Consumers Union et al. Comment Attachment A: Comment Body

Joint Comments on NHTSA and EPA's Notice of Proposed Rulemaking "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks"
(Docket No. EPA-HQ-OAR-2018-0283 and NHTSA-2018-0067)

From Consumers Union (CU), Consumer Federation of America (CFA), and American Council for an Energy-Efficient Economy (ACEEE)

Submitted October 26, 2018
via: www.regulations.gov

Joint Comments on Vehicle Sales, Ownership Costs, and Consumer Willingness to Pay for Fuel Economy

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I. Introduction

Consumers Union (CU),[1] Consumer Federation of America (CFA), and American Council for an Energy-Efficient Economy (ACEEE) submit the following joint comments on Vehicle Sales, Ownership Costs, and Consumer Willingness to Pay for Fuel Economy. The analytical support for the National Highway Traffic Safety Administration (NHTSA) and Environmental Protection Agency's (EPA) (hereinafter referred to collectively as "the agencies") preferred alternative in the above-referenced Notice of Proposed Rulemaking (NPRM) relies on contradictory and erroneous assumptions. Among these errors are (1) mischaracterizations of vehicle price trends, (2) unjustified inflation of ownership costs, (3) a flawed sales model, (4) a flawed fleet share model, and (5) contradictory and poorly supported beliefs about consumers' valuation of fuel economy improvements. Each of these problems is discussed in detail below.

II. Vehicle Price Trends

A. The agencies' vehicle pricing and sales assumptions are unrealistic and misstate historical trends.

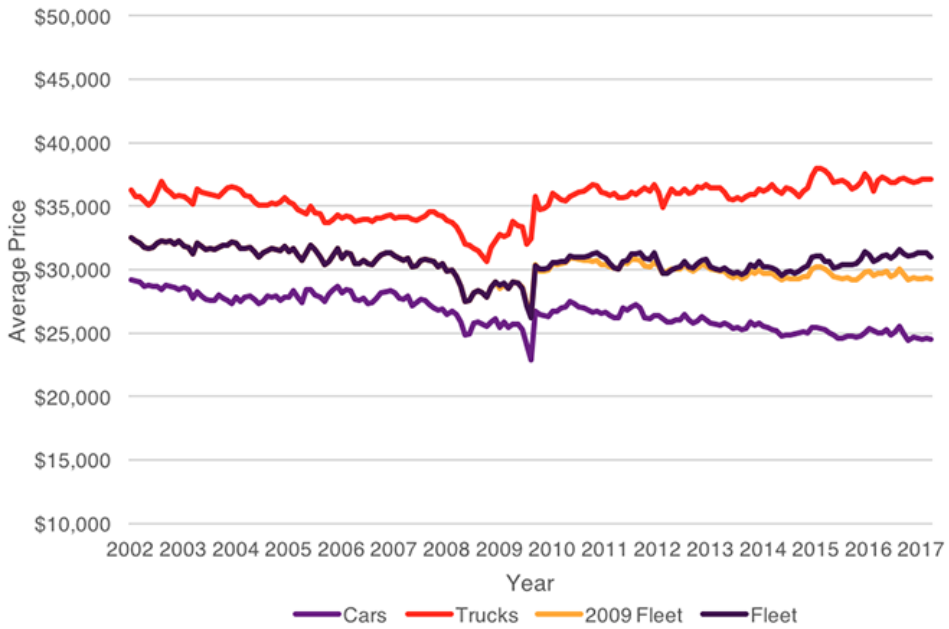
1. Agencies' claim that "there have … been tremendous increases in vehicle prices, as new vehicles become increasingly unaffordable" is inaccurate; historical data show that average vehicle prices have been essentially flat.

A pillar of the agencies' rationale for rolling back the standards is that "[i]ncreased vehicle prices keep consumers in older, dirtier, and less safe vehicles."[2] In fact, this narrative of rising vehicle prices is wrong.

Inflation-adjusted average price paid for new light-duty vehicles has been nearly flat since the early 2000s. The average price paid for new cars has decreased by approximately 16% since the early-90's.[3] The average price for new trucks has increased slightly since the recession, reflecting consumer choice to spend more despite the continued availability of more affordable options. Due to the shift in fleet mix from cars to trucks, the average price of cars and trucks combined has risen slightly over the past few years, as shown in Figure 1, but remains below the average in the early 2000s.

[1] Consumers Union is the advocacy division of Consumer Reports.
[2] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. 42,986, 42,993 (Aug. 24, 2018) (to be codified at 40 C.F.R. pt. 85).
[3] Eric Junga, *Fuel Economy Is Going Up. Vehicle Prices Are Holding Steady*, Am. Council for an Energy-Efficient Econ. (Nov. 16, 2017), http://aceee.org/blog/2017/11/fuel-economy-going-vehicle-prices-are. (Attachment 1).

Figure 1. Average New Vehicle Transaction Price for Cars, Trucks, and the Combined Fleet



Note: Prices include consumer incentives and rebates and are out-the-door expenditure, reflecting what consumers actually pay out of pocket. Source: BEA data adjusted for inflation (but not quality) by ACEEE.[4]

As EPA has noted, consumers have shifted toward purchasing a higher percentage of trucks, which carry a higher average price tag than cars.[5] If the sales share of cars and trucks were maintained at 2009-levels, the average transaction price of all vehicles would have decreased since 2009, as shown by the yellow line above. Further, as EPA found in the Final Determination, "prices in recent years, adjusted for quality and inflation, have been flat, not increasing."[6] The agencies now fail to address this previous EPA conclusion, and likewise fail to address the prior analysis that "if the prices for MY 2015 are used with the sales mix in MY2010, then average vehicle price would be about $1000 lower than the actual average price, just because of the different sales mix… In other

[4] Bureau of Economic Analysis (BEA), U.S. Department of Commerce, National Income and Product Accounts Underlying Detail, Auto and Truck Unit Sales, Production, Inventories, Expenditures, and Price. Table 7.2.5S. Prices adjusted for inflation. U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items [CPIAUCNS], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CPIAUCNS, October 24, 2018.

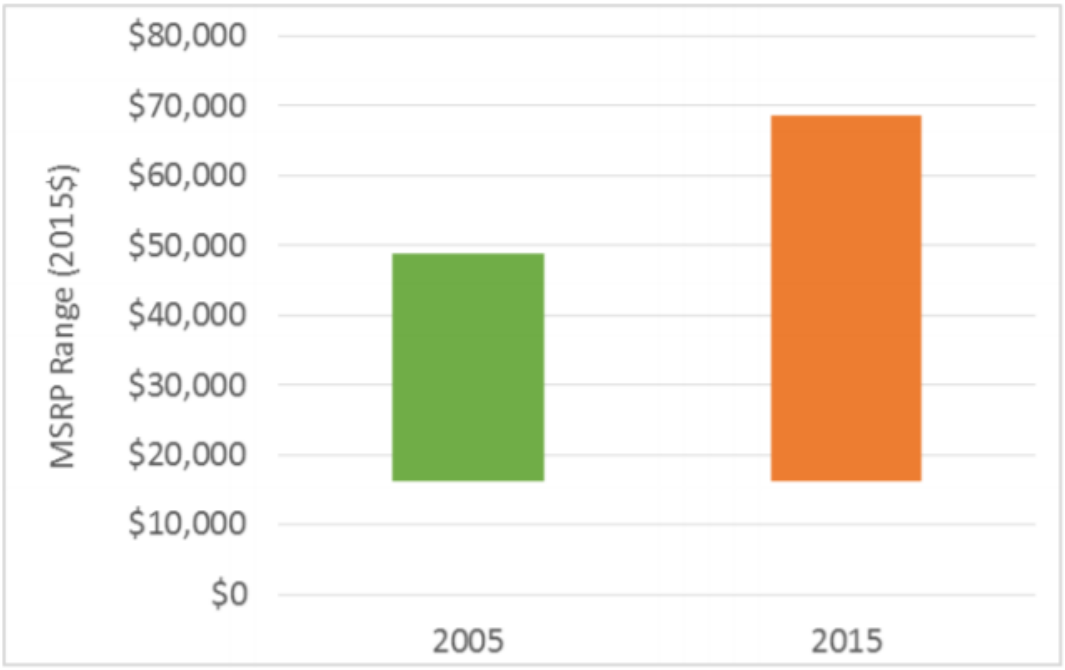
[5] *See* U.S. Envtl. Protection Agency, EPA-420-R-16-021, Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Technical Support Document A-72-73 (Nov. 2016), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100Q3L4.pdf. *See also* U.S. Envtl. Protection Agency, EPA-420-R-17-002, Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Response to Comments 133 (Jan. 2017), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQ9Y.pdf. (noting that "when adjusted for inflation, prices have not been increasing").

[6] U.S. Envtl. Protection Agency, EPA-420-R-17-002, Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Response to Comments 136 (Jan. 2017), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQ9Y.pdf.

words, with vehicle prices held constant…, the sales mix is a more expensive one in MY2015 than MY2010."[7]

A 2017 report from Synapse Energy Economics also demonstrated the point that vehicle affordability has not changed over the last decade. The Synapse analysis showed that the inflation-adjusted price of entry-level vehicles has remained approximately the same over the past decade, and that the most affordable vehicles among the top 30 sold in 2015 cost the same (in real terms) as the most affordable top 30 vehicles sold in 2005.[8] It's a different story for high-end vehicles: the inflation-adjusted price of the most expensive of the top 30 vehicles increased by 40 percent over the same period.[9] Figure 2 below shows that the range of inflation-adjusted vehicle prices for the highest-selling vehicles has increased, but not the price of entry-level vehicles.

Figure 2. Prices of Top 30 Selling Cars and Trucks (Synapse Energy Economics 2017)



[7] U.S. Envtl. Protection Agency, EPA-420-R-17-002, Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Response to Comments 137 (Jan. 2017), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQ9Y.pdf.
[8] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable (Mar. 6, 2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).
[9] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable (Mar. 6, 2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).

2. The agencies fail to take purchase incentives, improvements in vehicle quality, or consumer choice into account in discussing transaction price, causing them to mischaracterize price trends. Agencies cite Kelley Blue Book (KBB) average transaction price data.[10] Unlike the price shown in Figure 1 [above], the KBB data do not include consumer incentives, rebates, or other offers. Incentives and rebates are becoming a standard component of new vehicle pricing and are often substantial in size. Pickup trucks incentives frequently reduce sticker price by more than 30%. For example, on June 15, 2018, the incentives for pickup trucks were:

- Chevy Silverado/GMC Sierra: $13,676[11]
- Ford F-150: $10,250[12]
- RAM 1500: $11,915[13]

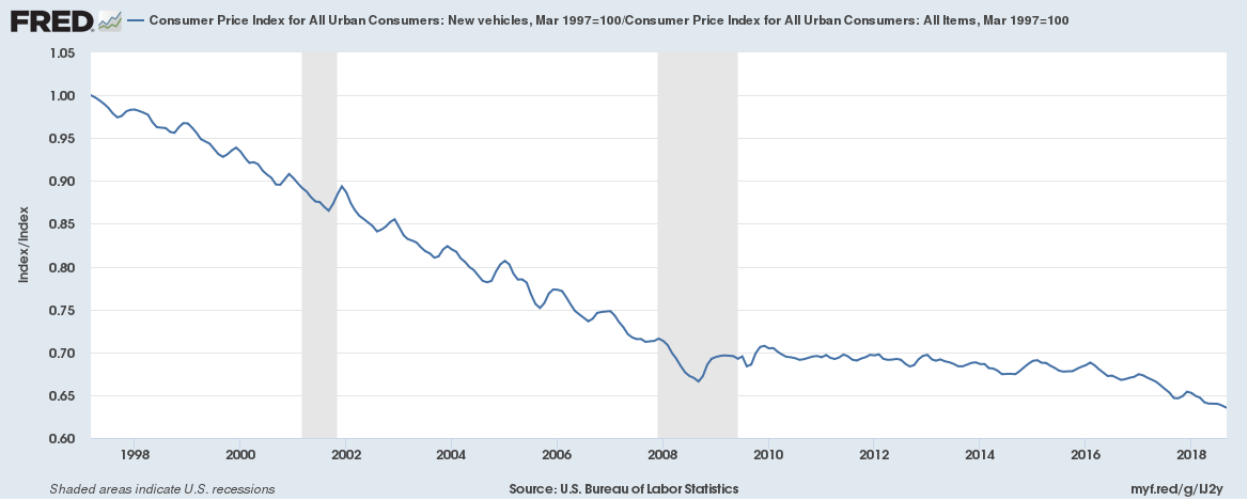
Hence prices that do not include these incentives do not reflect the actual price paid or financed by consumers, and are therefore misleading and not the appropriate prices to determine affordability for consumers.

Furthermore, in a press release cited by the agencies, a KBB analyst says: "The shifting sales mix to trucks and SUVs has been particularly extreme lately, and as volume shifts away from cars, the average vehicle price ticks up."[14] Thus the data the agencies cite to demonstrate the "increasing unaffordability" of vehicles instead reflects consumers' choice to purchase larger, more expensive vehicles.

The agencies also fail to take into account any improvements in quality of vehicles over time. Figure 3 below shows that quality-adjusted prices for new cars and trucks have declined significantly in real terms over the past two decades.[15] As shown above in Figure 1, accounting for inflation indicates that vehicle prices have been flat, but when improvements in vehicle quality are also accounted for, prices have effectively declined because people are getting a lot more for their money, as shown in Figure 3. This trend has continued to hold under the existing policy.

[10] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 42,994.
[11] *Sierra Offers*, GMC, https://www.gmc.com/sierra-incentives (last visited June 15, 2018).
[12] *Pricing & Incentives*, Ford, https://www.ford.com/trucks/f150/pricing-and-incentives/ (last visited June 15, 2018).
[13] RAM, https://www.ramtrucks.com/?sid=1037056&KWNM=dodge+ram+incentives&KWID=43700017970627968&TR=1&channel=paidsearch&gclid=Cj0KCQjwx43ZBRCeARIsANzpzb-xgwxNvx1ToU8fy3qL7mBlTsBnC3mcwgSJW8xHfskEzLP468PkyhcaAsO_EALw_wcB&gclsrc=aw.ds (last visited June 15, 2018).
[14] *Average New-Car Prices Rise Nearly 4 Percent for January 2018 on Shifting Sales Mix, According to Kelley Blue Book*, Kelley Blue Book (Feb. 1, 2018), https://mediaroom.kbb.com/2018-02-01-Average-New-Car-Prices-Rise-Nearly-4-Percent-For-January-2018-On-Shifting-Sales-Mix-According-To-Kelley-Blue-Book. (Attachment 3).
[15] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable 4 (2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).

Figure 3. Real Quality Adjusted New Vehicle Prices (Indexed 1997=100)[16]



3. The agencies' comparison of vehicle CPI to household income is meaningless and misleading.

In support of the claim that the price of vehicles has increased more rapidly than consumers' ability to afford new vehicles, the NPRM shows the following figure comparing new vehicle Consumer Price Index CPI) to median household income, inaccurately comparing a real value with a nominal one.

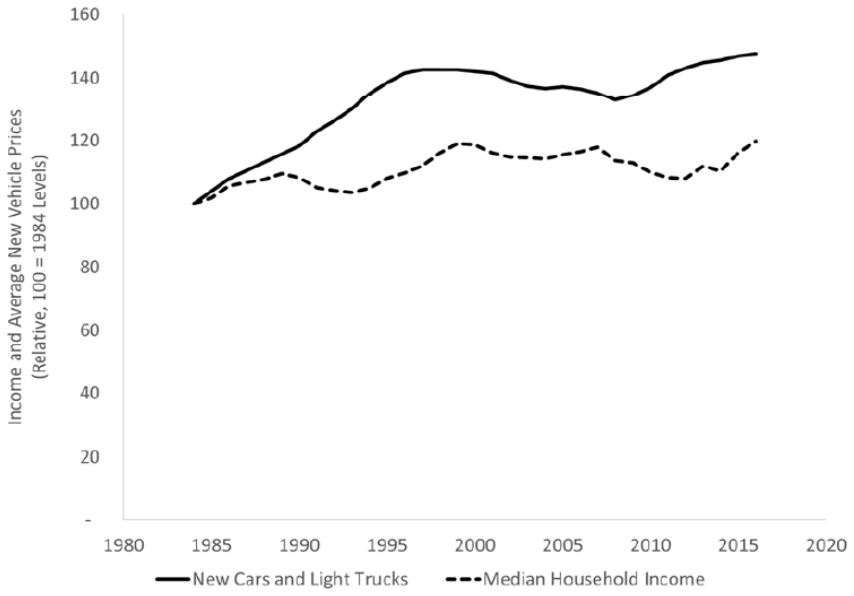
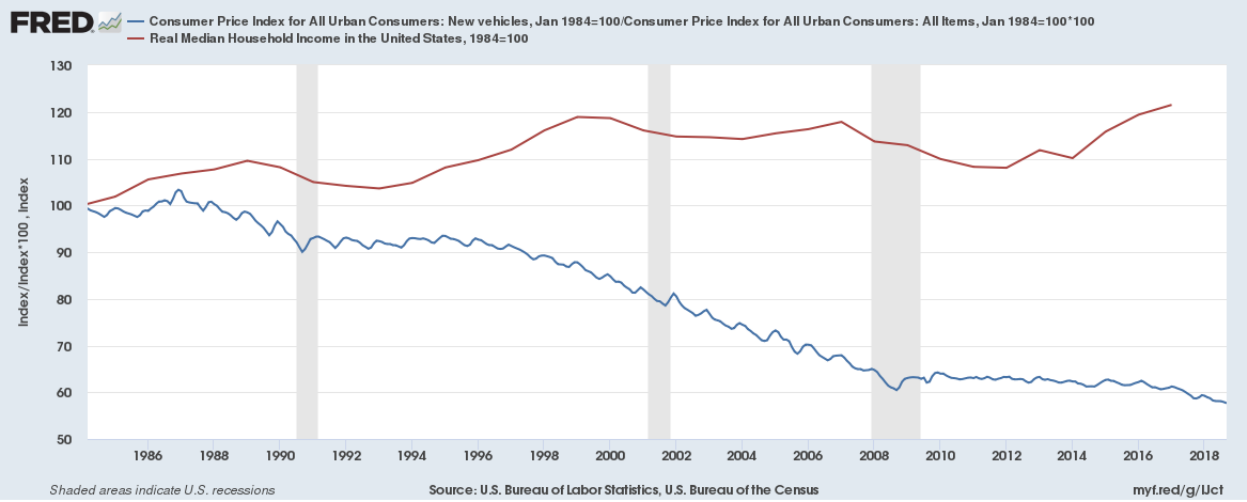


Figure I-2 - New Vehicle Prices and Median Household Income (Indexed, 1984 Levels = 100)[37]

[16] U.S. Dep't of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: New Vehicles [CUUR0000SETA01], *available at* https://fred.stlouisfed.org/series/CUUR0000SETA01 (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 24, 2018);
U.S. Dep't of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items [CPIAUCNS], *available at* https://fred.stlouisfed.org/series/CPIAUCNS (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 24, 2018).

This comparison does not make sense, however. The New Vehicle Price shown is the CPI for new vehicles--a component of overall CPI or, roughly speaking, inflation. This curve shows how a representative vehicle's price in nominal dollars would change over time. By contrast, Median Household Income (from the U.S. Census Bureau) is already inflation-adjusted, and hence shows income in real dollars. The graph is highly misleading and does not support the argument that vehicles are becoming less affordable. When the new vehicle curve is converted to real terms, so that it is comparable, the story changes dramatically as shown in Figure 4, which uses the same data (quality-adjusted), but with values indexed to inflation.

Figure 4. Real Vehicle Prices vs Real Median Household Income (Indexed 1984 =100)[17]



4. The agencies incorrectly assert that fuel economy standards force "great leaps forward that drive people out of the new car market or into vehicles that do not meet their needs."

The agencies contradict this very assertion by acknowledging that consumers are moving into vehicles with *greater* utility, not less, as standards have driven up fuel economy in recent years: "...consumers have moved more heavily into crossovers, sport utility vehicles and pickup trucks, than anticipated at the time of the last rulemaking."[18] In fact, the agencies themselves state that trucks' share of new vehicle sales is higher under the augural/existing standards (47% in MY 2025, compared with 45% under the preferred alternative) according to the agencies' own (flawed) modeling. Therefore, ignoring the flaws in their modeling, the agencies suggest that the augural/existing standards will reduce consumer utility, while their own modeling results suggest that the rollback will reduce the number of light trucks consumers purchase.

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[17] U.S. Dep't of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: New Vehicles [CUUR0000SETA01], *available at* https://fred.stlouisfed.org/series/CUUR0000SETA01 (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 24, 2018);
U.S. Dep't of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items [CPIAUCNS], *available at* https://fred.stlouisfed.org/series/CPIAUCNS (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 24, 2018); U.S. Dep't of Commerce, U.S. Bureau of the Census, Real Median Household Income in the United States [MEHOINUSA672N], *available at* https://fred.stlouisfed.org/series/MEHOINUSA672N (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 24, 2018).

[18] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 42,993.

Moreover, the agencies' scrappage model projects that the rollback will result in the loss of millions of cars from the fleet. And the agencies (improbably) project that neither those cars nor the miles they would have been driven will be replaced, presumably leaving Americans without their current ability to get to work, shop, and otherwise go about their daily lives without cars. The agencies tout this as a benefit - indeed, the *key* benefit of the rollback - suggesting that because consumers will be unable to drive, they will not have to suffer the safety consequences of that driving.

The agencies' essentially reason that expressly and deliberately rendering consumers' existing cars value-less, such that they will be forced to throw them away, is the most preferred outcome. Simultaneously, the agencies project that those same consumers will be locked out of the new vehicle market, as the agencies do not project new car sales to increase commensurate with the projected old car losses. Once again, the agency asserts that the current/augural standards will lock consumers out of the market. In fact, the agencies' own model projects that the rollback will not only lock consumers out of the market, but will render them unable to keep even the car they already have - and plucking their car out from under them is, in fact, the *biggest benefit* of the rollback. The agencies' conclusion is illogical, and stands directly contrary to their unsupported assertions that the current/augural standards fail to meet consumers' needs.

B. The agencies ignore the benefit that increasing new vehicle standards have for used vehicle buyers.

Fuel savings from improved fuel economy provide a large overall benefit to consumers. University of Tennessee researchers Greene and Welch describe that "[o]ver the 1980 to 2014 period, fuel economy improvements reduced households' expenditures on fuel by 25% to 30%, given the actual patterns of fuel prices and vehicle use."[19] As described below, strong fuel economy standards have benefitted used-car buyers, especially low-income consumers. The agencies must quantify these benefits to perform a proper cost-benefit analysis and assess the impacts of reducing the standards.

There are several components of the cost of vehicle ownership – including vehicle costs, fuel costs, maintenance and repair costs, vehicle insurance costs, etc. It is the sum of these that matters to consumers. However, of these, vehicle costs and fuel costs are likely to change most significantly due to fuel economy/GHG standards.

The timing of costs matters, and any analysis of costs must consider that most vehicles are leased or financed. The agencies observe that 85% of the people who purchased a new or used vehicle in 2014 took out a loan to finance that purchase.[20] A recent Synapse report found that under the augural/existing standards, fuel savings from fuel economy/GHG standards are likely to offset

[19] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 6 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).
[20] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,080.

increased monthly payments starting in the very first month of ownership.[21] EPA made this same finding in the 2012 rulemaking, demonstrating in detail that "the savings immediately outweigh the cost of a credit purchase and, in fact, this is true even in the first month of ownership."[22] Therefore, even if the full cost of fuel economy improvements were passed along to buyers, the total cost of purchasing and driving that car will decrease for the average buyer under the augural/existing standards, both over the vehicle lifetime and from the very first month of the financing period.

And the assumption that technology costs will be passed through to buyers is at least debatable. University of Tennessee researchers David L. Greene and Jilleah G. Welch found it difficult to isolate the impact of fuel economy and GHG standards on vehicles costs because there are many other factors at play. They observed that "[n]umerous factors beyond fuel economy added to the cost of vehicles over the 1975 to 2014 period. These include technological and design innovations (e.g., power accessories, electronics, cruise control, navigation systems, etc.), increased vehicle weight and engine power, safety features (e.g., air bags, antilock brakes, etc.), increased market shares of luxury and near-luxury vehicles, and emissions controls."[23]

Moreover, evidence suggests that for many vehicles technology costs have not been passed through to consumers. Even as vehicle quality, safety, fuel economy, acceleration, and other features have improved, entry-level and average prices have remained steady. Indeed, "the cheapest vehicle of the top 30 sold in 2015 was almost the same price (in real terms) as the cheapest vehicle of the top 30 sold in 2005, while the most expensive vehicle has increased by 40 percent." [24] In addition, as discussed above, the average price paid for new vehicles has barely increased from where it was 20 years ago, as also shown in Figure 3 above.

Moreover, consumers of used vehicles benefit the most under increasing standards, because they reap much of the savings due to reduced fuel consumption, while paying a smaller portion of the cost for the fuel-saving and emissions-reducing technologies.[25] Only a fraction of additional new vehicle costs attributable to fuel economy improvements will be passed forward to the purchasers of used vehicles. Greene and Welch found that new car re-sale values depreciate relatively

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[21] Tyler Comings et al., Fueling Savings: Higher Fuel Economy Standards Result in Big Savings for Consumers (2016), *available at* https://consumersunion.org/wp-content/uploads/2016/09/Fueling-Savings-Consumer-Savings-from-CAFE-2025-Final-1.pdf. (Attachment 5).

[22] 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624, 62,927 (Oct. 15, 2012) (assuming a five year, 60-month loan at an average interest rate of 5.35%, higher than present and projected auto loan interest rates). *See id.* at 62,927 Tables III-85 and III-86.

[23] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 9 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).

[24] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable 5 (2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).

[25] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable 6 (2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).

rapidly.[26] Therefore, they conclude, "if model year cohort fuel savings affect the prices of used vehicles at all, the effect is small, on the order of 20% of the discounted, expected remaining lifetime fuel savings."[27] Greene and Welch estimated that, at most, used car buyers generally pay only 20% of the net present value of lifetime fuel savings - meaning they receive the value of the remaining 80% of fuel savings at no cost.

Moreover, the value of fuel economy technology depreciates much more rapidly (due to the overall depreciation of new vehicles) than fuel economy technology deteriorates. In fact, while Edmunds estimates that a vehicle will lose 51% of its initial value by the end of its fourth year,[28] "[e]mpirical studies indicate that fuel economy either does not deteriorate with vehicle age (Murrell, 1980; Greene et al., 2015) or deteriorates very slightly, on the order of 1 MPG per 14 years (Lin and Greene, 2011)."[29] Since there is little to no degradation in fuel economy over time, yet the incremental costs will be depreciated, purchasers of used cars will reap most or all of the continued benefits of fuel economy improvements at a fraction of the cost. Though purchasers of used cars tend to own the vehicles for less time than purchasers of new vehicles (66 months vs. 79.3 months as of the end of 2015, according to IHS),[30] they still have ~45% of the vehicle lifetime to benefit from the fuel economy improvement.

Additionally, research has shown that fuel economy standards are progressive, with lower income quintiles benefiting more as percent of income, taking into account both higher upfront costs and lower fuel costs. For example, the Greene-Welch study found, "The impact of increased fuel economy on the distribution of income has apparently been progressive. Households in the lower 80% of the U.S. income distribution received annual net savings on vehicles and fuel [the difference between decreased expenditures on fuel and increased expenditures on motor vehicles] estimated at 0.5% to 2.0% of their average annual income over the 1980-2014 period. The net effect is relatively smaller for the highest income quintile, with our estimates indicating a range of 0.0% to 0.3%. Net benefits relative to income uniformly increase with decreasing income… Estimation of the impacts of future improvements from 2015 to 2040 produces very similar results."[31] And a

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[26] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 55 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).

[27] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 55 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).

[28] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 52 n.24 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).

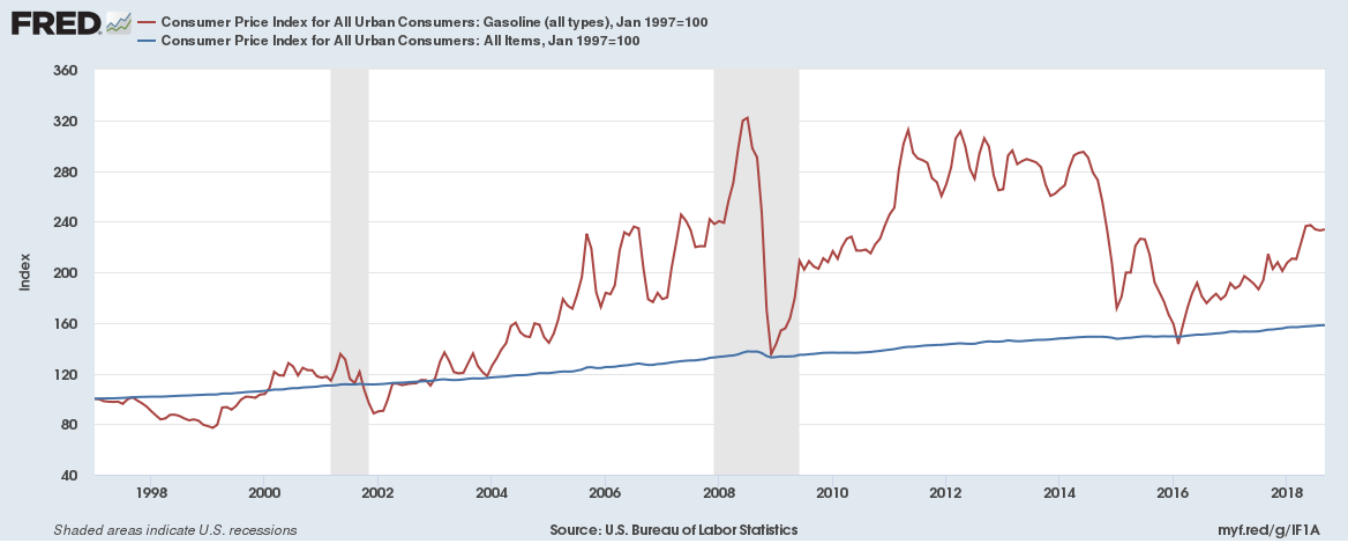
[29] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 16 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf (citation omitted). (Attachment 4).

[30] Jack Walsworth, *Average Age of Vehicles on Road Hits 11.6 Years*, Automotive News (Nov. 22, 2016), http://www.autonews.com/article/20161122/RETAIL05/161129973/average-age-of-vehicles-on-road-hits-11.6-years. (Attachment 6).

[31] David L. Greene & Jilleah G. Welch, The Impact of Increased Fuel Economy for Light-Duty Vehicles on the Distribution of Income in the United States: A Retrospective and Prospective Analysis 5-6 (2017), *available at* http://bakercenter.utk.edu/wp-content/uploads/2017/03/WhitePaper2-2017.pdf. (Attachment 4).

Synapse study found that fuel economy standards' net savings for low-income households, who primarily buy used vehicles, is greater than for the average household, as a percentage of income.[32] Americans in the lowest income quintile spend 26% of their transportation budget on gasoline and motor oil, while those in the top quintile, which represent most new car buyers, spend just 16%. The average American spends about 21%.[33]

It is also worth noting that gasoline prices have significantly outpaced inflation over the past 20 years (see St. Louis Fed data in graph below), whereas the cost of new and used vehicles has lagged behind inflation (as described above). Given that, reducing exposure to gasoline prices through fuel economy standards, even if it comes at the expense of modest increases to up-front vehicle costs, will help with the affordability of vehicle ownership, particularly for lower-income households, whose income growth has also lagged behind inflation but has exceeded increases in the cost of new and used vehicles.[34]



Growth in historical Consumer Price Index for All Items (Blue Line) vs. for Gasoline (Red Line)[35]

[32] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable 7 (2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).
[33] *Consumer Expenditure Surveys*, Bureau of Labor Statistics, https://www.bls.gov/cex/data.htm (last visited Oct. 24, 2018). (Attachment 7).
[34] Tyler Comings & Avi Allison, More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable 9-10 (2017), *available at* https://consumersunion.org/wp-content/uploads/2017/03/Synapse-CU-Affordability-Report-3-15-corrected-1.pdf. (Attachment 2).
[35] U.S. Dep't of Labor, Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: Gasoline (All Types) [CUUR0000SETB01], *available at* https://fred.stlouisfed.org/graph/?g=lF1t (retrieved from FRED, Federal Reserve Bank of St. Louis) (last visited October 19, 2018).

III. Ownership Costs

The proposed rule estimates that ownership costs (sales tax, financing costs, insurance costs and refueling surplus) would decrease by $490 using the preferred alternative compared to the augural/existing standards. However, the $490 savings are predicated on the agencies' estimated lower vehicle prices in the proposed rule, compared to the augural/existing standards.[36] Because a majority of ownership costs are directly linked to vehicle price/MSRP, the agencies' inflation of vehicle price/MSRP increases attributed to the augural/existing standards carries over to inflate the claimed savings on ownership costs from the proposed rule.

A. Agencies' Calculations of Ownership Cost Reductions are Based on Erroneous Assumptions about Vehicle Price/MSRP.

Although the proposed rule, improperly, does not describe how the agencies calculated the $490 in ownership cost savings, Consumer Federation of America (CFA) attempted to replicate the analysis as follows:

Difference in Ownership Costs Between Current Standard and Revised Standard for an Average 2029 Vehicle According to SAFE Analysis						
Ownership Cost	Current Standards MSRP in 2029	Revised Standards MSRP in 2029	Difference in MSRP	Rate	Cost	Total Cost
Sales Tax	$34,813	$32,774	$2,039	5.55%	$226	$479
Financing Costs				4.42%	$180	
Insurance Costs				2.25%	$92	
Refueling Surplus				-$19.68		

MSRP and rates are based on numbers from the Preliminary Regulatory Impact Analysis

The agencies' figures suffer fatal flaws. First, the sales tax, financing costs, and insurance costs calculations are all based on the agencies' flawed price/MSRP projections. The EPA's own estimate, found in the 2017 Final Determination, showed vehicle price/MSRP increasing by just $875 from MY 2021 to MY 2025. This lower price/MSRP estimate would lead to an increase in ownership costs of $174 as shown in the figure below.

[36] *See* ICCT comments submitted to Docket [NHTSA–2018–0067].

Difference in Ownership Costs Between Current Standard and Revised Standard for an Average 2029 Vehicle Using the EPA's Final Determination Analysis						
Ownership Cost	Current Standards MSRP in 2029*	Revised Standards MSRP in 2029	Difference in MSRP*	Rate	Cost*	Total Cost*
Sales Tax	$33,649	$32,774	$875	5.55%	$97	$174
Financing Costs				4.42%	$77	
Insurance Costs				2.25%	$39	
Refueling Surplus				-$39.36		

Based on numbers from the Preliminary Regulatory Impact Analysis
*Based on EPA estimates in the Final Determination

While the actual increase in price/MSRP might differ from the EPA's estimate in the Final Determination, as explained in the comment of, among others, Meszler Engineering Services in the docket,[37] the agencies' cost projections for the proposed rule suffer fatal flaws. The agencies have failed to provide any real-world justification for their assessment that technology costs - and, under the agencies' assumption that technology costs directly translate into increases in MSRP - prices have increased dramatically in just two years. And the agencies' updated calculations of ownership costs derive directly from these erroneous technology cost projections. More than doubling the price differential and, therefore, almost tripling ownership costs without acknowledgement or explanation is unreasonable and inappropriate under the APPA. In addition, when a reasonable and data-driven cost estimate of compliance is applied, the cost to consumers of added technology would be more than offset by the thousands of dollars in gas cost savings thanks to increased fuel economy.[38]

1. Sales Tax

The agencies estimate that the increased MSRP, due to fuel efficiency technology added to reach the augural/existing standards, would increase the sales tax by $226, using a national average sales tax rate of 5.55%. But using EPA's more reasonable Final Determination increase in price/MSRP due to fuel economy technology (described above), sales tax would increase by only $97, almost $130 less than calculated in the NPRM. Further, taxes are a transfer, not a cost, because those taxes are used to fund government services. Therefore, the increase in sales taxes

[37] *See* "Meszler Engineering Services (October 2018), *Technical Memorandum I: The NPRM CAFE Model's Treatment of Technology Benefits and Costs"* submitted to Docket [NHTSA–2018–0067].
[38] MJ Bradley & Associates, *Clean Car Roll-Back: Estimated Costs for American Families if U.S. Climate Pollution and Fuel Economy Standards Are Relaxed*, Envtl. Defense Fund (July 20, 2018), https://www.edf.org/sites/default/files/MJ_Bradley_Clean_Cars_rollback_report.pdf. (Attachment 8).

will either provide consumers with added value in the form of added government services, or will be returned to them in the form of a tax cut.

2. Financing Costs

The agencies estimate that the increased MSRP due to fuel economy technology would increase financing costs by $180 for a vehicle buyer, at the current national average auto loan interest rate of 4.25%. But using the Final Determination price/MSRP increase of $875 described above, financing charges would increase by just $77.

Moreover, the agencies fail to consider their own observation that 85% of vehicles are financed[39] rather than paid for in cash, and the vast majority of purchasers who finance will save money in the first month of ownership thanks to reduced fuel costs as described below under Consumer Savings. In addition, the argument the agencies posit of increased price/MSRP and ownerships costs pricing low-income consumers out of the new car market is unfounded. The fact is that low-income households make up a much smaller part of the new vehicle market than their share in the overall population, such that the bottom 20% of households account for less than 4% of the expenditures on new vehicles.[40] And even in those circumstances, it is reasonable to expect that such consumers would be purchasing entry level models for which prices have not increased at all as fuel economy as increased, as demonstrated in Figure 2, above. Further, because most 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 and thus that better fuel economy can be purchased at a lower cost in the used vehicle market.[41]

3. Insurance Costs

The agencies estimate that due to the increased MSRP, insurance costs would increase by $92. But using the more reasonable $875 increase in MSRP, insurance costs would increase by just $39, almost 60% less, which, again, would be more than offset by fuel savings. (Based on insurance costs estimated at 2.25% of the MSRP).

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[39] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,080.

[40] *See Consumer Expenditure Surveys*, Bureau of Labor Statistics, https://www.bls.gov/cex/data.htm (last visited Oct. 24, 2018).

[41] David L. Greene & Jilleah G. Welch, *Impacts of Fuel Economy Improvements on the Distribution of Income in the U.S.*, 122 Energy Policy 528-541(2018), *available at* https://www.sciencedirect.com/science/article/pii/S0301421518305135. (Attachment 9).

4. Refueling Surplus

The agencies underestimate the refueling surplus (the aggregate cost of consumers spending time at the gas pump) by increasing the number of times a driver would refuel their vehicle, by overestimating the "rebound effect" from increased travel resulting from lower fuel costs -- which historical evidence, such as the EPA's own Final Determination and other independent studies[42] shows to be closer to 10%, not the 20% put forth by the agencies in their latest analysis. This overestimation of the rebound effect in turn underestimates the drop in the number of times consumers refuel due to increased fuel economy. Using the more realistic 10% rebound effect, consumers would save almost $40 thanks to having to fuel up less over the lifetime of their vehicles, compared to the $20 the agencies put forward.

5. Consumer Savings

When using reasonable cost estimates, money saved on fuel costs from improved fuel economy would more than cover the other ownership and technology cost increases. CFA's analysis shows that, using today's gas prices,[43] consumers would save an average of $22.66 every month for the lifetime of the vehicle.[44] Using the EPA's compliance costs[45] (ownership and technology costs), totaling to $1,049 from the Final Determination, consumers will see an increase of $17.48 a month for the first five years (after which increased price/MSRP, financing costs and sales tax are paid for) leaving consumers $5.18 ahead every month thanks to increased fuel economy. After the five-year automotive loan is paid off, consumers will be $22.01 a month ahead as the only ongoing increased ownership cost is insurance.

IV. Sales Model

A. The Agencies' Non-peer-reviewed Sales Model Analysis Departs from Agencies' Prior Analysis, is Plagued by Modeling Errors, and is Predicated on Faulty Assumptions.

NHTSA relies on a new vehicle sales model, which assumes that more stringent standards will increase the cost of new vehicles and reduce sales. This model suffers from fatal flaws including, but not limited to, the following: inflated average price increases, unrealistic pricing decisions,

[42] *See* Ken Small comments on rebound submitted to Docket [NHTSA–2018–0067].
[43] Based on AAA national average gas price of $2.91 (10/11/18).
[44] Calculated using a 5-year automotive loan.
[45] U.S. Envtl. Protection Agency, EPA-420-R-17-002, Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Response to Comments 42 (Jan. 2017), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQ9Y.pdf.

failure to include the value of improved fuel economy, inconsistent treatment of willingness-to-pay, and failure to model consumer segments.[46]

1. The agencies' newly-inflated average price increases from augural/existing standards cascades into misleadingly inflated sales impacts.

As mentioned in prior sections, the agencies vastly overstate projected average price increases attributable to the augural/existing standards. The agencies estimate an average price increase for a MY2026 vehicle of $2,700 compared to MY 2016 and $2,000 compared to the Preferred Alternative (which assumes the market will drive some fuel economy improvement).[47] These estimates represent a dramatic (and largely unexplained) departure from even the agencies' own prior analyses. For example, in the original FRM, EPA estimated average per-vehicle incremental compliance costs of only $1182 between MY 2020 and MY 2025.[48] EPA's subsequent draft TAR analysis revised this figure downward, finding that due to technological advances, compliance costs would be only $894 using the indirect cost multiplier approach.[49] And as noted in ICCT's analysis of the proposed rule, the difference in the compliance cost of achieving the augural 2025 standards and the existing 2025 GHG standards, as assessed in the 2018 NPRM increased by 50-100% from the joint-agency Draft TAR from 2016, and over 100% from EPA's original 2016 Proposed Determination and 2017 Final Determination.[50] The agencies' cost increase is unjustified and unsupportable. In fact, the estimated compliance costs in the draft TAR should be revised *downward*, as even that estimate was too high.[51] Nevertheless, the agencies use their newly-inflated prices to project how many fewer new vehicles will be purchased under the augural/existing standards. Thus, even ignoring the flaws of NHTSA's assumption that increased average prices must necessarily result in decreased sales (refuted below), modeling the value of fuel savings (or the value of fuel savings to the consumer) would more accurately reflect pricing responses and would likely even change the direction of the projected impacts, such that weakening the standards actually depresses vehicle sales.[52]

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[46] Each of the following flaws is independent. That is, fixing any one of these flaws would not remedy the others.
[47] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,263-64, Table VII-4 (see last two rows for MY2025).
[48] U.S. Envtl. Protection Agency, EPA-420-R-12-016, Regulatory Impact Analysis: Final Rulemaking for 2017-2025 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards 7-34 Table 7.4-5 (Aug. 2012), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZI1.PDF?Dockey=P100EZI1.PDF.
[49] U.S. Envtl. Protection Agency et al., EPA-420-D-16-900, Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025 12-16 Table 12.17 (July 2016), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi/P100OXEO.PDF?Dockey=P100OXEO.PDF
[50] *See* ICCT comments submitted to Docket [NHTSA–2018–0067].
[51] Technical analysis indicates that the technology costs estimated in the draft TAR were themselves 34-40% overstated. Nic Lutsey et al., *Efficiency Technology and Cost Assessment for U.S. 2025-2030 Light-Duty Vehicles*, Int'l Council on Clean Transp. (Mar. 22, 2017), https://www.theicct.org/sites/default/files/publications/US-LDV-tech-potential_ICCT_white-paper_22032017.pdf. (Attachment 10).
[52] Jamie Hall et al., Effects of the Draft CAFE Standard Rule on Vehicle Safety (Oct. 25, 2018), *available at* http://www.synapse-energy.com/sites/default/files/Effects-of-Proposed-CAFE-Standard-Rollback-Vehicle-Safety_18-062_2.pdf (Attachment 11).

2. The agencies inaccurately model automaker pricing decisions, and when these inaccuracies are resolved, most sales impacts disappear.

The sales model (and the scrappage model) relies on flawed assumptions regarding automaker pricing decisions. The agencies' calculations of sales impacts rest almost entirely on the assumption that average new car prices will increase in lockstep with average projected technology costs. But the agencies ignore, among other things: (a) the agencies' own observation that the cost of additional technology may not result in increased prices;[53] and (b) the agencies' own assertion that they believe, under the preferred alternative, that automakers are likely to "redeploy some of [the vehicle technologies'] energy-efficiency benefits from increasing fuel economy to improving other features that potential buyers seek," but the agencies' failure to correspondingly incorporate the cost of those "redeployed technologies" into their consumer-price projections under the rollback.[54] Including those technology costs could offset or eliminate any price differential between the alternatives. Thus, addressing just these two omitted considerations could eliminate the vast majority of impacts calculated by the sales model (and the scrappage model).

3. Agencies' modeling of sales impacts from improving fuel economy fails to include the fact that the vehicles being modeled are improving and gaining value, which is likely to change the magnitude and direction of the sales impacts.

The sales model calculates and utilizes an implied elasticity of demand from historical data.[55] But price elasticities measure consumer response to changes in price *assuming that all other attributes of the product remain constant*. But here, other attributed of the product will not remain constant. At a minimum, vehicle fuel economy levels will change. Given this change in attributes, even the agencies admit that "the magnitude – and possibly even the direction – of [fuel economy improvements'] effect on sales of new vehicles is difficult to anticipate."[56] This

[53] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,083 (acknowledging that technology costs could, among other options, be paid for by manufacturers or dealers rather than be passed onto consumers in their entirety); *see id.* at 43,077 (stating that projecting "how manufacturers might strategically price these modified vehicles. . . requires a strategic pricing model, which each manufacturer has[.]"). Moreover, any suggestion that the agencies cannot practically estimate the portion of costs that will not result in price increases on specific models is belied by the agencies' own effort to project exactly that type of cost breakdown for EV technologies. *See, e.g.*, *id.* at 43,255 (discussing agency calculations of both retrievable and irretrievable portions of EV technology costs).

[54] *See* U.S. Dep't of Transportation & U.S. Envtl. Protection Agency, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 - 2026 Passenger Cars and Light Trucks, Preliminary Regulatory Impact Analysis 944 (Oct. 2018), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/ld_cafe_co2_nhtsa_2127-al76_epa_pria_181016.pdf.

[55] *See* U.S. Dep't of Transportation & U.S. Envtl. Protection Agency, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 - 2026 Passenger Cars and Light Trucks, Preliminary Regulatory Impact Analysis 949 (Oct. 2018), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/ld_cafe_co2_nhtsa_2127-al76_epa_pria_181016.pdf.

[56] *See* U.S. Dep't of Transportation & U.S. Envtl. Protection Agency, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 - 2026 Passenger Cars and Light Trucks, Preliminary Regulatory Impact Analysis 951 (Oct. 2018), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/ld_cafe_co2_nhtsa_2127-al76_epa_pria_181016.pdf.

concession stands contrary to the agencies' application of a negative implied elasticity to future sales.

Relatedly, the agencies fail to include consumer willingness to pay (WTP) for fuel economy improvements in the sales model. Any positive WTP value would act to offset some portion, and perhaps all, of the agencies' projected sales impacts. The agencies acknowledge this omission, stating that "[d]espite the evidence in the literature . . . that consumers value most, if not all, of the fuel economy improvements when purchasing new vehicles, the model described here operates at too high a level of aggregation to capture these preferences."[57] But they fail to explain why, in such an aggregate approach, ignoring WTP is reasonable. They likewise admit that "[e]stimating the sales response at the level of total new vehicle sales likely fails to address valid concerns about changes to the quality or attributes of new vehicles sold – both over time and in response to price increases resulting from CAFE standards."[58] And they even concede that theory underpinning the "Gruenspecht Effect," which they assert underpins their rationale for including both the sales and scrappage models in the first place, *requires* consideration of WTP. As the agencies describe it, "Gruenspecht recognized that because fuel economy standards affect only new vehicles, any increase in price (*net of the portion of reduced fuel savings valued by consumers*) will . . . reduce the number of new vehicles entering the fleet."[59] But in the sales model, the agencies do not utilize the *net* price after deducting the portion of fuel savings valued by consumers, and instead use their *gross* projected price increase without consideration of WTP. The agencies' method is belied by the underlying economic theory, consumer choice modeling described in a Section VI below, and by real-world consumer behavior.

Moreover, the agencies' assertion that incorporating WTP into its model is itself untenable. In fact, the agencies elsewhere assert two separate (and inconsistent) conclusions regarding average WTP. The agencies assert alternatively: a) that consumers, on average, value "at least half – and perhaps all – of the savings in future fuel costs they expect from choosing models that offer higher fuel economy";[60] and b) that automakers believe consumers value 30 months of fuel savings, and thus that manufacturers will provide any technology that pays itself back within 30 months even without regulation.[61] Yet the agencies fail to incorporate either of these assertions regarding average WTP into the sales model. Doing so would require that *at least* the portion of technology costs which is recouped within 30 months must be deducted from the average price increase input into the model. Indeed, elsewhere in the rule the agencies purport to calculate the "effective cost" of technologies, defined as "the difference between their incremental cost and the

[57] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,075.
[58] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,075.
[59] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,075 (emphasis added).
[60] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,073.
[61] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,179.

value of fuel savings to a potential buyer over the first 30 months of ownership."[62] Yet the sales model nevertheless incorporates only the projected average price increase, not the projected "effective" price increase adjusted to account for WTP.[63]

4. The agencies' sole reliance on average price impacts for modeling sales impacts is an unreasonable and inaccurate depiction of the real market, which is highly segmented by consumer preference, income and ability-to-pay.

The sales model's reliance solely on *average* price increases undermines any claim that it accurately projects real-world sales impacts. While the agencies assert that "it is necessary to quantify important measures, like sales price or fuel economy, by averages," they concede that, "[i]n an aggregate sense, the average is not comparable to the decision an individual consumer faces."[64] This concession reinforces the fact that, in a segmented market, automakers may mitigate impacts from average price increases by directing those price increases to consumers with the highest WTP for fuel economy (such as by producing highly efficient cars for sale to those consumers), or to consumers with high WTP for other vehicles, in effect cross-subsidizing the cost of fuel economy improvements with price changes for other, less-efficient cars.[65] ("Manufacturers have long cross-subsidized vehicle models in their lineups in order to recoup costs in cases where they do not believe they can pass the full costs of development and production forward as price increases for the vehicle model in question.").[66] With either strategy (or a combination of the two), any real-world sales impacts could be mitigated or eliminated. Yet the agencies fail to include these opportunities for automakers to distribute any average price increase selectively across consumers to protect sales, and instead simply (and erroneously) apply an implied elasticity to that average projected price increase. Utilizing an average in this way fails to reflect on-the-ground

[62] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,174.

[63] *See* U.S. Dep't of Transportation & U.S. Envtl. Protection Agency, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 - 2026 Passenger Cars and Light Trucks, Preliminary Regulatory Impact Analysis 953 (Oct. 2018), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/ld_cafe_co2_nhtsa_2127-al76_epa_pria_181016.pdf (the sales model "estimates the response of total new vehicle sales to changes in the average new vehicle price").

[64] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,075.

[65] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,222.

[66] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,222. The agencies appear to lament that purchasers of less-efficient vehicles might pay the cost of efficiency upgrades for other vehicles. But allocating external social costs to the users imposing more of those costs is consistent with the agencies' own descriptions of their regulatory missions. *See*, e.g., U.S. Envtl. Protection Agency, EPA-452/R-18-006, Regulatory Impact Analysis for the Proposed Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program 1-4 (2018), *available at* https://www.epa.gov/sites/production/files/2018-08/documents/utilities_ria_proposed_ace_2018-08.pdf ("This regulation will work towards addressing this market failure by causing affected [entities] to begin to internalize the negative externality associated with CO2 emissions.").

reality. And the agency must fulfil its responsibility to provide a reasoned analysis of the proposal's impacts instead of asserting that doing so would be difficult.[67]

V. Dynamic Fleet Share Model

A. The Agencies Misapply the Dynamic Fleet Share Model and Use it to Improperly Inflate the Costs of Augural/Existing Standards.

The Dynamic Fleet Share (DFS) model is a component of the CAFE model that projects the sales mix of cars vs. trucks under a given scenario in each model year. The DFS operates independently of the sales response model. Very little explanation of the DFS model is provided in the NPRM or PRIA. CAFE model outputs show that the DFS projects that truck sales shares will be equal under the current GHG and augural fuel economy standards and the preferred alternative through MY 2021, and then the two will diverge gradually. By CY 2040, the truck share of the fleet under the current/augural standards is 2 percentage points higher than under the rollback, comprising 47% of the U.S. fleet.[68] This leads to a projection of increases in compliance cost estimates, emissions, fatalities, and non-fatal crash costs for the current/augural standards relative to the preferred alternative.

1. The DFS is a borrowed model that is used for an inappropriate purpose, with no justification for its core elements, and with a premise that conflicts with the agencies' sales response model.

Like the sales and scrappage models, the DFS model is another example of the unrefined, poorly justified, un-peer reviewed, and internally inconsistent econometric content of the new CAFE model, which leads to implausible results.

First, the agencies apply the DFS model for an inappropriate purpose, relative to what it was designed for. The agencies state that the DFS model was taken from the Energy Information Administration's National Energy Modeling System (NEMS). In the context of NEMS, the sales mix equation (which the agencies use for the DFS model) serves a macroeconomic purpose, namely "to capture the changing purchase patterns of consumers in recent years" (historical changes).[69] Similarly, the NPRM describes the DFS as a tool to track macroeconomic changes that could follow from large swings in fuel price, for instance: "For example, at a gasoline price of $7/gallon, it would be unrealistic to expect the new vehicle market's light truck share to be the same as the future

[67] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,075 (lamenting that "attempts to address such concerns would require significant additional data, new statistical approaches, and structural changes to the CAFE model").

[68] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,432-33 Table VIII-37, 43,434-35 Table VIII-38. Table VIII-37 refers to the CAFE program and Table VIII-38 refers to the CO2 program.

[69] U.S. Dep't of Energy, U.S. Energy Information Administration, Transportation Sector Demand Module of the National Energy Modeling System: Model Documentation 48 (Nov. 2016), *available at* https://www.eia.gov/outlooks/aeo/nems/documentation/transportation/pdf/m070(2016).pdf.

where gasoline cost $2/gallon."[70] The agencies in fact used it for this purpose in the 2012 rulemaking for the GHG and fuel economy standards - they did not include it in the central analysis, but did use it for the uncertainty analysis, which looked at the baseline and preferred alternatives in the context of "thousands of possible future states of the world," some of which included "extreme cases of fuel prices," to ensure "consistent modeling responses within that context."[71] But the agencies are now using the DFS in the NPRM's central analysis to project different car and truck sales shares for each future standards scenario, where fuel economy differs but fuel price does not. This is not the purpose for which the NEMS model appears to have been developed, and the agencies offer no justification to support the notion that the tool can reliably project real-world impacts of changes in fuel economy standards despite the fact that it was not designed to do so. At a minimum, the agencies must more rigorously justify its suitability for this purpose. In addition, the agencies claim to apply the model "at a different level" by classifying vehicles as trucks or cars based on body style, rather than by the regulatory definition of cars and trucks.[72] But this does not appear to be the case--the NEMS version uses the body style classification as well. In fact, the DFS model is exactly as shown in EIA's NEMS Model Documentation (2016), not just the form but the coefficients as well.

Moreover, the agencies provide no explanation for the structure of the model or the values of the coefficients. The DFS model calculates change in car or truck sales share from prior years based on changes in fuel price and the horsepower, weight, and fuel economy of the average car or truck. The sign of the coefficient is opposite for cars and trucks in the case of fuel price, horsepower, and fuel economy. Hence an increase in fuel economy (as in the augural/existing scenario) will necessarily shift sales from cars (negative coefficient) to trucks (positive coefficient). This result is hard-wired into the model. Yet the agencies fail to support the choice of those coefficients or demonstrate that they have basis in the real world. Moreover, their projections that consumers will purchase bigger, more powerful cars under the augural scenario is inconsistent with the agencies' assertion that the augural/existing standards' "great leaps forward" in fuel economy will force people "into vehicles that do not meet their needs."[73]

[70] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,186.
[71] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,186.
[72] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,076. The agencies purport to have made this change because of the recent shift to CUVs that have model variants in both the car and truck fleets. However, changing to a model based on body style is inappropriate. Fuel economy is a key parameter in the DFS, and the standards affect CUVs differently based on whether they are classified as cars or trucks. Indeed, commenters in the past have observed that the application of more stringent targets to 2wd CUVs than to 4wd CUVs under the standards is likely driving the production of more 4wd CUVs and fewer 2wd CUVs (Honda 2016). Moving the vehicle mix model to a body style parameter eliminates the ability to detect this effect. Hence, especially for purposes of comparing various standards-related scenarios, this appears to render the model less, rather than more, reliable in projecting real-world outcomes.
[73] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 42,993.

In addition, the DFS and the sales model appear to be in conflict. In the PRIA, the agencies state: "Considering the absolute number of light trucks by age, shows that *although overall vehicle demand declines in the most stringent scenario, the dynamic fleet share model predicts that more of those vehicles will be light trucks as the difference in the cost of travel for trucks and cars converge*."[74] In other words, the DFS shows increased truck sales share under the augural/existing standards because truck fuel economy approaches car fuel economy. This is inconsistent with the sales response model, which omits fuel economy as a variable altogether. In effect, the agencies are claiming that, as indicated in the DFS model, a consumer contemplating a new vehicle purchase does in fact consider fuel economy to determine the type of vehicle, but does not consider price at all, as price is not an input into the DFS; whereas, under the sales model, that same consumer's decision of whether to purchase a vehicle *at all* is influenced by price alone without any consideration of fuel economy. This direct contradiction is unacknowledged by the agencies, is without real-world support, and is arbitrary.

2. The DFS arbitrarily inflates compliance cost estimates, emissions, and fatalities.

In addition to the impacts described above, the DFS also inflates compliance costs without real-world justification. As described above, the DFS projects that under the current/augural standards, by CY2040, 47% of the US fleet will be comprised of trucks compared to 45% of the fleet being trucks under the rollback standards. And the agencies project that per-vehicle compliance costs are $360 more for trucks than for cars.[75] Therefore, by projecting a shift from cars to trucks, the agencies have effectively increased total compliance costs under the augural scenario. Given the deficiencies in the DFS, as described above, these increased compliance costs are without justification, and arbitrary.

In addition, the agencies claim that the augural/current standards will increase the percentage of light trucks' impacts on emissions, fatalities, and non-fatal crash costs. As stated by the agencies, "The fleet share influences not only the fuel economy distribution of the fleet, as light trucks are less efficient than passenger cars on average, but the total miles are influenced by fact (sic) that light trucks are driven more than passenger cars as well."[76] In other words, based upon the agencies' use of the VMT schedules they apply in the rule, a greater share of light trucks means greater total VMT - which increases emissions, fatalities, and non-fatal crash costs under the existing GHG and augural fuel economy standards. But this assumes that the type of vehicle inherently determines factors, like mileage, rather than the consumer's needs.

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[74] U.S. Dep't of Transportation & U.S. Envtl. Protection Agency, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021 - 2026 Passenger Cars and Light Trucks, Preliminary Regulatory Impact Analysis 1046 (Oct. 2018), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/ld_cafe_co2_nhtsa_2127-al76_epa_pria_181016.pdf (emphasis added).

[75] Relative compliance costs were taken from the Compliance_Report.csv file for the Volpe Model run of the CO2 standards, posted by NHTSA to its website for the proposed rule. Specifically, relative to the current standards, average technology cost for passenger cars and light trucks under the proposed freeze are shown as $2,019 (cell AD4504) and $2,382 (cell AD4505), respectively.

[76] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,187.

The agencies acknowledge that the change in fleet share can exaggerate the influence of the rebound effect.[77] However, applying a truck's VMT schedule to the former-car-buyers who were responsible for the shift to more trucks is an additional flaw in the agencies' approach. One cannot assume that a person who would have bought a car but purchased a truck instead, because trucks became more efficient, is going to drive that truck any more than they would have driven a new car. Trucks are driven more on average than cars primarily because truck owners have different needs and habits than car owners, not because the fact that it is a truck causes them to drive more. In fact, rebound theory would indicate that someone who would have bought a car and buys a truck because of the standards ought to drive it less because, compared to the car, its fuel costs per mile are higher.

With respect to fatalities, the agencies claim that a greater share of trucks might lead to a greater number of fatalities due to different rates of involvement in fatal crashes.[78] However, the agencies' analysis does not bear this out - specifically, the fatality rates (in fatalities per mile) that are used in the CAFE model are "independent of regulatory class and var[y] only by year (and not vehicle age)."[79] In other words, the same base fatality rate (i.e., before accounting for any mass reduction under the standards) is used, by model year, regardless of whether a vehicle is a car or a truck - so there could be no change in fatalities due to the relative fatality rate of a different fleet mix.[80]

As a result, it appears that any increase in fatalities (as well as non-fatal crash costs) under the current/augural standards due to the DFS model are attributable to an increase in VMT, rather than to any change in the fatality rate of the overall fleet. Even leaving aside the flaws in the DFS model, fatalities and non-fatal crash costs arising from increased VMT should be treated the same way that the agencies state that they are treating such impacts resulting from increased VMT from the rebound effect - as a consumer choice that is not attributable to the standards - and assign equal, offsetting benefits to all such impacts.[81] The ancillary impacts attributable to consumers' choice of vehicle cannot serve as a justification for the rollback.

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[77] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,187.

[78] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,107 (noting that the DFS model "predicts the effects of changes in the standards on the share of light trucks and passenger cars in future model year light-duty vehicle fleets," and that "[v]ehicles of different body styles have different rates of involvement in fatal crashes, so that changing the share of each in the projected future fleet has safety impacts; the implied safety effects are captured in the current modelling."); *see also id.* at 43,135 ("Light trucks have higher rates of fatal crashes when interacting with passenger cars and, as earlier sections discussed, different directional responses to mass reduction technology based on the existing mass and body style of the vehicle.").

[79] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,188.

[80] It is possible that there might be a small *decrease* in fatalities under the current/augural standards due to the greater presence of trucks in the mix, because, as discussed in the agencies' safety analysis, mass reduction in trucks tends to improve safety - and if there are more trucks in the fleet that benefit would be associated with a larger number of vehicles. The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,111, 43,135.

[81] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,107 ("Increased driving associated with rebound is a consumer choice. Improved CAFE will

The agencies requested comment on whether the DFS model "reasonably capture consumers' decisions about how they substitute between different types and sizes of vehicles depending on changes in fuel economy, relative and absolute prices, and other vehicle attributes."[82] For all the above reasons, it does not. For this reason, as well as the other flaws noted above, reliance on the DFS modeling would be arbitrary and capricious. Without robust justification, the model inflates compliance costs, emissions, fatalities, and non-fatal crash costs.

VI. Consumer Willingness-to-Pay for Fuel Economy

A. The Agencies' Treatment of Consumer Willingness-to-Pay and Consumer Preferences is Inconsistent and Arbitrary

The proposed rule inconsistently accounts for consumers' preferences and willingness-to-pay (WTP) for improvements to fuel efficiency, arbitrarily assigning different WTP values in different parts of the analysis. [As noted in subsection IV.A.3 above, the agencies' sales model passes on the entire cost of technology to consumers. The agencies also assume that customers are willing to pay for any fuel economy and pollution reduction technology that will pay for itself within 30 months,[83] and assume that this "cost-effective" technology will be applied to a vehicle even absent any regulatory requirement.] But then at other points, the agencies cite different, contradictory values for consumers' WTP for fuel savings.[84]

1. The agencies departed from prior analysis on consumer willingness-to-pay and failed to justify their usage of zero willingness-to-pay in its sales model.

By definition, a positive willingness-to-pay value indicates the ability of a company to continue to maintain or increase sales even if it raises prices within the willingness-to-pay bandwidth. While there may be uncertainty as to what the exact willingness-to-pay for better fuel economy is (and as described below, new research indicates that this value can increase when consumers have information on fuel economy and/or are in the market for a large vehicle and have access to robust fuel economy options), ignoring willingness-to-pay (implying WTP is "zero") in its sales model cannot be considered reasonable [as the agencies themselves note, and even contradict, by the assumptions they are making, in other sections of the proposed rule]. Yet, by not modeling a range

reduce driving costs, but nothing in the higher CAFE standards compels consumers to drive additional miles. If consumers choose to do so, they are making a decision that the utility of more driving exceeds the marginal operating costs as well as the added crash risk it entails.").

[82] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,108.

[83] The 30-month payback was identified in the agencies' Draft TAR. U.S. Envtl. Protection Agency, EPA-420-D-16-900, Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025 6-7 (July 2016), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi/P100OXEO.PDF?Dockey=P100OXEO.PDF.

[84] *See* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 43,073 (showing that for used cars, consumers willing to pay for 48-101% of fuel savings for used vehicles and 75% or more for new vehicles).

of sensitivities with non-zero willingness-to-pay values in the sales model, the agencies are arbitrarily assuming zero WTP and overestimating the impact of fuel economy standards on vehicle sales.[85] A 2018 Synapse analysis demonstrates that had the agencies incorporated a reasonable WTP value into the sales model, among other adjustments to better reflect market conditions, the sales impacts of rolling back fuel economy standards would be shown to be negative or zero.[86]

In its 2016 Technical Support Document (TSD), EPA reviewed dozens of willingness-to-pay studies and recognized the uncertainty and complexity of modeling willingness-to-pay for fuel economy and other attributes, and declined to conduct a quantitative assessment of sales, due to the variability of WTP values across studies.[87] Having acknowledged that fuel economy improvements might either increase or decrease sales, and having no well-supported means of predicting which outcome will occur, the agencies should continue to assume that the impact on sales is zero. In the NPRM, the agencies have disregarded their prior analysis, failing to resolve the uncertainty noted in their prior analysis, or to justify their new decision to ignore WTP for the purposes of the sales model. Further, recent research described below has indicated that the WTP value for fuel economy is very likely positive.

2. The agencies assume automaker behavior absent the standards that is contradicted by other assumptions.

The agencies imply in the NPRM's sections on sales impacts that OEMs struggle to sell more efficient vehicles,[88] but then inexplicably assume that consumer demand and market forces will continue to increase fuel economy past 2021 even though the standards are frozen at 2020 levels.[89] This contradiction demonstrates that the agencies are biasing their analysis to obscure a larger effect on fuel consumption in order to justify the roll back.

3. Based on its own implied assumptions about consumer WTP in its modeling, NHTSA fails to meet the maximum feasible standard under EPCA.

By assuming that all technologies with a 30-month payback will be incorporated by manufacturers without the standards in place, yet proposing to set standards below that level, the proposed rule clearly does not meet the maximum feasible standard under EPCA. If automakers would invest in

[85] And as mentioned in prior sections of these comments, the sales model is fraught with erroneous or unfounded assumptions.

[86] Jamie Hall et al., Effects of the Draft CAFE Standard Rule on Vehicle Safety (Oct. 25, 2018), *available at* http://www.synapse-energy.com/sites/default/files/Effects-of-Proposed-CAFE-Standard-Rollback-Vehicle-Safety_18-062_2.pdf (Attachment 11).

[87] U.S. Envtl. Protection Agency, EPA-420-R-16-021, Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation: Technical Support Document 4-16 (Nov. 2016), *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100Q3L4.pdf; *see also* the similar finding of the National Academy of Sciences that "[h]ow markets actually value increases in new vehicle fuel economy is critical to evaluating the costs and benefits of fuel economy and GHG standards. Unfortunately, the scientific literature does not provide a definitive answer at present." National Research Council, Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles 318 (2015).

[88] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 42,986, 43,993. (Aug. 24, 2018).

[89] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks, 83 Fed. Reg. at 42,986, 43,260 (Aug. 24, 2018).

these technologies even without the standards, then that sets the floor for cost-effective standards. Yet the agencies have proposed a level of fuel economy below what they claim automakers would do on their own without standards.

B. The agencies have not adequately considered and incorporated recent data indicating a positive willingness-to-pay for fuel economy.

In July 2018, Consumers Union shared with the agencies a comprehensive report demonstrating that consumers have a positive willingness to pay for fuel economy, and that this willingness exceeds consumers' willingness to pay for improvements to performance and premium trim features. This research indicates that consumer welfare can be enhanced by standards that push automakers to offer more fuel-efficient choices. The research was conducted by Dr. Christine Kormos and Dr. Reuven Sussman, and employed a methodology that integrated the strengths of stated choice experiments – which allow for the estimation of economic models of valuation and willingness-to-pay using implicit measures of preference – with the strengths of randomized controlled trials (i.e., robust experimental assessment of causal effects) and surveys (i.e., collecting data on demographics and explicit vehicle preferences).[90] When participating in the choice experiment, consumers selected a preferred vehicle from a choice set based on their personal preferences on vehicle size and price range that identified a range of simple and isolated quantitative attributes that matter most to consumers. This research demonstrated a very significant willingness-to-pay for improved fuel economy that varied depending on the information presented and the fuel economy range of vehicle choices. WTP is positive for all vehicle categories, with consumers valuing fuel economy improvements more highly for low mpg vehicles than for high mpg vehicles, demonstrating rationality in their preferences and emphasizing the benefits of raising the efficiency floor for the least efficient vehicle categories.

The fact that choice sets presented to respondents were based on theoretical choices that matched respondents' preferred vehicle type and price point, and 5 shifting attributes (price, safety, reliability, fuel economy, performance, and premium trim), was helpful for focusing consumer decisionmaking on objective attributes, and indicates autobuyers' willingness to pay for 10 years of fuel savings. Importantly, even if the absolute values of respondents' WTP for various features is overestimated,[91] the value of WTP for fuel savings is nonetheless very significant, and relatively higher than the WTP for either performance or premium trim. The isolation of these attributes insulates respondents from automaker sales tactics, styling, and other emotional aspects of vehicle purchasing that can be influenced by automaker choices on packaging, marketing, and advertising. If automaker offerings and marketing aligned with consumer preferences for fuel economy, consumer welfare would increase and average fuel economy would increase.

[90] Christine Kormos & Reuven Sussman, Auto Buyers' Valuation of Fuel Economy: A Randomized Stated Choice Experiment (2018), *available at* https://consumersunion.org/wp-content/uploads/2018/06/FINAL-Kormos-and-Sussman-2018-%E2%80%93-Auto-buyers-valuation-of-fuel-economy.pdf. (Attachment 12).

[91] Today's vehicle market rarely provides consumers with robust fuel economy choice sets. Further, vehicle purchasing behavior is a complex mix of information and emotional response.

C. The agencies have arbitrarily relied on automaker assertions and have not considered the impact of automaker marketing on consumer willingness-to-pay.

The Kormos-Sussman study demonstrated that both the presence of information on fuel economy and the format of information presented had a statistically significant impact on consumer willingness-to-pay for improved fuel economy.[92] Another study, conducted by a UC Davis research team, analyzed the content of vehicle ads and found that fuel economy was mentioned one-third as often as performance attributes, and that electric vehicles were featured in only one percent of advertising.[93] The $14 billion dollars spent on auto advertising from 2008-2014 has a significant impact on the vehicle fleet we see today, and automakers' marketing choices and the information they provide to consumers influence consumers' willingness-to-pay for various features and attributes.[94] Consumer willingness-to-pay for fuel economy is not static, nor isolated from the rest of the auto buying experience. Automakers and dealers could increase or shift consumer demand for fuel economy through advertising if they chose to do so. Currently there is likely a misalignment between maximizing fuel economy and maximizing automaker or dealer profits, despite the fact that strong consumer interest in fuel economy could nevertheless lead to increased (if not maximized) profits. That is, manufacturers likely weigh consumer WTP for an attribute, and the profit margin for that attribute (and/or associated dealership services), against the potential profit margins for alternative attributes given limited manufacturer resources. In other words, the reason automakers may not provide as much fuel economy as consumers would prefer results not from the fact that consumer WTP is not high enough to support the technology, but from the fact that other technologies with lower technology costs (and lower or equal WTP) may provide lower-hanging fruit for the automaker to earn profits.

Automaker claims of "consumer acceptance" as a roadblock to widespread adoption of fuel-efficient or electric vehicles should not be taken at face value--their own offerings, marketing choices, and production decisions affect consumer choices, and are driven by far more nuanced considerations than a simple focus on WTP, as shown by the Kormos-Sussman study. Automakers and dealers have the ability to influence consumer preferences through marketing and interactions with salespeople, and the agencies should take this influence into account in determining whether it is economically practicable for manufacturers to produce and sell more fuel-efficient vehicles.

As even the agencies admit, they cannot show data that consumer willingness-to-pay is zero. Yet they fail to include WTP in their sales model. And they exacerbate their error by ignoring the probability that sales have been and will be affected by changes in automaker offerings and marketing behavior. In other words, the agencies' attempt to capture historical impacts on sales

[92] Christine Kormos & Reuven Sussman, Auto Buyers' Valuation of Fuel Economy: A Randomized Stated Choice Experiment (2018), *available at* https://consumersunion.org/wp-content/uploads/2018/06/FINAL-Kormos-and-Sussman-2018-%E2%80%93-Auto-buyers-valuation-of-fuel-economy.pdf. (Attachment 12).

[93] Gwen Arnold et al., Content Analysis of Unique Auto Ads in the United States: 2005, 2012, 2015, and 2017 (Oct. 2018), *available at* https://consumersunion.org/wp-content/uploads/2018/10/Final-Report-Auto-Ad-Content-Analysis-080318-1-1-1.pdf. (Attachment 13).

[94] Christine Kormos & Reuven Sussman, Auto Buyers' Valuation of Fuel Economy: A Randomized Stated Choice Experiment (2018), *available at* https://consumersunion.org/wp-content/uploads/2018/06/FINAL-Kormos-and-Sussman-2018-%E2%80%93-Auto-buyers-valuation-of-fuel-economy.pdf.

through their sales model based only on price and macroeconomic indicators fails to reflect the impacts of automakers' own choices on sales (including failures to adequately market and promote the benefits of fuel economy). And the agencies' application of that model to project future sales similarly fails to account for the fact that automakers could increase demand (and possibly even further increase WTP) by choosing to promote and market fuel economy gains more effectively.

VII. Conclusion

In conclusion, the analysis of sales impacts and consumer willingness to pay for fuel economy in the NPRM is without real-world support, and arbitrary. The agencies project adverse sales impacts without acknowledging real-world trends indicating strong, increasing sales and flat prices. The agencies' more than double ownership cost estimates relative to their own analysis performed just two years ago, without acknowledging that they are doing so, and based entirely on erroneous and fundamentally flawed compliance cost projections. The agencies commit several fundamental errors in the specification of their never-before-used Sales Model, each of which independently would result in their projections of sales impacts having no sound basis in fact. The agencies adopt, without explanation or justification, a new Dynamic Fleet Share model, excised from a complex model another agency developed for a different context and use it to conclude, without real-world evidence, that there would be a shift of sales toward trucks under the existing/augural standards, thereby artificially inflating compliance costs, emissions impacts, fatalities, and non-fatal crash costs. And the agencies adopt inconsistent stances on consumer willingness-to-pay for fuel economy improvements, appearing to adopt whatever position makes the rollback look the most appealing for each given application.

Each of these flaws affects the agencies' entire analysis, and inflates consumer costs and undercounts emissions and safety benefits of the existing/augural rule. None of the agencies' conclusions regarding the above factors appears to be rooted in real-world evidence, and therefore they cannot be used to support the proposal. Any one of these flaws renders the agencies' analysis inadequate. Together, they leave no doubt that the agency's analysis is arbitrary.

Respectfully submitted,

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