Environmental Protection Agency
EPA Docket Center (EPA/DC), Air and Radiation Docket, Mail Code 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

September 27, 2021

Consumer Reports Comments on EPA's "Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards"
(Docket No. EPA-HQ-OAR-2021-02087)

Submitted via: www.regulations.gov

Table of Contents:

List of Attachments

1. Petition Signatures
2. Fact Sheet: Restoring the Benefits Obama-Biden Standards
3. Fact Sheet: Vehicle Emissions Standards
4. The Un-SAFE Rule: How a Fuel-Economy Rollback Costs Americans Billions in Fuel Savings and Does Not Improve Safety
5. 2020 Electric Vehicle Survey
6. 2020 Fuel Economy Survey
7. 2019 Fuel Economy Survey
8. Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers
9. Argonne Vehicle TCO Report
10. Consumer Reports Comment on the 2018 SAFE rule proposal

1. Introduction

Consumer Reports supports EPA's efforts to reverse the previous administration's rollback[1] and reinstate strong light duty vehicle greenhouse gas standards. However, this proposal leaves significant consumer savings on the table and does not go far enough to meet the climate challenge ahead of us. CR's own analysis finds that EPA's preferred alternative will only recover ~75% of the consumer and climate benefits of the original Obama-Biden standards.[2]

CR strongly supports the administration's stated goal of reducing greenhouse gas emissions from new vehicles by 60%, while achieving 50% electrification by 2030.[3] Achieving this goal would result in over $1 trillion in consumer savings while reducing emissions by 10 gigatons through 2050.[4] Unfortunately, EPA's preferred alternative will leave the US fleet off the pace to achieve this important goal.

Consumer Reports asks EPA to increase the stringency of their proposal such that it achieves similar consumer savings through model year 2026 as the original 2012 Obama-Biden standards would have achieved, while putting the US fleet on track to achieve President Biden's climate commitments.[5]

In order to achieve these goals CR provides the following recommendations for strengthening the standard:

1) Adopt Alternative 2 stringency from MY23-25

---

[1] Consumer Reports, "The Un-SAFE Rule: How a Fuel-Economy Rollback Costs Americans Billions in Fuel Savings and Does Not Improve Safety" August 2019
https://advocacy.consumerreports.org/wp-content/uploads/2019/08/The-Un-SAFE-Rule-How-a-Fuel-Economy-Rollback-Costs-Americans-Billions-in-Fuel-Savings-and-Does-Not-Improve-Safety-2.pdf
https://advocacy.consumerreports.org/wp-content/uploads/2019/11/CRs-Updated-Analysis-of-the-UnSAFE-Rule.pdf

[2] Consumer Reports, "Fact Sheet: Restoring the Benefits Obama-Biden Standards" September, 2021
https://advocacy.consumerreports.org/wp-content/uploads/2021/09/EPA-Vehicle-Emissions-Standards-Proposal-Fact-Sheet.pdf

[3] Fact Sheet: President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks, August 5, 2021
https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/

[4] Consumer Reports, "Fact Sheet: Vehicle Emissions Standards" March 2021
https://advocacy.consumerreports.org/wp-content/uploads/2021/03/Consumer-Reports-Vehicle-Emissions-Standards-Fact-Sheet-3.22.21-FINAL.pdf

[5] Consumer Reports, "Fact Sheet: Restoring the Benefits Obama-Biden Standards" September, 2021
https://advocacy.consumerreports.org/wp-content/uploads/2021/09/EPA-Vehicle-Emissions-Standards-Proposal-Fact-Sheet.pdf

2) Increase the stringency of the standard in 2026 by 10 g/mi beyond Alternative 2

3) Reign in credits and loopholes that undermine the real-world benefits of the rule

EPA's own analysis shows that Alternative 2 will result in greater net benefits and CR's own analysis comes to the same conclusion. This alternative essentially matches the stringency of the original Obama-Biden standards for MY23-25, which automakers already agreed to almost a decade ago and were planning to comply with up until the SAFE rule was finalized last year. Furthermore, trends have shown that declining compliance costs, and growth in electrification will make meeting this level of stringency even easier. There is no strong justification for setting a standard weaker than Alternative 2.

CR also strongly supports increasing the stringency of the 2026 standard by 10 g/mi. According to EPA's own analysis, the current proposal will result in less than 8% electrification by 2026, putting the US fleet well behind both automakers' and President Biden's stated goals of achieving 50% electrification in 2030. Increasing the stringency in 2026 will provide automakers with sufficient lead time for factoring these stronger standards into their production plans, while putting the US on a better trajectory to meet our climate commitments.

CR also recommends that EPA further limit credits and multipliers that reduce the effectiveness of the rule. While CR applauds EPA's efforts to greatly limit the harm done by electric vehicle multipliers, these multipliers, by EPA's own analysis, do not significantly increase electrification and should be eliminated. CR also questions the expansion of the off-cycle credit cap without putting into place stronger requirements to ensure that these technologies actually deliver real world benefits. Without sufficient verification of emissions savings, these credits have the potential to be a massive giveaway to automakers for technologies that don't deliver real world benefits.

a. About Consumer Reports

Consumer Reports (CR) is an independent, nonprofit membership organization that works side by side with consumers to create a fairer, safer, and healthier world. Consumer Reports conducts extensive consumer surveys and research, and buys nearly 70 new vehicles each year to test at our Auto Test Track in Connecticut, to generate independent expert reviews and ratings related to fuel economy, reliability, safety, and other attributes important to consumers.

CR represents the interests of consumers and has provided comments on fuel economy-related public dockets for over a decade, including the setting of the 2017-2025 standards in 2012,[6] the Draft Technical Assessment Report in 2016,[7] the final determination in 2017,[8] the Draft Environmental Impact Statement in 2017,[9] the second final determination in 2018,[10] and the SAFE rule.[11]

2. The Consumer Case for Strong Standards

Consumers want better fuel economy for their vehicles, and support stronger standards by a wide margin. Nationally representative surveys have repeatedly demonstrated overwhelming public, bipartisan support for continuing to strengthen federal standards that affect vehicle efficiency. CR's most recent fuel economy survey continues to show this strong interest.[12] Key results include:

- **94%** of consumers consider fuel economy to be important when considering what vehicle to purchase or lease
- **89%** of consumers agree that automakers should continue to improve fuel economy for all vehicle types
- **83%** of consumers expect each new generation of vehicles available on the market to be more fuel-efficient than the last

---

[6] Consumers Union, Comments for Proposed Rule 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards (Feb. 10, 2012), https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0799-9454.

[7] Consumers Union, Comments on Midterm Evaluation Draft Technical Assessment Report for Model Year 2022–2025 Light Duty Vehicle GHG Emissions and CAFE Standards (Sept. 21, 2016), https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-3511.

[8] U.S. Environmental Protection Agency, Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation (Jan. 13, 2017), https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-6270; Consumers Union, 2016 Vehicle Fuel Economy Poll Nationally Representative Telephone Survey (June 20, 2016), https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-3511.

[9] Consumers Union, Comments on EPA's Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation (Dec. 23, 2016), https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-6028.

[10] Consumers Union, Comments on EPA's Request for Comment on Reconsideration of the Final Determination of the Mid-Term Evaluation of Greenhouse Gas Emissions Standards for Model Year 2022-2025 Light-Duty Vehicles (Oct. 5, 2017), https://www.regulations.gov/document?D=EPA-HQ-OAR-2015-0827-9166.

[11] Consumer Reports, Comments on Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Oct. 26, 2018), https://www.regulations.gov/comment/EPA-HQ-OAR-2018-0283-4117

[12] Consumer Reports, "Consumer Attitudes Towards Fuel Economy: 2020 Survey Report," February 2021. https://advocacy.consumerreports.org/wp-content/uploads/2021/02/National-Fuel-Economy-Survey-Report-Feb-2021-FINAL.pdf

- **73%** of consumers agree that the U.S. government should continue to increase fuel efficiency standards

Further, when asked what attributes in their current vehicle had the most room for improvement, consumers selected fuel economy 42% of the time, significantly more than any other selection, and 3 times as often as they selected horsepower as shown in Figure 2.1.

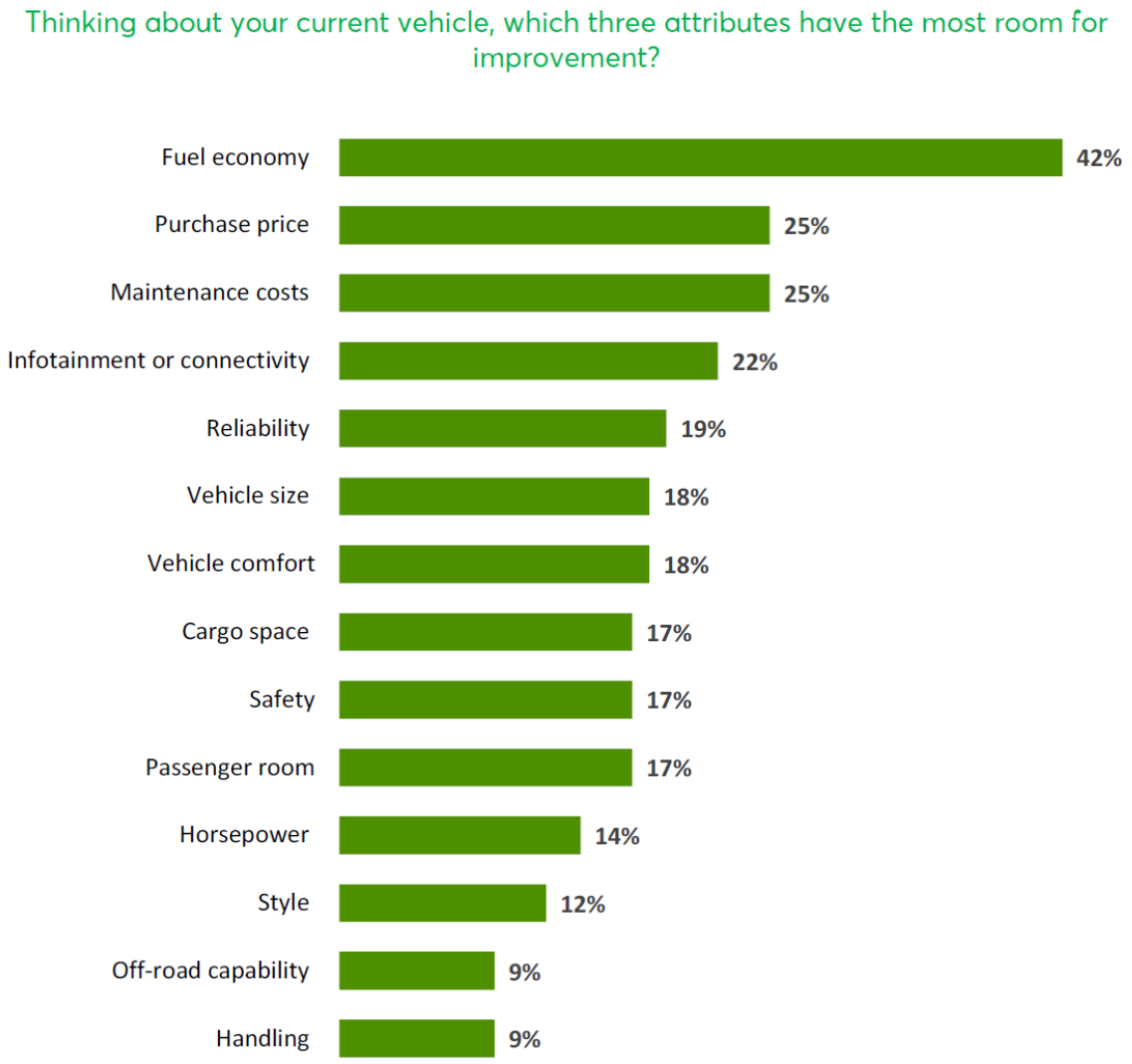

Figure 2.1 - Attributes Consumers Want Improved the Most on Their Current Vehicle

In a separate survey Consumer Reports asked consumers about their interest in electric vehicles.[13] It found that 71% of consumers had some interest in buying an electric vehicle, with 31% considering purchasing an EV for their next vehicle. Further analysis of these survey results uncovered a trend showing a significant increase in interest in purchasing an EV with direct experience with the vehicles. Survey respondents were given an "experience score" from 0-3 based on the answers to the following questions:

- Do you know someone who owns a plug-in electric vehicle?
- Have you ever been a passenger in a plug-in electric vehicle?
- Have you ever driven a plug-in electric vehicle?

The results are shown in Figure 2.2. Consumers with an experience score of 1 or 2 were more than two times as likely to consider an EV for their next vehicle, while consumers with an experience score of 3 were three times more likely to consider an EV for their next vehicle. However, only 6% of consumers in the survey sample had an experience score of 3, while 63% had an experience score of 0. This shows that there is significant room for improvement in consumer interest in electric vehicles as they become more common, and consumers gain greater experience and comfort with them.

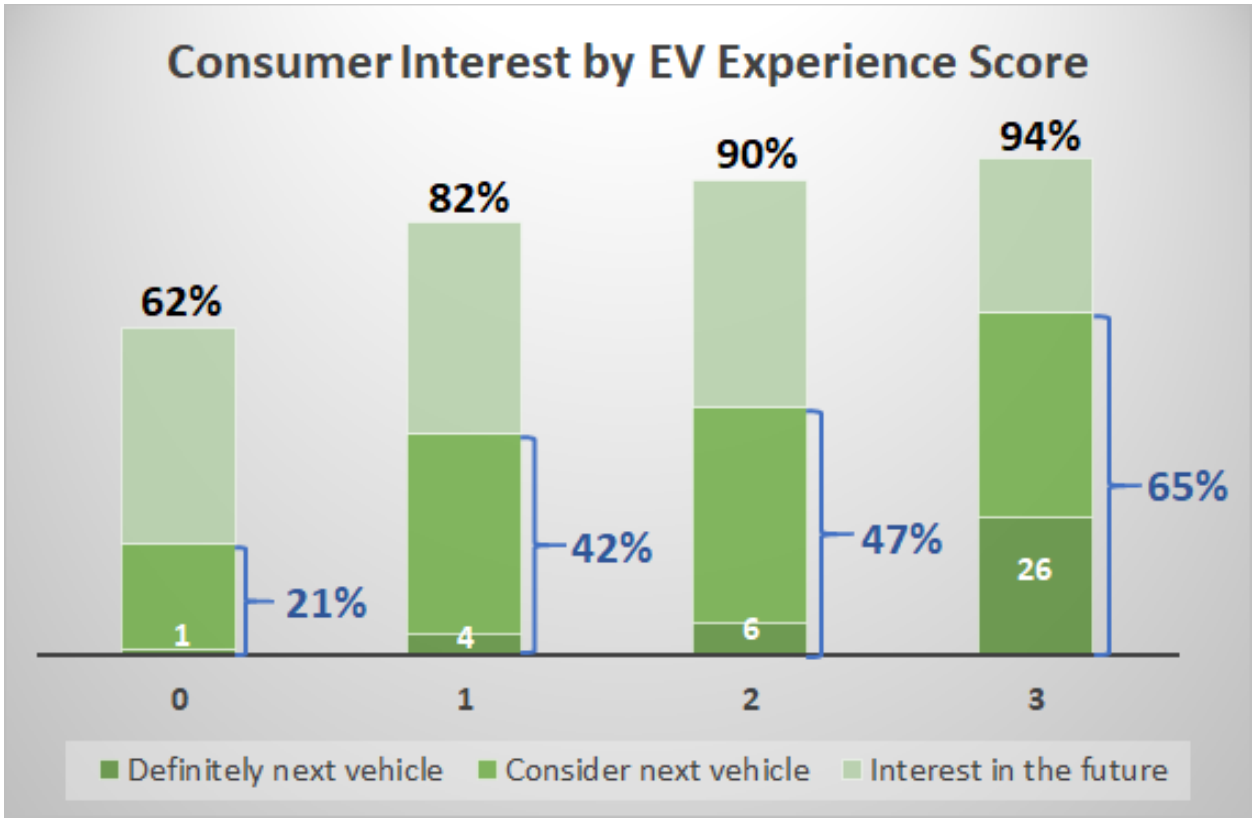

Figure 2.2 - Consumer Interest in Electric Vehicles by Direct Experience

[13] Consumer Reports, "Consumer Interest and Knowledge of Electric Vehicles," December 2020. https://advocacy.consumerreports.org/wp-content/uploads/2020/12/CR-National-EV-Survey-December-2020-2.pdf

Despite consumers' clear preference for vehicles with lower emissions and fuel costs, consumer choices are limited in the market, with 2/3 of car models getting within 5 mpg of the model average and nearly 2/3 (63%) of truck models getting within 3 mpg of the model average.[14] Furthermore, a team of researchers from UC Davis analyzed auto advertisements and found that performance is mentioned three times as frequently as either fuel economy or safety.[15] In 2017, a mere 7% of ads mentioned fuel economy.[16] This is despite the fact that consumers have shown a willingness to pay two to three times more for improvements in fuel economy and safety than for improvements in acceleration, and their willingness to pay increases with information on fuel economy.[17]

a. Consumer Equity Implications of Strong Standards

New car buyers on average are older, whiter, and wealthier than average,[18] and the decisions they make determine the vehicles available for purchase on the used market. That means that the preferences of a smaller, less diverse subset of Americans largely drives the market for new cars, even if those vehicles do not match the needs and wants of the 70% of Americans who can't afford, or chose not to enter, the new car market.[19] Strong federal standards are necessary to ensure the needs of all Americans are met by the new car market, even those who cannot afford to participate in it. In setting these standards EPA should explicitly consider the needs of lower income Americans, who participate mainly in the used car market, and spend a larger portion of their income on fuel.

---

[14] Calculated from the EPA's 2018 fuel economy guide. https://www.fueleconomy.gov/feg/download.shtml

[15] Gwen Arnold et al. *Content Analysis of Unique Auto Ads in the United States: 2005, 2012, 2015, and 2017* Figure E.1 https://advocacy.consumerreports.org/wp-content/uploads/2018/10/Final-Report-Auto-Ad-Content-Analysis-080318-1-1-1.pdf

[16] Gwen Arnold et al. *Content Analysis of Unique Auto Ads in the United States: 2005, 2012, 2015, and 2017* Section 5B https://advocacy.consumerreports.org/wp-content/uploads/2018/10/Final-Report-Auto-Ad-Content-Analysis-080318-1-1-1.pdf

[17] Christine Kormos & Reuven Sussman, *Auto Buyers' Valuation of Fuel Economy: A Randomized Stated Choice Experiment* (June 12, 2018) https://advocacy.consumerreports.org/wp-content/uploads/2018/06/FINAL-Kormos-and-Sussman-2018-%e2%80%93-Auto-buyers-valuation-of-fuel-economy.pdf

[18] Based on Consumer Reports' analysis of Bureau of Labor Statistics 2019 Consumer Expenditure survey. https://www.bls.gov/cex/tables.htm

[19] In 2018 and 2019 used car purchases accounted for 70% of total vehicle US light duty vehicle sales based upon comparing used vehicle sales of around 40,000,000 according to Edmunds 2019 Used Vehicle Report with widely reported new vehicle sales of around 17,000,000 in each year. Edmunds, "Used Vehicle Report: the car comeback CY 2019" https://static.ed.edmunds-media.com/unversioned/img/industry-center/insights/2019-used-vehicle-report.pdf

b. Consumer Petition

Consumer reports collected 19,042 signatures of consumers in support of strengthening EPA's current proposal for greenhouse case standards. Those signatures are attached.

Petition Text:
"*We are calling on the Administration to eliminate loopholes for automakers that would undermine our nation's Clean Car Standards. The current preferred proposals don't go far enough to meet the climate challenges we already face, and they leave billions of dollars in consumer savings on the table, as stronger standards could save drivers up to $88 billion on gas, maintenance, and costs for vehicles purchased in the next 5 years.*

Automakers already agreed to standards stronger than the current proposal almost a decade ago. The Administration must shift to stronger standards, hold the auto industry accountable, and ensure automakers take responsibility for their role in reducing climate-damaging pollution."

3. Recommended Improvements to EPA's Preferred Alternative

Consumer Reports asks EPA to strengthen the standards they have proposed. We specifically ask that EPA set stringency at the same level as Alternative 2 for MY23-25, further increase the stringency of the MY2026 standard by 10g/mi, and that EPA reins in various credits and multipliers that weaken the effectiveness of the standard.

a. Adopt Alternative 2 levels of stringency for MY23-25

EPA's own analysis shows that Alternative 2 would result in an additional $40B in net benefits through 2050.[20] It also shows that Alternative 2 would result in $34B in benefits through MY2026 compared to only $24B in benefits for EPA's preferred alternative.[21] Furthermore, Alternative 2 fully restores the top line stringency of the original 2012 Obama-Biden standards which automakers have already agreed to, and were planning to achieve prior to the finalization of the SAFE rule only last year. Throughout the NPRM and RIA, EPA provides very little justification for selecting the weaker proposal with lower benefits over their stronger Alternative 2 that has demonstrably greater net benefits across multiple analysis frames. Consumer Reports' own analysis comes to similar conclusions.[22]

---

[20] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, tables 4 and 12
[21] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, tables 5 and 13
[22] Consumer Reports, "Fact Sheet: Restoring the Benefits Obama-Biden Standards" September, 2021 https://advocacy.consumerreports.org/wp-content/uploads/2021/09/EPA-Vehicle-Emissions-Standards-Proposal-Fact-Sheet.pdf

b. Increase 2026 stringency by 10 g/mi

EPA asked for comment on increasing the stringency of the MY2026 standard by between 5-10 g/mi. Consumer Reports recommends that EPA strengthen the MY2026 standard by 10 g/mi. Consumer Reports estimates that making this change would result in an additional $8 billion in consumer savings through MY2026.[23] Achieving our climate commitments will require strong action, and a more stringent 2026 target will set automakers up for success in achieving longer term emissions reductions targets.[24]

In increasing the stringency in MY2026, EPA provides automakers with more than enough lead time to adjust to these higher standards. Automakers are all in the process of developing, updating, and increasing their electrification plans, and touting them to their shareholders.[25] Growing consumer interest (see section 2 of this comment) and improving economics of electrification (see section 3d of this comment) will also contribute to the feasibility of this higher standard.

c. Reign in credits and multipliers

Top line stringency levels are important, but equally important is ensuring that automakers actually deliver real world performance that comes close to matching those stringency levels. Various credits and multipliers can reduce the real world benefits delivered by the standards.

i. EV Multipliers

Consumer Reports does not support the inclusion of electric vehicle multipliers. EPA's own analysis in table 4-25 of the RIA finds that they only increase EV penetrations under the preferred alternative from 7.4% to 7.8%. EPA concludes that "*The results presented in this table suggest that the advanced technology multipliers are not expected to have a large impact on BEV and PHEV technology penetration*."[26] EPA also cites and discusses Gillingham's recent work that shows that electric vehicle multipliers

---

[23] Consumer Reports, "Fact Sheet: Restoring the Benefits Obama-Biden Standards" September, 2021 https://advocacy.consumerreports.org/wp-content/uploads/2021/09/EPA-Vehicle-Emissions-Standards-Proposal-Fact-Sheet.pdf

[24] Fact Sheet: President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks, August 5, 2021 https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/

[25] Consumer Reports, "Automakers Are Adding Electric Vehicles to Their Lineups. Here's What's Coming." Last Updated September 7, 2021. https://www.consumerreports.org/hybrids-evs/why-electric-cars-may-soon-flood-the-us-market-a9006292675/

[26] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, page 4-19 https://www.epa.gov/system/files/documents/2021-08/420r21018.pdf

can have a negative impact on EV penetration rates and emissions reductions.[27] Consumer Reports strongly agrees with this research, and concludes that the inclusion of electric vehicle multipliers is unwarranted, even with caps as included in the proposal.

Even capped, EPA estimates that these multipliers decrease the emissions reductions by about 8% compared to standards without multipliers between MY21-26.[28] EPA also states that: "*As zero-emissions technologies become more mainstream, EPA believes it is appropriate to transition away from multiplier incentives.*"[29] While Consumer Reports agrees with this statement, we also assert that EVs are already becoming more mainstream (see section 3d), and do not find the continued inclusion of these multipliers justifiable, especially given the reduction in emissions savings, and limited influence on the market demonstrated by EPA's modeling.

ii. EV Upstream Emissions

Consumer reports does not support continuing to expand the "0 g/mi" assumption for EV emissions through 2026. While EVs have much lower fuel cycle emissions than all gasoline vehicles, their emissions are not zero. The core purpose of these standards are to reduce emissions, and not counting the emissions from EVs unfairly benefits electric vehicles under a standard that is supposed to be technology-neutral. While electric vehicles are an important technology for meeting our long term climate goal, they should not be given unfair advantages under this standard. Transportation electrification is expected to rapidly increase, and as it does the lost consumer savings and emissions benefits due to the "0 g/mi" will also grow rapidly. See section 3d for further data to support the likelihood of higher EV penetration rates.

iii. Off-Cycle Credits

Consumer Reports generally disagrees with EPA's plan to expand the off-cycle credit limit by 5 g/mi. While other commenters will go into more detail on this program, CR's high level concern is with the lack of sufficient verification of real world emissions savings delivered by these technologies. We disagree with further expansion of this program without simultaneously increasing the requirements to verify real world emissions savings.

---

[27] Gillingham, K. (2021). "Designing Fuel-Economy Standards in Light of Electric Vehicles." NBER working paper #29067

[28] Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards, 86 FR 43726, 43760 (August 10, 2021) https://www.govinfo.gov/content/pkg/FR-2021-08-10/pdf/2021-16582.pdf

[29] Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards, 86 FR 43726, 43757 (August 10, 2021) https://www.govinfo.gov/content/pkg/FR-2021-08-10/pdf/2021-16582.pdf

As a separate point, Consumer Reports questions the idea of awarding off-cycle credits to battery electric vehicles. These vehicles emit zero tailpipe emissions, so no technology applied to these vehicles can further reduce real-world tailpipe emissions. As electric vehicles become a larger and larger portion of the fleet, the off-credit program may inadvertently hand out a significant number of "free" credits to electric vehicles that provide no real world emissions benefits.

iv. Advanced Technology Incentives for Full-Size Pickups

This credit, although limited to a relatively small portion of the market, may have some unintended consequences. Hybridization is increasingly being used by automakers to boost performance rather than efficiency. Ford's full sized pickup hybrid is marketed as "Power Boost" and happens to be the most powerful truck in their lineup at 430 HP. However, it achieves only a 3 mpg improvement over their 2.7L EcoBoost powertrain but increases horsepower by 105. Compared to the 3.5L EcoBoost, it increases efficiency by 4mpg (in 4x4 configuration) and horsepower by 30.[30] In addition to Ford, Toyota just announced a new Tundra Pickup that will be available with a hybrid option that will add 48 HP compared to the non-hybrid version.[31] EPA efficiency ratings for these powertrains are not yet available. While increasing the efficiency of full sized pickups is important, and can have an outsized impact on reducing emissions due to their low efficiency, any credits given for installing specific technologies should be designed to ensure that the technologies are actually used to increase efficiency rather than just used to boost power and performance.

In Consumer Reports' 2019 Automotive Fuel Economy Survey, drivers of large SUVs and pickups told us they wanted to see their vehicle's fuel economy improved more than 6 times as often as they wanted to see their vehicle's horsepower increased (55% vs. 8%) as shown in Figure 3.1.[32] This credit, as designed, allows automakers to comply by two pathways. The first is by installing a strong hybrid powertrain. The second is by achieving 20% lower emissions than the footprint based standard. If EPA decides to keep this credit in their final standard, Consumer Reports recommends that EPA simplify the credit by eliminating the "strong hybrid" credit, and only provide the credit to vehicles that meet the 20% improvement above the standard threshold, regardless of technology used. This would avoid potentially giving credits to strong hybrids designed to deliver increased performance, but minimal efficiency improvements.

---

[30]Motortrend, "2021 Ford F-150 PowerBoost Hybrid Gets Better MPG Than Gas-Fed Chevy, Ram," December, 11, 2020.
https://www.motortrend.com/news/2021-ford-f-150-hybrid-mpg-fuel-economy/

[31]Jalopnik, " The 2022 Toyota Tundra Is A Hybrid Pickup That Doesn't Want To Be A Work Truck," September 20, 2021.
https://jalopnik.com/the-2022-toyota-tundra-is-a-hybrid-pickup-that-doesnt-w-1847709384

[32] Consumer Reports, "2019 Automotive Fuel Economy Survey Report," August 2019.
https://advocacy.consumerreports.org/wp-content/uploads/2019/08/Consumer-Reports-Fuel-Economy-Survey-Report-2019-1.pdf

Another concern with this credit is that it is also applicable to electric pickups. While EPA put a cap on the EV multiplier credits, this credit would provide a means to exceed that cap with additional credits for electric vehicles.

Thinking about your current vehicle, which three attributes have the most room for improvement?	Total	Current Car MPG			Current Car Type			
	%	Less Than 20	20 to 29	30 or More	Large SUV or Pickup Truck	Large Car, Midsize SUV, or Minivan	Small SUV or Sports Car	Small or Midsize Car
			%	%	%	%	%	%
Respondents selected UP to three responses								
Fuel economy	37%	53%	38%	20%	55%	40%	43%	30%
Maintenance costs	26%	27%	25%	26%	20%	25%	27%	27%
Purchase price	23%	26%	24%	18%	38%	22%	18%	20%
Infotainment or connectivity	23%	18%	23%	27%	15%	22%	29%	24%
Passenger room	14%	16%	13%	14%	18%	12%	18%	13%
Off-road capability	13%	12%	13%	13%	13%	7%	10%	15%
Reliability	12%	15%	12%	11%	11%	10%	6%	15%
Cargo space	12%	12%	12%	12%	5%	9%	7%	16%
Vehicle comfort	12%	11%	11%	13%	8%	8%	20%	13%
Horsepower	12%	5%	15%	13%	8%	9%	14%	14%
Vehicle size	10%	7%	9%	14%	7%	10%	12%	10%
Safety	8%	7%	8%	9%	4%	9%	7%	9%
Style	7%	7%	8%	5%	6%	8%	5%	6%
Handling	5%	4%	6%	5%	4%	9%	6%	4%
Base: Americans Who Own and Drive a Vehicle	1,011	264	462	285	132	271	108	492

Figure 3.1 - Consumer Interest in Fuel Economy Improvements by Current Vehicle Type and Efficiency

d. Support for Higher EV Penetrations

The feasibility of greatly improving greenhouse gas standards beyond the preferred alternative is helped by rapid improvements in the economics of electrification in recent years, and corresponding growing market shares driven by automaker investments. The following subsections describe data that help justify the feasibility of stronger standards. EPA's analysis shows that Alternative 2 can be achieved with EVs accounting for only 6.9% of the fleet in MY2026. Much higher EV penetrations by this date are both likely, and needed, in order to achieve the administration's climate goals.

i. Industry Projections

EPA's modeling of both their preferred alternative, and Alternative 2 shows that both can be achieved with strong net benefits at very low EV penetration rates of 7.8% and

6.9% respectively in 2026. This is well below nearly all up-to-date, credible, industry projections. IHS Markit's latest projections expect US EVs (BEVs + PHEVs) to reach 24.3% of the market by 2026.[33] Bloomberg New Energy Finance estimates EV penetrations in the US upwards of 15% by 2026.[34] UBS estimates that EVs will account for 20% of the global light duty vehicle market by 2025.[35] Although the UBS numbers are global, they indicate that if automakers can achieve that level globally, they can almost certainly achieve some high fraction of that level of penetration in the US. These projections by well respected industry experts combined indicate that EV market penetration rates of 15-25% by 2026 are well within the range of what is feasible. Furthermore, hitting EV penetration rates at least at the bottom of this range will be necessary to be on track to achieve President Biden's goal of achieving 50% electrification by 2030.[36]

ii. Lower total cost of ownership

In addition to being feasible, higher EV penetration rates will be highly beneficial to consumers. Consumer Reports has found that all of the best selling electric vehicles on the market as of 2020 will already save consumers thousands of dollars over the vehicle's lifetime, with typical savings between $6,000 and $10,000.[37] This analysis also found that many of these vehicles will also save consumers money from the first year of ownership, as savings on fuel and maintenance outweigh the increased monthly payment on a financed vehicle.

iii. Cost Parity on the Horizon

While consumers are already saving money on EVs today, they will only save more money in the future as the purchase prices drop. The cost of batteries has dropped by almost 90% over the past decade, and prices are expected to continue to fall in the future.[38] This continued decline in battery costs is expected to bring the cost of electric

---

[33] Axios, "Electric vehicles forecast to overtake gas engines within a decade," August 10, 2021. https://www.axios.com/electric-vehicles-forecast-to-overtake-gas-engines-within-a-decade-dced6569-9314-45ef-a1fa-d368c5f43692.html

[34] Figure 5 of BNEF, "Electric Vehicle Outlook 2021" https://bnef.turtl.co/story/evo-2021/page/4/2?teaser=yes

[35] UBS, "The electric vehicle revolution is shifting into overdrive," March 3, 2021. https://www.ubs.com/global/en/investment-bank/in-focus/2021/electric-vehicle-revolution.html

[36] Fact Sheet: President Biden Announces Steps to Drive American Leadership Forward on Clean Cars and Trucks, August 5, 2021 https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/

[37] Consumer Reports, "Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers" October 2021 https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf

[38] Bloomberg, "Batteries For Electric Cars Speed Toward a Tipping Point," December 16, 2021. https://www.bloomberg.com/news/articles/2020-12-16/electric-cars-are-about-to-be-as-cheap-as-gas-powered-models

vehicles down to the point of cost parity with conventional gasoline vehicles at some point this decade.

Table 3.1 - Estimates of Electric Vehicle Cost Parity with Gasoline Vehicles

Organization	**Cost Parity Year**	**Notes**
ICCT[39]	2025-2026	200 mile range BEVs
ICCT[40]	2027-2028	250 mile range BEVs
BNEF[41]	2023-2024	“Many vehicle segments”
UBS[42]	By 2024	
McKinsey[43]	Around 2025	
Carnegie Mellon University[44]	By 2025	
General Motors[45]	2020	Luxury BEVs
General Motors[46]	By 2030	Mainstream BEVs

Estimates of exactly when cost parity for electric vehicles will be achieved vary, but most estimates fall between 2023 and 2028 (see Table 3.1). However, in vehicle classes such as luxury and sports cars, where consumers are willing to pay extra for power and

[39] Lutsey, N. and M. Nicholas, “ Update on electric vehicle costs in the United States through 2030,” ICCT, April 2019. https://theicct.org/sites/default/files/publications/EV_cost_2020_2030_20190401.pdf
[40] Lutsey, N. and M. Nicholas, “ Update on electric vehicle costs in the United States through 2030,” ICCT, April 2019. https://theicct.org/sites/default/files/publications/EV_cost_2020_2030_20190401.pdf
[41] Bloomberg, ”Batteries For Electric Cars Speed Toward a Tipping Point,” December 16, 2021. https://www.bloomberg.com/news/articles/2020-12-16/electric-cars-are-about-to-be-as-cheap-as-gas-powered-models
[42] The Guardian, “ Electric cars 'as cheap to manufacture' as regular models by 2024,” October 21, 2020. https://www.theguardian.com/environment/2020/oct/21/electric-cars-as-cheap-to-manufacture-as-regular-models-by-2024
[43] McKinsey, “Making Electric Vehicles More Profitable,” March 8, 2019. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/making-electric-vehicles-profitable
[44] The Conversation, “The road to electric vehicles with lower sticker prices than gas cars – battery costs explained,” July 27 2020. https://theconversation.com/the-road-to-electric-vehicles-with-lower-sticker-prices-than-gas-cars-battery-costs-explained-137196
[45] WardsAuto, “ GM CTO: EV Price Parity Will Come Sooner Than Later,” November 23, 2020. https://www.wardsauto.com/industry-news/gm-cto-ev-price-parity-will-come-sooner-later
[46] WardsAuto, “ GM CTO: EV Price Parity Will Come Sooner Than Later,” November 23, 2020. https://www.wardsauto.com/industry-news/gm-cto-ev-price-parity-will-come-sooner-later

performance, electric vehicles are expected to be cheaper than gas powered vehicles even sooner. This is due to the fact that it's much cheaper to add additional horsepower to an electric vehicle than to a gasoline vehicle. That extra power also comes with less of a penalty in terms of fuel cost due to the inherent greater efficiency of electric vehicles, and the lack of a need for premium fuel. This is backed up by claims from GM that EVs are already cheaper in the luxury segment.[47] It is also reflected in the actions of the rest of the auto industry, with many luxury automakers promising to rapidly increase electrification, and some promising to go all electric by the end of the decade.[48]

4. Key Areas of Support

There are many aspects of this proposal where Consumer Reports is in agreement with EPA. Although we have not taken the time to list them all, there are two that need special mention.

a. Starting the New Standards in Model Year 2023

Consumer Reports strongly supports EPA's proposal to institute these new standards as soon as possible, which we agree is model year 2023. Consumer Reports agrees with EPA that this should not be a problem for automakers. The SAFE rule was only finalized in March of 2020. Prior to this, automakers were planning to meet much stronger standards. This has given them little time to make significant changes, given relatively long product cycles in the auto industry. Since automakers already had plans in place to meet the original standards, which are more strict, it should not be a significant challenge for them to reinstate them, if they ever abandoned them in the first place. Furthermore, the availability of large credit banks whose lifetimes have been extended in this proposal, the ability to carryforward and carryback, and the likelihood of credit generation in MY2021 and MY2022 under the much weaker SAFE rule, mean that meeting the higher standard in MY2023 should not be a problem for automakers.

Furthermore, five automakers had already agreed to the California Framework, which already kept them on a trajectory more in line with the preferred alternative. In addition, nearly every automaker has committed to rapid electrification trajectories[49] which should assist them in meeting strong standards. Given the immediacy of the climate crisis, and

---

[47] WardsAuto, " GM CTO: EV Price Parity Will Come Sooner Than Later," November 23, 2020. https://www.wardsauto.com/industry-news/gm-cto-ev-price-parity-will-come-sooner-later

[48] Jaguar all electric by 2025 (https://www.caranddriver.com/news/a35519105/jaguar-land-rover-ev-only/), Volvo all electric by 2030 (https://www.bbc.com/news/business-56245618), Bently all electric by 2030 (https://www.bbc.com/news/business-54835588),

[49] Consumer Reports, "Automakers Are Adding Electric Vehicles to Their Lineups. Here's What's Coming." Last Updated September 7, 2021. https://www.consumerreports.org/hybrids-evs/why-electric-cars-may-soon-flood-the-us-market-a9006292675/

the significant consumer savings available, there is no room for delay, and EPA should stick to their plan to implement strong standards starting in MY2023

b. No Significant Safety Impacts

In terms of the safety impacts of the proposed rule, EPA found: "*This proposal would have no adverse impact on driving safety. EPA estimates that the risk of fatal and non-fatal injuries will remain virtually unchanged by this program.*"

This conclusion is consistent with the results of analysis CR performed in originally analyzing the SAFE rule proposal.[50] In this analysis CR found that weakening standards resulted in a small, but negligible decrease in safety, and that strengthening standards resulted in a similarly small but negligible increase in safety.

However, while the overall conclusion is sound, there remain significant problems with many of the assumptions used to calculate the safety impact, and the inclusion of financial costs associated with these small and uncertain risks within the cost-benefit analysis. EPA's analysis shows that the uncertainty in the analysis at the 95% confidence interval spans zero,[51] indicating that strengthening standards may have no effect on, slightly increase, or slightly decrease safety. Given this fact, the scientifically appropriate conclusions to draw would be that the impact is indistinguishable from zero.

Furthermore, EPA continues to attribute fatalities caused by rebound driving to the rule. Nothing in this rule compels anyone to drive more. Driving more is a consumer choice, and the fatalities associated with that driving should not be attributed to the rule. It is true that there are risks associated with driving, but those are risks that everyone understands and assumes when they get into a vehicle, and when they pay their monthly insurance premium. Any policy that puts more money in consumers' pockets may allow them to drive more, yet we don't attempt to estimate the traffic fatality impact of any additional driving that might be stimulated by tax cuts, and we shouldn't for consumer savings from increasing vehicle efficiency either.

For more detailed arguments on the lack of safety impact of strong standards please see Consumer Reports' more detailed comments and attachments on the SAFE rule NPRM,[52] which are also provided as attachment 10.

---

[50] Consumer Reports, "The Un-SAFE Rule: How a Fuel-Economy Rollback Costs Americans Billions in Fuel Savings and Does Not Improve Safety" August 2019 https://advocacy.consumerreports.org/wp-content/uploads/2019/08/The-Un-SAFE-Rule-How-a-Fuel-Economy-Rollback-Costs-Americans-Billions-in-Fuel-Savings-and-Does-Not-Improve-Safety-2.pdf

[51] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, page 5-10

[52] Consumer Reports, Comments on Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Oct. 26, 2018), https://www.regulations.gov/comment/EPA-HQ-OAR-2018-0283-4117

5. Model Shortcomings

Consumer Reports recognizes the limited time EPA has had to develop the analysis for this proposal, and that EPA has consequently relied heavily on the models and assumptions developed to support the SAFE rule. However, the use of these models and assumptions results in EPA significantly undercounting the benefits from this proposal. The following sections highlight some of those issues, and provide recommendations on how to improve the analysis to support strong standards.

a. Consumer Valuation of Fuel Economy and the Energy Efficiency Gap

Consumer Reports and others have contributed significant input into both the previous regulatory record, and legal record around past rulemakings, regarding the treatment of consumer valuation of fuel economy and the energy efficiency gap. We continue to stand behind the argument that there is a market failure in the automotive market, and that automakers will not deploy cost effective fuel savings technologies that consumers want unless driven to do so by regulations. EPA itself within the RIA concludes that an energy efficiency gap does indeed occur stating: "*it appears that markets on their own have not led to adoption of a number of technologies with short payback periods in the absence of the standards."*[53]

EPA also explores if the energy efficiency gap might be caused by low consumer valuation of fuel economy, or as a result of the market and automaker decisions. Consumer Reports has decades of experience doing survey work to understand what consumers want, and we assert that this market failure rests firmly in the hands of automakers.[54] The exact reason is unclear to us at this time, but some combination of the potential explanations outlined on pages 8-5 and 8-6 of the RIA is plausible.

EPA goes on to state that: "*It appears possible that automakers may operate under a different perception of consumer willingness to pay for additional fuel economy than how consumers actually behave."*[55] Yet despite this statement, EPA uses the same 2.5 year payback period to both estimate consumer valuation of fuel economy in their sales model, and assumes that automakers apply all technology with a payback period of less than 2.5 years within the baseline of their analysis, despite specifically recognizing that automakers have not done this in this in the past.

Consumer Reports recommends that EPA appropriately reflect the energy efficiency gap in their future modeling for this and future rulemakings. Although there is

[53] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, page 8-3

[54] see section 2 for more detailed data and analysis to support this claim including survey results and analysis of consumer interest and willingness to pay for more efficient vehicles and analysis of automaker behavior.

[55] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, page 8-7

uncertainty in the exact numbers with respect to what, if any, technology automakers will deploy in the absence of standards, and the exact amount of fuel savings consumers value, the record and literature clearly show that these values should be very different. EPA should attempt to model automaker behavior based upon their past historical actions with respect to the application of technology within the baseline. EPA should also update their consumer valuation of fuel economy assumptions in their sales model to more appropriately match the literature on consumer willingness to pay.

b. Modeling of Off-Cycle Credits

EPA assumes that all automakers apply 15 g/mi of off-cycle credits starting in MY2023 regardless of the cost effectiveness of these technologies relative to other compliance options. EPA also uses an average cost of $78 per g/mi improvement in emissions which seems very high.[56] Given that the standards require an average of 49 g/mi in total emissions reductions, complying with entirely off-cycle credits would cost automakers $3,800 per vehicle, while EPA's modeling finds that the average cost of compliance in MY2026 is only $1,044.[57]

While CR has not directly examined the CAFE model used by EPA directly, a close examination of table 4-16 of the RIA also provides some details as to the impact of these assumptions. Tesla jumps off the page as having compliance costs that average around $390 per vehicle despite being an all-electric vehicle manufacturer that easily complies with the rule with no additional credits. When comparing Telsa's compliance costs with the average automaker compliance cost for MY2026 of $1,044/vehicle we see that they are modeled to be spending 37% as much as the average automaker just to add 5 g/mi of off-cycle credits. While Tesla may indeed make a financial decision to use the off-cycle program to generate additional credits (see section 3.c.iii of this comment for discussion of why EPA should consider not allowing this) to sell to other automakers, they will only do so if they can make a profit doing it. If we assume that all automakers are modeled to be spending a similar amount on off-cycle credits, this implies that the average automaker is spending 37% of their compliance budget on 5 g/mi of improved performance and 63% of their compliance budget on an average of 44 g/mi of improved performance. While the presence of Automakers who agreed to the California framework agreement complicates this analysis, and it is not perfect for that reason, it is nonetheless clear that assumptions surrounding off-cycle credits are having a significant effect on the cost analysis in ways that imply completely irrational behavior by automakers. Either off-cycle credits have significantly lower costs to automakers than assumed by EPA, or automakers will choose other compliance pathways that avoid using these expensive credits.

[56] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, page 4-12

[57] Revised 2023 and Later Model Year LightDuty Vehicle GHG Emissions Standards, Regulatory Impact Analysis, EPA-420-R-21-018, Table 4-16

The most obvious way to address this modeling issue would be to simply not expand the off-cycle credit limit to 15 g/mi as Consumer Reports has recommended in section 3.c.iii. However, if EPA does continue to include expanded off-cycle credits, they should do significant modeling sensitivities around their assumptions related to these credits and their effect on the overall cost-benefit analysis.

c. Battery Costs

EPA notes that: "*The battery costs used in the SAFE FRM were considered too high by EPA. However, given that significant levels of vehicle electrification will not be necessary in order to comply with the proposed standards (past analyses by EPA have estimated BEV penetrations of less than 5 percent, in general), we did not consider updating vehicle electrification costs to be of paramount importance for this proposal, although we may update battery and other vehicle electrification costs for the final rule.*"

Consumer Reports recommends that EPA update their battery costs to be more in line with the current state of the electric vehicle market. This has the potential to have a significant impact on the cost-benefit analysis of the rule, especially with regards to the ability for EPA to push further, and set a stronger standard than the preferred alternative that is more in line with the administration's climate commitments.

d. Maintenance and Repair Costs

EPA has not historically quantified the change in maintenance and repair costs from changes in the vehicle fleet driven by greenhouse gas standards. However, the growing percentages of battery electric and plug-in hybrid vehicles in the fleet means that strong standards are likely to contribute significant consumer savings in the form of reduced repair and maintenance costs. Two recent studies, one by Consumer Reports,[58] and one by Argonne National Laboratory,[59] have attempted to quantify the change in maintenance and repair costs for vehicles with different powertrains. Although both studies use different methods, and place slightly different numbers on the specific costs, they both come to the same general conclusion that vehicles with electrified powertrains are likely to provide significant lifetime consumer savings from lower maintenance and repair spending. Consumer reports for example concludes that both BEVs and PHEVs are estimated to save $4,600 over the lifetime of a vehicle when discounted to the present value at the time of purchase, with a discount rate of 3%. Applying these savings to the preferred alternative, which EPA's modeling estimates includes 7.8% EVs, would result in over $5B of additional present value consumer benefits for MY2026

[58] Chaper 2 of Consumer Reports, "Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers" October 2021 https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf

[59] Burnham, A. et. al. "Comprehensive Total Cost of Ownership Quantification for Vehicles with Different Size Classes and Powertrains," Argonne National Laboratory, April 2021. https://www.osti.gov/biblio/1780970/

alone. Given the magnitude of these benefits, and the inevitable growth in electrification of the fleet, it is imperative that EPA capture this important consumer benefit in their cost benefit analysis.

e. Use of AEO2021 energy prices

While the use of energy price data from the DOE's Energy Information Agency's (EIA) Annual Energy Outlook (AEO) in cost-benefit analysis is standard practice, 2020 was an extreme outlier given the COVID-19 pandemic. Because of this, EIA's AEO2021 is heavily influenced by this outlier event which shut down the entire global economy and crashed energy prices. However, energy prices have rebounded sharply as demand has recovered quicker than supply. The result is that current gasoline prices are now much much higher than the AEO projections, and in fact AEO2021 projects that gasoline prices won't even reach their current levels of $3.19 a gallon[60] until 2044. One possible solution is that EPA could instead use energy prices from EIA's AEO2020 which was performed prior to the pandemic. Although the prices projected in AEO2020 are still well below current gasoline prices, they are at least closer. At a minimum EPA should acknowledge that the use of these energy price projections developed in the middle of a pandemic causes them to likely underestimate future consumer savings from this rule.

f. Rebound Effect on Electric Vehicles

Consumer Reports supports EPA's shift to a 10% rebound effect which is consistent with the existing literature when applied to increases in efficiency from conventional vehicles. However, we would ask that EPA consider doing more research prior to future rulemakings on the potential applicability of rebound effects for conventional vehicles being applied to battery electric vehicles.

6. Conclusions

EPA's proposal is a good start, but can and should go further to protect consumers and reduce emissions. Consumer Reports recommends that EPA adopt the stringency levels of Alternative 2 for MY23-25, increase the stringency in MY2026 by 10 g/mi beyond the stringency of Alternative 2, and tighten up the credits and flexibilities provided within the standards. Consumer Reports concludes that these improvements are justifiable based on cost-benefit analysis, and feasible for automakers to achieve.

[60] Current national average gasoline price in the US as of 9/21/21 according to AAA https://gasprices.aaa.com/

Respectfully Submitted,

Christopher Harto
Senior Policy Analyst, Consumer Reports