Alliance for Automotive Innovation

Comments to
U.S. Department of Transportation
National Highway Traffic Safety Administration

Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years 2027-2032 and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030-2035

Proposed Rule

Docket ID No.
NHTSA-2023-0022

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List of Acronyms and Abbreviations

A/C	Air conditioning
Auto Innovators	Alliance for Automotive Innovation
BEV	Battery electric vehicle
CAFC	Corporate Average Fuel Consumption for medium-duty chassis-certified pickups and vans
CAFE	Corporate Average Fuel Economy for light-duty vehicles and medium-duty passenger vehicles
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EVs	Electric vehicles, inclusive of battery electric, plug-in hybrid electric, and fuel cell electric vehicles
FCEV	Fuel cell electric vehicle
FCIV	Fuel consumption improvement value
GHG	Greenhouse gas
HDPUV	Heavy-duty pickup truck and van
ICE	Internal combustion engine
MDPCS	Minimum domestic passenger car standard
MPG	Miles per gallon
MY	Model year
NHTSA	National Highway Traffic Safety Administration

PEF	Petroleum equivalency factor; 10 C.F.R. § 474.3(b)
PEV	Plug-in electric vehicle (including battery electric and plug-in hybrid electric vehicles)
Proposed Rule	Referring to 88 Fed. Reg. 56128 (Aug. 17, 2023)
ZEV	Zero-emission vehicle (including battery electric and fuel cell electric vehicles)

1 Introduction

The Alliance for Automotive Innovation ("Auto Innovators"),[1] representing 42 automobile companies, automotive suppliers, and automotive technology companies that produce about 97% of the new vehicles sold in the United States, offers these comments on the U.S. Department of Transportation National Highway Traffic Safety Administration's ("NHTSA") proposed rule, Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years 2027-2032 and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030-2035 (the "Proposed Rule").[2] We and our members appreciate NHTSA's work in developing the Proposed Rule, and we look forward to further engagement and discussions regarding the Proposed Rule. While we support the overarching goals of the Proposed Rule, Auto Innovators is concerned about several aspects of the Proposed Rule, as we explain in the following comments.

Auto Innovators and its members support the related goals of reducing vehicle greenhouse gas ("GHG") emissions, conserving energy, and a transition to electric vehicles ("EVs", including battery electric, plug-in hybrid electric, and fuel cell electric vehicles). Auto Innovators has previously stated: "With the right complementary policies in place, the auto industry is poised to accept the challenge of driving EV purchases to between 40 and 50 percent of new vehicle sales by the end of the decade."[3] While the Bipartisan Infrastructure Act and Inflation Reduction Act are a good start to the necessary complementary policies to increase EV production and sales in the U.S., significant work remains to address the supply chain, infrastructure, and market challenges during this transition. Efficient, coordinated, and realistic government policies will be necessary for an accelerated transition.

2 Corporate Average Fuel Economy ("CAFE") Program

The best policy to sustain an EV transition would be a return to a single national standard to reduce carbon in transportation. The United States has one vehicle fleet and should have one national standard. Conflicting and overlapping rules are complex

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[1] From the manufacturers producing most vehicles sold in the U.S. to autonomous vehicle innovators to equipment suppliers, battery producers and semiconductor makers – Alliance for Automotive Innovation represents the full auto industry, a sector supporting 10 million American jobs and 5 percent of the U.S. economy. Active in Washington, D.C. and all 50 states, the association is committed to a cleaner, safer and smarter personal transportation future. www.autosinnovate.org.

[2] U.S. Department of Transportation, National Highway Traffic Safety Administration, Notice of Proposed Rulemaking: Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years 2027-2032 and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030-2035, 88 *Fed. Reg.* 56128 (Aug. 17, 2023), hereinafter "NPRM."

[3] Alliance for Automotive Innovation, "Auto Innovators: Aligning Policies for a Cleaner Future" (Aug. 5, 2021). Available at https://bit.ly/45GXdC5 (accessed Sep. 3, 2023).

and increase costs without corresponding benefits. Manufacturers need aligned standards between the three federal agencies and the state agency regulating vehicle tailpipes. We are concerned that NHTSA's consideration of battery electric vehicles ("BEVs") in developing its proposed standards, despite statutory prohibitions, combined with the Department of Energy's ("DOE") proposal to devalue the fuel economy of electric vehicles by 72%,[4] will result in serious misalignment, distracting manufacturers' attention and resources from the EV transition.

Even with EVs, NHTSA's proposal exceeds maximum feasibility. NHTSA projects that manufacturers will pay over $14 billion in non-compliance penalties,[5] affecting one in every two light trucks in 2027-2032, and one in every three passenger cars in 2027-2029.[6] The number of non-compliant vehicles and manufacturers projected exceeds reason and will increase costs to the American consumer with absolutely no environmental or fuel savings benefits. The projected $3,000 average price increase over today's vehicles[7] is likely to decrease sales and increase the average age of vehicles on our roads. Although NHTSA may balance its statutory considerations that were established by Congress, it cannot minimize consideration of technological feasibility and economic practicability to the extent that they are rendered meaningless.

For its final standards, NHTSA should remove the inappropriately included EVs and weigh technological feasibility and economic practicability more heavily. Its standards should be offset from final U.S. Environmental Protection Agency ("EPA") GHG standards considering the agencies' differences in the treatment of EVs and compliance flexibilities. Maximum feasible CAFE standards should coexist with an achievable EPA GHG program, resulting in CAFE compliance for manufacturers that comply with the GHG program. Standards that meet these principles will aid a smoother transition to electric vehicles and avoid negative impacts that will drive up unnecessary costs to consumers, workers, and manufacturers.

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[4] U.S. Department of Energy, Notice of Proposed Rulemaking; Request for Comment: Petroleum-Equivalent Fuel Economy Calculation, 88 *Fed. Reg.* 21525 (Apr. 11, 2023), hereinafter "PEF NPRM". The current petroleum equivalency factor for electric vehicles is 82,049 Wh/gal. 10 C.F.R. § 474.3(b)(1). The proposed value of the petroleum equivalency factor is 23,160 Wh/gal. PEF NPRM at 21539.

[5] NHTSA central rulemaking analysis, Compliance Report, sum of "Fines" for model years 2027-2032 for the combined baseline ("Scenario" 0) and proposal ("Scenario" 3).

[6] Auto Innovators analysis of data in NHTSA central rulemaking analysis, Compliance Report.

[7] NHTSA central rulemaking analysis, Compliance Report, sum of "Avg Reg-Cost" for model year 2032 for the combined baseline ("Scenario" 0) and proposal ("Scenario" 3).

2.1 Alignment of CAFE standards to EPA GHG standards is crucial to an accelerated transition to electric vehicles.

With limited resources (both human and capital), our members need efficient, aligned regulations more than ever. Yet, for the purposes of closely related GHG and fuel economy improvements, automakers remain regulated by four separate agencies in the U.S., including NHTSA for Corporate Average Fuel Economy ("CAFE"), DOE for the 'fuel economy' of plug-in electric vehicles ("PEVs"),[8] EPA for GHG emissions,[9] and the California Air Resources Board for both GHG emissions[10] and an additional zero-emission vehicle mandate.[11] As a result, automakers are subject to five separate regulations on efficiency and reducing climate-related emissions.

Automakers can ill afford to make the investments necessary to reach the Biden Administration's goal of 50% EV sales by 2030[12] while also making major investments in internal combustion engine ("ICE") vehicles. Unlike the past, where profits from existing ICE vehicles funded investments in the next generation of ICE vehicles, it is generally understood that (for legacy automakers) profits from ICE vehicles will be used to fund the transition to electric vehicles.[13] Nor can automakers afford to pay billions of dollars in civil penalties for non-compliance with CAFE regulations while still complying with EPA GHG regulations.[14]

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[8] *See* 49 U.S.C. § 32904(a)(2)(B) and 10 C.F.R. Part 474.

[9] *See* 40 C.F.R. § 86.1818-12.

[10] *See* 13 C.C.R. § 1961.3.

[11] *See* 13 C.C.R. §§ 1962.2 and 1962.4.

[12] *See* Executive Order 14037, Strengthening American Leadership in Clean Cars and Trucks, 86 *Fed. Reg.* 43583 (Aug. 10, 2021). *See also* U.S. Department of Energy, U.S. Department of Transportation, U.S. Environmental Protection Agency, and U.S. Department of Housing and Urban Development, *The U.S. National Blueprint for Transportation Decarbonization* (Jan. 2023). Available at https://www.energy.gov/eere/us-national-blueprint-transportation-decarbonization-joint-strategy-transform-transportation (accessed Sep. 3, 2023).

[13] *See, for example,* Nair, Ganapavaram and Leinert, "Ford boosts EV spending to $50 billion, sets up new Model e unit", Reuters (Mar. 2, 2022), quoting Ford CEO Jim Farley saying "We need the ICE business to generate cash and the EV business to focus on innovation." Available at https://www.reuters.com/business/autos-transportation/ford-run-ev-ice-businesses-separately-2022-03-02/ (accessed Sep. 3, 2023).

[14] While NHTSA CAFE civil penalties are expensive, and their impact continues to increase under inflation adjustment rules and with the diminishing oil savings of each "mile per gallon", EPA's penalty structure remains higher and more prohibitive. Thus, as a result, compliance with EPA's rules becomes a pre-condition and the baseline in standard-setting design.

Given current statutory requirements and constraints, a CAFE program that is aligned to the EPA GHG program is the most efficient regulatory pathway to address the burdens, overlap, and compliance challenges between the two government regulations. When determining maximum feasible CAFE standards, NHTSA is statutorily prohibited from considering the fuel economy of dedicated alternative fuel vehicles, including BEVs and fuel cell electric vehicles ("FCEVs"), and must treat dual fueled vehicles, such as plug-in hybrid electric vehicles, as operating only on conventional fuel.[15] In contrast, EPA may consider electric vehicles in setting GHG emissions standards. Therefore, the level of GHG emissions reductions possible in a future where manufacturers are transitioning to EVs is likely to increasingly exceed the level of maximum feasible fuel economy improvements under NHTSA's statutory authority. Indeed, this is the case, albeit with adjustments needed, in the present rulemakings from EPA and NHTSA as described further below.

Auto Innovators believes that the EPA proposed standards, particularly through 2030, are neither reasonable nor achievable.[16] Yet NHTSA's proposed standards exceed those proposed by EPA in 2027. For example, EPA's projected fleet of passenger cars in model year "MY" 2027 (including 43% BEVs) would be subject to a proposed CAFE standard of 60.7 miles per gallon ("MPG"),[17] but this fleet is projected to achieve only 59.4 MPG.[18] Similarly, EPA's projected fleet of light trucks (including 32% BEVs) would have a proposed CAFE standard of 44.4 MPG, but achieve only 42.7 MPG. This outcome is a result of DOE's proposed reduction in the CAFE petroleum equivalency factor ("PEF") and NHTSA's (improper in our view) inclusion of BEVs in developing its proposal. Overall, the proposed standards exceed maximum feasibility and NHTSA's statutory considerations, particularly technological feasibility and economic practicability.

Ultimately, we believe the EPA standard must be changed to mitigate risks associated with achieving the projected level of EV sales necessary to comply. Thus, the CAFE standards should also be modified commensurately. NHTSA and EPA should closely

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[15] 49 U.S.C. § 32902(h)(1) and (2).

[16] *See* Alliance for Automotive Innovation, Comments to U.S. Environmental Protection Agency Proposed Rule: Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles (Jul. 5, 2023), attached as "Attachment 1 - Auto Innovators Comments to EPA" at pp. i, 1 to 23, and 54 to 60. *See also* Benchmark Minerals Intelligence, U.S. Electric Vehicle Feasibility Study (Q1 2023), included as Attachment 2 – US Electric Vehicle Feasibility Study (Benchmark Minerals Intelligence). Auto Innovators is the licensee to the copyrighted content of this report and has BMI's written permission to make the content publicly available.

[17] Auto Innovators analysis. Proposed CAFE targets applied to the individual vehicles in EPA's central analysis Vehicles Report output file; sales-weighted average.

[18] Auto Innovators analysis. Individual vehicle GHG emissions / electrical energy consumption in EPA's central analysis Vehicles output file (included EPA-assumed A/C efficiency and off-cycle credits) converted to fuel economy based on carbon content of gasoline / diesel and current / proposed petroleum equivalency factor; sales-weighted average.

coordinate their final rules to ensure that EPA-projected fleets that comply with EPA GHG standards also comply with CAFE standards.

2.2 The 'petroleum equivalency factor' is the major difference between the GHG and CAFE programs; NHTSA should consider the PEF in developing aligned standards.

A significant difference between the EPA GHG and NHTSA CAFE programs is their treatment of electric vehicles. EPA correctly recognizes that EVs have zero tailpipe emissions. In contrast, NHTSA (through DOE's petroleum equivalency factor or "PEF") treats PEVs as consuming petroleum even though they generally do not. This difference must be accounted for to avoid the unintended but foreseeable consequences of overly aggressive CAFE standards. Absent efforts to account for the difference in how EVs are counted, regulatory alignment issues unnecessarily arise that could have been avoided when the standards were set.[19]

Further, DOE has proposed to lower the PEF by 72%, effective MY 2027. This action would lower the fuel economy of all BEVs in the fleet by 72%. This change has an immediate real-world impact on CAFE compliance and affects NHTSA's rulemaking given its inclusion of BEVs in its analysis (despite the statutory prohibition).[20] Auto Innovators commented extensively on DOE's proposal,[21] and will continue engagement with DOE in search of a more appropriate PEF that reflects an EV's petroleum consumption and seeks a more appropriate implementation timeframe.[22] NHTSA can also help address CAFE alignment to the GHG Regulation and CAFE compliance concerns by deferring (or phasing in) the use of a lower PEF if DOE ultimately adopts a new value. DOE has not issued a final rule and it is unknown whether or to what extent the PEF ultimately will be revised. Therefore, it is speculative, premature, and

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[19] In general, ICE vehicle technologies provide similar GHG and fuel economy benefits. In contrast, a BEV provides more compliance benefit in the GHG program than in the CAFE program, a situation further and drastically exacerbated by DOE's proposal to reduce the PEF by 72%. Without alignment, manufacturers may become subject to additional civil penalties that provide no environmental or energy conservation benefits. Such penalties instead draw resources away from investments in EVs or other technology.

[20] DOE's proposal to weaken the value of the PEF significantly is relevant to NHTSA's CAFE proposal to the extent it will radically narrow the pathways to compliance for manufacturers. There must, therefore, be greater coordination between the two agencies in establishing a regulatory framework that is feasible for regulated parties, where each agency's decisions (on the PEF and in standard-setting) are inextricably interdependent.

[21] *See* Attachment 3 – Auto Innovators Comments to DOE.

[22] DOE has considerable discretion under the statutory factors governing the establishment of the PEF, see 49 U.S.C. § 32904(a)(2)(B)(i)-(iv), which include "the need of the United States to conserve all forms of energy and the relative scarcity and value to the United States of all fuel used to generate electricity," *id.* § 32904(a)(2)(B)(iii). DOE has maintained that it has authority to strengthen the value of the PEF based on that factor. *See* PEF NPRM (*supra* note 4) at 21535.

inappropriate for NHTSA to include any revision to the PEF in this current rulemaking. Given the use of a speculative PEF in its proposal, NHTSA should reopen comments on the CAFE proposal following final DOE action on the PEF.[23]

2.3 NHTSA's proposed standards are improperly predicated on alternative fuel vehicles.

Despite clear prohibitions,[24] NHTSA improperly includes the fuel economy of BEVs, a type of dedicated alternative fuel vehicle, in its consideration of CAFE standards. It does so under the guise of including them in its baseline assessment (i.e., a view of what NHTSA projects would happen absent further regulation) through a variety of pathways. However, the law makes no such exception.

The inclusion of BEVs increases the modeled achieved fuel economy of the passenger car and light truck fleets by up to 17.1 miles per gallon ("MPG") and 7.9 MPG, respectively in the timeframe of the Proposed Rule.[25] Including BEVs in the baseline assumes market feasibility and adoption levels that NHTSA has not properly analyzed in reaching this conclusion. Without these dedicated alternative fuel vehicles, the proposed standards clearly exceed technological feasibility.

While we respect NHTSA's desire to reflect electric vehicles in its analysis, NHTSA cannot simply ignore or bypass clear direction from Congress.

Please see Appendix A for more details.

2.4 The proposed standards exceed technological feasibility and economic practicability.

Putting aside that NHTSA's inclusion of dedicated alternative fuel vehicles in its analysis is proscribed by statute, the proposed passenger car and light truck standards exceed technological feasibility and economic practicability. This point is demonstrated by NHTSA's projected compliance outcomes.[26] In the rulemaking time period, NHTSA projects that 13 out of 19 manufacturers (68%) will be subject to civil penalties in one or

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[23] *See* 49 U.S.C. § 32909(c). (Indicating that NHTSA could be directed to receive additional submissions if they "are material and there were reasonable grounds for not presenting the submissions in the [rulemaking] proceeding").

[24] 49 U.S.C. § 32902(h)(1).

[25] Auto Innovators assessment based on data found in NHTSA's central rulemaking analysis Vehicles Report model output file. (Comparison of sales-weighted average 2-cycle compliance fuel economy with and without battery electric vehicles.)

[26] We refer to the rulemaking analysis, not the Environmental Impact Statement analysis. We recognize that the rulemaking analysis is constrained in certain respects and that the Environmental Impact Statement analysis may be more reflective of what could happen in practice. However, NHTSA's responsibility is to determine maximum feasible standards subject to the constraints set by Congress.

more model years.[27] On a sales basis, nearly one out of every three passenger cars sold (32%) in MY 2027-2029 will be subject to penalties for failure to meet applicable standards. For light trucks, 49% of vehicles sold in MY 2027-2032 are forecast to have penalties assessed on them. In fact, NHTSA projects that the light trucks on average will fail to meet the proposed standards in every year of the program.

NHTSA notes that it does not set standards based on the least capable manufacturer.[28] However, NHTSA grossly misconstrues this approach in the Proposed Rule. When the majority of manufacturers and a significant portion of the fleet (or worse yet the fleet on average) are projected to be unable to meet (a question of technological feasibility) or unwilling to meet (a question of economic practicability) the proposed standards, the proposal clearly exceeds maximum feasibility for both passenger cars and light trucks.[29] In other words, the proposal misses the mark on the overarching purpose of the Energy Policy and Conservation Act of 1975 and the Energy Independence and Security Act of 2007.[30] Instead, the proposal drives increasing civil penalty payments to the U.S. general fund without commensurate energy saving or environmental benefits.

Appendix B includes further analysis and commentary on these issues.

2.5 NHTSA presumes an economically impracticable increase in ICE fuel economy in combination with a rapid transition to electric vehicles.

Between 2012 and 2022, the average 2-cycle fuel consumption (gal/mile) of non-EVs improved at an average annual rate of 1.3% (passenger cars) and 2.0% (light trucks).[31] Higher observed rates of improvement in overall CAFE performance are attributable to increasing usage of off-cycle and air conditioning efficiency fuel consumption

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[27] NHTSA central rulemaking analysis Compliance Report.

[28] NPRM (*supra* note 2) at 56314.

[29] *See* S. Rep. No. 94–516, 94th Congress, 1st Sess. 154–155 (1975) (stating that NHTSA's determination [of maximum feasible average fuel economy level] should take industry-wide considerations into account. … the Secretary must weigh the benefits to the nation of a higher average fuel economy standard against the difficulties of individual manufacturers."); *see also* H. Rep. No. 94–340, 87 (1975) ("[A]ny regulatory program must be carefully drafted so as to require of the industry what is attainable without either imposing impossible burdens on it or unduly limiting consumer choice as to the capacity and performance of motor vehicles.").

[30] NHTSA discusses EPCA's/EISA's overarching purpose of energy conservation in the NPRM (*supra* note 2) (see, e.g., NPRM at 56138, 56259, and 56311), and notes that it is guided by this overarching purpose while balancing various statutory factors. However, as demonstrated in our comments, NHTSA's NPRM in several areas, including the vast number of vehicles subject to civil penalties, reveals its proposed actions undermine the underlying purpose of EPCA and EISA.

[31] S&P Global Mobility, Model Years 2012 to 2022 Baseline Study (Jan. 20, 2023). Referenced detail data available by request to Auto Innovators.

improvement values and through increasing EV market share (for passenger cars in particular).

In the 2022 to 2032 period,[32] NHTSA projects that non-EV 2-cycle fuel economy will increase by 2.2% per year for passenger cars and by 2.9% per year for light trucks,[33] a significantly higher rate than that historically observed. These gains are largely projected to come from increasing sales of strong hybrid electric vehicles (from 5% to 21% of passenger cars sales and from 8% to 45% of light truck sales). At the same time, NHTSA projects EV sales share to increase from 14% to 42% (passenger cars) and from 3% to 39% (light trucks).

Manufacturers have a limited pool of human and capital resources to invest in new vehicles and powertrains. Auto Innovators does not believe that it would be economically practicable to invest the resources necessary to achieve both the non-EV improvements envisioned and the increase in EV market share envisioned.

2.6 NHTSA incorrectly asserts that light trucks have more room to improve fuel economy than passenger cars.

NHTSA is proposing light truck standards that increase at a rate of 4% per year in contrast to passenger car standards that increase at a rate of 2% per year. NHTSA asserts that "light trucks have significantly more opportunity for fuel economy improvements due to lower baseline technology levels, and greater average [lifetime mileage]."[34] The assertion that light trucks have lower baseline technology levels is generally incorrect.

NHTSA's own model shows that ICE-based passenger cars and light trucks have similar levels of technology both in MY 2022 and in the NHTSA-projected MY 2026-2032.[35] Where passenger car and light truck powertrain technologies differ is in the degree of electrification of the fleets in this same timeframe. Setting aside dedicated alternative fuel vehicles, which NHTSA is not supposed to consider in its rulemaking analysis, light

[32] We recognize that the period presented here is broader than the standard-setting years NHTSA is considering. However, the years in advance of the standard-setting years form the basis upon which additional fuel economy improvements in the standard-setting years are premised. I.e., without those earlier improvements, the level of fuel economy achievable in the standard-setting years would likely be lower.

[33] Auto Innovators analysis of NHTSA central rulemaking Vehicle Report file.

[34] NPRM (*supra* note 2) at 56259.

[35] Auto Innovators analysis of NHTSA central rulemaking Technology Utilization Report, no action (baseline) scenario. Details available in Appendix C.

trucks exhibit higher penetration of 12-volt engine stop-start systems and strong hybrid systems both in MY 2022 and the NHTSA-projected MY 2026-2032.[36]

An analysis of the MY 2022 fleet prepared by S&P Global Mobility[37] tells a similar story. Setting aside alternative fuel vehicles, the sales-weighted powertrain efficiency[38] of the passenger car and light truck fleets is the same – 24%. Little variation is observed in sub-segments of the fleet (traditional cars, utility vehicles classified as passenger cars, utility vehicles classified as light trucks, minivans, and pickups). All range between 23% and 24% powertrain efficiency. Thus, for ICE powertrains, we find that light trucks utilize the same or more baseline powertrain technology than passenger cars, in direct contrast to NHTSA's assertion.

According to NHTSA's modeling,[39] transmission technologies also exhibit similar penetration between passenger cars and light trucks. In MY 2022, 55% of light trucks used an advanced transmission[40] as compared to passenger cars at 59% (a minimal 4 percentage point difference). In NHTSA's baseline projections for MY 2027-2032, utilization of advanced transmissions in passenger cars and light trucks remain separated by only 3-4 percentage points. We conclude that light trucks do not have significantly lower baseline transmission technology levels than passenger cars.

Differences in roadload technologies (aerodynamic, tire, and mass improvements) between passenger cars and light trucks are mixed. For tires, NHTSA generally finds similar technology levels in MY 2022 and predicts a rapid transition to the lowest rolling resistance tires by MY 2027 for both fleets, with light trucks generally achieving slightly higher use of low rolling resistance tires than passenger cars. In a similar vein, NHTSA projects rapid improvements in vehicle aerodynamics with light trucks achieving higher

[36] Belt-integrated starter generator (mild hybrid) systems, another type of electrification, have similar technology penetration in the passenger car and light truck fleets.

[37] S&P Global Mobility, Model Years 2012 to 2022 Baseline Study (Jan. 20, 2023). Referenced detail data available by request to Auto Innovators.

[38] Powertrain efficiency is defined here as the tractive energy required for a vehicle to drive the combined city / highway test cycles (based on its weight and roadload characteristics) divided by the fuel energy supplied.

[39] Auto Innovators analysis of NHTSA central rulemaking Technology Utilization Report, no action (baseline) scenario. Details available in Appendix C.

[40] Here, Auto Innovators bins dual clutch transmissions, transmissions labeled "level 2" or higher in NHTSA's modeling, and transmissions used in hybrid and electric vehicles as "advanced."

average levels of aerodynamic improvement where feasible.[41] The only place where there is some difference in which passenger car baseline technology levels exceed those of light trucks is in mass reduction. However, the sales-weighted average mass reduction levels in passenger cars (average of level 2.5) and light trucks (average of level 2.2) are similar. For roadload technologies, we again find that there is not a significantly greater opportunity for improvement in light trucks relative to passenger cars.

For additional details, please see Appendix C.

2.7 A model year 2032 augural standard is unnecessary.

A MY 2032 augural standard is unnecessary and generally inconsistent with Congressional intent. Congress set a limit on the number of years that could be considered in rulemaking to ensure that NHTSA did not set standards so far into the future such that its projections and analysis of maximum feasible standards would become subject to too much uncertainty. Given that NHTSA would need to undertake additional rulemaking to finalize a MY 2032 standard, we recommend that NHTSA forego an augural standard at this time, leaving MY 2032 for a future rulemaking. If NHTSA's concern is providing future direction, that direction is unnecessary given that without such an augural standard, manufacturers will have the direction provided by MY 2032 EPA GHG standards.

2.8 Minimum Domestic Passenger Car Standards

NHTSA proposes to finalize minimize domestic passenger car standards ("MDPCS"), as required by Congress, with an offset to account for uncertainty in the projected fuel economy of passenger cars upon which the MDPCS is based. Actual achieved fuel economy can vary from the fuel economy projected when a standard is finalized, potentially resulting in civil penalties that would not have occurred if the fuel economy of the passenger car fleet was accurately projected initially. An offset to account for such uncertainty remains warranted in the MY 2027-2032 CAFE program.

2.9 Air conditioning efficiency and off-cycle fuel consumption improvement programs remain important and applicable to both ICE and EVs.

Flexibilities such as the air conditioning ("A/C") efficiency and off-cycle fuel consumption improvement values ("FCIVs") have been an important part of the CAFE program since 2017. These flexibilities have encouraged the development of new technologies and have resulted in real-world fuel consumption reductions beyond those that would have

[41] NHTSA correctly recognizes that the opportunity for aerodynamic improvements on pickup trucks at the highest modeled level is not feasible given their design and utility requirements. Descriptions here are based on percentage of passenger cars and light trucks achieving aerodynamic improvement levels relative to the maximums allowed by NHTSA's model.

been achieved through focusing on only laboratory test cycles. The existing A/C efficiency and off-cycle credits are balanced to produce a verifiable real-world result, and both are subject to caps to further ensure that the FCIVs remain reasonable.

Auto Innovators believes that such flexibilities can and should still play an important role moving forward for both ICE and EVs. Consistent with our recommendations to EPA, we urge NHTSA to maintain A/C efficiency and off-cycle FCIVs for EVs and ICE vehicles through at least MY 2032 and to coordinate with EPA. We discuss these issues in greater detail in Appendix D.

2.10 NHTSA needs to address credit transfer caps

Automobile manufacturers may earn credits for exceeding applicable standards.[42] In the Energy Independence and Security Act of 2007, Congress required NHTSA to create a credit transfer program, allowing for the movement of credits between compliance categories.[43] Congress also set limits on such transfers based on MPG, the same units in which credits are generally denoted.

However, as fuel economy standards increase, the oil savings represented by the mile per gallon metric decrease. As a result, the credit transfer flexibility afforded under NHTSA's implementation of the credit transfer statute is significantly reduced over time. For example, credit transfer flexibility is reduced by 48% between MY 2018 and MY 2026. This erosion will continue under NHTSA's proposed standards.

Congress clearly intended that there be a usable credit transfer program. As stated in statute, "The Secretary of Transportation shall establish by regulation a fuel economy credit transferring program." (Emphasis added.)[44] Thus, NHTSA's current implementation of the statute, which results in a declining to near-meaningless transfer program, fails to meet Congressional intent.

However, there is a solution. Auto Innovators proposes that NHTSA interpret the statutory cap on credit transfers in terms of oil savings, a primary purpose of the CAFE program. While the statute does not require NHTSA to preserve oil savings when credits are transferred, NHTSA may make such an interpretation. In fact, NHTSA has already taken this approach in its credit trading (movement of credits between manufacturers) program. Doing so would be consistent with Congress's intent to provide a meaningful credit transfer program and would also support the Energy Policy and Conservation Act's energy saving purpose. Auto Innovators previously presented

[42] 49 U.S.C. § 32903(a).

[43] 49 U.S.C. § 32903(g).

[44] *Id.*

this concept to NHTSA and is disappointed this proposal lacks, at a minimum, the opportunity to comment on an approach directly related to recognition of oil savings.

The Inflation Reduction Act of 2022 includes a number of incentives to encourage domestic production of batteries and EVs. These provisions may further exacerbate concerns with NHTSA's interpretation of credit transfer caps as manufacturers move production of highly efficient EVs from import passenger car to domestic passenger car fleets. The remnant import passenger cars will likely have lower average fuel economy, not because those vehicles have become less efficient, but because the more efficient vehicles would be removed from that particular fleet. Without action to address the interpretation of credit transfer caps, import passenger car fleets may become increasingly subject to CAFE civil penalties.

Details of our proposal are provided in Appendix E.

2.11 Conclusion on Proposed CAFE Standards

For the above reasons, NHTSA should reconsider its proposed passenger car and light truck standards. The final CAFE standards should ultimately be aligned to reasonable and practicable GHG standards, properly recognize electrification, and result in a CAFE program under which manufacturers that are compliant with the GHG program do not become subject to CAFE penalties.

3 Heavy-Duty Pickup and Van Program

NHTSA proposes corporate average fuel consumption ("CAFC") standards for heavy-duty pickup trucks and vans ("HDPUVs") for MYs 2030-2035, with proposed standards increasing stringency year-by-year during that timeframe at a rate of 10% per year. The agency proposes targets for each vehicle based on their work factor, which is a function of payload and towing capabilities, and sets fleet average standards for each manufacturer based on the aggregation of vehicle targets. The work factor attribute has been used to set attribute-based standards for HDPUVs in this manner since MY 2014. Agency modeling projects that manufacturers will electrify large portions of their fleets to achieve the proposed HDPUV standards.

Auto Innovators supports NHTSA's decision to update standards for HDPUVs as part of this rulemaking. We endorse and support many structural elements of the NHTSA HDPUV proposal, including:

- Maintaining, as is, the MY 2027 Advanced Technology Multiplier for electrified vehicles.
- Continuing to use work factor as the HDPUV attribute to set fuel consumption targets.
- Providing sufficient lead-time for new CAFC targets by starting new standards in MY 2030.
- Recognizing that zero-emission vehicles ("ZEVs") such as BEVs and FCEVs consume zero gallons of fuel per mile in compliance calculations.

- Providing transparent assumptions about compliance pathways, including a clear characterization of the baseline fleet, a transparent summary of projected fuel saving technologies, their cost and effectiveness in combination with other technologies, and how the agency projects manufacturers could adopt these technologies to meet the proposed standards.

Nonetheless, alignment with EPA and program implementation elements may justify further consideration.

For instance, as manufacturers electrify large light trucks (i.e., large sport utility vehicles and pickup trucks), many of these electrified vehicles will likely increase curb weight on account of batteries, increase gross vehicle weight rating to maintain capability, and transition from the light truck to medium-duty Class 2b/3 classification. Further, many customers will demand large capacity batteries to tow, receive charge quickly, and provide range in challenging conditions. Such batteries are likely to provide non-towing ranges exceeding 300 miles and will thus be larger than those the agency commonly modeled. EPA, as part of their parallel GHG rulemaking for light and medium-duty vehicles,[45] proposed updated regulatory definitions to allow manufacturers to certify capable, heavy ZEVs in the light truck fleet average. NHTSA, operating under different statutes, has not proposed adjustments to regulatory class definitions, yet still assumes many battery-electric large sport utility vehicles and pickup trucks will be included in the light truck fleet average.

Auto Innovators encourages NHTSA to establish a credit transfer mechanism from the HDPUV fleet to the light truck fleet to address the likelihood of light trucks with heavy batteries moving to the Class 2b/3 fleet, and to improve alignment with proposed EPA regulations. This concern can be addressed by allowing credit transfers from HDPUV to light truck fleets. NHTSA's governing statutes do not prohibit it from creating a credit transfer program between HDPUVs and light truck fleets. 49 U.S.C. § 32903 can serve as a guide for the credit transfer program. We suggest NHTSA establish a transfer program from HDPUV to light truck by converting credits based on oil savings.

In Appendix F, Auto Innovators outlines why this transfer mechanism is needed to align with NHTSA's projected compliance pathways, and outlines how transfers under this proposed credit program could be implemented to properly account for oil savings. We also provide additional comments on other aspects of NHTSA's HDPUV proposal, including our concern that the proposed increase of 10% each year for MY 2030-2035 as is exceeds the maximum feasible improvement factors.

Auto Innovators looks forward to working with NHTSA, together, to discuss a credit transfer mechanism from HDPUV fleet to the light truck fleet.

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[45] U.S. Environmental Protection Agency, Proposed Rule: Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, 88 *Fed. Reg.* 29184 (May 5, 2023).

4 Additional Comments

Additional comments on other issues are provided in Appendix G. These include:

- Extension of some analyses out to calendar year 2100.
- Inclusion of brake and tire wear in PM 2.5, in addition to vehicle exhaust.
- Documentation of CAFE model output.