

A Brief Review of Proposed Rulemaking: The Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards



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Introduction

On 10 August 2021, the U.S. Environmental Protection Agency (EPA) published the [Proposed Revision to the 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards](#). The Notice of Proposed Rulemaking functions as a revision to the regulations for the model years (MY) 2023-2026, which the Trump Administration's [Safer Affordable Fuel-Efficient \(SAFE\) Vehicle Rules](#) established for Model Years 2021-2026. As with the previous rulemaking, the EPA welcomed comments from relevant industries and organizations. The comment period for the Proposed Rule lasted until 27 September 2021 and included a virtual public hearing held on 25 August 2021. The EPA is expected to announce a final rule by the end of 2021.

Not surprisingly, elements of the Biden Administration's Proposed Rule reverse many elements of the Trump Administration's SAFE Rule. It is worthwhile to note that while there was a wide range of reactions to the SAFE Rule, most comments submitted for the 2021 Proposed Rule have been supportive of the proposed revisions—with some notable exceptions. It is also important to note the current Proposed Rule was individually published by the EPA and not jointly with the National Highway Traffic Safety Administration (NHTSA). Recent proposals and subsequent rules have been developed jointly between EPA and NHTSA. The shift to separate rules may indicate growing differences between the two rule-making entities. The industry has strongly supported EPA and NHTSA to develop a single coherent rule.

In the Proposed Rule, the EPA presents and analyzes standards at three levels: The (preferred) proposed standard, a more stringent standard, and a less stringent standard. This paper presents key points of the proposed standard and provides a sample of key stakeholder reactions. However, it is possible—even likely—that the EPA's final implemented ruling will include elements beyond what has been proposed.

The Proposed Rule intends to supplement the current Administration's decarbonization goals through the implementation of more stringent emissions regulations. The EPA recognizes that achieving the Administration's goals will be difficult, and compliance from automotive manufacturers may require increased flexibility. While some organizations may directly benefit from more flexible regulations, others argue that the flexibilities will hinder progress towards emissions reduction.

Despite some notable dissent and added recommendations, the response to the Proposed Rule has primarily been supportive. With industry feedback and support, the EPA believes:

The proposed revised standards would result in significant benefits for public health and welfare, primarily through substantial reductions in both GHG emissions and fuel consumption and associated fuel costs paid by drivers, and the benefits of the proposed standards would be far in excess of costs. (EPA, 2021, p. 1)

Revised 2023-2026 Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards – Proposed Rule

For the EPA, the reduction of greenhouse gas (GHG) emissions is critical to addressing climate change. Passenger cars and trucks contribute are the nation's largest contributor to GHGs, responsible for 58 percent of U.S. transportation sector emissions and 17 percent of the nation's total GHG emissions (EPA, 2021). Efforts to significantly reduce transportation sector emissions are aimed at reducing the probability and severity of climate change-related impacts. The EPA expects that the newly-written

Proposed Rule's more stringent emissions regulations will result in substantial public health and welfare benefits while also providing consumers with savings through lower fuel costs (EPA, 2021).

The Proposed Rule is a revision to the current 2020 SAFE Rule standards which began in MY 2021. The Proposed Rule (re)introduces more stringent emissions standards and modifies carbon credit flexibilities for automakers that were part of the Obama-era emissions standards. The newly proposed standards are intended to stimulate the deployments of advanced propulsion and efficiency technologies, as well as increase the production of lower emission hybrid-electric (HEV), battery-electric (BEV), and fuel-cell electric (FCEV) vehicles.

This review looks at two different components of the Proposed Rule. The first section focuses on the GHG emissions (g/mile) standards, the second section focuses on carbon credits and flexibilities for advanced vehicle technologies.

Overview of the GHG Emissions (gram/mile) Standards

The Proposed Rule includes a proposed g/mile GHG standard as well as more stringent and less stringent alternatives. The main set of proposed standards are highlighted below:

- The EPA is proposing strengthening federal GHG emissions standards for passenger cars and light trucks for Model Years (MY) 2023-2026.
- The stringency of these standards would increase by about 10 percent in MY 2023, compared to MY 2022. Stringency would then increase by roughly 5 percent each year from MY 2024 through MY 2026.
- EPA's proposed GHG emissions standards would reach a projected industry-wide target of 171 grams CO₂/mile (52 mpg equivalent) by MY 2026.
- EPA is not proposing to revise GHG emissions standards for MY 2021 and MY 2022, which become just 1.5 percent more stringent each year. (EPA, 2021, pp. 6-7)

Greenhouse Gas Emissions Standards: Discussion and Comments

The current Proposed Rule requires more stringent standards than the Trump Administration's GHG regulations. Compared to the currently-implemented standards, the Proposed Rule has much more aggressive emissions reduction objectives to achieve by 2026. The stringency of the proposed standards is comparable to the stringency of the Obama Administration EPA's 2012 Final Ruling. Table 1 compares the GHG emissions and fuel economy expectations of the current Proposed Rule and previous Administrations. It is useful to note the Proposed Rule goes to 2026, one year past the standard set by the Obama administration in 2012. The 2012 standard is more stringent than the Proposed rule through 2025.

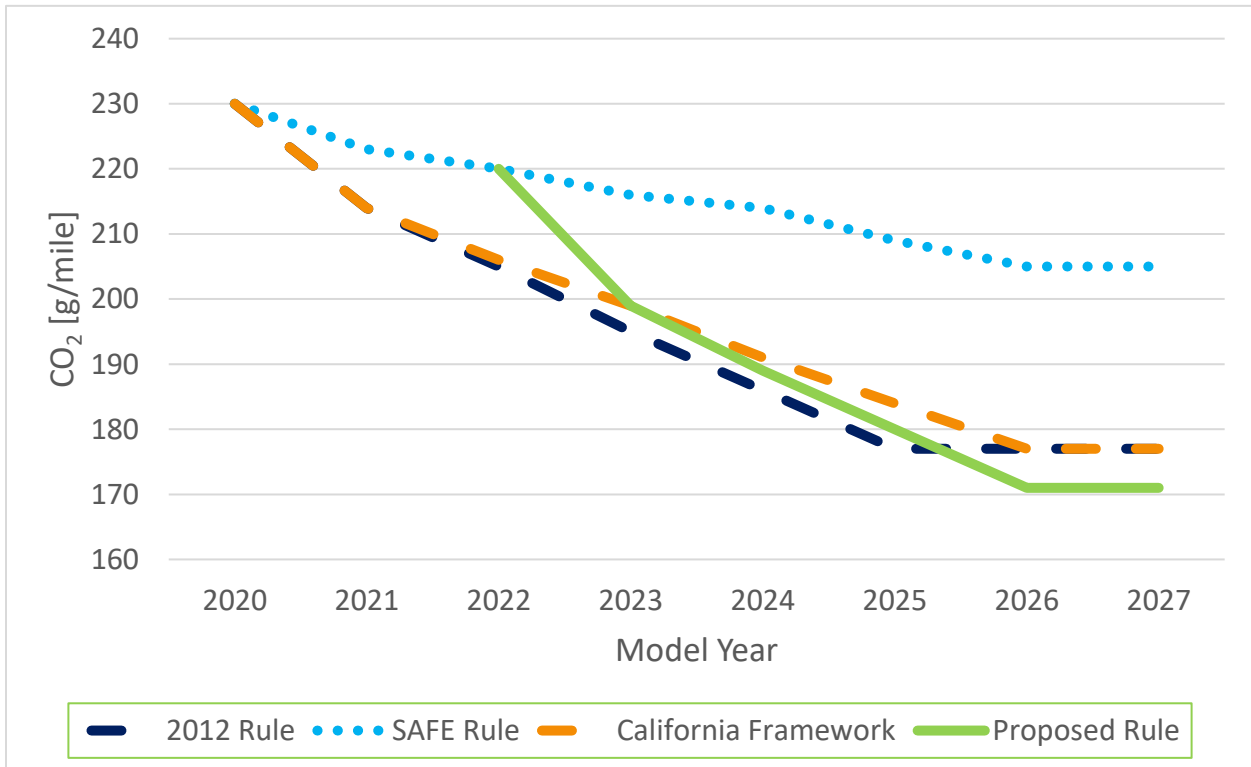
Table 1: Comparisons of Proposed Standard to Previous Light Duty GHG Emission Standard Projections for Model Year 2026

	EPA Projected Fleet-wide CO ₂ Emissions Standards	EPA CO ₂ Standards (expressed as “MPG equivalent”)
Proposed Standards	171 grams/mile	52.0 mpg
2020 Final Rule Standard (currently in effect)	205 grams/mile	43.3 mpg
2012 Final Rule Standards	177 grams/mile	50.1 mpg

Source: Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards

The EPA does not propose revisions to the current GHG emissions standards for MY 2021 and MY 2022. However, in 2023, the Proposed Rule substantially strengthens the SAFE rule’s GHG emissions standards. According to the EPA, the Proposed Rule’s standards, if implemented, would become the most stringent federal light-duty vehicle GHG emissions standards ever set. Due to the relatively low year-over-year reduction for 2021 and 2022 (approximately 1.5 percent reduction), the EPA proposes a 10 percent increase in stringency for the first year of new standards (MY 2023). After a “catch-up year” in 2023, the EPA proposes an approximately 5 percent per year reduction in GHG for 2024 through 2026.

Figure 1: EPA Proposed Industry Fleet-Wide CO₂ Compliance Targets, Compared to 2012 and 2020 Rulings, grams/mile, 2021-2026



Source: Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards

Stakeholder Comments in Support of the Revised Emissions Standards

Written comments in response to the Proposed Rule were generally supportive of the Proposed Rule. Industry lobbyist groups, such as the Motor Equipment Manufacturers Association (MEMA) and the Alliance for Automotive Innovation (AAI), function as advocates for many members of the automotive industry. Both MEMA and AAI generally support the EPA's initiatives in the Proposed Rule. Comments from MEMA, which represents over 900 companies in the vehicle supplier parts industry, state:

MEMA agrees with the EPA that the improvements proposed through MY 2026 are feasible and achievable through deployment of currently available technologies. MEMA supports the proposed standards and the program's performance-based approach. (MEMA, 2021, p. 4)

AAI, which represents manufacturers and other stakeholders involved in the production of 99 percent of cars and light trucks sold in the United States, holds a very similar stance:

Auto Innovators supports the goals of EPA's GHG program: to drastically reduce greenhouse gas emissions from light-duty vehicles and to encourage a transition to electric and net-zero emission vehicles, including plug-in hybrid electric vehicles, battery electric vehicles, and fuel cell electric vehicles. (AAI, 2021, p. 2)

Both MEMA and AAI also advocate that the EPA, NHTSA, and the California Air Resources Board (CARB) should coordinate their efforts to set harmonized standards for the industry. Other stakeholders agree, like Stellantis who submitted comments which describe added complexities and costs for industry players attempting to navigate three unique sets of standards (Stellantis, 2021). Several other automakers (GM, Nissan, Toyota, Volkswagen, and Volvo) also submitted comments which encourage the implementation of harmonized standards. Since 2010, the EPA has coordinated with NHTSA in several joint rulemaking efforts. Initially, this coordination helped both agencies implement their respective statutes and avoid inconsistencies. However, the EPA has since made it clear that it believes the two agencies are fundamentally different in their mandates, objectives, and programs overall. In the current Proposed Rule, the EPA claims that:

While [we] remain committed to ensuring that GHG emissions standards for light-duty vehicles are coordinated with fuel economy standards for those vehicles, it is unnecessary for the EPA to do so specifically through joint rulemaking. (EPA, 2021, p. 30)

Numerous other stakeholders submitted comments in direct response to the emissions standards of the recent Notice of Proposed Rulemaking (NPRM). For some, these comments were an opportunity to describe future visions for federal emissions regulations beyond the 2026 targets of the Proposed Rule. The Environmental Defense Fund (EDF) supported the initiatives put forth in the Proposed Rule, so long as the EPA creates a strong foundation for future action. The EDF's forward-looking comments state:

We urge the administration to propose and finalize those next-generation standards promptly and set new multi-pollutant standards for passenger cars that eliminate tailpipe pollution from new vehicles sold by 2035. Long-term standards beyond MY 2026 are crucial to achieving President Biden's goal of 50 percent sales of new zero-emitting passenger cars and light trucks by 2030. (EDF, 2021, p. 2)

Toyota generally agrees with the emissions standards of the Proposed Rule. At the same time, the automaker believes that the EPA's projections have underestimated the level of electrification the industry will need to meet the EPA's standards, while also overestimating the contribution of CO₂ reduction technologies.

Toyota generally supports the proposed 2023-2026 model year GHG standards. Successful implementation of, and compliance with, the proposed standards require complementary market-development and sustainment measures. (Toyota, 2021, p. 1)

In August 2020, five vehicle manufacturers (Honda, Ford, Volkswagen, BMW, and Volvo) reached an agreement with the state of California to establish more stringent GHG standards than outlined in the SAFE regulation (California Air Resource Board, 2020). Four of these manufacturers submitted comments in support of the EPA's proposed GHG standards, which is more aligned with the California Framework

Honda supports the proposed emissions standards and goals:

The agency's proposed standards move quickly to begin delivering emissions reductions promptly....and bring federal standards in line with the California Framework stringency. Honda supports the proposed MY 2026 targets. (Honda, 2021, p. 4)

Volkswagen echoed that support:

Volkswagen supports the goals of the EPA proposal for reducing vehicle GHG emissions for 2023-2026 MY. (Volkswagen, 2021, p. 7)

Ford supports the proposed emissions standards and goals, with special reference to the California Framework:

Ford supports EPA's proposal to increase the stringency of the SAFE standards... We believe EPA's primary proposal – which would deliver similar overall GHG reductions as the California Framework Agreement – is the appropriate level of stringency. (Ford, 2021, p. 2)

Most of Volvo's opinions on the Proposed Rule are similar to AAI's comments. As mentioned earlier, AAI supports the EPA's proposed emissions standards and goals:

Volvo is a member of the Alliance for Automotive Innovation (AAI) and so [Volvo] supports the comments submitted by [AAI]. (Volvo, 2021, p. 1)

General Motors (GM) was not a participant in the California agreement, but also submitted comments supporting EPA's proposed emissions standards and goals:

GM supports the emission reduction goals of this proposal and believes that the environmental benefits can and should be achieved through high-volume electric vehicle sales that will set the industry on a stronger trajectory to greater GHG reductions in model year 2027 and later. (GM, 2021, p. 3)

Stakeholder Comments Challenging the Revised Emissions Standards

While some organizations recognize the Proposed Rule as an appropriate and necessary first step in implementing future change, not all forward-looking comments shared this opinion. Other comments suggest more stringent regulations, often referencing the Biden Administration's 2030 EV sales target as a quickly-approaching deadline.

Lucid Motors, for example, does not agree that the initiatives put forth in the Proposed Rule are stringent enough for the nation to meet President Biden's 2030 50% EV sales target. The startup states:

Furthermore, the stringency of the proposed standards in the [Notice of Proposed Rulemaking] NPRM is insufficient to achieve President Biden's goal of 50% EV sales by 2030, announced in the August 2021 Executive Order. It will be too late to begin that transition to EVs with the next round of rulemaking starting with MY 2027. (Lucid Motors, 2021, p. 5)

Tesla also agreed that the EPA should impose more stringent standards within the 2023-2026 timeline. Tesla's comments state:

In contrast to [the] proposed outcomes, there are compelling grounds for the EPA to adopt a rule whereby, starting in MY 2023, the standards should be made more stringent...EPA's proposal is neither sufficiently stringent through MY 2026 to meet the agency's statutory burden of protecting the public health and welfare from the impacts caused by climate change, nor does it support the level of EV deployment necessary to meet the Administration's near-term 2030 decarbonization goals. (Tesla, 2021, p. 3)

Among the automakers, only Tesla and Lucid Motors requested more stringent emissions regulations. Responses to the proposed emissions standards were more varied among comments provided by other industry stakeholders. The National Association of Clean Air Agencies (NACAA's) comments suggested that the EPA implement more stringent emissions standards:

EPA should set standards sufficiently stringent to, at a minimum, achieve the same level of emission benefits as under the final standards adopted under the 2012 rule...these standards should create a path to 50 percent of all new passenger cars and light trucks sold in 2030 being zero-emission vehicles...consistent with President Biden's August 5, 2021, Executive Order. (NACAA, 2021, p. 3)

More specifically, NACAA would like the EPA to implement its alternative (more stringent) standard as well as implement an MY 2026 standard that is 10 g/mi more stringent than currently proposed. NACAA believes this will allow the EPA to achieve a trajectory towards emissions benefits that will match the regulations put forth in 2012.

The National Automobile Dealers Association (NADA), which represents over 16,000 franchised automobile and truck dealerships, opposes much of the Proposed Rule. NADA claimed that:

Many OEMs have been unable to comply with EPA's GHG standards since at least MY 2016. NADA believes serious questions exist regarding their ability to meet the proposed mandates in a cost-effective, economically practicable manner that will bring vehicles to market which preserve consumer choice and feature preferences. (NADA, 2021, p. 4)

NADA points out that many OEMs have had difficulty meeting EPA compliance with their current product portfolios. NADA claims that pushing OEMs to comply with more stringent GHG emissions regulations will lead to poor product outcomes and negatively impact automobile dealerships. NADA suggests that the EPA conduct further analysis to adequately understand consumer behaviors and marketplace realities tied to emissions reduction technologies.

Despite some disagreement regarding the EPA's proposed emissions standards, many of the traditional industry stakeholders agree that meeting more stringent standards will be difficult. Accordingly, they

think achieving industry-wide compliance will require coordinated strategies and efforts from OEMs and federal regulators.

Overview of Proposed Carbon Credits and Flexibilities

The concept of carbon offset credits arose in the late 1980s through an early attempt to mitigate climate change (Greenhouse Gas Management Institute). Carbon offset credits function as transferrable instruments certified by governments, representing an emissions reduction of one metric ton of CO₂ or other GHG equivalents (Greenhouse Gas Management Institute). For a governing body like the EPA, these credits are helpful for monitoring and enforcing regulations related to GHG emissions reductions. Automakers can accumulate credits by producing lower-emission vehicles and efficient technologies or by purchasing credits from other automakers. Credit multipliers function as incentives for advanced technology vehicles, essentially allowing manufacturers to count certain lower-emission vehicles as more than one vehicle in the compliance process. Additionally, manufacturers can apply for off-cycle credits by producing efficient technologies whose benefits may not be directly captured by EPA compliance tests (e.g., aerodynamic improvements, thermal control technologies, engine idle start-stop, high-efficiency lighting) (EPA, 2021).

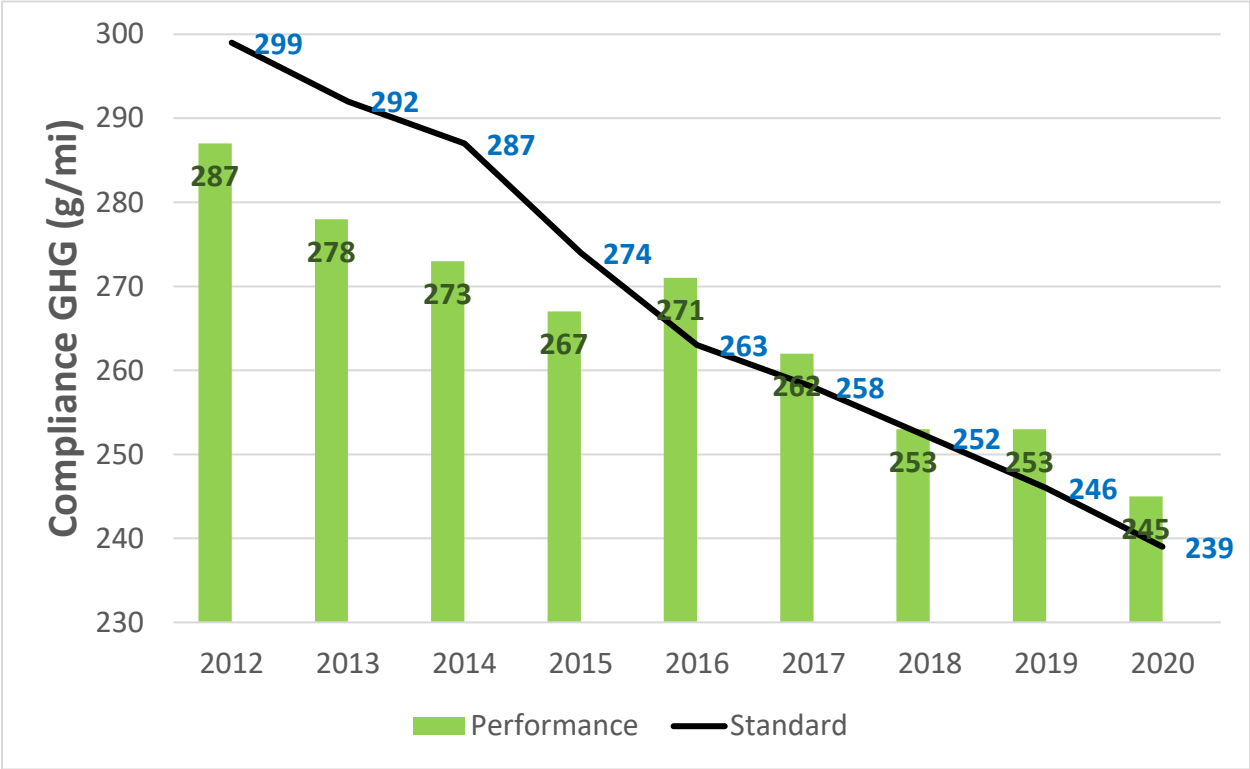
To meet the emissions standards put forth by the EPA, automakers could achieve compliance by performing at the standard or by spending their carbon offset credits. The EPA is now proposing additional and revised flexibilities to support the industry, as automakers are faced with increasingly stringent emissions standards and soon-expiring credits. These carbon credit flexibilities may help automakers who appear to be approaching a credit crunch_ (Nriagu, 2021).

The Proposed Rule introduces new and modified emissions credit flexibilities for automakers. These new incentives include:

- A limited extension of credits generated from the MY 2016 through MY 2020 standards, to be carried forward for compliance with the proposed standards.
- A restoration of capped advanced technology vehicle multiplier credits for MY 2022 through 2025, to encourage the introduction of zero and near-zero emissions vehicles.
- Restoration of the 2012 Rule's full-size pickup truck incentives for strong hybrids for MY 2022 through 2025.
- An increase of the "off-cycle" credits menu cap from 10 g/mile to 15 g/mile. Off-cycle credits recognize the emissions benefits of technologies that provide real-world emissions reductions that are not captured on the EPA compliance tests. (EPA, 2021, p. 7)

Figure 2 shows that automakers consistently met compliance with the EPA's tailpipe GHG emissions standards from 2012 through 2015. However, starting in 2016, the industry as a whole began failing to meet the EPA's increasingly stringent emissions standards. However, despite failing to meet the EPA's tailpipe emissions standards through performance, auto manufacturers were *still able to maintain compliance* by spending their carbon offset credits.

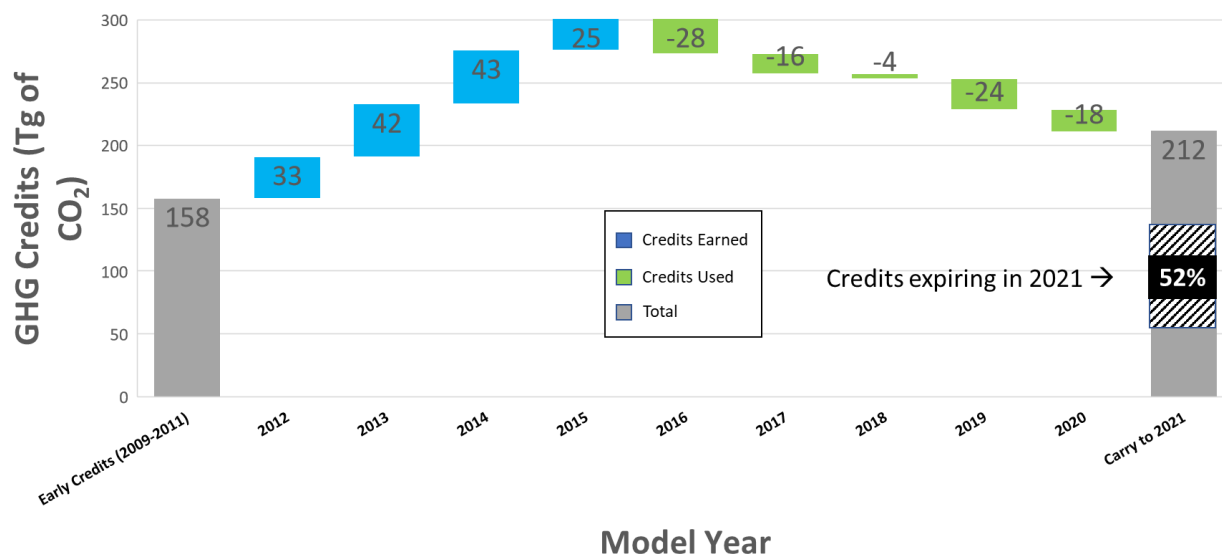
Figure 2: Automotive Industry GHG Performance and Standards 2012 - 2020



Source: The 2021 EPA Automotive Trends Report

As a result of exceeding EPA standards through 2015, vehicle manufacturers amassed a strong balance of carbon credits. As shown in Figure 3, the automakers continued to generate credits through performance until the industry’s carbon credit bank reached its peak in 2015. In 2016, the industry began to use more credits than it was generating, entering a period of credit depletion in 2016. This trend continued through 2020.

Figure 3: Automotive Industry Credit Generation and Use 2012 - 2020



Source: The 2021 EPA Automotive Trends Report

As noted previously, Tesla’s comments called for more stringent regulation within the 2023-2026 timeline. The company also provided comments on the new emissions compliance flexibilities:

Additionally, from MY 2023 to MY 2026 the equivalent of 30 percent of EPA’s proposed stringency is lost to the new and expanded compliance flexibilities. In contrast to these proposed outcomes, there are compelling grounds for the EPA to adopt a rule whereby, starting in MY 2023, the standards should be made more stringent, all proposed compliance flexibilities should be removed, and the final standards should put the country on a trajectory to achieve 100 percent EV sales by 2030. (Tesla, 2021, p. 1)

Tesla has benefited from selling their newly-generated credits, so it is not surprising that they would call for removing certain flexibilities. An influx in available credits would dilute the value of Tesla’s credits. Tesla’s position highlights a significant divide among automakers based on their credit balance, product portfolio, and compliance capabilities.

Stellantis, an automaker with a large bank of purchased carbon credits, submitted comments on the Proposed Rule’s compliance flexibilities. The company generally supports the extension and expansion of flexibilities, but recognizes certain aspects of the flexibilities as “overly constraining.” The comments specifically mention issues regarding the 2.5 g/mile cap placed on the extended advanced technology vehicle multipliers and the redefinition of three off-cycle emissions reduction technologies. Stellantis put forth several suggested revisions to the credit flexibilities:

EPA Should increase the EV multiplier cap to the same level proposed in the California Framework to incentivize EV growth from the current 2.5% rate to an 8-13% rate... EPA should extend appropriate EV multipliers through MY 2026... EPA should avoid the redefinition of certain technologies, [which would reduce their value to OEMs which had invested]. (Stellantis, 2021, pp. 2-3)

The Edison Electric Institute (EEI) also provided comments supporting the EPA’s proposed regulatory flexibilities. EEI stated that it supports the implementation of these flexibilities, as long as their purpose remains to support automakers as they accelerate the production of lower-emission technologies. The institute states:

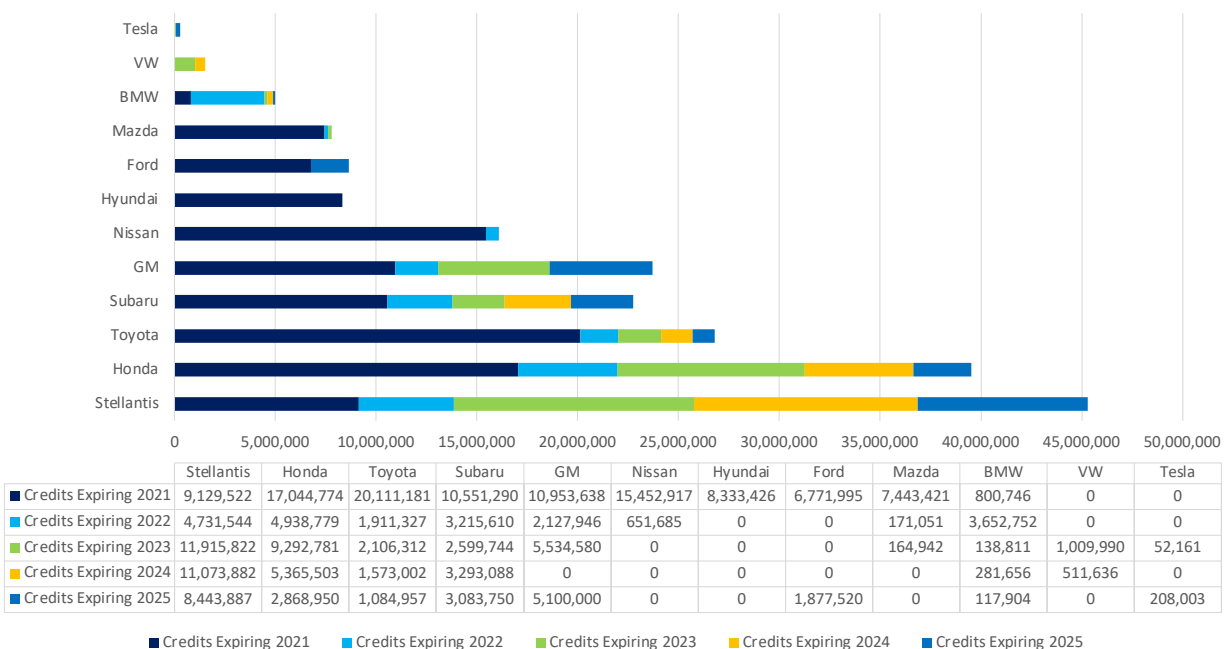
Regulatory flexibilities are a practical and longstanding method of helping affected sources comply with environmental regulations in efficient, cost-effective, and commonsense ways... the Agency should continue to monitor [these] flexibilities to ensure they facilitate the transition to increasingly stringent standards required for the zero-emissions future—not impede that transition. (EEI, 2021, p. 9)

Extension of Credits and Flexibilities: Discussion and Comments

PROPOSED: A limited extension of credits generated from the MY 2016 through MY 2020 standards, to be carried forward for compliance with the proposed standards (EPA, 2021).

As shown in Figure 4, a substantial volume of carbon credits will be expiring in 2021 and the following years. Several companies, e.g., Ford, Hyundai, Mazda, and Nissan, will lose most of their currently-available credits after 2021. Other companies, e.g., GM, Honda, Stellantis, and Toyota, have credit banks with more longevity. Tesla generates many credits every year due to its battery-electric portfolio but famously sells most of its credits rather than banking them.

Figure 4: Manufacturer Credit Balance After Model Year 2019



Source: The 2021 EPA Automotive Trends Report

Stakeholder Comments in Support of the Extension of 2016 – 2020 Emissions Credits

Honda supports the extension of credits, with some added requests; that credits from MY 2016 be extended for two additional years, and credits from Model Years 2017-2020 be extended by one additional year:

Honda has previously supported the concept of extended credit carry forward for Model Year 2016-2020 credits, and does so here as well...we [also] see rationale for extending the credit carry forward provisions beyond those specified in the proposed rule. (Honda, 2021, p. 4)

Toyota also supports the extension of 2016-2020 credits, specifying they will be a helpful resource to comply with upcoming changes to EPA emissions standards:

Toyota agrees extending the life of credits manufacturers have earned from 2016 to 2020 MY can help manage the short lead time provided to comply with the proposed 10% stringency jump between 2022 and 2023 MY and the required annual improvements that follow. (Toyota, 2021, p. 10)

Stakeholder Comments Challenging the Extension of 2016 – 2020 Emissions Credits

Lucid Motors believes that the extension of these credits as put forth in the Proposed Rule, is counterproductive. Lucid states that providing these flexibilities will counteract the increased stringency of the proposed emissions regulations:

EPA has over-expanded credit carry-forward for model years 2023-2026. While Lucid understands that some degree of flexibility in the use of credits is important to facilitate the transition to more stringent standards, the proposed increase in flexibility weakens the stringency jump in the standards. (Lucid Motors, 2021, p. 4)

Tesla claims that the extension of credits is beneficial to companies who have not made significant efforts/progress in reducing GHG emissions, while essentially punishing companies who have generated a substantial number of credits through over-compliance:

EPA should not extend the lifetime of previously earned credits... Such a proposal rewards manufacturers that have not adequately moved to deploy technologies in the U.S. to meet the past performance standards...the credit lifetime expansion will also lessen the immediate value of earned credits. (Tesla, 2021, p. 20)

Understandably, Tesla and Lucid Motors (BEV manufacturers) would oppose any changes that reduce the value of their tradeable credits. Any actions taken by the EPA to reduce the value of carbon credits are a detriment to manufacturers with established carbon credit revenue streams.

Restoration of Capped Advanced Technology Vehicle Multiplier Credits: Discussion and Comments

PROPOSED: *A restoration of capped advanced technology vehicle multiplier credits for MY 2022 through 2025, to encourage the introduction of zero and near-zero emissions vehicles* (EPA, 2021).

The restoration of advanced technology vehicle multiplier credits is intended to accelerate the development and release of lower-emission propulsion systems and adjacent technologies. Ideally, this flexibility will entice automakers to actively pursue low and zero-emissions technologies. The EPA hopes that these incentives will help expedite these technologies into the market and lower costs by gaining scale economies sooner.

Industry Comments in Support of Advanced Technology Vehicle Multiplier Credits

Toyota supports the proposed flexibilities overall. The automaker recommends that the EPA increase the proposed PHEV multiplier from a 1.6X multiplier to a 1.8X multiplier. Toyota also recommends the EPA increase the cumulative credit cap to the same level as the California

Framework. Lastly, Toyota suggests that the multipliers and cap be extended to the 2026 model year, or at least made available for four years:

[Toyota] appreciates EPA’s holistic approach and supports regulatory flexibilities that help manufacturers manage compliance and push desired technologies into a growing but uncertain market - Toyota requests the PHEV multiplier be increased closer to that provided for BEV’s... [Toyota] also requests the proposed 2.5 g/mi cumulative cap be increased to 5.8 g/mi, to be consistent with the benefit provided under the California Framework...Finally, [Toyota] requests the multipliers and cap be extended to 2026 model year, or at least both be available any four years between and including the 2022 and 2026 model years. (Toyota, 2021, p. 6)

Honda recognizes the value of credit multipliers for near-term innovation and production of advanced technologies. However, Honda warns that excessive use of these multipliers may prove counterproductive for the industry:

[Honda] concurs with [the restoration of advanced technology multipliers] ... At the same time, Honda shares concern about emissions benefits erosion resulting from excessive use of multipliers, and supports a thoughtfully designed program including an appropriate usage cap. (Honda, 2021, p. 6)

Volkswagen also supports the restoration of advanced technology vehicle multipliers. The automaker recognizes that these will not contribute to immediate emissions reductions throughout the industry, but they will prove valuable in the long term:

Volkswagen supports the extension and enhancement of the advanced technology vehicle multipliers... Volkswagen agrees that while the multiplier may reduce the overall pragmatic reductions of CO₂ in the near-term, the flexibility will drive additional volumes of electrification beyond which otherwise may be achieved. (Volkswagen, 2021, p. 12)

Finally, Ford also supports the restoration of advanced technology vehicle multipliers with some alterations to better support coordination with the California Framework:

Ford supports EPA’s proposal to extend the Advanced Technology Vehicles multipliers first promulgated in the 2017-2025 MY “One National Program” GHG standards. (Ford, 2021, p. 3)

Stakeholder Comments Challenging the Advanced Technology Vehicle Multiplier Credits

Automakers that only produce BEVs have unique perspectives on the multiplier credits. Lucid supports the restoration of advanced technology vehicle multipliers but suggests the standard be different for BEV and zero-emission vehicle (ZEV) manufacturers. Lucid believes that the EPA should not cap these multipliers for manufacturers that only produce zero-emission vehicles:

[ZEV-only manufacturers like Lucid] should not be subject to an advanced technology multiplier cap. This cap was intended to target manufacturers that produce vehicles with internal combustion engines and prevents them from counterbalancing high-emitting vehicles with ZEV sales. ZEV-only manufacturers should not be subject to this cap because they are not offsetting sales of ICE vehicles in their own fleets. (Lucid Motors, 2021, p. 5)

Tesla does not support advanced technology vehicle multipliers, despite being one of the primary beneficiaries of this flexibility. The company claims that the existence of these multipliers will prolong the deployment of lower-emission technologies and vehicles among other automakers.

EPA should not reintroduce the alternative vehicle multiplier... The renewal and increased value are unnecessary and, rather than serve as an incentive, will further delay manufacturers from deploying large amounts of electric vehicles in the U.S...the enhanced multiplier unnecessarily rewards late-acting manufacturers with excessive and richer credits after over a decade of notice from the EPA. (Tesla, 2021, p. 20)

In addition to their claim, it's worth noting that Tesla would benefit from a more constrained credit market, which would likely drive up the value of their credits.

Restoration of Full-Size Pickup Truck Strong Hybrid Credits: Discussion and Comments

PROPOSED: *A restoration of the 2012 rule's full-size pickup truck incentives for strong hybrids for MY 2022 through 2025* (EPA, 2021).

Like the credit multiplier incentive discussed above, The EPA proposes a restoration of incentives intended to accelerate the development and release of full-size strong hybrid pickup trucks. The EPA included the opportunity for manufacturers to gain credits for the sale of strong hybrid full-size pickups to encourage manufacturers to use advanced technology in the segment. Some manufacturers have recently introduced strong hybrid pickup trucks into the market. Concomitantly, some manufacturers are introducing BEV pickups. There is some uncertainty about the consumer acceptance of both technologies.

Stakeholder Comments in Support of Restoring the Full-Size Pickup Truck Incentives for Strong Hybrids

Toyota supports the reinstating of the advanced technology incentives for strong hybrid full-size pickup trucks, with an added request:

Toyota supports reinstating the advanced technology incentives for full-size pickup trucks, but requests the incentives apply through the 2026 model year, or at least any four years between and including 2022 and 2026. (Toyota, 2021, p. 8)

Ford, a company that relies heavily upon the sale of its full-size pickup trucks and has invested in hybrid technology for its main pickup truck model, also supports reinstating of the advanced technology incentives for strong hybrid full-size pickup trucks:

Ford believes that this provision continues to be essential in enabling continued adoption of advanced technology in the full-size pickup segment and supports EPA's proposed reinstatement. (Ford, 2021, p. 4)

The Electric Drive Transportation Association (EDTA), a trade association of established and emerging manufacturers of vehicles, batteries, and components as well as electricity providers and infrastructure developers, commented that the advanced technology incentives for full-size pickup trucks are necessary to ensure vehicles meet consumers driving needs:

EDTA supports the reinstatement of the incentives for full-size pickup strong hybrids... We agree with EPA's rationale that advanced technologies are "particularly challenging due to the need to preserve towing and hauling capabilities" and will help to address initial market challenges. (EDTA, 2021, p. 3)

Stakeholder Comments Challenging the Restoration of Full-Size Pickup Truck Incentives for Strong Hybrids

Rivian Automotive, the manufacturer of the first fully-electric pickup truck, does not view incentives for strong hybrid pickup as useful:

EPA previously offered an incentive for “strong” and “mild hybrid” pick-up trucks in the form of a grams per-mile, per-vehicle credit. Rivian’s own groundbreaking product offerings prove that hybridization of pick-up trucks is a technological dead-end—while incrementally better than a conventional ICE, hybrids fail to excite the driving public and are insufficient to the task of decarbonizing the transportation sector. Only fully electric models will rise to the challenge of deep emissions reductions. (Rivian, 2021, p. 4)

Tesla, with plans to produce its fully-electric pickup truck, points to a wave of several other automakers who are also actively developing fully-electric pickup truck models. The company believes incentives for strong hybrids should not be an industry/federal priority.

EPA should not renew the advanced technology incentives for full-size pickups...EPA’s analysis underestimates the deployment of newly manufactured full EV pickup trucks... Tesla also asserts this incentive is not needed to incentivize deployment of actual EV pickups and should be removed to increase the proposal’s stringency. (Tesla, 2021, p. 22)

Increase in Off-Cycle Credits Menu Cap: Discussion and Comments

PROPOSED: An increase of the “off-cycle” credits menu cap from 10 g/mile to 15 g/mile. Off-cycle credits recognize the emissions benefits of technologies that provide real-world emissions reductions that are not captured on the EPA compliance tests (EPA, 2021).

There has been a substantial amount of innovation aimed towards reducing vehicle emissions throughout the automotive industry. The EPA has implemented compliance tests to quantify some of these improvements. Despite these structured tests, not every efficiency improvement is accurately captured within the EPA test cycles. Because of this, the EPA has established an “off-cycle” classification for technologies that may not be captured in their structured tests. EPA rules currently allow for credit up to 10g/mile for recognized off-cycle technologies. The EPA has proposed to increase the off-cycle credit cap to 15 g/mile.

Stakeholder Comments in Support of Increased Incentives from the “Off-Cycle” Credits Menu

Toyota supports the increased incentives for off-cycle credits:

Toyota supports robust verification of off-cycle technology benefits... Toyota also supports increasing the maximum credits earned under the technology menu from 10 g/mi to 15 g/mi. (Toyota, 2021, p. 9)

General Motors also supports the increased incentives for off-cycle credits:

General Motors believes regulatory incentives for real world off-cycle emissions reductions will continue to play an important role in reducing CO₂ emissions and increasing fuel economy. As such, GM supports EPA’s proposal to raise the cap on off-cycle technologies. (GM, 2021, p. 6)

In addition to supporting the credit cap raise for off-cycle technologies, Ford mentions that they are continuing to develop off-cycle technologies for zero-emission and near-zero-emission vehicles:

Ford supports raising the credit cap for off-cycle menu technologies to 15 g/mi, including for past model years... Ford has [also] submitted off-cycle demonstration credit applications for BEV and PHEV technologies that provide real electrical load savings. (Ford, 2021, p. 4)

Stakeholder Comments Challenging the Increased Incentives From the “Off-Cycle” Credits Menu

Lucid Motors views off-cycle technology credits as a benefit for ICE-vehicle manufacturers. The company does not view off-cycle reductions as relevant, compared to the output of ZEVs:

The increase in the cap on off-cycle credits allows extra flexibility for ICE vehicle manufacturers in return for measures that offer only questionable reductions in GHG emissions... these proposed flexibilities should be revisited and reduced in the final rule. (Lucid Motors, 2021, p. 5)

Similarly, Tesla believes only ICE-vehicle manufacturers will benefit from off-cycle credits. To Tesla, off-cycle emissions savings are not worthwhile, and the industry should focus on transitioning towards ZEVs:

EPA should eliminate, not expand, off-cycle credits... The utilization and increase in off-cycle credit use creates a disparity in the type of vehicles that are rewarded for deploying efficiency technology... The off-cycle menu credits consist almost entirely of technologies applicable for use on internal combustion vehicles. (Tesla, 2021, p. 22)

Conclusion

Automotive industry stakeholders generally support the plans put forth in the EPA’s Proposed Rule. Regarding the revised emissions standards, these implementations represent stringent and necessary steps to achieve lower emissions throughout the transportation sector. Disagreements with the emissions standards state that the new standards are not stringent enough, particularly with the Biden Administration’s new and ambitious 2030 decarbonization goals. The carbon credit flexibilities proposed by the EPA have been the other main topic of discussion. Industry stakeholders provided a wide range of comments based on the unique ways that the proposed flexibilities may impact their business. For some automakers, these flexibilities represent much-needed opportunities to comply with EPA regulations, while others view the flexibilities as a backward step in reducing the industry’s emissions. Regardless of any opinion related to the Proposed Rule, every stakeholder would support developing, introducing, and producing advanced low-emissions technologies. The ease with which these technologies will saturate the market will uniquely rely on guidance from organizations like the EPA, NHTSA, and CARB.

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