signed onto the California Clean Car Program. The Program has helped to set the U.S. on a path that will improve the performance of light duty vehicles by a greater amount in a shorter time period than ever accomplished in U.S. history. This two-standard arrangement is supported by over two-thirds of Americans, as consumers can see the clear benefit of increased fuel economy.

## **Legality**

If the agencies decide to move forward with the rollback in fuel economy standards, with no new, compelling evidence and by irrationally, and misrepresenting old data, the agencies will directly violate the Administrative Procedure Act (APA). The APA does not allow for a radical change in agency direction without strong and thorough evidence to support it, and by the significant lost benefits to savings (-6 to 1), it is clear this is not the case. The rollback also violates legal obligations of NHTSA, as it is mandated to set standards with the highest technologically feasible and economically practicable energy savings possible.

## **Changing Market**

CFA analyzed the changing automotive market and the switch from cars to SUVs and whether consumer preference is connected to fuel efficiency. The agencies' position that consumers don't value fuel economy is completely false as SUVs, pickups and crossovers, whose fuel economy increased by over 15% between 2011 to 2017, had a 70% increase in sales. On the other hand, these types of vehicles with less than a 15% increase in fuel economy from 2011 to 2017 only experienced a 50% increase in sales, 20% less. Consumers are therefore switching from cars to SUV's because they can now obtain the same fuel economy as in a sedan, while SUVs also provide numerous additional benefits, from storage and leg room to increased field of vision

## **CONCLUSION**

History and the hearing record support the continuation of the standards. In summary, it is clear that EPA and NHTSA's Rollback and Freeze Proposal is not supported by the in-depth analysis done since the CAFE program was restarted in 2012 through 2016. The agencies' proposal harms consumers and our economy and should be withdrawn.

- The EPA should affirm its earlier conclusion that the standards set for 2021-2025 are appropriate.
- There is no need, under the enabling statutes of both NHTSA and EPA, to issue rules for the "out years" beyond 2026 and the agencies should make clear that their recommendation of the 2021-2025 standards, does not address future standards.
- To the extent that the agencies can identify flexibility within the current rules that enable automakers to accomplish essentially the same goals at a lower cost, they should put these proposals out for further comment.

## TECHNICAL APPENDIX

### I. INTRODUCTION AND OVERVIEW

#### FUEL ECONOMY IS A MAJOR CONSUMER ISSUE

The Consumer Federation of America<sup>5</sup> (CFA) and 32 of its member organizations (hereafter CFA Consumer Groups) appreciate the opportunity to provide the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) with comments regarding the Notice of Proposed Rulemaking on the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks.<sup>6</sup> The agencies are proposing to freeze the current CAFE standards at their 2020 levels through 2026 and to revoke California's waiver to set its own emissions standards which can be and has been adopted by other states.

Throughout its 50 years of existence, CFA and many of its members have been vigorous and continuous participants in the process of setting regulations to improve the efficiency of energy-using consumer durables and lower the cost of energy borne by consumers.<sup>7</sup> Transportation fuels, the sources of energy most directly affected by DOT regulations are a major household expenditure, representing over 3 percent of total expenditures, one of the 6 largest subcategories listed in the consumer expenditure survey. The overwhelming majority of the benefits of fuel economy (80% or more) and pollution reduction standards are economic,

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<sup>5</sup> The Consumer Federation of America is an association of more than 250 nonprofit consumer groups that was established in 1968 to advance the consumer interest through research, advocacy, and education.

<sup>6</sup> Hereafter, NHTSA 2018 NPRM.

<sup>7</sup> The CFA website (<http://consumerfed.org/issues/energy/>) provides links to 140 pieces of testimony and reports published in the past ten years dealing with the efficiency of energy-using consumer durables divided roughly equally between appliances and vehicles.

directly yielding consumer pocketbook savings and indirectly stimulating macroeconomic growth.

The CFA Consumer Groups<sup>8</sup> have participated in dozens, if not hundreds, of efficiency rulemakings, regulatory negotiations, and legislative hearings involving large and small energy using durables, ranging from automobiles to heavy duty trucks, air conditioners, furnaces, water heaters, computers, and light bulbs.<sup>9</sup> We have participated in every round of the rulemaking for fuel economy standards since the passage of the Energy Independence and Security Act of 2007, which rebooted and reformed the CAFE program. We appreciate the opportunity to share our views on the current state and future prospects for the National Program. Attachment A identifies over a decade of three types of activity in this area: 1) reports, 2) national surveys and 3) testimony and comments before federal and state agencies. CFA has frequently been joined by numerous member groups in the filing of comments in major proceedings.<sup>10</sup>

In these comments we make a simple point, with a great deal of data and analysis. In 2008, NHTSA wrote a standard using many of its old, error ridden assumptions and practices that did not conform to the program as rebooted by the Energy Independence and Security Act of 2007 (EISA). Beginning in 2009 and particularly with the National Program, NHTSA/EPA corrected almost all of those errors. The Technical Analysis Report (TAR) in 2016 affirmed those corrections. CFA's comments in these proceedings analyzed and affirmed those corrections, although there were still a couple more we would have liked to have seen corrected. Unfortunately, with the 2018 Rollback and Freeze proposal, the agency has tried to go back to

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<sup>8</sup> The Consumer Federation of America is an association of more than 250 nonprofit consumer groups that was established in 1968 to advance the consumer interest through research, advocacy, and education.

<sup>9</sup> The CFA website (<http://www.consumerfed.org/issues/energy>) lists over 100 pieces of legislative testimony and regulatory comments in home energy and motor vehicles, most of which involve energy use and efficiency standards.

<sup>10</sup> Id., the filings in the 2008 and 2012 rulemakings in particular.

the bad old days, re-introducing two dozen errors into its approach. These comments explain why NHTSA's assumptions and analyses are incorrect and illegal, violating the Administrative Procedure Act (APA) and the enabling statutes under which NHTSA and EPA operate.

## **The Consumer View**

We approach the setting of standards from a uniquely consumer point of view, always starting from a basic question:

- Will a standard save consumers money?

If there appears to be potential savings, we ask:

- Why is there an efficiency gap that appears to impose unnecessary costs on consumers?

If we find market imperfections that prevent the gap from being closed and cost savings from being realized, we then ask:

- Why is a standard an appropriate policy and how can the standard be best designed to achieve the goal of lowering consumer cost?
- Throughout the analysis, we pay particular attention to the impact of energy expenditures on low and lower middle-income households, who typically spend a much larger part of their income on energy costs.

Our technical expertise is not in the design and production of these durables, it is in the design and implementation of minimum energy standards.<sup>11</sup> We believe that knowing how to build an effective standard is at least as important to arriving at a successful outcome as knowing how to build a consumer durable. Moreover, we conduct extensive polling of public opinion, review the technical economic studies prepared by others and analyze evidence on the market performance of consumer products to determine whether there are significant potential consumer savings that would result from a higher standard.

## **OVERVIEW OF FINDINGS**

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<sup>11</sup> Mark Cooper, *Energy Efficiency Performance Standards: Driving Consumer and Energy Savings in California*. Presentation at the California Energy Commission's Energy Academy, February 20, 2014

The CFA Consumer Groups show in these comments that the Notice of Proposed Rulemaking in which the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) propose to roll back and freeze the fuel economy standards for new light duty vehicles (the “Rollback and Freeze Proposal”)” is misguided and ill-conceived. We believe the agencies’ proposal is arbitrary and capricious because it violates the Administrative Procedure Act (APA) requirement that rules be realistic and bear a reasonable relationship to the evidence before the agency,<sup>12</sup> but also because it violates the enabling legislation that empowers both agencies to adopt standards.<sup>13</sup>

The reasons for our belief that the proposal should not be allowed to go forward are laid out in Table I-1 and I-2. As shown in Table I-1, for almost forty years and across four presidents, two from each party, the corner stone of benefit/cost analysis is the identification and inclusion of all costs and benefits described and evaluated on a scientific, transparent basis. The analysis put forward to defend the Rollback and Freeze Proposal violates all three principles of sound benefit cost analysis.

Table I-2 identifies the specific flaws in the “Rollback and Freeze Proposal,” in relation to the evidence and legal analysis that the agencies built in the several proceedings that implemented the Energy Independence and Security Act (EISA), signed into law by President Bush in 2007. As shown in the comments filed by CFA identified in the table, the current

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<sup>12</sup> We have analyzed this issue at great length in a report by Jack Gillis and Richard Eckman, entitled, *An Analysis of Consumer Savings and Automaker Progress On the Road to 2025 CAFE Standards Increasing Fuel Economy Saves Consumers Money, Sells Vehicles, Keeps American Companies Competitive and, Most Importantly, is Achievable*, July 24, 2017, which was attached to the Consumer Federation of America, Comments to the Office of the Secretary of Transportation, 14 CFR Chapters I, II, and III, 23 CFR, Chapters I, II, and III, 46 CFR Chapter II, 48, CFR Chapter 12, 49 CFR Chapters I, II, III, V, VI, VII, VIII, X, and XI, Docket No. DOT–OST–2017–0069, Department of Transportation on Regulatory Reform, 2017, in re: Notification of Regulatory Review: November 1, 2017. As noted below, an update on the performance of high MPG “all new” vehicles in 2018, was published in 2018. These are the latest in a series of reports, identified in Attachment A, that document the ability of automakers to comply with the standards under the reformed approach adopted by EISA.

<sup>13</sup> Id.

NHTSA/EPA proposal flies in the face of the high quality conceptual, empirical and legal analysis that the agencies used over the past decade to deliver a balanced, rational and reasonable rule for coordinated national and state standards called the “National Program.” Hence, the “Freeze and Rollback Proposal” is a complete and unjustified reversal (a Freeze) of a decade of careful analysis by the agencies.

Table I-2 is constructed as follows. The first column identifies issues (errors) made by NHTSA over the course of the decade since the passage of EISA. In the second column, we provide references to our comments in the 2008 rulemaking in which we identified and explained the errors in the analysis and selection of a standard in the final rule. Most were made in the first post-EISA rule. A few involve trends that developed over time and like the other entries, contradict NHTSA’s assumptions in the current “Freeze and, Rollback Proposal.”

The next three columns refer to significant developments in the setting of fuel economy and environmental standards in the major proceedings leading up to and encompassed by the “National Program” proceedings. In these three columns (2012 through the TAR, including the analysis by the California Air Resources Board, which was collaborating with EPA and NHTSA on the National Program), NHTSA/EPA corrected most of the errors. We fill the columns with citations to CFA supporting comments. In the fourth column we identify the errors reintroduced in the rulemaking by the “Freeze and Rollback Proposal.” The citations, in italics point to the pages on which the issue was discussed, as provided in the sources section of Table I-2.

Congress enacted EISA to reboot the fuel economy standards program after two decades of dormancy. Unfortunately, after the Congress rebooted the fuel economy program with the passage of EISA, NHTSA went back to its old ways that had led to the dormant period. In our view, NHTSA made over three dozen mistakes in writing that first, post-EISA order in 2008.

Most of these were carefully corrected by subsequent orders, as our comments on the National Program pointed out.

#### **TABLE I-1: OMB GUIDANCE ON THE BASIC PRINCIPLES OF BENEFIT COST ANALYSIS**

Reagan (12291): each preliminary and final Regulatory Impact Analysis shall contain the following information...

A description of the potential benefits of the rule, including any beneficial effects that cannot be quantified in monetary terms, and the identification of those likely to receive the benefits

Clinton (12866): In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider

Bush (OMB-Circular A-4): When quantification of a particular benefit or cost is not possible, it should be described qualitatively. The analysis of these alternatives may also consider, where relevant and appropriate, values such as equity, human dignity, fairness, potential distributive impacts, privacy, and personal freedom.

Obama (13563): It must take into account benefits and costs, both quantitative and qualitative. Where appropriate and permitted by law, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts.

#### **Transparency**

Reagan (12291): In order to implement Section 2 of this Order, each agency shall, in connection with every major rule, prepare, and to the extent permitted by law consider, a Regulatory Impact Analysis. Such Analyses may be combined with any Regulatory Flexibility Analyses performed under 5 U.S.C. 603 and 604. Except as provided in Section 8 of this Order, agencies shall prepare Regulatory Impact Analyses of major rules and transmit them, along with all notices.

Clinton (12866): Each agency shall draft its regulations to be simple and easy to understand, with the goal of minimizing the potential for uncertainty and litigation arising from such uncertainty.

Bush (OMB-Circular A-4): The agency should add notes to the bottom of the tables that enable readers to interpret the information in the tables correctly. For example, when there is significant uncertainty to estimates, a caveat describing the nature of the uncertainty should be provided in the notes. A good regulatory analysis is designed to inform the public and other parts of the Government (as well as the agency conducting the analysis) of the effects of alternative actions. Regulatory analysis sometimes will show that a proposed action is misguided, but it can also demonstrate that well-conceived actions are reasonable and justified.

Obama (13563): It must ensure that regulations are accessible, consistent, written in plain language, and easy to understand. It must measure, and seek to improve, the actual results of regulatory requirements. It must promote predictability and reduce uncertainty

#### **Scientific Basis**

Reagan (12291): Administrative decisions shall be based on adequate information concerning the need for and consequences of proposed government action;

Clinton (12866): Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation.

Bush (OMB-Circular A-4): The agency should use the best reasonably obtainable scientific, technical, economic, and other information to quantify the likely benefits and costs of each regulatory alternative. Presenting benefits and costs in physical units in addition to monetary units will improve the transparency of the analysis.

Obama (13563): In applying these principles, each agency is directed to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. It must be based on the best available science.

**TABLE I-2: EVOLUTION OF THE APPROACH TO STANDARDS SETTING IN THE POST-EISA ERA**

ISSUES	2008	2010	2012	TAR	2018	Impact on
(correctable errors)	Post-EISA	Transition	Full	Approach	Old/New	B,C = Δ %
	Errors	Correction	Correction	Affirmed	Errors	TAR v. 2018
<b>Underestimating Benefits</b>						
Truncating Benefits					43314	B= + > 30
Rebound Effect Pocketbook	2,8,10,59-60;.8,28	10,27	12,53	5,6	43099-108	B= + 10 to 15
Gasoline Prices	2,8,44,49;2a		53		4299343070	B= + 3
Include All Benefits	2.8.57-58;a6	27,71, 2,16,27	14	2		B= + 50
Macroeconomic	22	8	14	4,6,69-72, App.G	43068	B= + 60
Public Health Co-Benefits	9	3,29,33	7,33	App.H,a4		B= + 33
Non-enviro externalities	2,8	3,6-7, 33-37	7,14,33			B= +
Discount rate (3% v. 7%)	2,40,52-55		55	APP.E	42306	B= + 34
<b>Overestimating Cost</b>						
Technology Cost	3,4,57	1,5,12	8,35,42-43	2,3,APP.D	42993	C= - 50
Tecnology Feasibility	3,10,11,17, 20-21		8,41,12	14,b8	42991	
Payback	53-54,56;a51		29,72	4,59	43255	
emerging technology	9,21	7		2		
Refresh and redesign cycle	11			?		
<b>Misrepresenting safety</b>					43231	
Rebound effect	10					C= - >75
Light-weighting trucks						C= - ?
Technology						C= - ?
<b>Broad Market Issues</b>						
Low income households			12,51	6-7	43227	B = + ?
Pocketbook			12,51	6-7	43105	B = + ?
Public Health				6-7		B = + ?
Clean Cars States					43306-16	
Federalism	Econ. Anal		Federalism	3,4,15,a4	43235-53	B = + ?
Hybrids aand Evs		35		3,15,APP.I,a8-9	43217-22	
<b>Conceptual &amp; Legal Frame</b>						
Economic Assumptions	36,39,65	2,4,21,40-45				
Efficiency Gap/Diffusion	22,33-37,41-42	2,3,22,23 38,39,50,56	12-13,15,54	8,APP.B,C,F, b6-7	43071	B = + ?
Behavioral Economics	36,39,38,41	22-23,31-32,45-46				B = + ?
Legal Balancing Post-EISA	2-3,8,11-13,17;a3-4	3,5,7-8, 19-21, 34,35, 64-66,109	8,15	2-4,12-13, APP. A,G;C6,ATT.SII	43206-16,43309	
Modelling Flaws		5, 19, 110		4,5		
Failure to vet, peer review						
Outdated data	10,11					
Internal inconsistencies	57, 10 VMT				xx scrappage	
<b>Real World Behavior</b>						
Consumers		6,68,70			43070-74	
Attitudes	18;a2,5	76,77				
Support for Stnadards						
Interest in Fuel Economyu		78-79			435216-17	
Payback Periods				5	43255	
Behavior	18,69;a7,30	68, 86-88,96-98	27-29			
marginal value of driving					42991-92	B = + ?
WTP Critique	42	24, 68			43071	B = + ?
Monthly Loan Payment			29	2,4		B = + ?
Automaker behavior	a2,7	71,73-75,91-95	46	2,16, APP.D,b10		
Misrepresenting Consumers preferences	36, 39;a5	71, 58-64	5,20	9,,10,11,a10,12	42993	
payback	53,60,61	1	4	3,10		B = + ?
Advertising (manipulation)				2		B = + ?
Strategies & Pricing	61, a11	9, 70, 81			42993-4	
Plans & Refresh Cycle	10,11,17, 33,38,41;a3,	81	48			C = - ?
Fines, credits	33,35,41,59	20				C = - ?
Compliance	12,33;a11			3-4,12		C = - ?
<b>Market Performance</b>	4,9,11	15	10	2,17,a4,6	43809-94,43099	
Prices	11			51,7	42993	
Auto sales total	9,43	81-90,99-102		2,b11-13	42995	
Sales of efficient vehicles	11a,			2,b11-13		
<b>Overall Impact of Rollback &amp; Freeze</b>	2,8,14,25,36, 39,65	4,9,17,30,39-41, 70	5,6,8,11	2,5,17,b6	43419	TAR v. CFA = + 10% to 30%

Legend: *Italicized* cites are flaws noted in CFA comments. **Bold** cites are corrections of flaws by the agencies as noted in CFA comments. ***Bold Italicized*** cites are issues partially addressed by NHTSA/EPA rules.

**General References, citations to CFA Comments and “Rollback and Freeze Proposal:**

- 2008, Primary = “Comment and Technical Support Appendices of the Consumer Federation of America,” *Average Fuel Economy Standards, Passenger Cars and Light Trucks, Model Years 2011-2015*, July 1, 2008
- (a) = “Comments on the Draft Environmental Impact Statement of Consumer Federation of America, et al.,” *Notice of Proposed Rulemaking: Average Fuel Economy Standard; Passenger Cars and Light Trucks, Model Years 2011-2015*, August 18, 2008
- 2010 Primary=, “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 27, 2009
- (a) =
- 2012, Primary = Comments of Consumer Groups on 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-9495-2NHTSA-2010-0131, February 13, 2012 (hereafter CFA Program Comments)
- (a) Statement of Dr. Mark Cooper, Director of Research, Joint NHTSA-EPA Hearings on Fuel Economy Standards for 2017-2025, January 2012
- 2016, TAR, primary= Consumer Federation of America, 2016, *Comments of the Consumer Federation of America, Evaluation Draft Technical Assessment Report for Model Year 2022-2025 Light Duty Vehicle GHG*) Department of Transportation Emissions and CAFE Standards, EPA- HQ-OAR-2015-0827; NHTSA-2016 0068; FRL-9949-54-OAR RIN 2060-AS97; RIN 2127-AL76, September 26, 2016 (hereafter CFA TAR Comments).
- (a) Consumer Federation of America, 2017, *Comments of the Consumer Federation of America on the California Air Resources Board Mid-Term Review*, before the California Air Resources Board, March 24, 2017 (here after, CFA CARB Comments).
- (b) Consumer Federation of America, 2017, *Comments of the Consumer Federation of America, Notice of Intent to Prepare an Environmental Impact Statement; Request for Scoping Comments*, before the National Highway Transportation Safety Administration, Department of Transportation, Docket No. NHTSA-2017-0069, September 25, 2017.
- (c) = *The Consumer Federation of America, Comments to the Office of the Secretary of Transportation*, 14 CFR Chapters I, II, and III, 23 CFR, Chapters I, II, and III, 46 CFR Chapter II, 48, CFR Chapter 12, 49 CFR Chapters I, II, III, V, VI, VII, VIII, X, and XI, Docket No. DOT-OST-2017-0069, *Department of Transportation on Regulatory Reform, 2017, in re: Notification of Regulatory Review*: November 1, 2017, with Attachment. (hereafter DOT/ATT)
- 2018, NPRM, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks Department of Transportation National Highway Traffic Safety Administration, 49 CFR Parts 523, 531, 533, 536, and 537; Environmental Protection Agency, 40 CFR Parts 85 and 86 [NHTSA-2018-0067; EPA-HQ-OAR-2018- 0283; FRL-9981-74-OAR] RIN 2127-AL76; RIN 2060-AU09, 83 Fed. Reg. 42,986, 43,100 (Aug. 24, 2018);

Fortunately, the new administration immediately set about correcting those errors with the 2009 Notice. These changes, which CFA supported, are identified in the third column. However, this was a transitional standard for two reasons. First, the auto industry was under a great deal of stress, in part, as we demonstrated, because of its own mistakes. As a result, the regulatory change was transitional. Second, it takes time and analysis to unmask and reverse mistakes recently made by the agency. Key steps were taken, but there was much more to be done to put the rules on a rational and realistic basis consistent with the statutes and the industry.

The correction process was complete with the “National Program” that included coordination between federal and state agencies in a long-term program. These corrections and the overall framework and standards set in 2012 were affirmed the 2016 TAR.

Here we must emphasize the broad process of bringing the standards into touch with reality and compliance with the congressional intent of EISA. The first rule written by NHTSA after EISA was remarkably deficient. We summarized the deficiencies in our 2008 comments by identifying well-over a dozen major flaws, as shown in Table I-3. Many of these mistakes have been reintroduced by NHTSA in the “Freeze and Rollback Proposal.”

We called on NHTSA to raise the standard for 2010-2012 by 40% and rescind the standards for 2013-2015, pointing out that by 2015 the proposed standards were failing to capture three-quarters of the available benefits. We showed that correcting the flaws in the analytic framework and data used in the 2008 analysis would increase consumer pocketbook benefits by over 80% and total societal benefits by 125%.<sup>14</sup> We show in these comments that the errors reintroduced into the analysis of benefits and costs of standards, lead to an even larger misestimation of the net benefit of continuation of the National Program standards.

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<sup>14</sup> Attachment B, p. 61.

### TABLE I-3: CRITIQUE OF NHTSA'S 2008 RULE

The issues that are the target of NHTSA's incomplete studies are central to the rulemaking, including:

- The market share of various models in the vehicle fleet;
- The value of reduced emissions of greenhouse gases;
- The effectiveness of technologies for improving fuel economy, and
- The cost of technologies for improving fuel economy.

There are other areas where it has simply run ahead of its data, resorting to projections in a market that is rapidly changing, such as:

- Relying on old sales data and projections in a time of rapid change in the industry;
- Uncertainty about the impact of vehicle mix on safety;
- Uncertainty about the pattern of inclusion of fuel saving technology in light trucks;
- Technology adoption strategies ("pull ahead") that speed penetration of fuel savings technology into the vehicle fleet;
- Recent changes in fuel economy and the practices of automakers in adopting fuel economy technologies; and
- Changes in vehicle usage patterns across time.

There are also areas where the underlying data is suspect and would benefit greatly from improvement as time allows, including:

- The production plans of automakers;
- Uncertainties about market share and price data;
- The validity of the speed of adoption of technology (phase-in caps) in light of dramatic changes in auto market behavior; and
- Assumptions about the compliance strategies of auto manufacturers.

If NHTSA

- Adopted a properly balanced view of technological feasibility, economic practicability and the need to conserve energy **or**
- Adopted a more reasonable set of fuel price assumptions, **or**
- Used a consumer-oriented discount rate, **or**
- Corrected the group of other flawed economic assumptions that undervalue fuel savings (rebound effect, resale value of fuel-efficient vehicles, military and strategic value of gasoline consumption),

It would have set the standard at about the level of the "50-50" standard, thereby savings the nation 40 percent more gasoline while, providing a substantial net economic benefit.

By 2013, NHTSA's proposed standard is capturing less than half of the difference between the minimum allowable progress and the maximum economic conservation standard level. By 2015, it is capturing a little over one-quarter. This is an analytic conclusion and policy justification that supports our call for NHTSA to rescind its proposed standard for 2013-2015 based on the paucity of data on which it based the standards for those years.

Source: CFA, 2008 Comments, pp. 8-11, 14.

The new administration took a somewhat different approach, one that ultimately accomplished much of the goal of correcting the flaws. As noted above, it issued a transitional rule in 2010 that corrected many flaws, then produced a comprehensive alternative that not only implements the enabling statutes, but also resolved conflicts with the approach of the Clean Cars states. The analytic and legal basis of the standard, not to mention the remarkable political

achievement of reconciling various interests, is rock solid. In contrast, the “Rollback and Freeze Proposal” fails miserably on all counts.

As the agencies fleshed out the approach to setting standards under the enabling legislation as amended by EISA and harmonizing them across the two federal agencies and the California Air Resources Board (CARB), CFA’s comments tracked the process and identified issues that should be considered and incorporated. CFA has recently prepared a comprehensive discussion of that long line of comments and presented it to the agencies as part of the broad Trump administration’s regulatory reform initiative, as well as the specific mid-term review. We have attached that review as Attachment B.

In these comments, by reference, we incorporate all of the sources identified in Table I-2 in the Technical Appendix into the current record. We believe this is appropriate, not only as a matter of general practice, but also because the mid-term review was intended to look at the record and performance of the National Program, and the entire hearing record of that proceeding, including, in particular the TAR, should be the foundation for the review.

The “Rollback and Freeze Proposal” fails on every one of the more than three dozen issues identified in the Table I-2 (errors are in italics, corrections are bold, transitions or partial issues are in bold italics). In some cases, the assumptions in the “Rollback and Freeze Proposal,” are even farther removed from reality than the mistakes made in 2008 (e.g. rebound rate, scrappage, available technologies). In other cases, the agencies simply changed the interpretation of existing evidence, without justification. NHTSA’s new auto market model is far from transparent, has not been subject to full review and appears to be riddled with contradictions. The errors made in the “Rollback and Freeze Proposal” are identified in the sixth column.

The current SAFE proposal goes backwards by making and expanding upon the flaws found in the 2008 rule. By carefully re-analyzing of the impact of the “Freeze and Rollback Proposal,” CFA Consumer Groups show the conclusions drawn from the 2012 rule and 2016 TAR were correct in their assessment of the benefit and costs of the standards. The SAFE analysis both underestimates the benefits of the standards by 10-30%, while also downplaying the harms of not enacting the standards as put forth in the TAR. The bottom line is clear, the Rollback and Freeze Proposal will cost consumers and then nation about six times as much as it saves in auto technology or safety costs.

The seventh column of Table 1 summarized the impact of NHTSA’s errors in the “Rollback and Freeze Proposal” in terms of its impact the cost benefit analysis. It identifies the impact on benefits or costs, showing whether they are positive or negative and how large (the Delta  $\Delta$ ) they are in percentage terms. The final column also shows our current analysis compared to our earlier analysis of the TAR. Our detailed analysis of the TAR and the auto market it reflects, attached as Attachment B, led us to conclude that rollback and freeze of the standards was not in the public interest. Contrary to the statutes, it robs consumers of a quarter of a trillion dollars of benefits and the nation of hundreds of millions of additional benefits. Careful reanalysis of the impact of standards, prompted by the “Freeze and Rollback Proposal” leads us to not only reaffirm those earlier findings, but also to conclude that the actual benefits foregone by “Freeze and Rollback Proposal” would be 10% to 30% higher, as shown in the final column of Table I-2. That is, the benefits of the National Program standards are likely to be 10% to 30% higher than we estimated in 2017.

Thus, the benefit cost ratio of the “Freeze and Rollback” Proposal is negative – as much as -6 to 1 – which violates the enabling statues of both agencies and guidance from the Office of

Management and Budget (OMB) on rulemakings. By turning their backs on the current rule without building a record to support it, the flip-flop on standards also violates the APA. In these comments we highlight the major conceptual, analytic and quantitative flaws in the Rollback and Freeze Proposal. The Technical Appendix and attachments discuss many more flaws in the proposal and provide empirical evidence that support our conclusions.

Of equal importance, the NHTSA/EPA “Freeze and Rollback Proposal” would impose even larger, long term harm on consumers and the nation because they put a very large thumb on the scale against future standard increases by adopting extreme assumptions, faulty logic and flawed models that unjustifiably militate against greater fuel economy. In at least six major areas, NHTSA’s current analysis makes unrealistic assumptions that are not supported by sound evidence. These assumptions reduce or ignore the vast majority of benefits and inflate the estimates of costs to the extent that future increases in standards would never be justified.

#### **THE MID-TERM REVIEW**

The 2012 proceeding and the TAR are the evidentiary basis on which the current standards are based and against which the “Freeze and Rollback Proposal” must be judged. The focal point of this proceeding should be the TAR. The TAR was a collaborative document that reflected the overall approach and updated the record. EPA and CARB had the evidentiary record and legal authority to reach a final determination and they did so in proper legal order. NHTSA was required to conduct a new proceeding, which should have launched from the TAR. Obviously, it could have produced solid evidence that a change in course was necessary, compared to the TAR, but it took a year-and-a-half and failed to do so.

NHTSA/EPA claim that circumstances have changed in the auto market to render the previous conclusion that continuing to pursue the standards as established in 2012 by the

National Program are not supported by the analysis. They are wrong. Circumstances in the auto market have not changed in any material way to undermine the evidentiary basis for the standards. The only things that have changed are the assumptions used by NHTSA/EPA to conduct the regulatory impact assessment. However, the new assumptions they used do not fit the reality of the auto market. If anything, to the extent that there have been changes since 2012, or more importantly, 2015-2016, when the Technical Analysis Report (TAR) was prepared, they have been in a direction that lends more support to sticking with the National Plan, not less.

The primary challenge for the agency was to present empirical, real world evidence that things had changed so dramatically that it was necessary for standards to head in exactly the opposite direction. We believe it was unable to cite such credible evidence. Having failed to do so, it simply offered new interpretation of old data, which had been thoroughly discredited by the prior analysis. In the process of offering those new interpretations, the agencies slipped back into approaches and tactics that had been thoroughly discredited in earlier proceedings. As a result, there are a boatload of things wrong with the analysis.

In each of the areas the TAR offered a balanced, rigorous, rational and reasonable analysis of the market. In contrast, the analysis underlying the Notice of the “Rollback and Freeze Proposal,” is unbalanced, slapdash and irrational, contradicted by a reasonable reading of the record. Economic evidence and theory, as well as strong historical patterns, contradict the assumptions and, therefore, the conclusion of the “Rollback and Freeze Proposal.”

## **II. CORE ISSUES IN COST BENEFIT ANALYSIS: MAJOR FLAWS IN THE “ROLLBACK AND FREEZE PROPOSAL”**

The agencies claim that the Rollback and Freeze proposal has a small, positive benefit cost ratio. That claim is incorrect. The agencies’ notice tries to establish general themes that argue that the standards have diminished value and are not needed. Their arguments are, at best, unsupported and dubious, and at worst, they are flat out wrong.

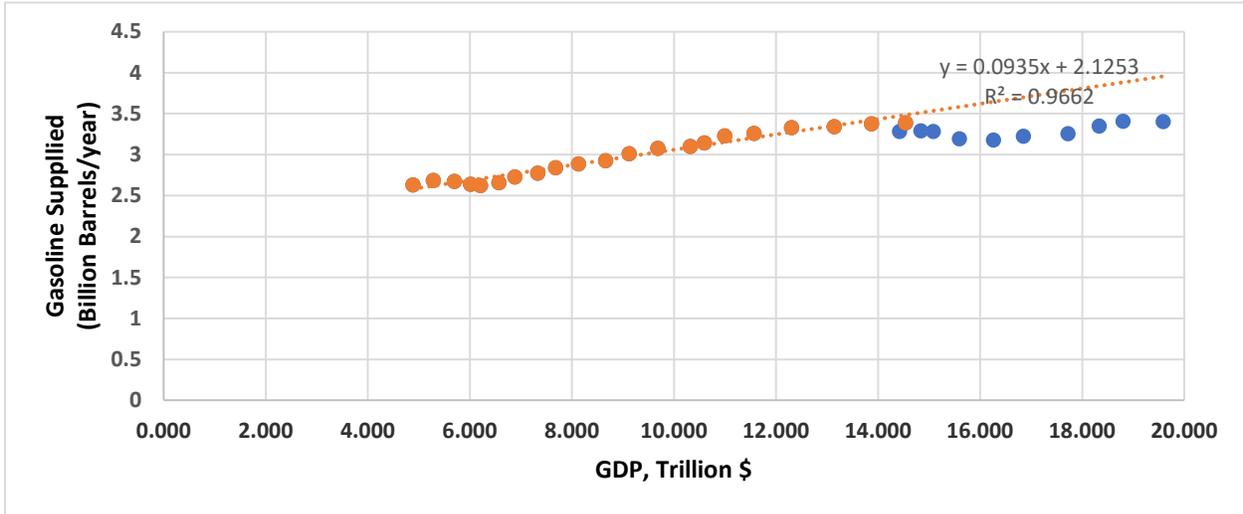
As we show throughout these comments, the agencies have failed to count all of the benefits, while they have not only included all of the costs, but overestimated them dramatically. Each of these errors is biased in favor of the proposal and against the preservation of the standards. Correcting any one of the most egregious errors reverses the conclusion of the proposed rule. Correcting them all shows that the Rollback and Freeze proposal has a substantial negative benefit cost ratio. That is, it denies benefits to the public that are far greater than the costs it claims to save. Our summary evaluation in the conclusion and the more detailed discussion in Attachment B show that the likely benefits of keeping the standards are between 3-to-1 and 6-to-1. In other words, the Rollback and Freeze has a negative benefit cost ratio of that size (i.e. -3 to-1 or -6 to-1). In this section we begin correcting the errors by examining the individual mistakes made by the agencies.

### **THE IMPORTANCE OF FUEL ECONOMY TO PUBLIC POLICY**

The most blatant methodological flaw is to apply a framework that includes all of the costs, but not all of the benefits. EPA/NHTSA claim that the improvement in our oil situation allows them to favor other factors, rather than follow the intent of the enabling statutes to maximize conservation and reduction of emissions of pollution. As a matter of law, we do not think they can so blatantly reject that goal. As a practical matter, even if they could, they should not. Their rationale is dubious for two reasons.

First, improvement in fuel economy has made a substantial contribution to the improvement of the current situation, accounting, by the view taken in Figure II-1, for half a billion barrels per year, or about 20% of the improvement in our import dependence.

**FIGURE II-1: GASOLINE CONSUMPTION AND GDP**



Source: Data Bureau of Economic Analysis for GDP, Energy Information Administration for gasoline consumption.

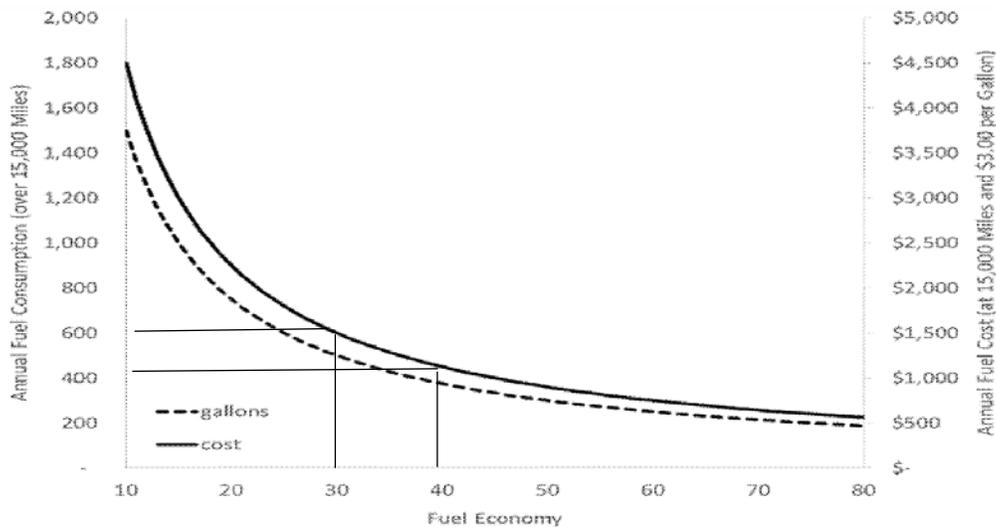
Second, freezing the standard and holding the line for a number of years would result in a huge increase in U.S. oil consumption. The vehicles produced in each model year would consume close to half a billion more barrels of oil than if the National Program standards remained in force. In just the five years covered, there would be 80 million inefficient vehicles on the road consuming over 2 billion extra barrels of oil compared to the vehicles that would be sold if there were no rollback and freeze. Continuing the standards delivers a substantial benefit and reduces the pressures on the domestic oil industry. It also helps to alleviate some pressure on the global oil industry. This is an important qualitative consideration. There are numerous quantitative errors in the Rollback and Freeze Proposal

**THE IMPORTANCE OF COMPARING BENEFITS AND COSTS**

In addition to arguing incorrectly that improving fuel economy is less important because of increased U.S. supply, the Notice tries to establish other general themes that argue that the

standards have diminished value. As shown in Figure II-2, the agency points to the declining marginal impact of fuel economy improvements as a justification for the Rollback and Freeze Proposal, using figures that fit the empirical situation being analyzed (in terms of efficiency and value of savings). Figure II-2, shows an obvious physical reality that beg the relevant policy question. Are the continuing reductions worth what they cost? One must look at both costs and benefits simultaneously.

**FIGURE II-2: INCLUDING BENEFITS AND COSTS SHOW THAT THE BENEFITS OF IMPROVED FUEL ECONOMY FAR EXCEED THE COST**



**Figure I-1 - Annual Fuel Use and Costs vs. Fuel Economy (at 15,000 Miles and \$3.00 per Gal.)**

13,500 miles/year @ 30 MPG	= 450 gallons per year
13,500 miles/year @ 40 MPG	= 338 gallons per year
Savings	= 112 gallons per year
Savings over 12 year	= 1344 gallons
Tech. cost @ \$2,700/1344	= \$2.01/gallon
Tech cost @ \$1,000/1344	= \$0.74/gallon

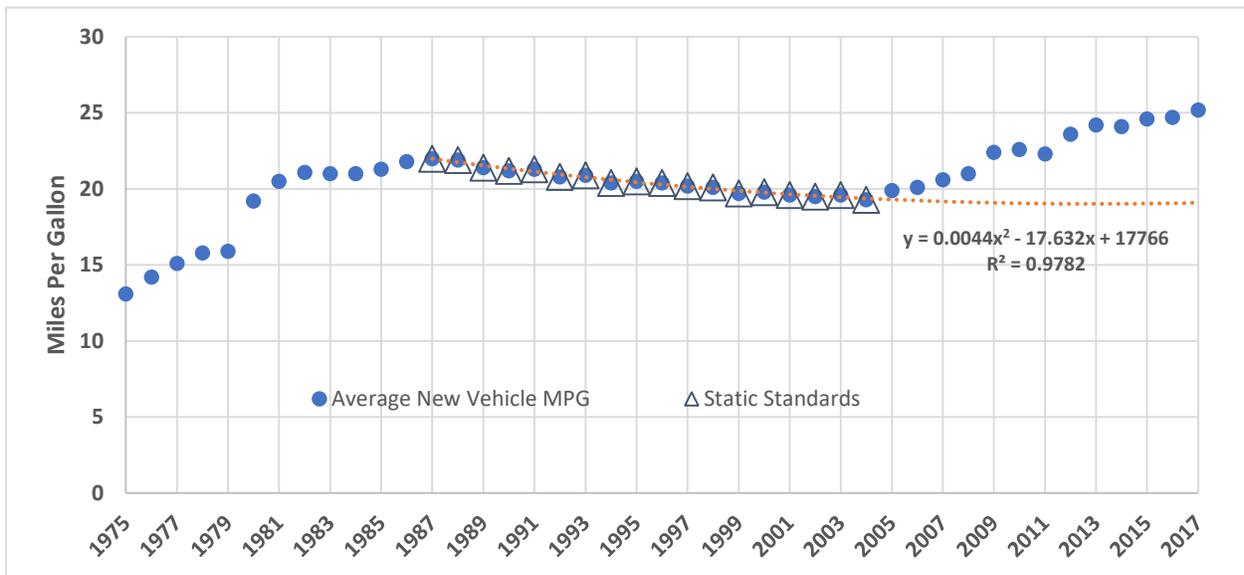
Source: NPRM, 22993, Vehicle life of 12 years reflects the NPRM data that current average life is 11.6 years and growing. Average of 13,500 miles driven per year over the lifetime of the vehicle reflects NPRM data.

It turns out that applying the parameters from the proceeding, such as an increase in MPG from 30 to 40 and average annual mileage over the life of cars, the cost per gallon saved is one-third lower than the cost of gasoline assumed in the analysis – it costs \$2.00 to save \$3.00. Of

course, at the much lower costs of technology, which are fully justified in the record, the cost per gallon saved is only about \$0.74 exactly the cost we have calculated in our earlier analysis of the TAR and the harm imposed by the “Freeze and Rollback Proposal.”.

This flaw in the presentation can be tied directly to the previous observation on the importance of improving fuel economy. In the example of Figure I-2, every vehicle produced under the weaker standard consumes almost 1350 gallons more gasoline than it would have. Assuming an average of 16 million vehicles produced each model year, that means half a billion barrels more of oil consumption, which is a heavy burden in terms of U.S. oil dependence and world oil markets. To soften this blow, NHTSA/EPA assume a steady 1% increase in fuel economy without standards. The historical record suggests otherwise, as shown in Figure I-3. When the standards were dormant, fuel economy did not increase.

**FIGURE II-3: ABSENT STANDARDS, IMPROVEMENT IN FUEL ECONOMY IS UNLIKELY**



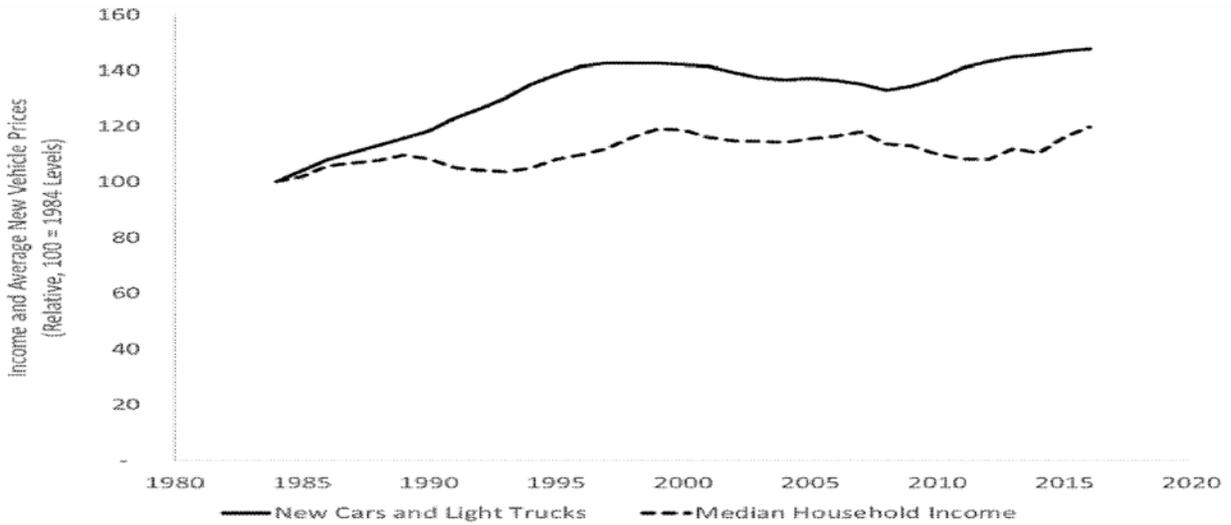
Source: EPA Trends, 2017

### AFFORDABILITY IN THE AUTO MARKET

Another misguided effort to establish an anti-standard meme is the comparison between vehicle costs and household income, presented in an effort to show that standards are driving the

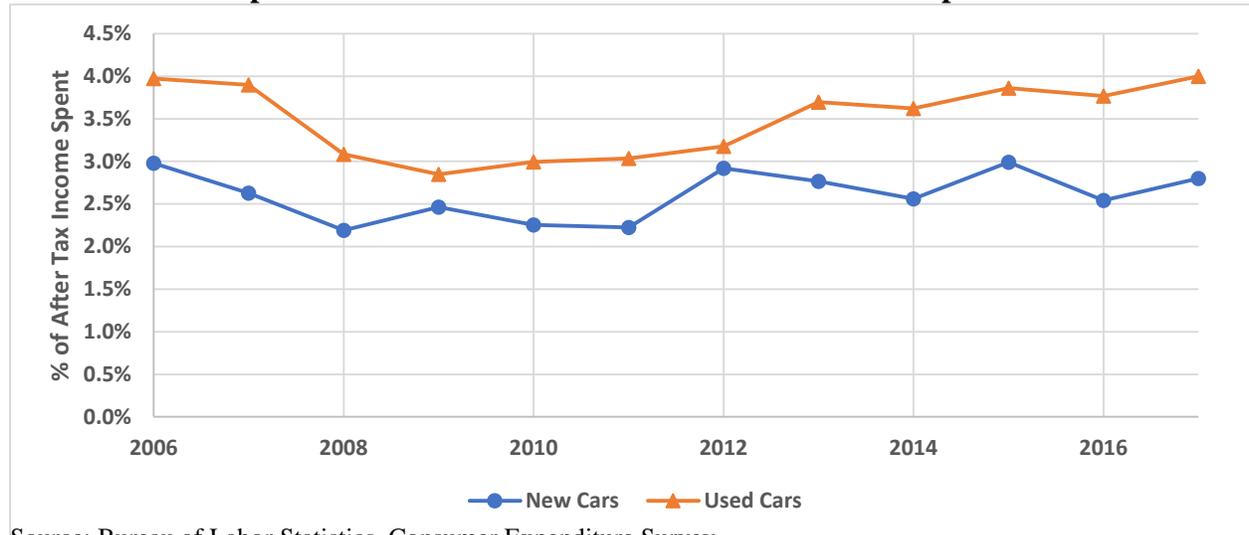
costs up too high and threaten the auto market. The data present makes an egregious mistake. As show in the upper graph of Figure II-4, it compares auto cost trends in nominal dollars to real household income, which is certain to make auto costs prices look bad.

**FIGURE II-4: AFFORDABILITY OF VEHICLES HAS NOT BEEN UNDERMINED BY FUEL ECONOMY**  
**The Erroneous NHTSA/EPA Comparison, Nominal Prices versus Real Income**



Source: NHTSA 2018 NPRM, p. 42995

**The Correct Comparison: Percent of After-Tax Household Income Spent on Vehicles**



Source: Bureau of Labor Statistics, Consumer Expenditure Survey

This bad data ignores the fact that the auto market had booming sales when fuel economy standards were increasing. The spending on vehicles, new and used, plummeted during the great recession, but recovered with the economic recovery. The upward trend in spending as a

percentage of household income has returned to the level prior to the great recession. Prices have not been rising compared to income, but fuel economy has. In fact, when examined with a higher resolution microscope, as we do below, we find that increase in cost has likely been driven by other automaker choices so that the cost of efficiency, as a percentage of income has probably been declining, exactly the opposite of what NHTSA claimed.

This misguided presentation of key dynamics of the auto market goes deeper and undercuts other parts of the NHTSA/EPA argument, as discussed later in these comments. The claim that increasing fuel economy standards harms low income households by driving them out of the market is also incorrect because lower income households are much less likely to be in the new vehicle market and much more likely to benefit from improvements in fuel economy.

#### **REBOUND EFFECT AND POCKETBOOK SAVINGS**

Another important error in the NHTSA/EPA analysis involves the rebound rate – i.e. the amount of additional driving NHTSA/EPA assume takes place as a result of the lower cost of operating a vehicle that results from higher fuel economy. Unlike the first error, which is a blatant mistake in arithmetic, the rebound rate is a blatant error in interpreting the evidence on which to make an assumption.

As shown in Figure II-5, NHTSA/EPA **doubled the rebound rate** based on a reinterpretation of the academic and independent evidence before the agency and two studies funded by automakers which are inherently biased. The TAR reviewed the same evidence and concluded that the rebound rate should be set at 10% and was likely moving lower. Independent evidence since the release of the TAR affirms that conclusion.<sup>15</sup> Ironically, the 20% rebound

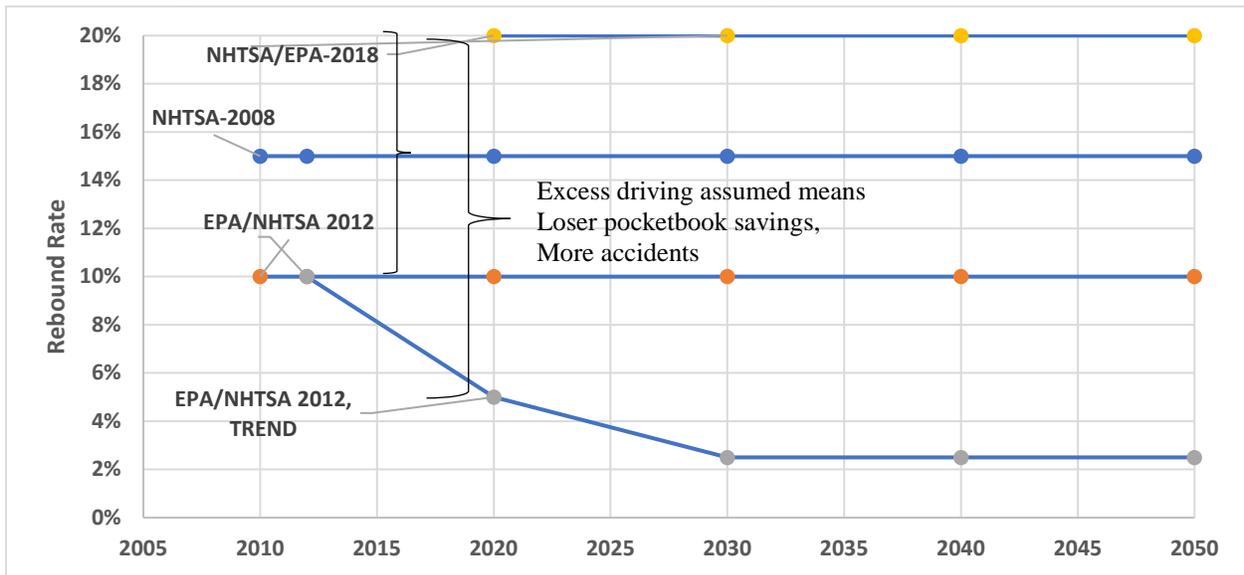
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<sup>15</sup> Jeremy West, et. al., Vehicle Miles Not Traveled: Why Fuel Economy Requirements Don't Increase Household Driving, NBER Working Paper, May 2015; Susan J. Tierney and Paul J. Hubbard, Vehicle Fuel Economy and Air Pollution Standards: A Literature Review of the Rebound Effect, Analytics Group June 28, 2018; Tom

rate used in the “Rollback and Freeze Proposal” is actually one-third higher than the rate used in the 2008 rulemaking. **A reasonable analysis would have cut the rebound rate in half, not doubled it.**

Overestimating the rebound effect dramatically reduces the estimate of the pocketbook benefits to consumers, thereby **underestimating the welfare gains consumers enjoy. It also dramatically over estimates the number of accidents and resulting costs.** The value is at least 15% too high.<sup>16</sup>

**FIGURE II-5: EXTREMELY HIGH, EXCESSIVE ASSUMED REBOUND RATE  
More Driving and Accidents, Smaller Pocketbook Savings Macroeconomic Benefits**



Source: CFA, comparing assumptions NPRM, TAR, CFA-Attachment B.

### GASOLINE PRICES

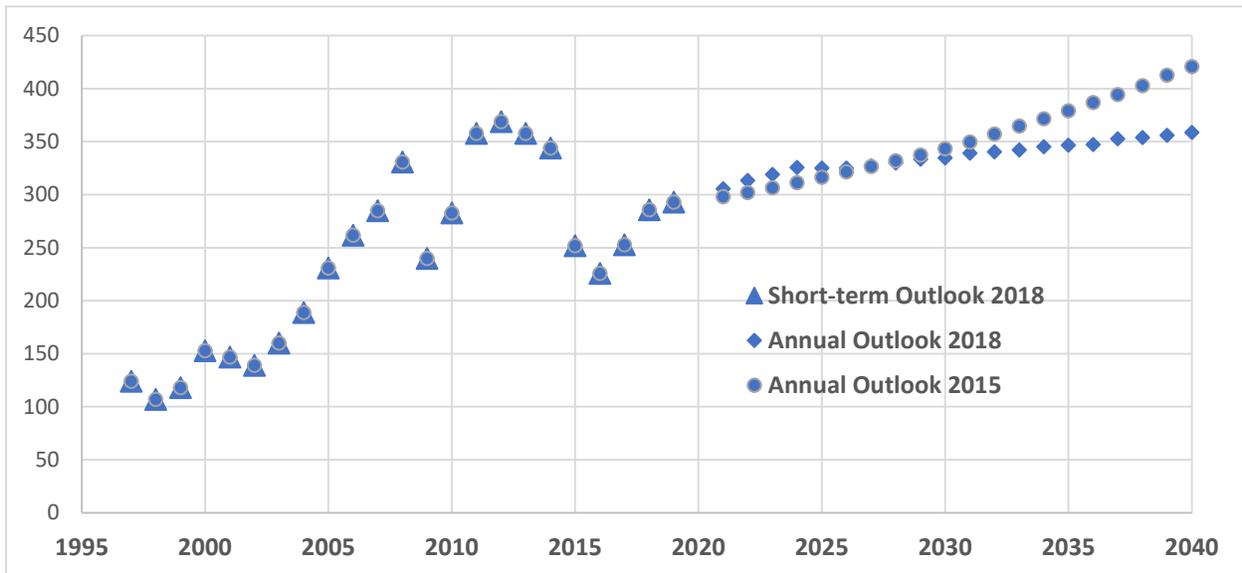
Over the long term, for example, the first two decades of the 21<sup>st</sup> century, as shown in Figure II-6, gasoline prices have been quite volatile, but the trend has been rising.

Wenzel and K. Sydney Fujita, Elasticity of Vehicle Miles of Travel to Changes in the Price of Gasoline and the Cost of Driving in Texas, Lawrence Berkeley National Laboratory, March 2018;

<sup>16</sup> We say, “at least,” because the value is trending downward and a pure income elasticity of demand for gasoline expenditures on an average household spending basis would be about 2.5%.

. Federal agencies tend to use the Energy Information Administration projections, as the official government estimate of future prices, although given the volatility of the past two decades, EIA’s record of projection is not stellar. Nevertheless, compared to the TAR, the “Rollback and Freeze Proposal” actually projects slightly higher gasoline prices. In the current projection, prices are 4.7% higher than the TAR prices in real, 2017\$, and 3.3% in discounted dollars. The difference between the “Rollback and Freeze Proposal” and the TAR means **the economic value of benefits would be 3% higher if the TAR were rerun with 2018 projections.**

**FIGURE II-6: GASOLINE PRICES IN CENTS PER GALLON (nominal \$)**



Source: Energy Information Administration, various sources as cited in the noted various Annual Energy Outlooks.

**MACROECONOMIC BENEFITS**

In order to conduct proper benefit cost analysis, all of the benefits and all of the costs much be included. In addition to overestimating the costs and under estimating the benefits, NHTSA/EPA have irrationally and unreasonably excluded important benefits including macroeconomic and public health benefits, benefits that are inextricably tied to the reduction of consumption of fossil fuels.

First, consumer spending has such a large multiplier effect in our economy that underestimating the consumer pocketbook savings, dramatically lowers the macroeconomic benefits that will flow from the standards.<sup>17</sup> In the past, NHTSA/EPA have mentioned the macroeconomic benefits of lowering the total cost of driving. Although they have not claimed the full benefit of stimulus, the increase in auto sales and employment that they estimated in the long term was a function of the underlying macroeconomic impact.

#### **PUBLIC HEALTH/CO-BENEFITS**

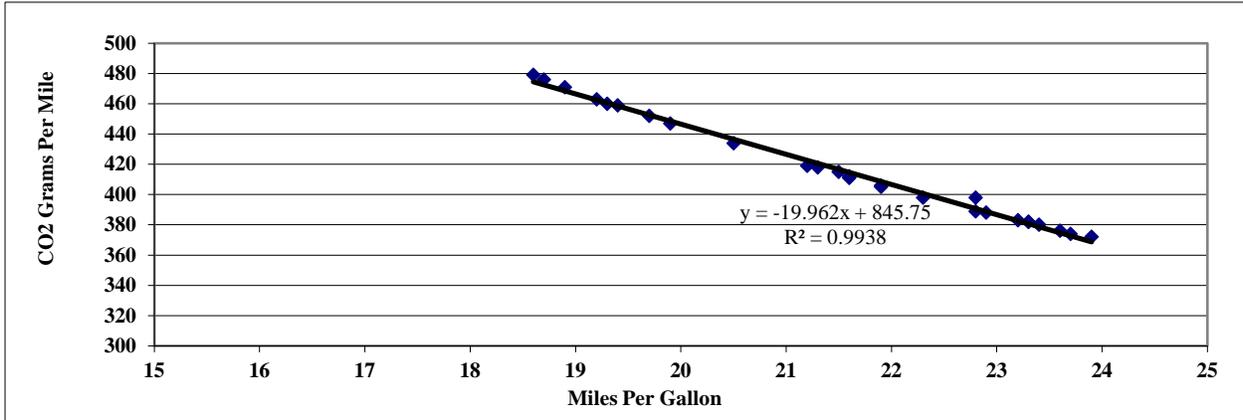
Second, the previous analysis has also counted the benefit of the inevitable reduction in emissions of all pollutants that result from the reduction in the consumption of gasoline. While our primary focus has always been on consumer pocketbook and macroeconomic issues, it is important to recognize that there are other benefits that inevitably flow to consumers and the economy because of the physical relationship between reduced burning of fossil fuels and the reduction of pollution. Emissions and fuel economy stand at the intersection of two powerful sets of laws – physics and economics.

The least cost way to reduce pollution in vehicles powered by gasoline or diesel is to reduce the amount of fuel consumed by raising the fuel economy. Improving fuel economy saves consumers money and reduces the emission of pollutants, as shown in Figure II-7. We made this point when we became involved in the Clean Cars program over a decade ago and we have reiterated it in all of our comments before federal and state agencies.

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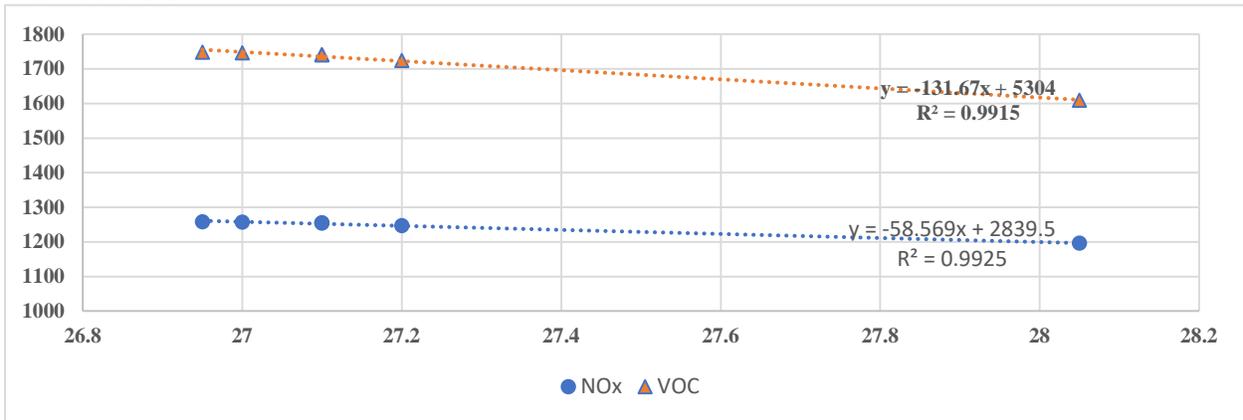
<sup>17</sup> Attachment B.

**FIGURE II-7: THE “INESCAPABLE” PUBLIC HEALTH BENEFITS OF REDUCED FOSSIL FUEL USE**  
**Carbon Dioxide**

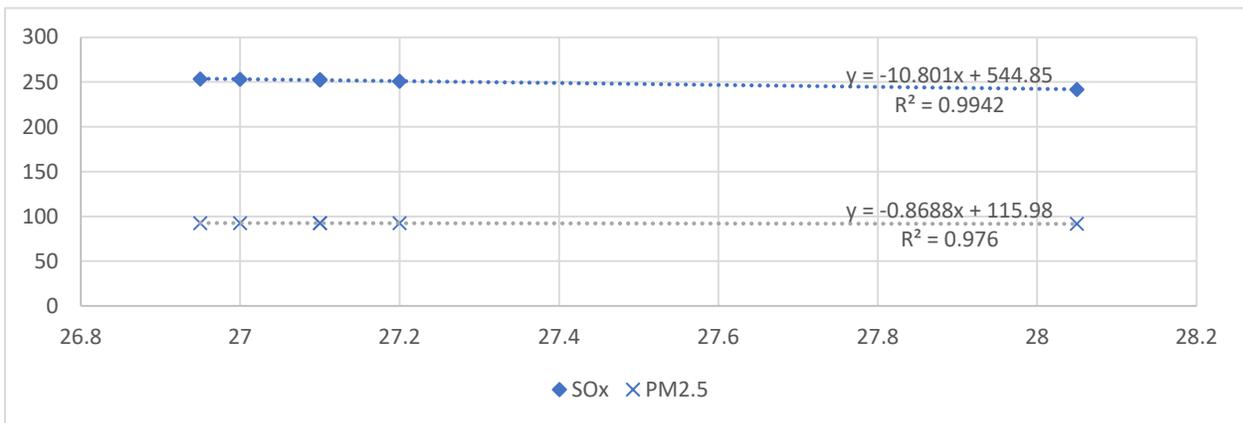


Source: Environmental Protection Agency, *Light Duty Automotive Technology: Carbon Dioxide Emission, and Fuel Economy Trends: 1975 Through 2009*, November 2009, p. vii.

**NOx & VOC**



**SOx & PM2.5**



Source: Environmental Protection Agency

Neither the Congress nor the agencies can repeal the laws of physics and they would be foolish to ignore economic considerations required by the law. Indeed, the enabling statutes require them to take economics into account requiring the maximum efficiency/pollution reduction, subject to an economic constraint. Consumers and the economy benefit both from the direct pocketbook gains of fuel savings and the indirect reduction in public health costs that result from reduction of pollution. These are public health benefits that translate into indirect economic benefits for households and the economy.

### **DISCOUNT RATE**

We have frequently argued that the 3% discount rate is a good, perhaps somewhat high estimate of the opportunity cost of consumer capital. It is also one of the anchor points ordered by the Office of Management and Budget (OMB), making it available in all formal agency evaluations.<sup>18</sup> In Table II-1, we show a variety of estimates of the opportunity cost of consumer capital. Here we show 2017 estimates of how much consumers earn on relatively low risk investments, and how much they pay to borrow money. We include borrowing as an alternative use of consumer credit. These capture the essence of the idea of the discount rate by providing metrics for the “alternative investments.”

It is clear that the consumer discount rate is in the range of 1-3%. While federal agencies are required to consider 3% and 7%, this data shows that the 3% figure is a far better (perhaps

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<sup>18</sup> OMB Circular A-4, pp. 33-34. The 7 percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy. It is a broad measure that reflects the returns to real estate and small business capital as well as corporate capital. It approximates the opportunity cost of capital, and it is the appropriate discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector. OMB revised Circular A-94 in 1992 after extensive internal review and public comment. In a recent analysis, OMB found that the average rate of return to capital remains near the 7 percent rate estimated in 1992. Circular A-94 also recommends using other discount rates to show the sensitivity of the estimates to the discount rate assumption... The effects of regulation do not always fall exclusively or primarily on the allocation of capital. When regulation primarily and directly affects private consumption (e.g., through higher consumer prices for goods and services), a lower discount rate is appropriate. The alternative most often used is sometimes called the social rate of time preference. This simply means the rate at which a society discounts future consumption flows to their present value. If we take the rate that the average saver uses to discount future consumption as our measure of the social rate of time preference, then the real rate of return on long-term government debt may provide a fair approximation. Over the last thirty years, this rate has averaged around 3 percent in real terms on a pre-tax basis. For example, the yield on 10-year Treasury notes has averaged 8.1 percent since 1973 while the average annual rate of change in the CPI over this period has been 5.0 percent, implying a real 10-year rate of 3.1 percent. For regulatory analysis, you should provide estimates of net benefits using both 3 percent and 7 percent.

even high) proxy for the opportunity cost of consumer capital. Reflecting this analysis, we have always focused on the agency analyses based on the 3% discount rate.

**TABLE II-1: OPPORTUNITY COST OF CONSUMER CAPITAL**

Savings/	Bank Account		1
Investing	5-year Interest rates	CD	2
	Home value	1996-2016	3.2
		2006-2016	-1.9
	Municipal Bonds	1-year	1
		2-year	1.2
		5-year	1.8
		10-year	2.4
		30-year	3.2
	Inflation Protected Treasury (TIPS)	5-year	0
		10-year	0.5
		20-year	0.7
		30-year	1
Borrowing	5-year Interest rates	New Car	2.4
		Used Car	2.7
	15-year fixed Refi	Home	2.9

Sources: Attachment B. Auto loans: Bankrate.com boot screen, Rate of return, homes, Stocks, Bonds: <http://money.cnn.com/calculator/pf/home-rate-of-return/>, Saving account: <http://www.money-rates.com/savings.htm>, 5-year CD <http://www.interest.com/cd-rates/news/5-year-cd-rates/>

The 3% discount rate is not only a somewhat high estimate of the consumer discount rate, it also serves as a somewhat high estimate of the social discount rate when intergenerational and incommensurable impacts are being analyzed, as OMB Circular A-4 noted.

“Some believe, however, that it is ethically impermissible to discount the utility of future generations. That is, government should treat all generations equally. Even under this approach, it would still be correct to discount future costs and consumption benefits generally (perhaps at a lower rate than for intragenerational analysis), due to the expectation that future generations will be wealthier and thus will value a marginal dollar of benefits or costs by less than those alive today. Therefore, it is appropriate to discount future benefits and costs relative to current benefits and costs, even if the welfare of future generations is not being discounted. Estimates of the appropriate discount rate appropriate in this case, from the 1990s, ranged from 1 to 3 percent per annum.”<sup>19</sup>

<sup>19</sup> OMB Circular A-4, pp. 35-36. Similar issues affect health impacts, “When future benefits or costs are health-related, some have questioned whether discounting is appropriate, since the rationale for discounting money may not appear to apply to health” (p. 34).

### III. TECHNOLOGY COST

#### THE TECHNOLOGY COST WHIPLASH

In the “Rollback and Freeze Proposal,” EPA/NHTSA assume a dramatic increase (100% to 200%) in the cost of compliance. This assumption is based primarily on the claim that very high penetration of electric vehicles will be necessary to meet future standards. The TAR looked at the various options available with gasoline powered engines and concluded that there were numerous technology paths to meeting the standards with conventional engines. As a result of the availability of technology and the historical pattern of learning by automakers, the cost of compliance was declining, not rising.

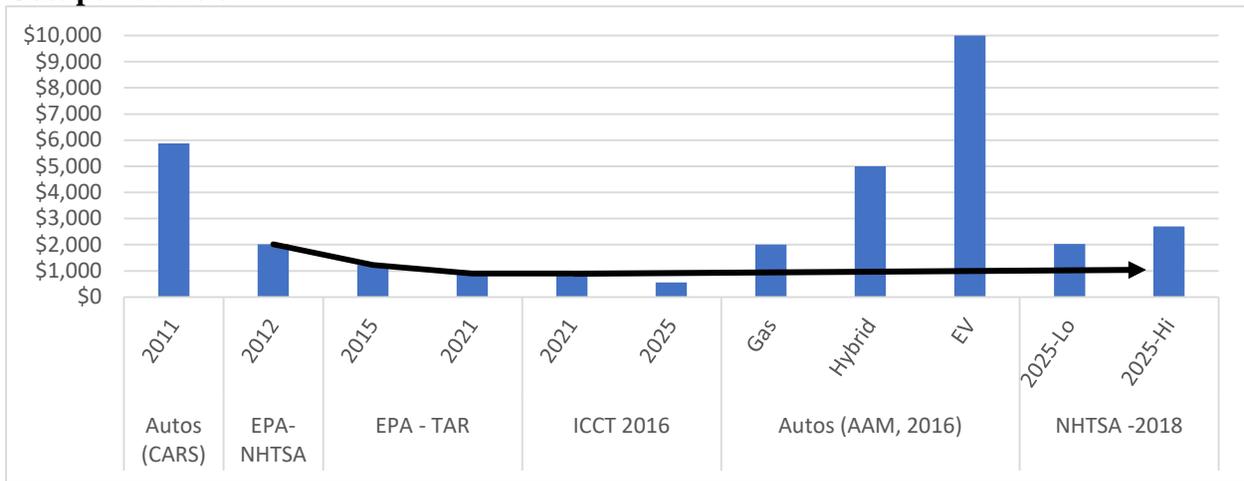
The whiplash of the current proposal is depicted in Figure III-1. The reasons for the whiplash are the severe constraint on technology choices imposed by the new NHTSA model and the very high markup assumed. By imposing constraint on the use of technologies, ignoring emerging technologies and assuming many more electric vehicles would be necessary, NHTSA has adopted a price that is far above EPA’s estimates and those of independent third parties, as shown in the upper graph of Figure III-1.

Another way to appreciate this whiplash is to calculate the cost of increasing fuel economy per MPG. As shown in the lower graph of Figure III-1, David Greene, one of the leading experts on fuel economy, recently conducted a review of the literature in which he concluded that an estimate of 27% of the increase in vehicle cost, or about \$150 for every mile per gallon improvement, was too high. He gave two reasons for this.

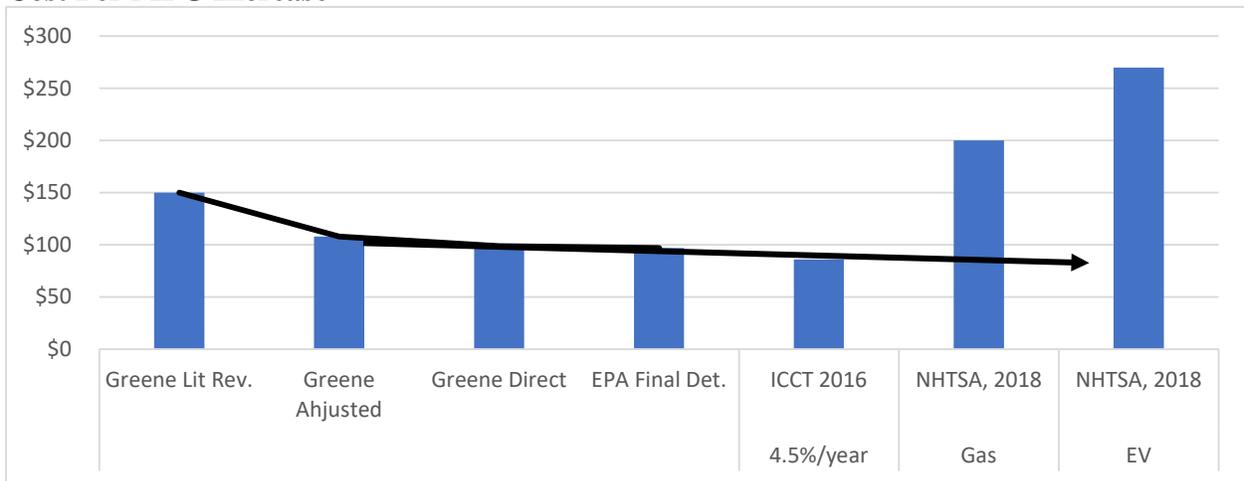
First, backward looking analysis of cost increases that included used vehicles (as his analysis did), were double counting the cost of increasing fuel economy because the sellers of vehicles were capturing a significant part of the capitalized value of better fuel economy equal to

about 20% of the estimated cost of efficiency, in their sales price. This factor alone would lower the estimate to 21.6% of the increase in price or to about \$120 for each 1-mile improvement in the MPG.

**FIGURE III-1: THE COST WHIPLASH: PER VEHICLE COST OF MEETING THE 2025 STANDARD**  
**Cost per Vehicle**



**Cost Per MPG Increase**



Source: CFA, Attachment B, CARS Memo, NHTSA, 2018, p. 43222

Second, real world experience showed that there was a learning process in which costs fell as automakers gained more experience with increasing fuel economy. Greene suggested that 2% per year was a reasonable estimate. Over the redesign cycle of vehicles (e.g. five years) this learning rate would lower the cost by about 10%. Thus, one might argue that the appropriate

numbers would be about 20% per year and \$108 dollars per MPG, as shown in the lower graph of Figure III-1.

There is a third factor that is implicit in Greene's analysis. The distribution of the cost of vehicles is skewed. The much more expensive vehicles purchased by upper income households are likely to include a larger amount of costs incurred to upscale the vehicles, rather than for fuel economy. In a subsequent analysis, Greene estimated the cost of improving fuel economy directly with an econometric model that corroborated the above concerns, as shown in the lower graph in Figure III-1. The simple adjustment to a constant 20% of total cost moves the estimate much closer to the empirical evidence offered by Greene suggesting costs that are about two thirds of the literature review—about 18% or \$99/MPG.

EPA's analysis of the cost of the National Program in the TAR yields an estimated cost for fuel savings that is similar, \$97/MPG. This estimate reflects considerable technological progress over the early years of the National Program, which is consistent with the historical pattern. A recent study by the ICCT offers an estimate of going forward costs of improvement close to the rate of the national program (national program = 3.3%, ICCT = 4% per year). The ICCT study also includes continuing technological progress.

Moreover, our data on new models since the National Program reducing emissions/fuel economy, supports the key problem with using a simple percentage of the total cost of the vehicle to approximate the cost of improving fuel economy. There is a strong, negative correlation ( $r = -.7$ ) between the cost of a vehicle and the mileage and a moderate, negative correlation ( $r = -.4$ ) between the cost of the vehicle and the change in mileage. A fixed percentage makes no sense.

In light of this analysis, we believe a cautious estimate of the cost of fuel economy improvements is around \$100/MPG improvement. The “Rollback and Freeze Proposal” rests on assumptions about cost that are far above and not supported by independent empirical evidence. The whiplash on cost in the “Rollback and Freeze Proposal” expressed as cost per mpg improved is shown in the lower graph of Figure III-1.

Throughout the development of the current approach to standard setting, we have repeatedly pointed out two facts. First, the industry and regulators typically overestimate the costs, the former by much more than the latter. The industry has a strong interest in overestimating costs, since this tends to weaken rules. Regulators tend to overestimate costs in part because the industry estimates create an upward bias, and in part because they underestimate the powerful market forces that drive costs down once the standards are set.

Second, independent estimates of long-term technology costs trends show that the standards have been set at levels that are quite moderate and eminently achievable. Our analysis shows that these two forces are still at work. Attachment B goes into these arguments in detail.

Thus, historical and independent contemporary evidence on which the TAR is based indicate that that costs are declining and will likely continue to decline. A reasonable analysis would have reduced the estimated compliance costs, not increased them, and concluded that the standards set by the National Program are technically feasible. In addition to the base case TAR assumptions that are reasonable, below we also show results consistent with the assumption of a continuing decline of costs by another 30%.

## **TECHNOLOGY DEPLOYMENT**

The overarching discussion of technology developments that introduces the NHTSA analysis is fundamentally flawed and infects the entire proposal. NHTSA claims that some

options considered in the original order for the National Program has not worked out as EPA/NHTSA anticipated.<sup>20</sup> This is given as a major justification for rolling back and freezing the standards.

NHTSA/EPA fail to note that some options have performed better than anticipated and that the Notice pointed out that there were many alternative routes available to complying with the standards. More importantly, this is what should be expected from the “command-but-not-control” approach embodied in EISA and implemented faithfully in the National Program. The idea is to give the automakers flexibility to meet consumer needs while complying with the standards. NHTSA/EPA fails to accept the fact that the automakers and the auto market have used this flexibility to achieve both goals. The fact that some technologies have not panned out is no more a basis for abandoning the rule, than the fact that some technologies have done better than expected is a basis for increasing the standards, not in the context of a mid-term review that was supposed to tweak the long-term program. The question should have been, are the 2022-2025 standards achievable and in the public interest.

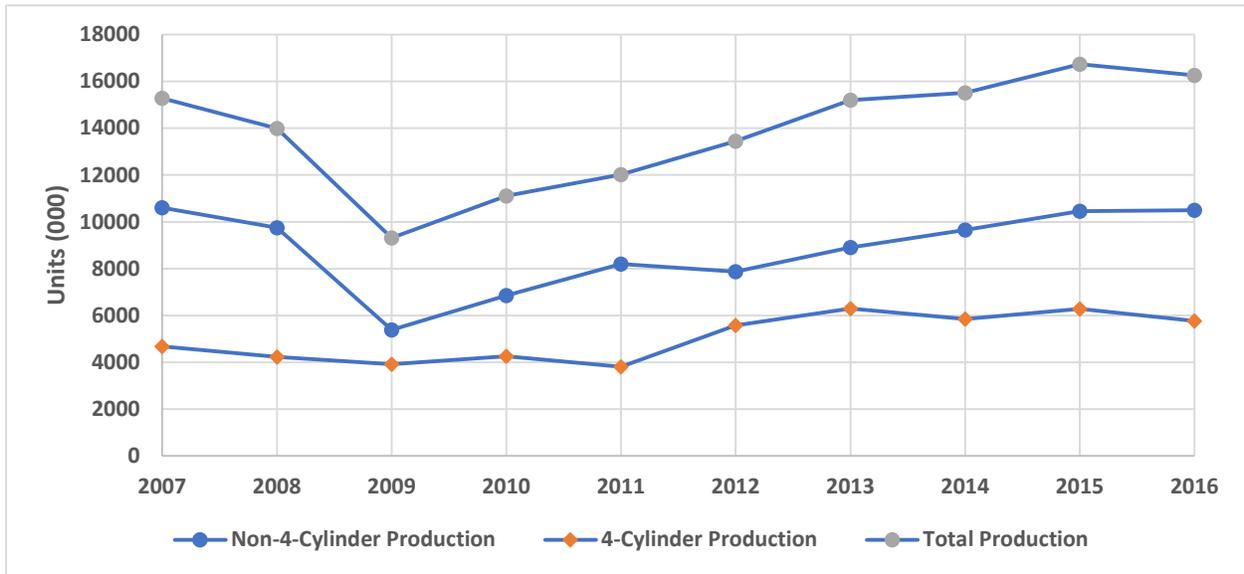
Take the example of four-cylinder engines, as shown in Figure III-2. Their market share has grown dramatically, thereby improving the average mileage of cars substantially. In part, their popularity reflects the fact that they more horsepower than earlier 4-cylinder engines. This means that some of the fuel savings that could have been achieved by shifting to smaller engines is “taken back.” That is exactly the objective of a command-but-not-control approach. Automakers make the choices that keep them in compliance while also meeting consumer needs. This balance has worked extremely well. The performance of the auto market does not support

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<sup>20</sup> NHTSA 2018 NPRM at p. 42991.

the claim that the standards have damaged its functioning. Record numbers of vehicles have been sold and record number of 4-cylinder vehicles have been purchased.

**FIGURE III-2: 4-CYLINDER ENGINES OUTPERFORM THE REST OF THE MARKET:  
4-Cylinder sale never dipped in the great recession and account of all of the increase in total sales since 2007**



Source: EPA, Trends, 2017

#### **IV. BROAD ISSUES DRIVING STANDARD SETTING AND ACCEPTANCE**

Beyond the core analytic issues that establish the basic benefit cost analysis, three sets of broad issues have been invoked as setting constraints on the ability to set standards. Safety has been dealt with in every rulemaking and, heretofore, not been a major obstacle. In the “Rollback and Freeze Proposal,” NHTSA has reinterpreted and misrepresented the safety issue by ignoring the reality of the auto market.

Low income issues have frequently been raised as a barrier to higher standards. Here, too, the opponents of standards have misunderstood and misrepresented the impact of standards on low income households and their role in the auto market.

Finally, the question of the ability of states to adopt a second, single higher standard has now taken a central role in the standards setting debate.

#### **MISREPRESENTING THE SAFETY IMPACT OF HIGHER FUEL ECONOMY**

Besides costs, the main argument regarding the current standards that the SAFE analysis puts forward as rationale to roll back the standards, is vehicle safety which the agencies state will be decreased if the current standards were to be implemented. By far the largest change from previous analyses in connection with safety is the change in the rebound rate. By irrationally doubling the rebound rate, the agencies projected increased fatalities due to increased fuel economy by 75%.

The agencies also underestimate the increasing crashworthiness of vehicles. While the agencies correctly point out that vehicles are becoming lighter to meet the standards, vehicles are also more crashworthy compared to just 7 years ago when the standards went into effect. An analysis<sup>21</sup> of all 2018 crash tests show that 71 percent of vehicles weigh less and had better fuel

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<sup>21</sup> Jack Gillis, entitled, Trump, Wheeler and Chao Mislead America On Fuel Efficiency and Auto Safety, October 25, 2018

economy than its previously crash tested version. Of these vehicles, 47 percent had a better crash test rating, while the other 53 percent had the same rating. Not a single vehicle in the analysis had a worse crash test rating than its previous version. Outside of the passive nature of crashworthiness, the amount of added safety features that actively help to prevent a crash<sup>22</sup> has increased by 60 percent since 2011. These facts can be proven by real-world driving experiences as well. The percentage of crashes that result in a fatality has steadily been decreasing since the standards were enacted, with a full tenth of a percentage decline from 0.61% to 0.51% from 2011 when the standards were enacted, to 2016 (the latest year figures are available).<sup>23</sup>

Another argument the agencies put forward to roll back the standards is that due to the increased cost of vehicles, the turnover rate would decrease, meaning there would be more, older less safe vehicles on the road. The agencies ignore the fact that each year for the past five years, an average of 16.9 million new, safer and more fuel-efficient vehicles (17 million in each of the two years, and projected again for 2018) have been added to the fleet, while an average of 13 million older, less safe and less fuel-efficient vehicles have been retired<sup>24</sup>. Even this year, auto sales are up 1.1 percent compared to the same time last year, clearly showing the argument of low turnover rate to be fictional.

And our national survey conducted in August, 2018 revealed that over three quarters (76%) of Americans reject the assertion that increasing fuel economy standards would lead to more accidents.<sup>25</sup> This rejection is widely bipartisan, with 60 percent of Republicans, 80 percent of independents, and a plurality of 90 percent among Democrats rejecting the argument.

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<sup>22</sup> Crash Imminent Braking, Dynamic Brake Support, Lane Keeping Assist, Blind Spot Detection, and Pedestrian Crash Avoidance.

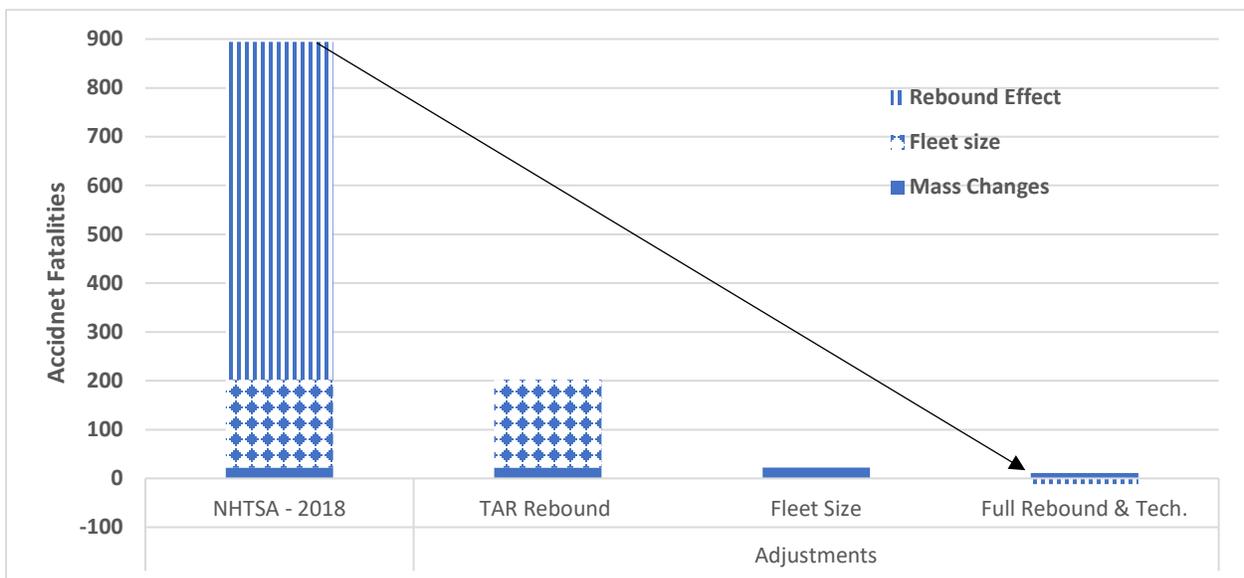
<sup>23</sup> Based on NHTSA's 2016 Motor Vehicle Crashes: Overview.

<sup>24</sup> Jack Gillis, entitled, Fuel Economy Standards: There Is No Tradeoff with Safety, Cost, And Fleet Turnover, July 24, 2018

<sup>25</sup> Jack Gillis and Mark Cooper, entitled, Report on Consumer Attitudes Toward Fuel Economy Standards, September 25, 2018

Correcting the major flaws in the NHTSA/EPA framework, including the rebound effect and the failure to recognize technological flexibility for automakers dramatically reduces the assumed safety benefits of the Rollback and Freeze Proposal. As shown in Figure IV-1, these adjustments eliminate over 80% of the claimed reduction in accidents. We believe other technological improvements, introduced along with higher fuel economy, further reduce the impact of increased accidents.

**FIGURE IV-1: CORRECTING NHTSA ERRORS ELIMINATES ANY INCREMENTAL INCREASES IN FUEL ECONOMY RELATED ACCIDENT FATALITIES**



Source: NHTSA, PRIA 2018, NPRM, p. 1080, adjusted by to eliminate excessive rebound effect and overreliance on mass reduction

## LOW INCOME CONSUMERS

### CFA's Seminal Analysis of Consumer Pocketbook Impacts

Automakers, dealers and biased think tank analyses frequently claim that increases in fuel economy driven by performance standards drive lower income households out of the market. We responded to the claims that higher fuel economy standards will harm low income households.<sup>26</sup>

<sup>26</sup> CFA responded to these claims in *Top 10 Reasons Consumers Want 54.5 MPG by 2025*, May 22, 2012, as well as in comments on the proposed Rule, 2012.

This rebuttal was part of the record and the object of the extensive analysis offered by Greene in the TAR proceeding.<sup>27</sup>

We have argued that, since low income households are generally not in the new car market and operating costs are a much larger share of their cost of driving, the standards do not harm them. The TAR recognized this argument, reviewed the literature and concluded that the evidence supported our point of view.<sup>28</sup> The study by Greene and Welch, not included in the TAR review, discussed above looks at this issue in greater detail than any previous study and strongly supports our conclusion.

Since the issue receives such attention from the opponents of standards and in the “Rollback and Freeze Proposal,” it merits a reexamination. Our argument can be summarized in three points. These are demonstrated in Figure 7 with data from the Consumer Expenditure Survey of 2015 broken down by deciles of income.

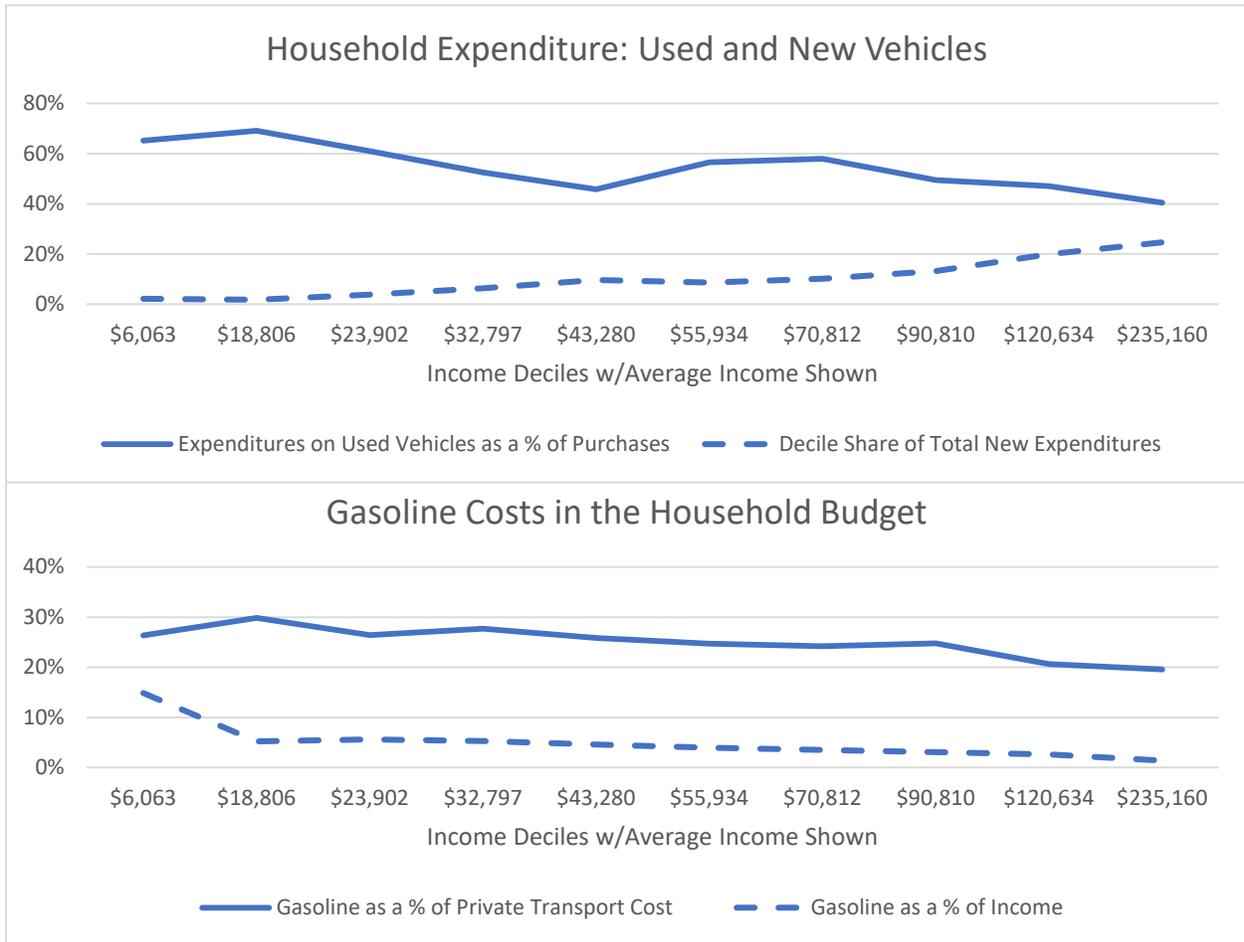
First, low income households make up a much smaller part of the new vehicle market than their share in the overall population. The upper graph of Figure IV-2 shows that the two lowest income categories –bottom 20% of households -- account for less than 4% of the expenditures on new vehicles. The share of low-income households in expenditures on used vehicles is above the national average. The percentage of used vehicle costs in total ownership costs declines steadily as income rises. Therefore, as shown in the lower graph, the operating cost of vehicles makes up a much larger part of their total cost of driving than the average household, and fuel economy standards reduce operating costs. The operating cost share of private transportation costs and household income decline steadily as income rises.

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<sup>27</sup> **Source:** David Greene and Jilleah G. Welch, *The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States*, Oak Ridge National Laboratory and the Energy Foundation, September 2016,

<sup>28</sup> TAR, pp. 6-16 to 6-22.

**FIGURE IV-2: OWNERSHIP AND OPERATING COSTS ACROSS INCOME DECILES**



Source: Bureau of Labor Statistics, Consumer Expenditure Survey, 2015.

Second, because low income households buy used cars, they tend to benefit from the fact that the economic value of future fuel savings is only partially reflected in the resale price of used vehicles. Low income households get a disproportionate share of the operating cost reduction.

Third, low income households are likely to be disproportionate beneficiaries of the indirect benefits. Low income households are likely to suffer most from environmental and public health externalities associated with the operation of vehicles. They are likely to suffer most in a weak economy and benefit from policies that strengthen it. Therefore, they are likely to benefit most from reductions in those impacts.

## **Confirmation of the Key CFA Argument**

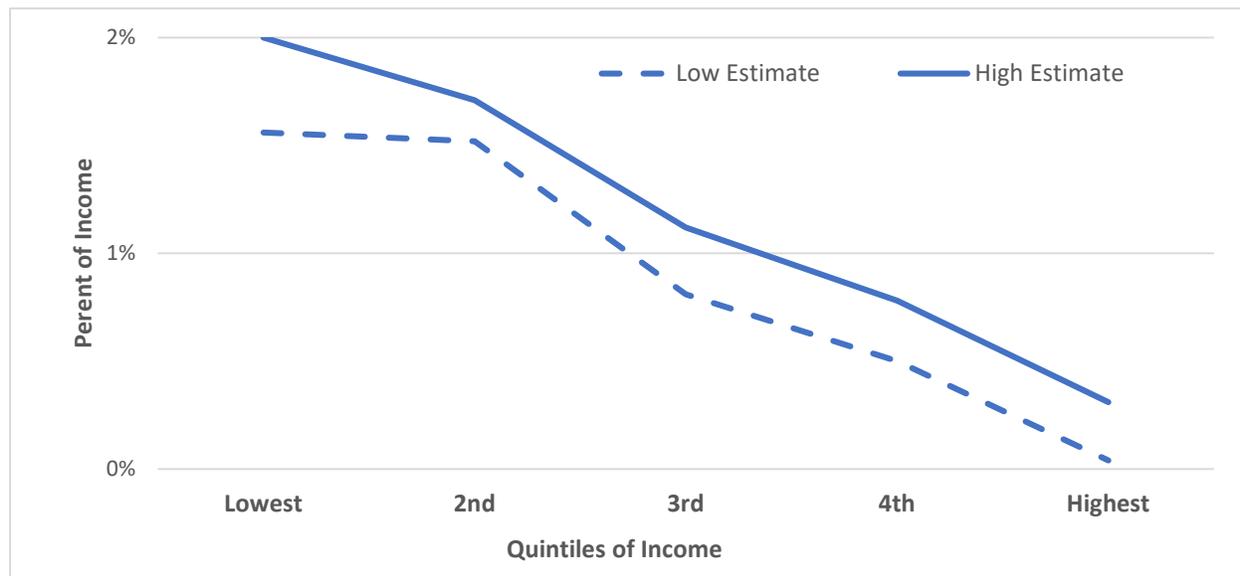
The Greene and Welch study strongly supports our view, as shown in Figure 8. Using the Consumer Expenditure Survey, the study can directly measure many of the key elements in our argument. Low income households are much less likely to buy new automobiles, so ownership costs are relatively less important than operating (primarily fuel) costs. As more fuel-efficient vehicles pass through the used car market into the hands of lower income households, their operating cost expenditures decline. One of the big questions is “how much of the value of fuel savings is captured in the price of the used vehicle?” Based on a review of the literature and examination of the CES data, Greene and Welch find that about four-fifths of the value of fuel economy is passed on to low income purchasers of used vehicles. This finding is consistent with our conclusion that the auto market is imperfect with respect to fuel economy. Many of the imperfections that afflict the new car market would also affect the used car market.

The fact that lower income households receive a disproportionate share of the fuel savings interacts with the fact that operating costs are a larger part of their private transportation costs and the fact that they have lower income to produce a powerful progressive effect of the program, as shown in Figure IV-3.

The two lowest quartiles (bottom 40%) enjoyed a reduction in household expenditures of 1.5% to 2% of income. The two middle income quartiles enjoyed a reduction in the range of 0.5% to 1%. The upper income quartile had the smallest net saving (0% to .3%), as a percentage of income. Contrary to the claims frequently made by industry opponents of efficiency standards, a careful look at the data shows that low income households enjoy disproportionately large benefits from well-crafted standards. Thus, repeating an analysis that is unrebutted in and fully supports the evidentiary record, we show that since low income households are generally not in

the new car market and operating costs are a much larger share of their cost of driving, the standards do not harm them. In fact, low income households actually benefit more than the overall population.

**FIGURE IV-3: PERCENT OF INCOME SAVED FROM FUEL ECONOMY IMPROVEMENTS 1980-2014**



**Source:** David Greene and Jilleah G. Welch, *The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States*, Oak Ridge National Laboratory and the Energy Foundation, September 2016, p. 56.

### **PUBLIC HEALTH IMPACTS**

The same is true for public health impacts. Low income households suffer disproportionately from environmental pollution.<sup>29</sup> They tend to live in areas that are most affected by pollution and have less resources to prevent, adapt or recover from the harms of pollution. They live closer to facilities that emit pollutants,<sup>30</sup> making them more vulnerable to the harmful effects of pollutants that have local and regional impacts,<sup>31</sup> and live in housing that

<sup>29</sup> Miranda, Maie Lynn, 2011, “Making the Environmental Justice Grade: The Relative Burden of Air Pollution in the United States,” *Int. J. Environ. Res. Public Health*,8(6).

<sup>30</sup> Morello-Frosch, R. and B.M. Jesdale, 2006, “Separate and unequal: residential segregation and estimated cancer risks associated with ambient air toxics in U.S. Metropolitan areas,” *Environ. Health Perspect.* 114(3); Fleischman, Lesley and Marcus Franklin, 2017, *Fume Across the Fence Line*, Clean Air, November.

<sup>31</sup> Deguen, S. and D. Zmirou-Navier, 2010, “Social inequalities resulting from health risks related to ambient air quality – a European review,” *Eur J Public Health* (1); Katz, Cheryl, 2012, “People in Poor Neighborhoods Breathe More Hazardous Particles,” *Scientific American*, November 1.

is less resistant to pollution.<sup>32</sup> They are more exposed and are more susceptible to suffer from pollution. This issue has been recognized for decades.<sup>33</sup>

This is certainly a very complex issue, but the evidence is overwhelming that lower income is associated with greater exposure to pollutants, which is associated with a higher incidence of the health problems associated with pollution (See Figure IV-4). As one study put it,

Census tracts in the lowest quartile of socioeconomic position, as measured by various indicators, were 10–100 times more likely to be high risk than those in the highest quartile. We observed substantial risk disparities for on-road, area, and non-road sources by socioeconomic measure and on-road and area sources by race. There was considerably less evidence of risk disparities from major source emissions.<sup>34</sup>

The graph of the data that underlies this conclusion, as shown in Figure IV-4 is crystal clear. Simply put, living close to traffic and facilities that emit pollution raises the exposure to toxics and the risk and incidence of the related health effects.

Recent research confirms and extends the concern about public health impacts of pollution.<sup>35</sup>

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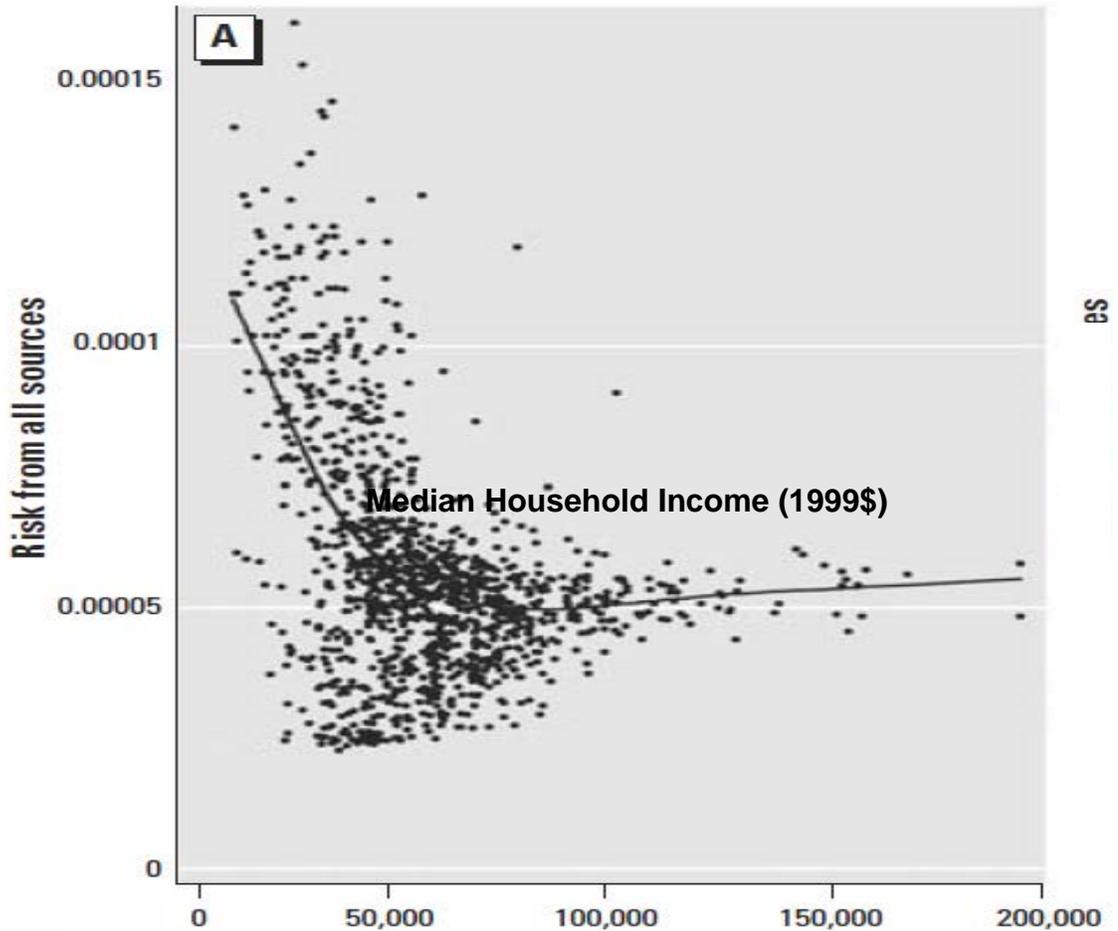
<sup>32</sup> Shrubole, C., et al., 2016, “Impacts of energy efficiency retrofitting measures on indoor PM<sub>2.5</sub> concentrations across different income groups in England: a modelling study,” *Advances Building Energy Research*, 10(1).

<sup>33</sup> Faiz, Asif, Christopher S. Weaver and Michael P. Walsh, 1996, *Air Pollution from Motor Vehicles: Standards and Technologies for Controlling Emissions*, The World Bank.

<sup>34</sup> Buckley, Timothy J, Ronald White, 2005, “Socioeconomic and Racial Disparities in Cancer Risk from Air Toxics in Maryland,” *Environmental Health Perspectives*, July, p. 693. While this study was at the census tract level in Maryland, other studies reach similar finding in metropolitan areas across the nation. See, for example, “Segregation and Black/White Differences in Exposure to Air Toxics in 1990,” Lopez, Russ, 2002, *Environmental Health Perspectives*, 110, April, three factors, Black/White poverty levels, percent employed in manufacturing, and degree of segregation as measured by the dissimilarity index, collectively explain over half the variation in the net difference score for exposure to air toxics in large U.S. metropolitan areas. Other potential factors, including overall income inequality, relative political power, and local variation in environmental regulation (64), may also affect net difference scores and should be included in future research.... The results here show that Blacks are more likely than Whites to live in census tracts with higher total modeled air toxics concentrations, partly because they are more likely than Whites to live in poverty, and poverty itself may be a risk factor for living in a poor-quality environment.

<sup>35</sup> Maximillian Auffhammer, “The Mental Cost of Air Pollution,” *Energy Institute Blog*, September 24, 2018; Kelly Bishop, et al., *Hazed and Confused: The Effect of Air Pollution on Dementia*, NBER, August 2018.

**FIGURE IV-4: CANCER RISK FROM AIR TOXICS V. MEDIAN HOUSEHOLD INCOME**



Sources: Buckley, Timothy J, Ronald White, 2005, Socioeconomic and Racial Disparities in Cancer Risk from Air Toxics in Maryland,” *Environmental Health Perspectives*, July, p. 696.

### **THE CLEAN CARS APPROACH**

A third issue that impacts standards is the right of states to adopt a different standard. Given the pervasive, persistent and significant imperfections discussed below that cause the failure of the auto market to invest in efficiency commensurate with its economic value and thereby imposing harm on consumers and the nation, the importance of the Clean Cars program becomes evident. A general principle of the American political system is that federalism allows national and state level governments to pursue independent actions to address problems that frequently vary across our continental economy.

Under this principle, California has had authority under the Clean Air Act for over four decades to adopt pollution control standards, independently of the federal government. The prospect of 50 states adopting separate standards has led to an approach in which there would only be two standards, federal and California. Other states could choose to follow either standard. Over the past two decades more than a dozen states have chosen to follow the California standard, which has been more stringent than the federal standard. As part of the coordination and harmonization efforts of the National Program, California, NHTSA and EPA worked out one common standard.

Here it is important to reiterate the convergence of standards governing tailpipe emissions of pollutants and fuel economy. Our analysis shows that these general principles of the American approach to policy, physics and economics have a strongly beneficial result in the Clean Cars program. We call it “American federalism at its best”. In Table I-1, above, we identify three pieces of analysis (all included in filings at various federal and state agencies) that demonstrate this argument. We cite a 2008 analysis that was our basis for urging states to participate in the Clean Cars program, a 2012 analysis supporting the EPA waiver granted to CARB, and the affirmation of this principle in the TAR.

Following the general approach described in the introduction, after a consumer pocketbook analysis in 2008, the Consumer Federation of America strongly supported California’s Advanced Clean Cars Program and urged the Environmental Protection Agency to grant California’s waiver request as submitted.<sup>36</sup>

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<sup>36</sup> This section is excerpted from “Statement of Dr. Mark N. Cooper Director of Research, Consumer Federation of America (CFA) on American Federalism at Its Best: Why the Environmental Protection Agency Should Grant a Clean Air Act Waiver to California For Its Advanced Clean Cars Program,” to the *Environmental Protection Agency, Public Hearing*, September 19, 2012.

California's Clean Cars Program has helped to set us on a path that will improve the performance of light duty vehicles, (cars and trucks), by a greater amount in a shorter time period than ever accomplished in U.S. history. CFA believes that the direction set by California and the states that follow its lead is a wonderful example of American federalism at its best. The California Clean Cars Program enjoys widespread support from consumers, automakers and suppliers, business groups, national defense experts, public health advocates and environmentalists.

CFA and many of its members, like Consumers Union (CU) and Consumer Action, support the Advanced Clean Cars program because consumers agree that California and other states should be able to lead as shown in our 2011 national public opinion survey. To examine the responses across different types of states we doubled the sample size and identified four categories of states. California, the other Clean Cars states, automotive states (Ohio, Michigan, Indiana, Missouri) and the other states. The continued involvement of the states is supported by about two-thirds of the respondents, with the strongest support coming from the automotive states.

The very concrete and significant benefits associated with reducing emissions from vehicles are obvious, as are the corresponding improvements to fuel economy that come when emissions are reduced. Our analysis of the national standard, which mirrors California's greenhouse gas emissions standard through the year 2025, yields the following estimates of the economic benefits:

- consumer pocketbook savings of thousands of dollars per vehicle,
- reduced oil imports of billions of barrels of oil,
- increased gross domestic product of \$150 billion, and
- over 100,000 additional auto sector jobs.

We emphasize the plural, “Clean Cars states,” for a simple reason. While it is true that the statutory language gave California the lead in developing a state-based alternative to federal standards, we believe that the adoption of the California standard by 13 states plus the District of Columbia was instrumental and irreplaceable in the process the during 2009 waiver process.

- Combined, the “Clean Car” states represented the fifth or sixth largest auto market in the world.
- The collective wisdom of so many states gave the California standard a great deal of credibility; the size of the market gave it economic clout.

One of the great benefits of American federalism is to allow the individual states to act as laboratories to discover better ways of accomplishing shared goals. The more eyeballs looking at a problem, the more likely it is that a good solution will be found. By allowing the largest economy in the nation to develop a set of standards independently of the federal standards and allowing the states to adopt either the federal or the California standard, the Clean Air Act prevents fragmentation into fifty standards, but preserves the dynamic of state-based innovation.

By adding a layer of cooperation between federal and state agencies, the executive order issued by the Obama administration smoothed the process and increased the benefits of Federalism in this policy area that is important to the environment, public health and safety, the economy and national defense.

That cooperation produced an immediate acceleration of emissions standards that has saved consumers over \$35 billion in the 2012-2015 period alone, and it has now created the first long-term plan for fuel economy and clean air standards in the history of the nation that will yield the massive benefits identified above.

The proposed standards for which California has requested an EPA waiver, already supported by several states, continue to play exactly that role. In the early 2000s, when the California standard

pointed the auto market toward hybrid technologies, the automakers said it could not be done. Today, there are over 150 hybrid and electric models in auto showrooms. The current proposed standard continues to nudge the market in that direction, while the technologies used to meet the California standards help automakers meet the national standard.

## **V. THE CONCEPTUAL AND LEGAL FRAMEWORK FOR STANDARDS**

### **MARKET IMPERFECTIONS**

The extremely narrow view of market imperfections in the 2008 analysis reflected the historical orientation of the agency and came before the financial meltdown and Great Recession of 2008-2010. Even at that early date there was an immense amount of empirical and theoretical analysis that criticized and rejected the simple, neoclassical market fundamentalist approach that was reflected in 2008 rule. CFA had criticized the narrow view taken by NHTSA. The events of 2008-9 increased the criticism dramatically.

Over the course of the next decade, the NHTSA/EPA view of market imperfections as a justification for standards moved much closer to the view supported by the economic literature. CFA reiterated and expanded on the market failure analysis. Attachment B summarizes the mountain of evidence supporting the broader view of market imperfections. It shows the evidence at three levels.

First, over the past three decades (see Table V-1), 22 Nobel prizes (over 40% of the total) have been awarded to economists who have criticized the neoclassical model in four schools of thought. These are identified in the lists of prizes we associate with each school of thought. Over half-a-dozen of these prizes were awarded since EISA was signed into law (of course, those prizes reflect work done in the previous couple of decades). The four schools we identify include:

- deepening the traditional critique of model, focusing on both market structural and societal (externalities) concerns,
- new institutional economics, including transaction costs, and endemic problems,
- behavioral economics,
- return of political economy with the recognition that policy is the objective of economics.

**TABLE V-1: RECENT NOBEL LAUREATES, NEW SCHOOL OF THOUGHT, AND IDENTIFICATION OF MARKET IMPERFECTION AND SOURCES OF MARKET FAILURE**

**Market Structure:**

Krugman, 2008, Heckman, 2008; Tirole 2014; Deaton, 2015  
Nordhaus, 2018,

**Basic Conditions:** New Institutional/ Transaction Cost: Coase, 1991;  
North, 1993; Fogel, 1993; Williamson, 2009; Ostrom, 2009  
Endemic Flaws: Stiglitz, 2001; Spence, 2001

**SOCIETAL FLAWS**  
Expanded Role of Externalities  
Positive  
Negative  
Public Goods  
Basic research  
Information  
Learning-by-doing  
Learning-by-using  
Network Effects  
Direct  
User  
Nonuser  
Indirect  
Cross platform  
Innovation Economics  
General Purpose  
Technology  
Producer Surplus  
Consumer Surplus  
Prosumers  
Productivity  
Applications  
Co-invention  
Non-economic Values

**DEEPER CRITIQUE OF INDUSTRY STRUCTURE**  
Imperfect Competition  
Concentration  
Barriers to Entry  
Scale  
Vertical Leverage  
Collusion  
ICE Problems  
Price Discrimination  
Entry Barrier  
Bargaining  
Technology  
R&D  
Investment  
Marketing  
Bundling: Multi-attribute  
Product Differentiation  
Gold Plating  
Inseparability  
Purchase Method  
Advertising  
Cost-Price  
Level  
Structure  
Product Cycle  
Disaggregated/  
fragmented Market  
Ownership  
Control  
Transfer  
Limited Payback  
Lack of Premium  
Elasticity  
Own-price  
Cross-price  
Income  
Availability  
Backward-bending  
Supply  
Absence  
Emergency  
Replacement  
Poor Quality  
Other Distortions

**TRANSACTION COST FRICTION**  
Search & Information Imperfections  
Availability  
Accuracy  
Search Cost  
Bargaining  
Risk & Uncertainty  
Technology  
Marketplace  
Policy  
Financial  
Liability  
Enforcement  
Monitoring Costs  
Switching Costs  
Sunk Costs

**ENDEMIC TENDENCIES**  
Information Asymmetry  
Perverse Incentives  
Conflict of Interest  
Agency  
Moral Hazard  
Adverse Selection  
Inequality of Physical Capital  
Maldistribution  
Insufficiency  
Inequality of Human Capital  
Health  
Education  
Macroeconomic Imbalances  
Income/  
Demand  
Insufficiency  
Investment  
Instability

Conduct: Behavioral: Akerloff, 2001; Kahneman, 2002; Smith, 2002; Shiller, 2013; Thaler, 2017 Strategic Behavior: Nash, 1991 Selton, 1994; Harsanyi, 1994

**BEHAVIOR**  
Motivation Values & Commitment  
Bounded  
Selfishness & Wants  
Morality  
Fairness/reciprocity  
Altruism  
Preference  
Custom  
Social Group & Status  
Perception  
Bounded Vision/  
Attention  
Prospect  
Framing  
Loss Avoidance  
Status Quo,  
Habits/inertia  
Salience  
Self-fulfilling  
Prophecy  
Social Influence  
Awareness  
Attention  
Low Priority  
Calculation  
Bounded  
Rationality  
Ability to process info  
Limited  
Understanding  
Heuristic Decision-Making  
Rules of Thumb  
Information  
Discounting  
Low-probability Events  
Long-Term  
Small Outcomes  
Execution  
Bounded  
Willpower  
Improper use  
Improper maintenance

**Performance:** End of Value-free Economics, Return of Political Economy Sen, 1998; Romer, 2018, North, Stiglitz Krugman, Ostrom Shiller, Thaler

**FOUNDATIONAL VALUES**  
Wellbeing, capabilities  
Declining marginal value of wealth  
Distribution of surplus matters between producers & consumers & among consumers  
Excessive inequality is harmful & inefficient

**RETURN OF POLITICAL ECONOMY**  
Power  
Legal Framework  
Property  
Contract  
Policy  
Taxation  
Subsidies  
Trade  
Protectionism  
Antitrust Toward  
Structure  
Market Dominance  
Mergers  
Behavior  
Regulation  
Price Distortion  
Access  
Permitting  
Capture

Source: Nobel Laureate lectures can be found at:  
[www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/](http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/)

Second, the efficiency gap literature experienced an intense debate for two decades and a clear conceptual framework emerged from leading research institutions including Resources for the Future and Lawrence Berkeley National Laboratory. That literature, which is discussed in Attachment B, finds that a great deal of empirical evidence supports the conceptual framework and standards are seen as an important and, in many ways, preferred policy approach.

Finally, the innovation diffusion literature, discussed in Attachment F, strongly reinforces all of the above conclusions.

The broad critiques strengthen the case for considering the conditions under which markets perform poorly. It follows that policy interventions to correct market imperfections and market failures are appropriate. Few, if any, of these analysts abandon capitalist markets as central economic institutions. Their primary goal is to identify the sources of market failure with greater precision and to prescribe policies to reduce the imperfections, all while preserving the positive, dynamic forces of markets. This course of development is consistent with the underlying framework presented above.

The important take-aways from these analyses, which we have emphasized repeatedly, are that the imperfections that afflict the market are on both the supply and the demand sides and that standards are a strong solution to many of the market imperfections, particularly when they are well designed, as the National Program is. In Table V-1 we identify by underlining the specific market failures that the literature shows can be addressed by well-designed standards. We summarized the “Command-but-not-Control” approach of the post-EISA standards in our comments in our 2012 comments on the National Program, as described in Table V-2. We have shown that these attributes have been effectively implemented across a variety of standards

promoting energy efficiency, including work trucks and appliances. These are described in Attachment B.

#### **TABLE V-2: COMMAND-BUT-NOT-CONTROL: POST-EISA FUEL ECONOMY STANDARDS**

The current standard recognizes 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 standard 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 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.

#### **The Benefit of Technology Neutral, Product Neutral Long-Term Standards**

The current approach to standard setting, which is technology neutral, product neutral and long-term, transforms standards into consumer friendly, procompetitive instruments of public policy.

**Long-Term:** 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, auto makers 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.

**Product Neutral:** The new approach to standards accommodates consumer preferences; it does not try to negate them. The new approach to standards is based on the footprint (size) of the 18 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:** Taking a technology neutral approach to the long-term standard unleashes competition around the standard that ensures that consumers get a wide range of choice at that lowest cost possible, given the level of the standard. There will soon be hundreds of models of electric and hybrid vehicles using four different approaches to electric powertrains (hybrid, plug-in, hybrid plug-in, and extended range EVs), offered across the full range of vehicles driven by American consumers (compact, mid-size family sedans, large cars, SUVs, pickups), by half a dozen mass market-oriented automakers. At the same time, the fuel economy of the petroleum powered engines can be dramatically improved at consumer-friendly costs and it will continue to be the primary power source in the light duty fleet for decades.

Source: Comments of Consumer Groups on 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-9495-2NHTSA-2010-0131, February 13, 2012, pp. 9-12.

## **THE LEGAL FRAMEWORK**

We seriously question whether or not the “Rollback and Freeze Proposal” will pass legal muster. We believe it will not for three reasons. We urge the agencies to consider the points we make and urge them to withdraw the proposal.

The first legal implication of these comments, as identified in the introduction and supported throughout, is that the “Freeze” aspect violates the Administrative Procedure Act. It has failed to develop a record that supports the radical change in the direction of policy.

The second implication is that the “Rollback” aspect violates the enabling statutes of both agencies. The Rollback proposal fails to achieve technologically feasible and economically practicable energy savings in pursuit of maximum energy conservation and reductions in emissions of pollution, and the factors it claims that support this outcome are not consistent with history, independent third-party analysis, the evidence before the agencies and the legislative mandates that were strengthened by the passage EISA.

A lengthy discussion of the first implication was presented to the agencies in the report attached to these comments as Attachment B. The second implication has been a central theme of our comments throughout our filings over the past decade, as identified in Attachment A.

### **The “Command-But Not-Control” Approach to Standards**

Even with well-documented market imperfections, there is no guarantee that the standards will deliver the benefits they claim. The design of standards is important. The literature points out that performance standards have positive effects if they are well-designed, enforced and updated. Of utmost importance in our framework we find that, “command but not control” performance standards work best when they embody six principles, which are clearly at the core of the National Program. The extensive and intensive analysis of the current standards

demonstrates that in the National Program, the agencies have designed an effective performance standard embodying the key characteristics of performance standards below.

In our view, EISA made major contributions to the execution of a more industry friendly/consumer friendly approach. That attribute-basis for standards, as implemented by NHTSA, transforms it by eliminating the bias toward small vehicles and dramatically enhances automaker flexibility. The long-term perspective enhances the ability to manage change and innovation. The reaffirmation of the basic goals of standards strengthens the direction of the intent of Congress. These changes unleash the power of the market to ensure a least cost, consumer-friendly response to the standards.

### **The Misguided Orientation of the Department of Transportation**

In our comments to an earlier Notice from the Department of Transportation, we argued that the thrust of its policy direction was misguided and violated the enabling statute. The “Rollback and Freeze Proposal,” embodies all of those errors and then some.

DOT’s goal for (de)regulation stated in the Notice is incorrect. The goal in the underlying statutes and executive branch guidance is not to “minimize burdens;” it is to maximize energy conservation, or minimize pollution, by adopting rules that maximize net benefits to the nation.<sup>37</sup> Overemphasizing costs and underemphasizing benefits distorts the analysis and undermines the ability of the responsible agencies to accomplish the goals of the statutes.<sup>38</sup> This distortion is not simply illegal, it is bad policy – robbing consumers and the economy of valuable resources and imposing unnecessary harm on the environment and public health contradicts what the agencies have been charged to do.

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<sup>37</sup> OMB Circular A-94.

<sup>38</sup> OMB Guidance on E.O. 13777, makes the same mistake counting deregulatory actions initially focused only on costs, without mentioning benefits. Overall, the guidance mentions costs 50% more often than benefits.  
<https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2017/M-17-23.pdf>

The “Rollback and Freeze Proposal” is also a classic case of the free rider, free loader problem in public policy. Because the proposal alone cannot solve the entire pollution problem, the agencies claim that they do not have to take any action. Only a total solution is worthy of a claim of benefits. This view is morally and legally wrong. That was not the intent of Congress in the enabling statutes, nor should it be. The ultimate irony here is that, a shared pollution (shared between sources) places a premium on coordination and cooperation, the antithesis of what the “Rollback and Freeze Proposal” does.

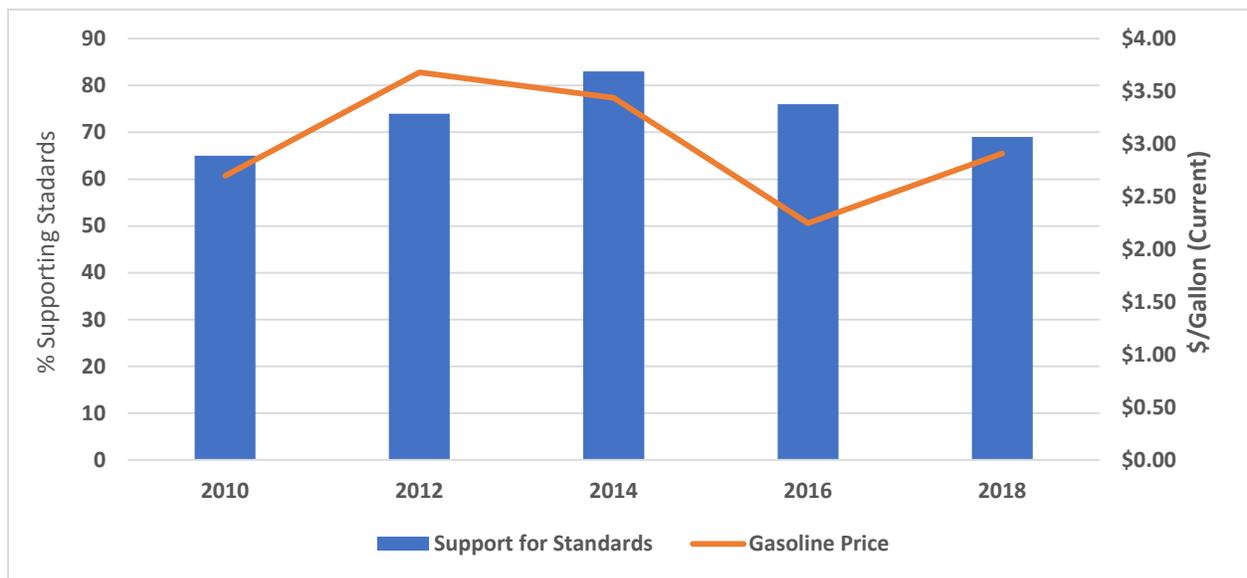
## VI. THE REAL AUTO MARKET: QUALITATIVE FLAWS IN THE “FREEZE AND, ROLLBACK PROPOSAL”

### CONSUMERS

#### Attitudes toward Standards

Over the course of more than a decade, CFA has sampled public opinion about fuel economy standards. We have found consistent large majorities support standards. Support cuts across geographic areas, (Clean Cars states, auto states, other states), and political orientation of respondents. Figure VI-1 shows the support for standards starting in 2010, when the questions identified substantial increases in fuel economy that were in the range being contemplated by the National Program. It also shows gasoline prices in current dollars in the year of the survey. Gasoline prices do not exhibit a strong relationship to prices in this period, which we surmise reflects the fact that consumers expect them to rise and also react adversely to price volatility. This, of course, is one of the primary reasons we have been vigorous advocates of increasing standards.

**FIGURE VI-1: SUPPORT FOR STANDARDS AND GASOLINE PRICES**



Sources: CFA surveys, EIA database, Gasoline Prices

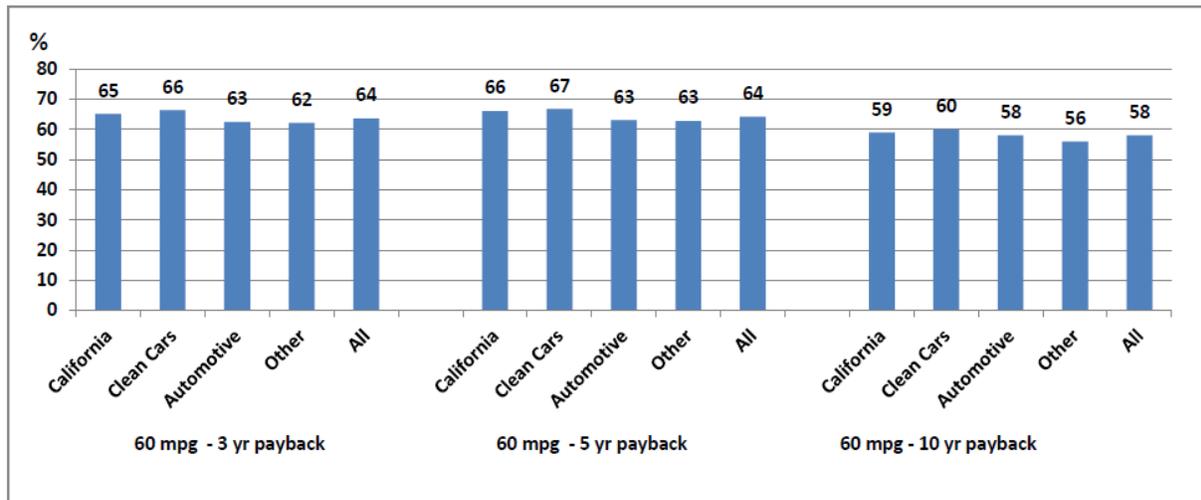
However, the support alone is not central to the analysis conducted by the agencies. As important as “mere” support is, the reasons given and the detailed attitudes about fuel economy standards are even more important for setting standards. For example, public opinion supports standards for a mix of reasons, consumer pocketbook savings, national security (e.g. concern about dependence on oil imports), and environmental reasons. Therefore, consumers reflect the various purposes underlying the enabling statutes. Public opinion is reflected in the factors that the statutes tell the agencies to balance in setting standards.

At an even more concrete level, consumers express attitudes that demand action from the agencies. For example, they want more fuel efficiency than the automakers appear to be offering in the market. They hold automakers significantly responsible for the glut of gas guzzlers that burdened their balance sheets and drove two of the big three into bankruptcy. In this data we find standards filling a need that the automakers are not meeting on their own.

### **Payback**

Of most direct relevance to the standards setting process, we have asked consumers how they view the potential economic impact of standards. As a general proposition, payback periods are an inferior measure of economic performance that should not be used to drive the economic analysis. In this case, the payback periods are seen as a constraint on market behavior by assuming that people will not buy technologies with a longer payback. The 2.5-year payback period dramatically restricts the technologies that the model can include in its estimation of costs. The model assumes that technology can only be included in vehicles if it has a 30-month payback. Our survey evidence shows, in Figure VI-2 that not only do a clear majority of consumers accept a 3-year payback period, but an equal percentage accepts a five-year payback period, and even a 10-year payback period is acceptable to a majority.

**Figure VI-2: Support for Standards by Region and Payback Period**



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

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  
 (5) Don't know

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

**AUTOMAKERS**

In our 2011 survey, in addition to the general question about support for fuel economy standards, we also asked respondents whether they support a standard of 60 miles per gallon.<sup>39</sup> For the 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. The specific target of 60 mpg is supported by over 60% of respondents with payback periods of three and five years. This support remains in the high 50% range with a ten-year payback period. We noted at the time that using a payback period to assess fuel economy is

<sup>39</sup>CFA Comment, 2012, pp. 24-25.

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. **The analysis arbitrarily restricts technology choices, particularly compared to the TAR.**

### **Misrepresentation of Consumer Attitudes**

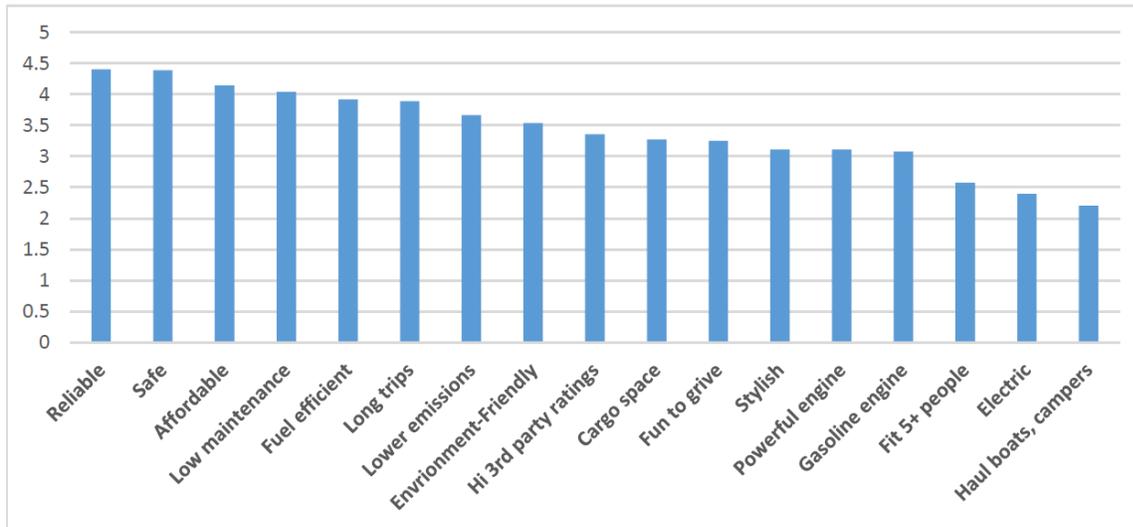
Automakers have a very different view of consumers, one which we find is inconsistent with their own data. It is certainly true that consumers want reliable, safe, affordable, low maintenance vehicles, but these attributes are not significantly negatively affected by their fuel economy.

As Figure VI-3 shows, the analysis of desirable vehicle attributes finds that consumers want reliable, safe, affordable and low maintenance vehicles. For example, if an EV and gasoline vehicle were matched on cost and travel length, more would prefer the electric vehicles (48% to 43%) and a clear majority (57%) are willing to pay more for an electric vehicle. There is no reason to believe that fuel efficient gasoline engines or electric vehicles (EVs) cannot fill the bill and automakers are working hard to achieve that goal.

After the big four attributes, respondents care as much about fuel efficiency as the ability to take long trips and the automakers are working on that too. Beyond these big six attributes, the valuation of others falls off, but even here the message for EVs is positive. Environmental impacts rank a lot higher (8<sup>th</sup> and 9<sup>th</sup>) than powerful engines (13<sup>th</sup>) or engine type (gasoline power =14<sup>th</sup>, electricity = 16<sup>th</sup>). Fitting more than 5 people (15<sup>th</sup>) or hauling boats and campers (ranks dead last)

don't matter much. If you watch the TV ads and go into the showrooms, you would have to conclude that the automakers are pushing the wrong vehicles. More importantly, there is nothing in this data that suggests EVs cannot be a big success. Our survey results, this data and automaker investments can be interpreted to mean there is strong interest in EVs.

**FIGURE VI-3: RANK ORDER OF IMPORTANCE OF VEHICLE CHARACTERISTICS**



Source and Notes: Mitch Bainwol, President and CEO, Alliance of Automobile Manufacturers, *Consumers & Fuel Economy*, CAR Management Briefing Seminars, Traverse City, Michigan, August 2016, p. 10. The winter related question, specific to the North East, has been discarded. It would rank 12<sup>th</sup> of 18, low in California, high in New England)

## AUTOMAKER BEHAVIOR

### 1) The Background for the National Program

In adopting the National Program, EPA/NHTSA concluded that it was economically practicable and technologically feasible. We teed-up the framework for the analysis of the implementation of the standards as follows:

A proposed rule must 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 standard 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 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.

### **3) Automaker Incentives: The Industry Has Strong Incentives to Comply**

Globalization of the auto industry means it is no longer possible to be a successful automaker without being able to compete globally.

- As shown in Figure, VII-7 below, the current 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.

Automakers know they can sell quality. As shown in Figure VII, 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 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 improvement over the past 15 years.
- Unlike most other quality additions, fuel economy improvements deliver pocketbook savings to consumers.

- In today's market, fuel economy is a major determinant of vehicle quality that the market can easily absorb.
- Automakers adjust MSRP and discounts and auto financing in response to much larger changes in affordability.

Concerns about a negative impact of the current standards on consumers and the auto market are unfounded, even in the case of low-income consumers because they rest on faulty assumptions that are refuted by the above analysis.

- When the costs of driving go down, vehicle ownership becomes more affordable, so output and employment in the industry will expand.
- Low-income households are much more involved in the used car market, in which we see an increase in supply of vehicles and lower prices as the standards accelerate the fleet turnover.

With the adoption of the National Program, CFA began monitoring the performance of the auto market, focusing on the supply side, since our longitudinal polling of consumers over ten years and analysis of automaker behavior indicated that there should be no fundamental obstacle to achieving the goal, but for the political resistance of the automakers. Things played out as we expected. Automakers had no problem complying; they even exceeded the near-term goals, as the logic of the refresh and redesign cycle dictated. However, in spite of clear success, the current administration is seeking to undermine the National Program.

**3) The benefits of the National Program are still very strong, in spite of fluctuating gasoline prices, because the minimum performance standards were extremely well designed. They are what we call a “command but not control” approach to regulation.**

- They address numerous market imperfections.
- They do so in a manner that harnesses the power of capitalism and markets to meet the standard in the least cost manner possible.
- The new approach ensures consumers have choices in what to buy and automakers have freedom to select the technologies they know best to meet the standards.

**4) Automakers have done an excellent job with the freedom they have.**

- The auto market is setting records for sales, even as the fuel economy standard rises.
- Automakers are over-complying.
- Costs are coming down.
- Innovation is roaring.

**5) Industry complaints about the standards are the typical handwringing, which has proven to be wrong time and again in the past.**

- The attack on the National Program is based on a mixture of unsubstantiated assumptions and false choices between efficiency and other attributes of vehicles.
- The current round of complaints uses costs that are between two and seven times of the agencies' estimates.
- Their analysis misrepresents what consumers want and ignores the billions of dollars they spend on advertising which influences consumer behavior.
- The auto industry funded think tank attacks on the National Program are equally unconvincing. Six months ago, their report identified a dozen concerns in the TAR. The 1200 pages of the TAR make it clear that the agencies have responded and still find a strongly positive outcome.

**6) The automakers are also overstating the differences between the agencies and demanding a unified National Program in the hope that this would lower the standards.**

- Both agencies find that the National Program is in the public interest under the both of the applicable statutes.
- Many of the differences between the agencies were transitional and will be eliminated before the MY2022 standards kick in.
- Analytic differences are “easy” to resolve. The two agencies (EPA and the California Air Resources Board) that support the current standard (or stronger) have made a better case.

Our continuing analysis of automaker performance, described in the market performance section below, the review of the TAR and the reports and critiques that have been made public prior to the filing of formal comments lead us to make the following recommendations.

NHTSA's departure from the base case assumptions has not been well-justified and should be dropped, or treated as a minor sensitivity analysis. This applies to the shift in markup calculation

and the dramatic reduction in vehicle miles traveled. More broadly, NHTSA needs to abandon the artificial constraint it has place on technology in its model with the 3-year payback requirement. That figure was never correct. Consumers are willing to accept a five-year payback. More importantly, the marketplace has moved away from short paybacks. It appears that the overwhelming majority of consumers, (90% according to a NADA spokesman), finance their vehicles. They do not walk into a dealership and pay cash up front. Leases now run an average of 68 months and vehicles are being held by owners more than five years. A payback constraint on technology, if one can be justified, should be five years.

Both agencies should estimate the indirect macroeconomic benefits of the rule.

Payback periods have been given far too much prominence because they embody and reflect market failures. They should not determine the inclusion of technology directly.

The impact of standards on low income households deserves continuing attention and analysis since it is frequently, and incorrectly, cited as a reason to weaken fuel economy standards.

Specific detailed examples and case studies of the dramatic increase in innovation stimulated by performance standards should developed.

The role of the Clean Cars Program in triggering the development of hybrid technology should be examined both as a backward look at how federalism under the Clean Air Act has worked and as a forward-looking framework for the development of electric vehicles.

The agencies should continue to work, as they have in the past, to resolve and reconcile their differences over technologies, program design and costs. The richness of the analysis that comes from multiple agencies using different approaches should be seen not as a source of dissension and difference. The agencies must act to implement a National Program, and their statutes afford them the flexibility to resolve their differences by using the highest, not lowest common denominator.

## **VII. OVERALL MARKET PERFORMANCE AND THE BENEFITS OF STANDARDS**

Given the persistent pattern of misunderstanding or misrepresenting consumer attitudes, the very large and repeated overestimation of costs, the many tools automakers have to adjust to changes in market conditions, and the failure to admit the major improvements made in the standards program by EISA, we should not be surprised find that the automaker predictions have been miles off the mark over the past decade. We have shown this by looking at actual market performance in a number of ways.

### **DEVELOPMENTS IN AGGREGATE MARKET TRENDS**

One type of analysis looks at aggregate numbers. The upper chart in Figure VII updates the analysis we presented in our comments on the CARB mid-Term review.<sup>40</sup>

The claim that efficiency improvements increase prices dramatically is simply not supported by real world data. In our comments we point to extensive analysis in the record that rebuts this claim.

In the post-EISA period, new car prices fell early as the great recession depressed sales. After the first increases in fuel economy mandated by EISA went into effect, they tracked inflation. Recently, car prices have significantly failed to keep up with inflation, while truck prices have moderated slightly. The automakers' predictions have once again failed to come to pass and they should be dismissed as a self-interest public relations stunt.

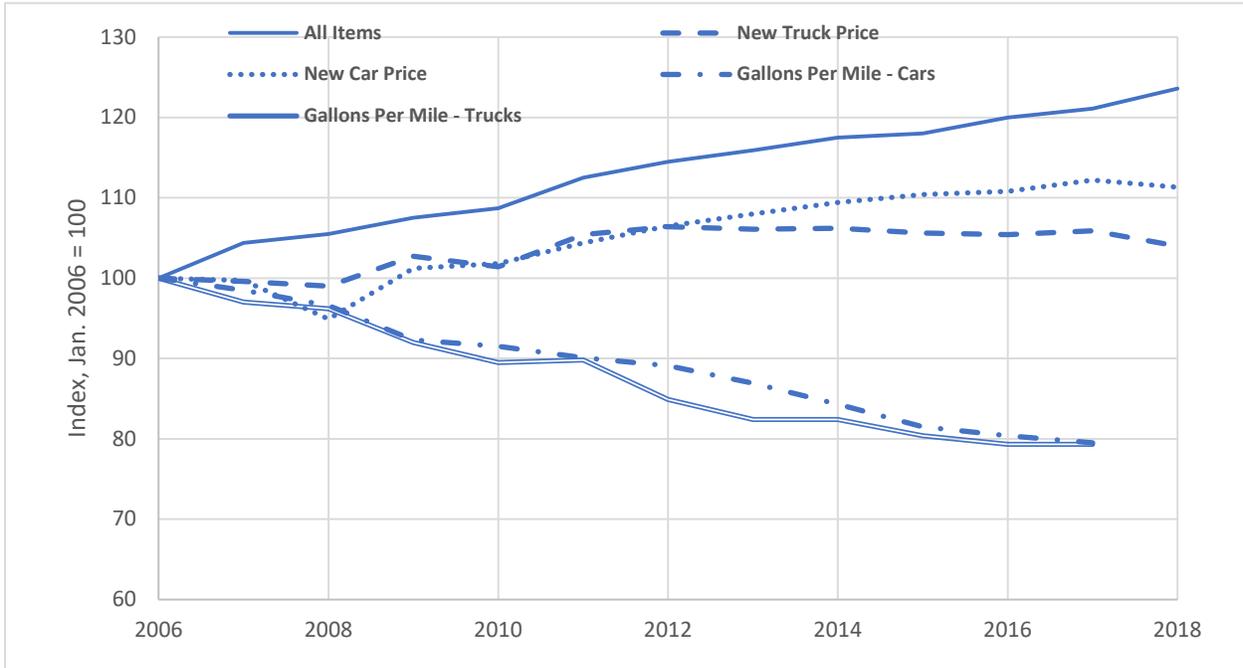
The upper graph shows that general inflation was greater than the increase in new vehicle prices, which means vehicles were becoming less costly compared to other goods and services. All the while, fuel economy was improving, by about 20%.

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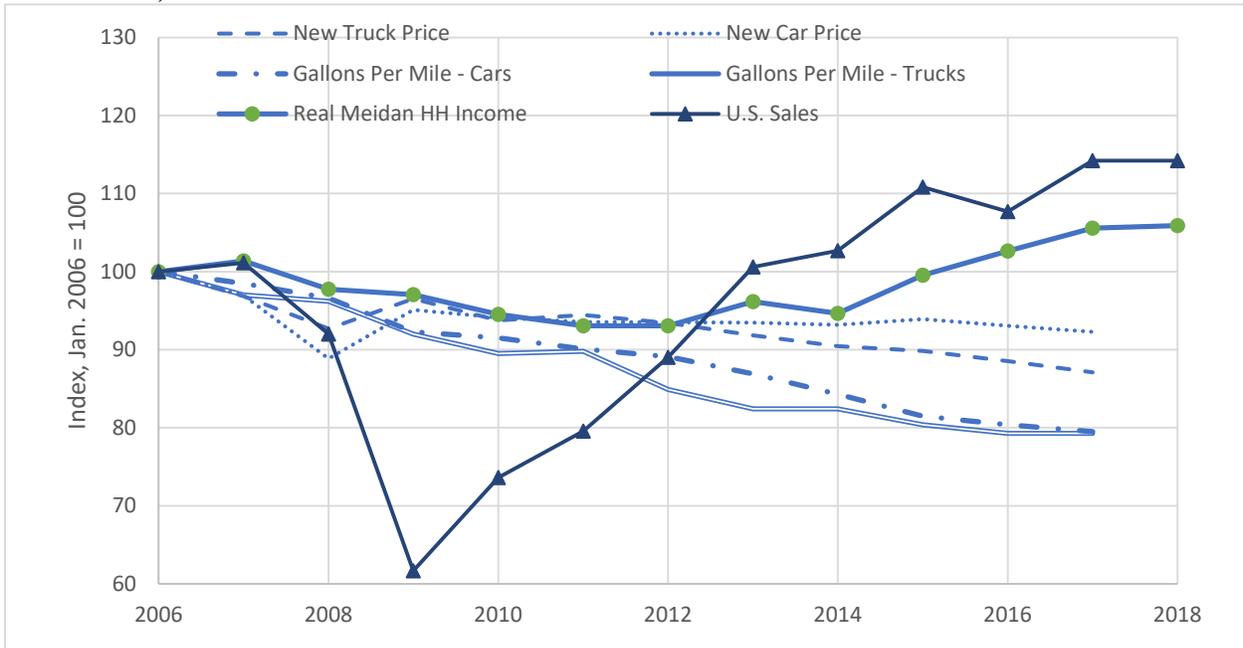
<sup>40</sup> The following two paragraphs are from CFA's comments on the CARB mid-term review.

**FIGURE VII-: NEW CAR PRICES, MILEAGE AND OTHER MARKET FACTORS**

**Inflation in All Items and New Vehicle Prices**



**Real Prices, Household Income and New Vehicle Sales**



Source: Bureau of Labor Statistics, Consumer Expenditure Survey, New Car Prices, EPA, Light Duty Vehicles, Trends Report. Updated from CFA, 2017 CARB Comments.

The lower graph restates the analysis in constant real dollars and includes two other real indicators, median household income and auto sales. In this graph we can see the slight decline in real auto prices, while fuel economy improved. We can also see that sales plummeted with the onset of the Great Recession, as real household income declined. With the economic recovery, household incomes began to rise and so did auto sales. The swiftest increase in sales was associated with the largest increase in both household income and fuel economy. Clearly, the sky did not fall on the auto industry. It is possible that declining costs and rising household incomes “saved it,” although the fate of gas guzzlers in the period prior to the National Program suggests otherwise.

#### **CHANGES ACROSS MODEL YEARS**

While the headlines describing the woes of the automakers point to a sudden shift in consumer purchasing patterns in the Great Recession with a shift from light trucks and large SUVs to more fuel-efficient cars, a close look at the data indicates that:<sup>41</sup>

- There was nothing sudden about the shift.
- It involves much more than a shift from trucks and SUVs to cars (higher fuel economy within vehicle types sells more vehicles).
- Simply put, it did not take \$4/gallon gas to cause the change in consumer behavior, it started at least three years ago when gas was \$2.50 per gallon and has been growing progressively.

The automakers not only missed the shift in consumer behavior, they actually tried to resist it by continuing to pump out gas-guzzlers and trying to bribe consumers to buy them with rebates and low interest. To examine this issue, we compiled a database of the top fifty models in each year and charted their sales (as reported by Automotive News) and EPA mileage ratings across time. There is an average of 61 models in each year-to-year comparison (because different

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<sup>41</sup> The following paragraphs are from the CFA Comment on the DEIS, 2008, p. 24.

models will be included in the top fifty in one year, but not the next). A total of 83 models occurred in the top fifty over this period for which we had sales and mileage data. These models represent an average of approximately two-thirds of all units sold over the period.

Figure VII-2 shows the sales for the top sixty models, plotting EPA mileage ratings (all based on the new method) against the change in sales. From 2003-2005, there was no relationship between fuel economy and sales; the regression line was flat. Starting with the 2005-2006 comparison, there is a relationship; vehicles that got higher mileage fared better in the marketplace. The relationship persisted in 2006-2007 and through the first half of 2008.

While the direction of the relationship remained about the same (i.e. the slope of the line did not change much) the relationship became much stronger (the scatter of the observations around the line became smaller in magnitude). In the first half of 2008, the level of fuel economy of the model accounts for over 40 percent of the variance in the change in sales.

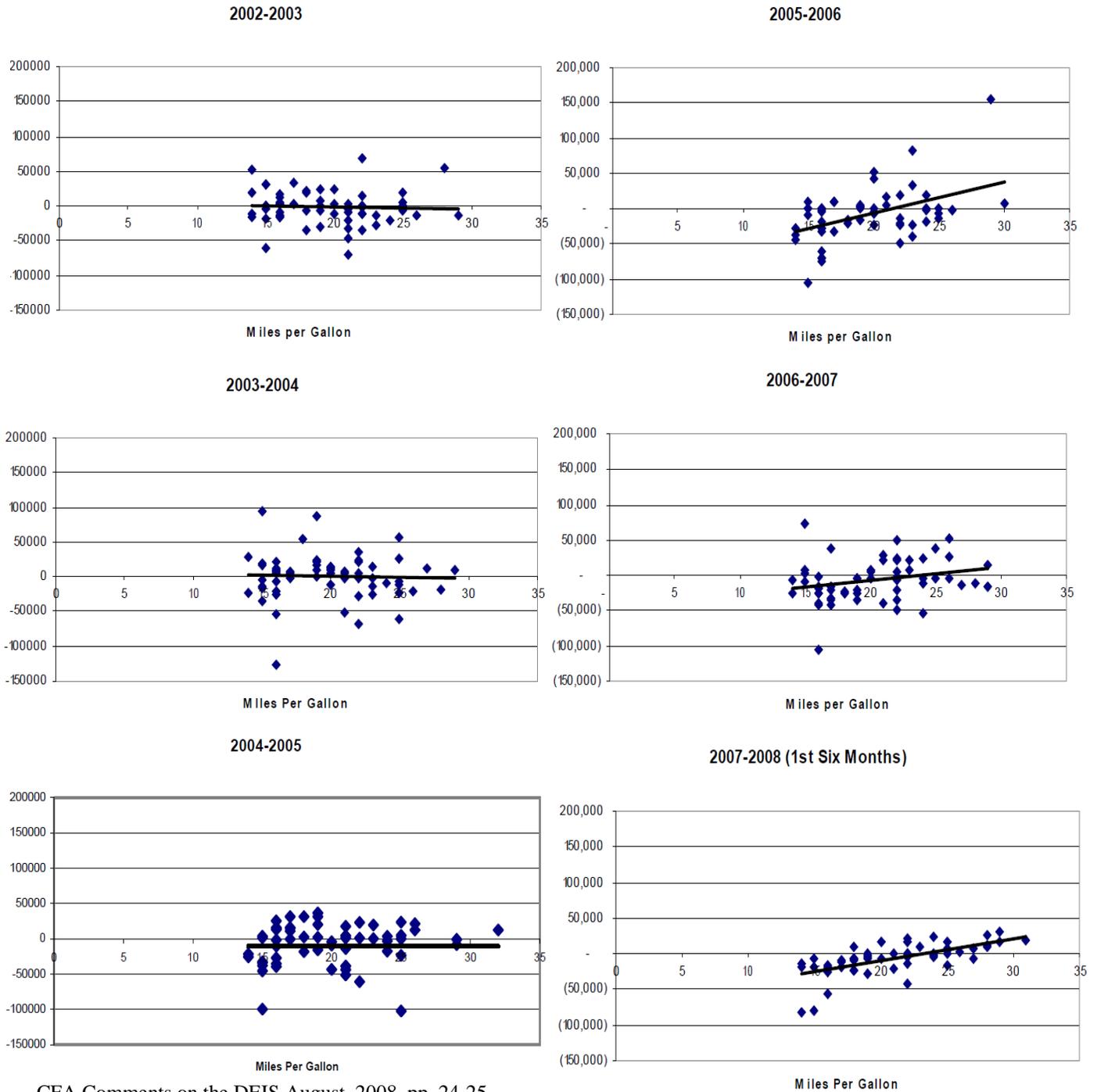
The graphs in Figure VII-2 exclude the Prius, which is the only hybrid to be ranked in the top fifty over this period and has been so popular that there have been delivery delays. (It is an outlier and its “poor” performance in recent years is not the result of a lack of demand but, rather, the result of a lack of supply. This is a circumstance that is radically different than that faced by vehicles with conventional engines).

### **Market Performance of “New” Models**

More recently and at a more micro-level, we examined the fuel economy and cost of individual models in the context of the implementation of the National Program. A close look at individual models, fuel economy improvements, prices and sales indicates that improving fuel economy plays a positive role in increasing sales, contrary to the industry’s claims. The rationale for the rollback is that it costs too much to comply with the standards and, as a result, vehicle

prices will increase, thus dissuading consumers from buying new cars. The fact is, rolling back the standards would not only cause great harm to consumer pocketbooks, but, because of consumer demand for fuel efficiency, would also harm sales.

**FIGURE VII-2: CHANGES IN SALES V. FUEL ECONOMY**



CFA Comments on the DEIS August, 2008, pp. 24-25.

As shown in Figure VII-3, we examined the current progress in meeting fuel economy standards by analyzing the performance of 2017 and 2016 vehicles from a variety of perspectives.<sup>42</sup> Manufacturers have the greatest opportunity to improve vehicle fuel economy when they introduce a truly new vehicle. For this analysis, we compared the cost and fuel economy of 19 of the 27 “all-new” 2017 models which had a 2011 version, the year before the current standard was put in place. These 19 models included 79 different EPA designated engine/drive train/transmission/MPG configurations (or what are called “trims”).

When we compared the cost difference between the “all-new” 2017 models and their 2011 version, after factoring in inflation, 21 or 27% actually went down in price, yet every one of these vehicles saw a 1 to 10 MPG increase. Vehicles that improved their fuel economy while going down in price ranged from the Subaru Impreza and GMC Acadia to the Mercedes E Series, clearly demonstrating that improvements in fuel economy do not have to generate higher prices.

Annual vehicle price increases (less inflation) cover many different improvements such as new safety technology, convenience items, design changes, as well as upgraded fuel economy technology. The notion that fuel economy is the primary driver of increased vehicle prices is simply wrong. Increasing fuel economy does have costs, but the best available evidence is that each mile per gallon of improvement is estimated to cost about \$100 in improved fuel economy technology, as explained in the above discussion of technology costs.

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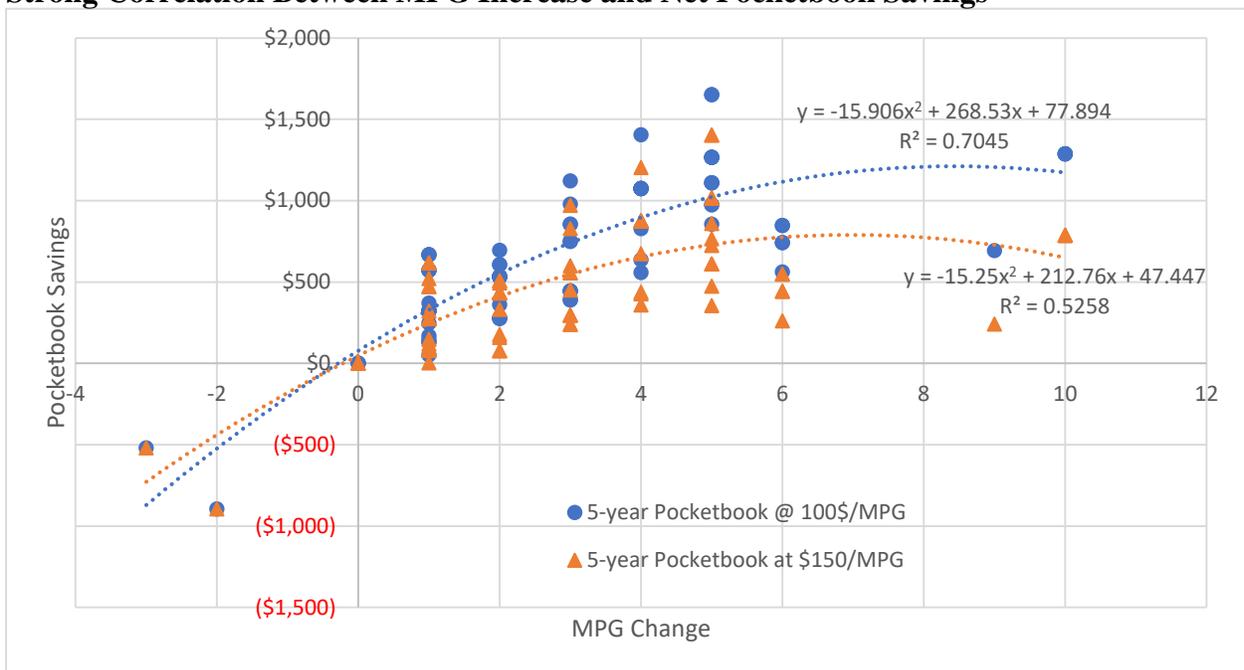
<sup>42</sup> This discussion of “all new” vehicles is based on An Analysis of Consumer Savings and Automaker Progress: On the Road to 2025 CAFE Standards (hereafter, On the Road, 2017), 2017, pp. 3-8,” which was attached to our Comments to the Department of Transportation on Regulatory Reform, 2017. The graphs for 2011-2016 are new, based on that data. The statistics on 2011-2017, are from an updated version of that analysis, On the Road, 2018.

**FIGURE VII-3: “ALL NEW” VEHICLES, COMPARISON OF 2011-2016 CHANGES IN PRICE, MPG AND POCKETBOOK SAVINGS**

**No Correlation Between Price Increase and MPG Increase**



**Strong Correlation Between MPG Increase and Net Pocketbook Savings**



Source: *An Analysis of Consumer Savings and Automaker Progress on the Road to 2025 CAFE Standards* (hereafter, *On the Road*, 2017).

By separating out the cost of fuel economy improvements from these other costs, we were able to get a more accurate look at the impact of the standards on consumer pocketbooks, as shown in Figure VII-4. Overall, for 74 of the 79 vehicles (94%), the added cost of new fuel-efficient technology was far exceeded by the resulting fuel cost savings over the first 5 years of ownership.

For 12 of the 58 vehicles whose cost went up, the savings in fuel costs exceeded the entire price increase for that vehicle, even though only part of that increase can be attributed to fuel efficiency. On average, the price increase for vehicles that increased their fuel economy by more than 10% was 15% lower than the price increase for vehicles that increased their fuel economy less.

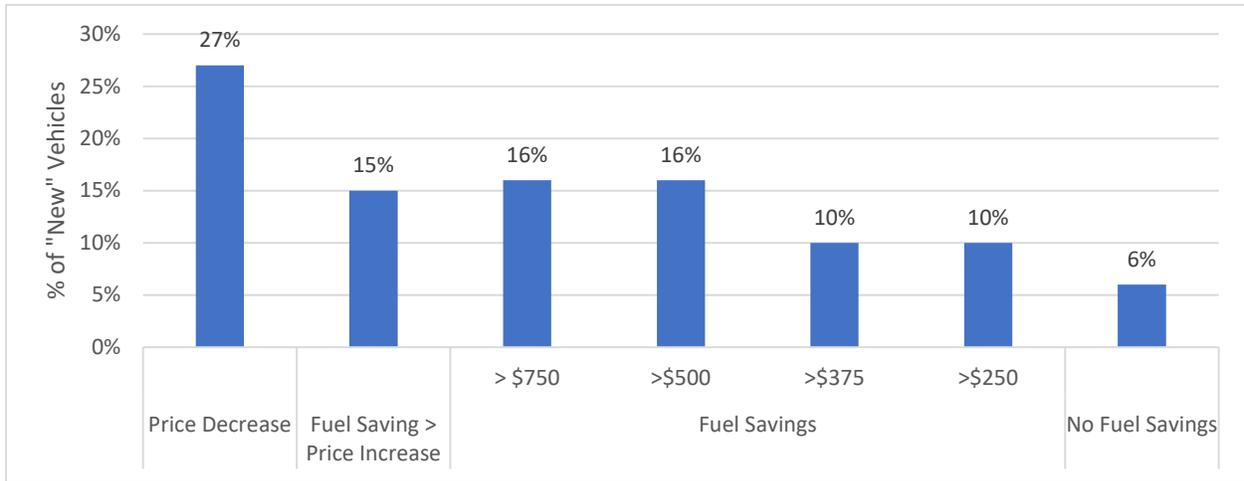
For 41 of the 58 vehicles whose cost went up, the savings in fuel costs outweighed the cost of the fuel economy technology. Finally, for the few vehicles whose fuel economy stayed the same or actually decreased, all experienced an increase in price.

The introduction of “all-new” vehicles is the best barometer of a manufacturer’s ability to comply with CAFE standards. Changing the fuel economy of existing vehicles is difficult, as the vehicle is already designed and is being manufactured to its original specifications. With “all-new” vehicles, manufacturers can incorporate their latest fuel-saving technologies. Interestingly, percentage-wise, trucks beat cars for CAFE compliance in 2017.

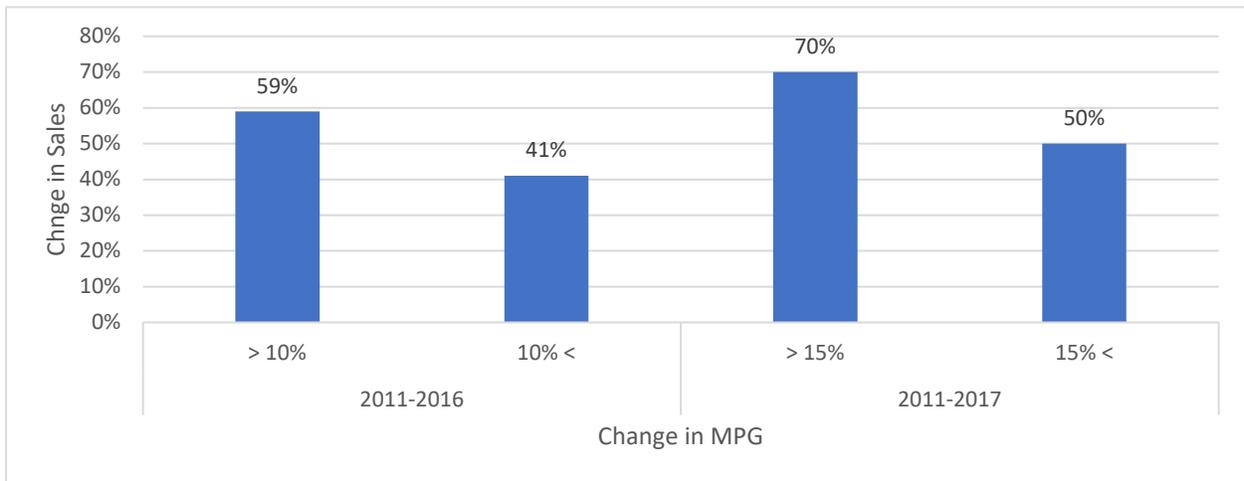
In comparing the CAFE compliance of “all-new” models introduced in 2015, 2016 and 2017, there was a significantly higher percentage of CAFE-compliant vehicles in 2017. In fact, 70 percent of the “all-new” 2017 vehicles had a CAFE-compliant trim, compared to 41 percent of the “all-new” 2015 vehicles. Particularly noteworthy was the fact that 78% of the “all-new” light duty trucks had a CAFE compliant trim in 2017.

**FIGURE VII-4: “ALL NEW” VEHICLES, POCKETBOOK SAVINGS, MPG CHANGE, COSTS AND SALES**

**Pocketbook Savings are Much Larger than Technology Costs**



**Bigger Increases in Fuel Economy Translate into Bigger Increases in Sales**



Source: *An Analysis of Consumer Savings and Automaker Progress on the Road to 2025 CAFE Standards*

**NEW VEHICLE MILEAGE AND OLD VEHICLE RETIREMENT**

One of the important issues in estimating the impact of fuel economy standards is the evolution of the vehicle fleet on the road. We calculate the deregistration of vehicles as follows:

$$\text{Deregistration} = ((\text{Registration in Year } T_{-1}) + (\text{New Vehicle Sales})) - (\text{Registration in Year } T_0)$$

The analysis of deregistration shows a very strong linear decline until the Great Recession, as shown in the upper graph of Figure VII-5. The rate of deregistration increases

dramatically during the Great Recession because sales plummeted. However, as shown in the middle graph, the number of vehicles deregistered per year showed very little change. With the end of the Great Recession, sales picked up, so the rate of deregistration returned to the underlying trend. This pattern supports our earlier view of that marginal value of vehicle driving declines over time and reaches a saturation point. Hence the reliance on older studies with high rebound effects misrepresents the real-world market dynamics.

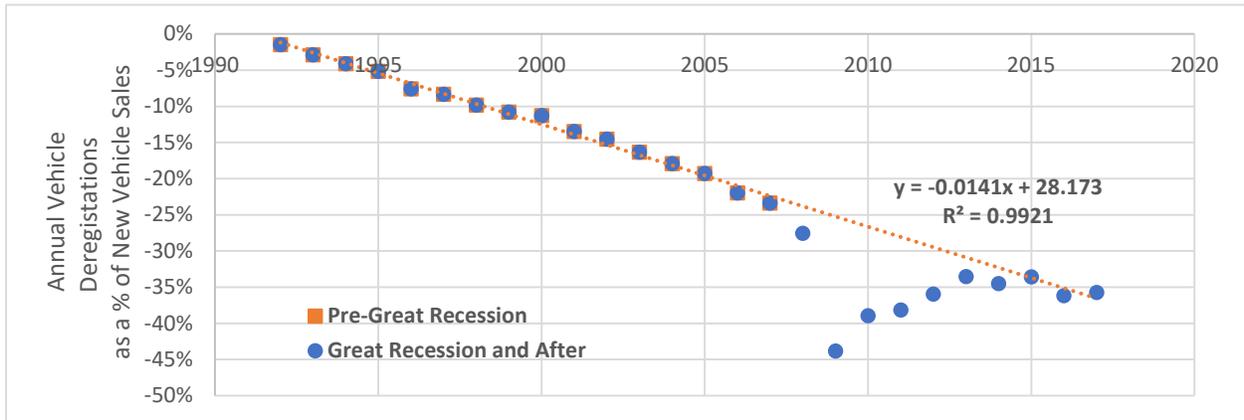
The bottom graph of Figure VII-5 show that the relationship between mileage and deregistration prior to the Great Recession was very weak. Mileage was constant, but deregistration followed the downward trend. After the Great Recession, mileage improved and deregistration returned to the historic trend.

In the pre-Great Recession period and the overall period, the trend of increasing scrappage is by far the most statistically significant, accounting for 99.2% of the variance in the pre-Great Recession period and 89% of the variance in the total period. The coefficient is statistically significant at the .000 level in both cases. Once we control for the underlying trend, increases in mileage do increase scrappage significantly, but it accounts for less than one half of one percent of the variance in the pre-Great Recession period and it is not significant in the total period. The claim that increases in fuel economy slows scrappage down and, therefore keeps people on the road in less efficient or less safe vehicles is incorrect. The only way to look at these figures and conclude that mileage improvement reduces scrappage of vehicles is to make three mistakes. One must ignore the trend and the dramatic increase in the fleet and the impact of the Great Recession. Focusing on the short-term number of vehicles scrapped, one would conclude that the increase in mileage accounted for an almost 800,000-unit reduction in scrappage. Controlling for the above three factors in a multivariate regression analysis reduces

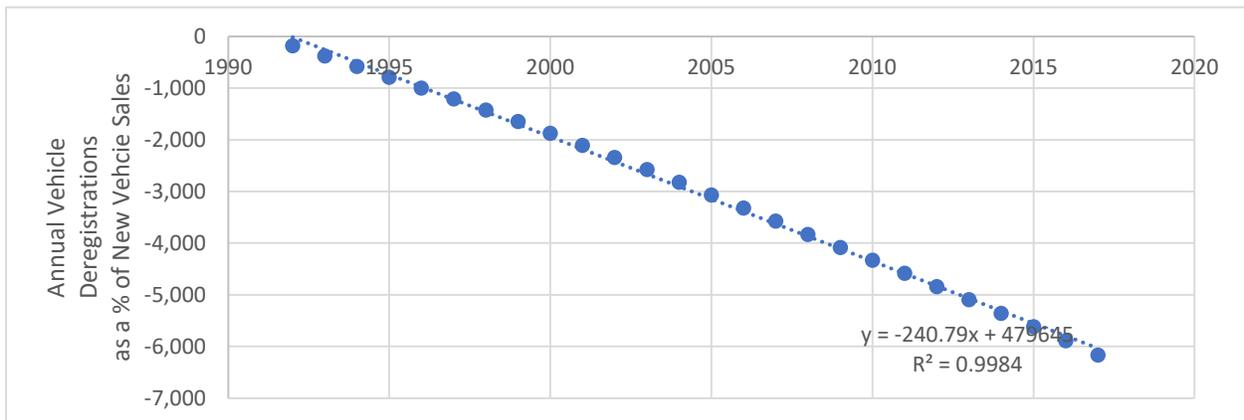
the size of the impact by almost 95% and the resulting reduction of 58,000 units is not statistically significant.

**FIGURE VII-5: REDUCTION IN REGISTRATIONS COMPARED TO NEW VEHICLE SALES**

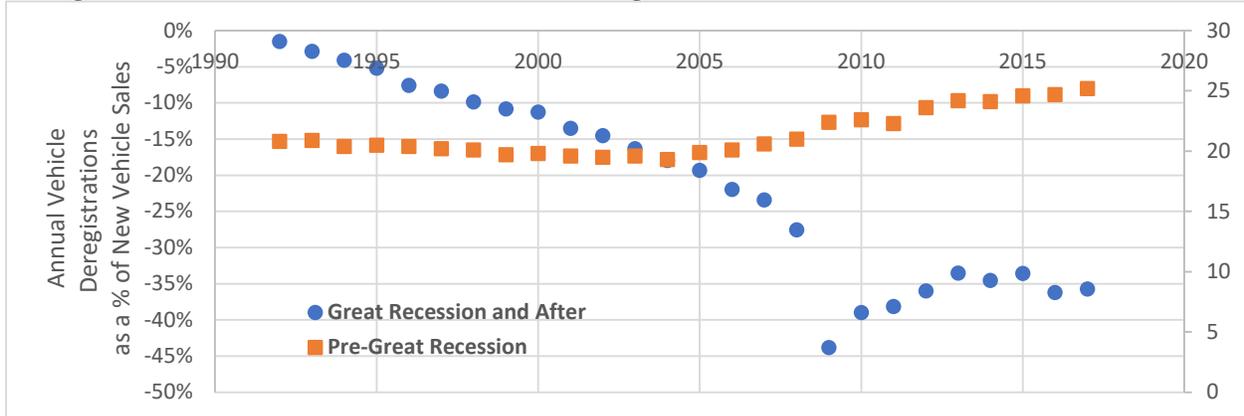
**Percentage Across Time**



**Absolute Numbers Across Time**



**Deregistration of Vehicles and Gasoline Mileage**



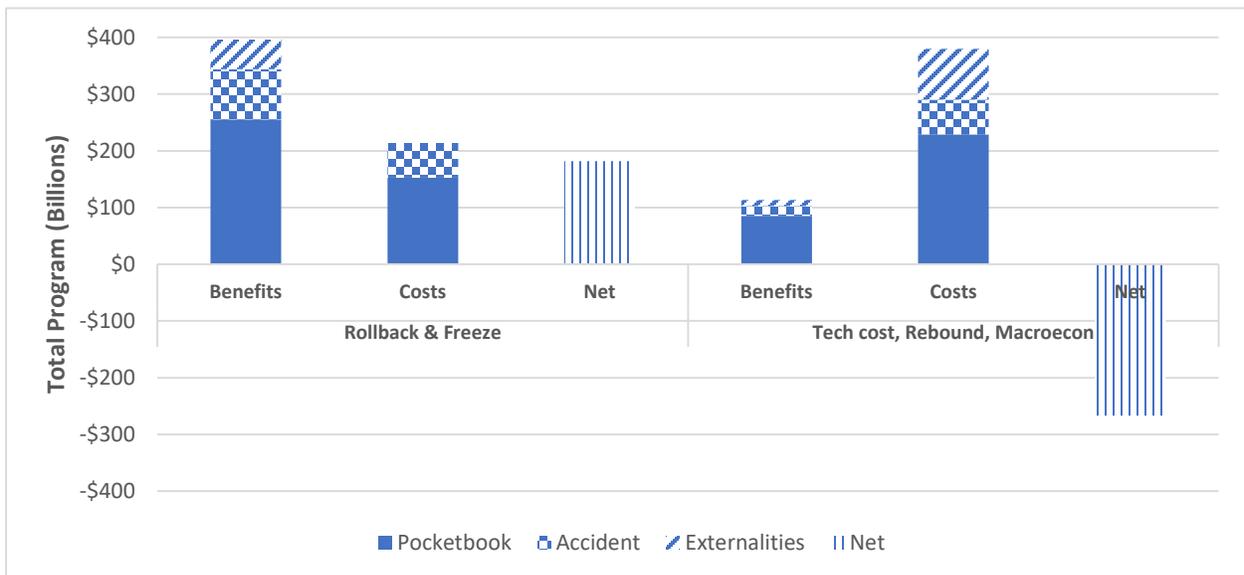
Source: U.S. Department of Transportation, Environmental Protection Agency, *Trends – 2017*.

This is the mistake that NHTSA appears to have made at the broad conceptual level. Contrary to NHTSA’s claims, improving fuel economy increases sales and accelerates scrappage. In the six years of the National Program, almost 100,000 more fuel efficient vehicles have entered the fleet and over 30,000 older vehicles have left it.

**THE HARMFUL EFFECT OF FREEZE AND ROLLBACK**

Given the focus of this proceeding and analysis of the standards under review, we examine the current period in greater detail. Figure VII-6 shows that correcting three obvious errors turns the positive benefit cost ratio negative.

**FIGURE VII-6: CORRECTING THE REBOUND, MACROECONOMIC & TECHNOLOGY COST: Freeze and Rollback Costs Exceed Benefits by 3-to-1.**



In Table XIII-1 we show the results of the benefit-cost evaluation of the full range of analysis for over forty years of efficiency standards in the United States. It is a remarkable record of accomplishment and, as the benefit cost analysis of the past decade shows, there are still major consumer pocketbook, macroeconomic and public health gains to be made. As these comments show, the decision of NHTSA/EPA to Rollback and Freeze this progress is unjustified and illegal.

In our initial analysis, we adjusted the value of fuel savings to reflect the decline in gasoline prices between 2012 and 2016. We do so by calculating the dollar value of MY 2022-2025 in the National Program final RIA and comparing it to the value of fuel savings in the TAR. However, as noted, the 2018 Annual Energy Outlook estimated an uptick (3% increase) in EIA projected gas prices. We assume the value of environmental/public health impact has not changed. We use the cost as stated in the RIA and account for the decline in costs by considering a scenario in which costs are 30% lower.

Given the analysis in the TAR, the challenge is to parse out the costs and benefits from the early years of the National Program between those that are not being reconsidered (MY2017-2020) and those that are. We have built an analysis of the rollback and freeze based upon the Final Regulatory Impact Analysis (RIA) for the National Program. While some things have changed, the overall implications of the analysis are crystal clear.

In Table XIII-2, we examine the “Freeze and Rollback Proposal for light duty vehicles. We found that Freeze and Rollback have severely negative impacts on consumers, the economy and the environment. The Proposal has substantial negative benefit cost ratios. Therefore, we believe the Freeze and Rollback proposal violates the agencies statutes and the executive branch guidance. Since review of the standards for 2021 was not included in the mid-term review instituted by the National Program but the Trump Administration has proposed to rollback those standards, we focus here on the rollback and freeze impact.

- The lost pocketbook benefits would be over \$145 billion for the rollback and freeze and reduced economic growth would be over \$75 billion (see Table XIII-2). The loss of \$220 billion in benefits yields just under \$70 billion in cost savings. In other words, the pocketbook benefit cost ratio is -2 to 1. The total economic cost benefit ratio is -3 to 1.

**TABLE XIII-1: EVALUATION OF ENERGY EFFICIENCY/EMISSION STANDARDS**

Consumer Durable	Period (Source)	Cost & Benefit	2016\$ Billion at 3% discount	b/c Ratio	IRR	Cost of Saved Energy \$/Gal.	Enviromental Billion b/c at 3%	Traditional Pocket + Enviro b/c	IRR	Pure Extern. Macro + Enviro b/c	IRR	Total Pocket+Extern b/c	IRR	Adjuste Total b/c @ 70% of Cost
<b>Light Duty Past</b>	1980-2014 (Greene & Walsh) at 6% discount	TechCost	\$499			\$0.58								
		Pocketbook	\$2,121	4.25	13.88%		\$697	1.40	5.65	18.72%				
		Macroeconomic Total Economic	\$1,622 \$3,743	3.25 7.50		24.97%					4.65	15.28%	8.90	29.66%
<b>Present</b>	2008-2011 (NHTSA, TSD)	TechCost	\$9			\$1.11								
		Pocketbook	\$27	3.00	9.31%		\$6	0.67	3.67	11.80%				
		Macroeconomic Total Economic	\$18 \$45	2.00 5.00		16.50%					2.67	8.10%	5.67	18.78%
<b>2012-2016 (EPA/NHTSA, TSD)</b>		TechCost	\$62											
		Pocketbook	\$182	2.94	9.06%		\$41	0.66	3.60	11.55%				
		Macroeconomic Total Economic	\$120 \$302	1.94 4.87		16.05%					2.60	7.07%	5.53	18.32%
<b>Near Future</b>	2017-2021 (National Program)	TechCost	\$47			\$0.88								
		Pocketbook	\$192	4.09	13.30%		\$48	1.02	5.11	16.87%				
		Macroeconomic Total Economic	\$131 \$323	2.78 6.86		22.82%					3.80	12.27%	7.88	26.25%
<b>2022-2025 (EPA Determination.)</b>		TechCost	\$36			\$0.75								
		Pocketbook	\$92	2.56	7.56%		\$41	1.14	3.69	11.88%				
		Macroeconomic Total Economic	\$56 \$148	1.56 4.11		13.39%					2.69	8.12%	5.25	17.36%
<b>Far Future</b>	2025-2030 (ICCT Adapted)	TechCost	\$39											
		Pocketbook	\$117	3.00	9.31%		\$52	1.33	4.33	14.05%				
		Macroeconomic Total Economic	\$78 \$195	2.00 5.00		15.07%					3.33	9.01%	4.59	15.07%
<b>Heavy Duty Trucks Present</b>	Phase I (EPA, NHTSA)	TechCost	\$9			\$1.07								
		Pocketbook	\$56	6.22	19.35%		\$6	0.67	6.89	22.94%				
		Macroeconomic Total Economic	\$47 \$103	5.22 11.44		35.76%					5.89	18.28%	12.11	37.84%
<b>Near Future</b>	Phase II (EPA, NHTSA CFA Supporting)	TechCost	\$29			\$0.33								
		Pocketbook	\$163	5.62	17.42%		\$66	2.28	7.90	24.67%				
		Macroeconomic Total Economic	\$134 \$297	4.62 10.24		32.00%					6.90	21.49%	12.52	39.13%
<b>Far Future</b>	Alt. 5 Increment (EPA, NHTSA)	TechCost	\$24			\$0.33								
		Pocketbook	\$66	2.75	8.82%		\$27	1.13	3.88	11.71%				
		Macroeconomic Total Economic	\$42 \$108	1.75 4.50		11.74%					2.88	6.95%	5.63	17.40%
<b>Appliance Past</b>	1988-2007 (Meyers, et al.) 3% to 2007 7% to 2040	TechCost	\$179			Billion \$/Quad \$2.29								
		Pocketbook	\$488	2.73	16.28		156	0.87	3.60	16.08%				
		Macroeconomic Total Economic	\$309 \$797	1.73 1.60		29.03					2.60	15.26%	5.32	33.83%
<b>Present</b>	2007-2040 Light Bulbs ACEEE	TechCost	\$23											
		Pocketbook	\$212	9.22	61.40		42	1.84	11.06	73.71%				
		Macroeconomic Total Economic	\$189 \$401	8.22 17.43		116.23					10.06	54.70%	17.4	110.67%
<b>2007-2040 ACEEE assorted</b>		TechCost	\$39											
		Pocketbook	\$166	4.26	27.65		33	0.85	5.11	33.63%				
		Macroeconomic Total Economic	\$127 \$293	3.26 7.51		49.97					4.11	20.36%	7.51	47.76%
<b>2014-2044 DOE TSD Refrigerator</b>		TechCost	\$26			\$1.29								
		Pocketbook	\$62	2.38	13.53		11	0.42	2.81	19.69%				
		Macroeconomic Total Economic	\$36 \$98	1.38 3.77		24.15					1.81	8.51%	4.19	26.65%
<b>Near Future</b>	CFA Supported	TechCost	\$56											
		Pocketbook	\$370	6.61	20.15		18	0.32	6.93	23.94%				
		Macroeconomic Total Economic	\$314 \$684	5.61 12.21		49.97					5.93	16.42%	12.54	79.76%
<b>Far Future Appliances</b>	(assume b/c=3, no water savings)	TechCost	\$202											
		Pocketbook	\$607	3.00	18.42		121	0.60	3.60	22.29%				
		Macroeconomic Total Economic	\$405 \$1,012	2.00 5.00		32.86					2.60	15.28%	5.60	35.62%

**Sources and Notes**

**Light Duty**

**Past:** This estimate is based on David Greene and Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States, Howard Baker Center for Public Policy, January 2017. A slight period of overlap between past and present is subtracted based on the NHTSA estimate of 208-2012.

**Present:** These are from the Technical Support Documents. Here we use the Federal Register Notice with the EPA economic analysis, since EPA separated out pocketbook (fuel) and other benefits. The inflator to bring the estimates to 2016 is 1.1.

2008-2011: [https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/2006\\_friapublic.pdf](https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/2006_friapublic.pdf)

2012-2016: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1006V2V.PDF?Dockey=P1006V2V.PDF>

2017-2025: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100F1E5.PDF?Dockey=P100F1E5.PDF>

**Near Future:** These are from the Technical Support Documents in the mid-term review.

TAR: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100OXEO.PDF?Dockey=P100OXEO.PDF> Final Determination:

**Far Future: Light Duty Vehicles:** This is based on a comparison of the ICCT projections for the five years between 2025-2030 to the analysis of the 2022-2025 period in the mid-term review. We use a 4.5% improvement scenario (the average of the ICCT 4% and 5% scenarios) because EPA discusses a 4.5% scenario for going forward in the mid-term review. The ICCT cost numbers are 10% higher and the savings rate 10% lower, compared to the EPA analysis, which seems reasonable given the movement up the supply curve for efficiency technology and the short period of time covered. ICCT: Nic Lutsey, et al., *Efficiency Technology and Cost Assessment of U.S. 2025-2030 Light Duty Vehicles*, March 2017.

#### **Heavy Duty Trucks:**

**Present:** The first standard for heavy duty trucks adopted as a result of the Energy Independence and Security Act. Taken from the Technical Support Document: Phase

I: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EG9C.PDF?Dockey=P100EG9C.PDF>, In the Technical Assessment Report (TAR) and the Final Determination, EPA projects substantial cost reductions from the original Technical Support Document for the National Program. The current incremental cost estimate is almost 20% lower than the original incremental cost for 2022-2025. Taking a cautious approach for this analysis, we assume that the cost decline represents a 10% decline in the 2025 costs (assuming no cost overestimation in the 2017-2021).

**Near Future** These are from the Technical Support Documents: Phase II: <https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf>

**Far Future:** This is based on the Regulatory Impact Assessment of the Phase II Heavy Duty Truck Rule. We use the difference between the most stringent alternative considered and the final rule.

#### **Appliances**

**Past:** Stephen Meyers, James McMahon and Barbara Atkinson, *Realized and Projected Impact of U.S. Energy Efficiency Standards for Residential and Commercial Appliances*, LBNL, March, 2008. Converted from \$2006 and a benefit cost ratio of 2.7-to-1 (p. 2). The study used a split discount rate, 3% for backward looking estimates and 7% for forward looking.

**Present:** (2008- 2014) is subtracted from the past. All adjustments to quantities are made to preserve the benefit cost ratios in the original.

Lowell Unger, et al., *Bending the Curve: Implementation of the Energy Independence and Security Act of 2007*, ACEEE, October 2015. Dollars inflated from 2013 to 2016. Discount rate adjusted from 5% to 3%. Costs are derived from net benefits and benefit cost ratio after adjustment to preserve the original benefit cost ratio.

**Near Future:** These are based on a small number of rules that were on the cusp of being adopted and have been delayed, for which CFA has taken action to secure the consumer benefits. , these estimates are for the 50% holdout scenario analyzed by Lawrence Berkeley National Laboratory (LBNL Report Impact of the EISA 2007 Energy Efficiency Standard on General Service Lamps (see Table 3: Representative Lamp Options and Properties), which was cited in our letter to DOE (Appliance Standards Awareness Project, et al., Docket No. EERE-2017-BT-NOA-0052, October 16, 2016). Small rules include portable air conditioners, uninterruptible power supplies, air compressors, commercial packaged boilers, ceiling fans and walk-in coolers and freezers.

**Far Future:** This is based on the ACEEE estimate that identifies opportunities for further increases in appliance efficiency consistent with the statutory mandates for updating standards (Appliances in general: <http://aceee.org/research-report/a1604>). They project dollar value savings. We inflate to 2016\$ and discount the total. We assume the benefit cost ratio will be slightly lower than the near future ratio of 3-to-1 to estimate costs.

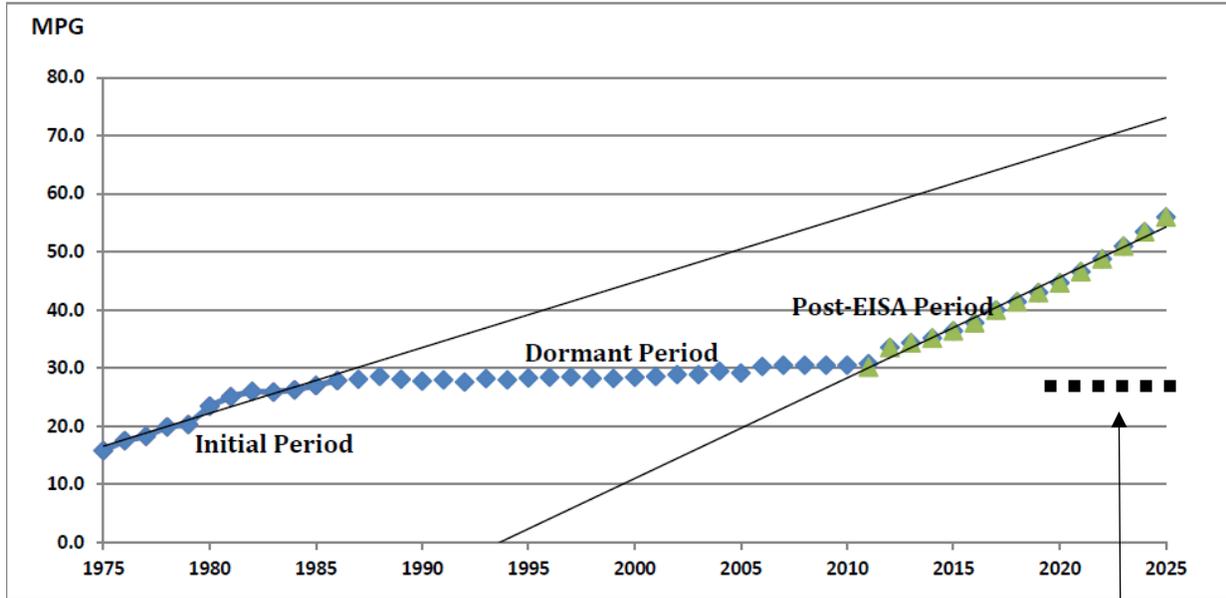


## **COMPARATIVE AND LONG-TERM PERSPECTIVE**

The large economic benefits of continuing with the standards as set by the National Program, justify the continued implementation of these standards, but there are other aspects of the “Rollback and Freeze Proposal” that are a source of concern and suggest it should be rejected. The “Rollback and Freeze Proposal” returns America to the “bad old days” of stagnant fuel economy, as shown in the upper graph of Figure VII-7. As shown in the lower graph, this renders the U.S. a permanent laggard in the global race for increased fuel economy.

**FIGURE VII-7: THE ROLLBACK AND FREEZE PROPOSAL GOES BACK TO THE BAD OLD DAYS OF STAGNATING FUEL ECONOMY**

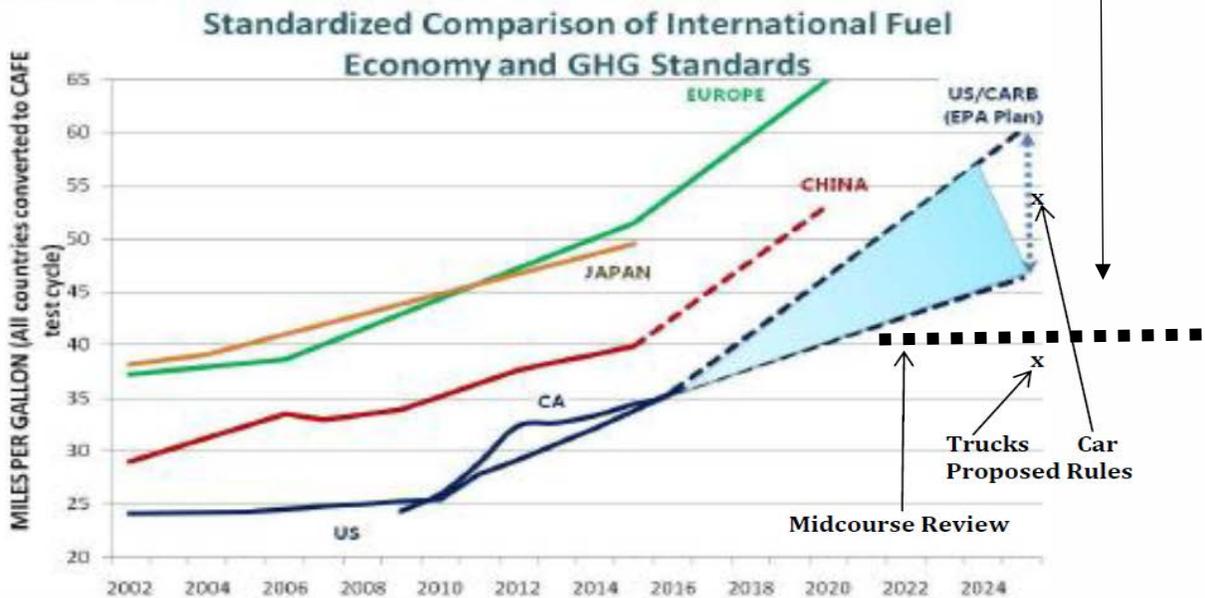
**Denying Consumer Benefits of Improved Fuel Economy: The National Program Rate of Increase is Consistent with Past Efforts to Improve Fuel Economy**



Sources: EIA, Light Duty Automotive Technology, Carbon dioxide Emissions, and Fuel Economy Trends: 1975 Through 2009, November 2009, Table; Office of Regulatory Analysis and Evaluation, Regulatory Impact Analysis, Corporate Average Fuel Economy, 2011, 2012-2016, 2017-2025.

**U.S. Will Fall Behind in the Global Race for Fuel Economy**

**Rollback**



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 innovations Center for Energy and Transportation, United National Commission on Sustainable Development, May 2011, Background Paper No. 3)