



Alliance for Automotive Innovation

Comments to U.S. Environmental Protection Agency on

Revision of Tier 4 Criteria Pollutant Standards, Part 1: Amendments to Phase-In Schedule for Light-Duty and Medium-Duty Vehicles; Proposed Rule

**Docket ID No. EPA-HQ-OAR-2025-3297
RIN 2060-AW96**

July 6, 2026

The Alliance for Automotive Innovation (“Auto Innovators” or “the Association”) appreciates the opportunity to comment on the U.S. Environmental Protection Agency (“EPA” or “the Agency”) Notice of Proposed Rulemaking (“NPRM”) regarding amendments to the phase-in of Tier 4 criteria emissions standards for light- and medium-duty vehicles.¹

Auto Innovators represents the full auto industry, including the manufacturers producing most vehicles sold in the U.S., equipment suppliers, battery producers, semiconductor makers, technology companies, and autonomous vehicle developers. Our mission is to work with policymakers to realize a cleaner, safer, and smarter transportation future and to ensure a healthy and competitive auto industry that supports U.S. economic and national security. Representing over 5 percent of the country’s GDP, responsible for supporting nearly 11 million jobs, and driving \$1.5 trillion in annual economic activity, the automotive industry is the nation’s largest manufacturing sector.

Our members are deeply committed to a cleaner, safer, and smarter automotive future, investing billions of dollars to advance vehicle electrification, to improve internal combustion engine (“ICE”) vehicle efficiency, and to dramatically reduce criteria and air toxic emissions.

When the Tier 4 rule was finalized in 2024,² Auto Innovators warned that its compressed requirements were on the ragged edge of achievability, even if every external variable went exactly right.³ Success depended entirely on a flawless scenario of factors beyond the control of

¹ U.S. Environmental Protection Agency. Revision of Tier 4 Criteria Pollutant Standards; Part 1: Amendments to Phase-In Schedule for Light-Duty and Medium-Duty Vehicles. 91 Fed. Reg. 28463 (May 18, 2026). Hereinafter “NPRM”.

² U.S. Environmental Protection Agency. Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles; Final Rule. 89 Fed. Reg. 27842 (Apr. 18, 2024). Hereinafter “Multi-Pollutant Rule”.

³ Bozzella. EPA’s Final EV Plan: The Ragged Edge of Achievable? Mar. 20, 2024. <https://www.autosinnovate.org/posts/blog/ragged-edge-of-achievable>.

automakers: unprecedented consumer adoption of electric vehicles (“EVs”),⁴ the rapid creation of secure and resilient battery supply chains, and sustained government incentives to help drive the market transition and offset higher vehicle costs.

Unfortunately, the U.S. market for electric vehicles has not aligned with those assumptions. Growth in consumer demand for EVs flattened through 2024 and that trend continued in 2025, subsidies have evaporated, and parts of EV supply chains remain heavily dependent on China. We sincerely appreciate that EPA has formally identified these critical changes to the automotive landscape and its negative effects on the feasibility of the Tier 4 standards within this proposed rule.

Given these realities, Auto Innovators strongly supports EPA’s proposal to extend the Tier 3 program, deferring applicability of the Tier 4 requirements while it considers additional revisions to Tier 4 standards and related provisions in a subsequent Part 2 rulemaking.

Below, we provide detailed feedback on EPA’s proposal and recommendations designed to ensure a final rule is clear, implementable, and achieves its intended goals.

⁴ Herein, we use the terms “electric vehicles” or “EVs” to refer to plug-in electric vehicles in general including battery electric and plug-in hybrid electric vehicles. We use the terms “battery electric vehicles” or “BEVs” to refer to battery electric vehicles specifically where appropriate.

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I. THE TIER 3 PROGRAM SHOULD BE EXTENDED FOR A MINIMUM OF TWO YEARS; A THREE-YEAR EXTENSION IS REASONABLE (REQUEST FOR COMMENT C-1)

Auto Innovators supports EPA’s proposed extension of the Tier 3 emissions program to model years (“MYs”) 2027 and 2028, delaying the start of the Tier 4 program to MY 2029. The Association would also welcome extension of the Tier 3 program for an additional year, through MY 2029 (Request for Comment C-4). The time provided to develop and apply the requisite technology to meet the Tier 4 standards is inadequate, particularly in light of major changes to expectations for the U.S. electric vehicle market.

If the Tier 3 program is extended – whether for two years, three years, or some other length – such extension should also be made for the Tier 3 small volume manufacturer provisions in addition to the primary program.

A. The Tier 4 Standards Provided Inadequate Lead Time to Develop and Deploy the Requisite Technologies in General and Given Recent U.S. EV Market Changes Specifically

The Clean Air Act (“CAA”) provides that vehicle emissions standards promulgated under § 202(a) (42 U.S.C. § 7521(a)) “shall take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology [. . .]”

In the case of the Tier 4 standards, the requisite technology for compliance with non-methane organic gases plus oxides of nitrogen (“NMOG+NOx”) standards was generally considered by EPA to be electric vehicles. EPA anticipated a rapid growth in U.S. electric vehicle market share that has not and is no longer anticipated to come to fruition.

For Tier 4 particulate matter (“PM”) standards, EPA generally anticipated the addition of gasoline particulate filter technology to ICE vehicles. The Tier 4 rules require 20% of vehicles up to 6,000 lbs. gross vehicle weight rating (“GVWR”) to meet the Tier 4 PM standards in 2027, 40% to meet them in 2028, and 60% to meet them in 2029. Expanded battery electric vehicle (“BEV”) sales would have helped meet the phase-in requirements, allowing manufacturers more time to develop GPF systems for U.S. models and to align their application with other ICE vehicle design changes.

1. The Tier 4 Standards Provided Less Than Two Years of Lead Time

The Tier 4 criteria emissions standards for light- and medium-duty vehicles were finalized April 18, 2024.⁵ The standards apply to MY 2027 and later vehicles.

MY 2027 vehicle sales could have started as early as January 2, 2026, less than two years after the Tier 4 rule's adoption.⁶ In general, sales of most MY 2027 vehicles will likely begin by mid-2026 at the latest.

Prior to sale, vehicle manufacturers need lead time to research and develop any requisite changes to ICE vehicle emission control systems and to certify those vehicles for conformity with the Clean Air Act and EPA's regulations thereunder. This process may take two to three years in general, with even longer lead times necessary if significant changes are required to engines or to vehicle designs (e.g., to accommodate additional hardware such as gasoline particulate filters).⁷

An abbreviated timeframe was provided to manufacturers for the development and execution of plans for compliance with Tier 4 regulations for MY 2027 to MY 2029 vehicles, particularly in light of manufacturers' current compliance status with Tier 3 regulations and the extent of changes from previous expectations for emissions control system development as described further below. As such, expanded electrification of vehicles likely played a significant role in compliance plans, even for these early model years of the Tier 4 program.

2. Manufacturers Have Yet to Meet Tier 3 Standards on Average

Early in the Tier 3 program, automakers achieved lower average federal test procedure ("FTP") NMOG+NOx tailpipe emissions than required (Figure 1). As the stringency of the Tier 3 standards continued to increase, average emissions fell in line with the standards in MYs 2022-2023. Later, in MYs 2024-2025, as the U.S. electric vehicle market share ceased growing,⁸ average performance was higher (worse) than required by the fleet average standard. As of MY 2025, production-weighted fleet average FTP NMOG+NOx emissions were approximately 35 mg/mile (5 mg/mile higher than the Tier 3 standard of 30 mg/mile) even with the inclusion of automakers that sell only battery electric (zero-emission) vehicles.

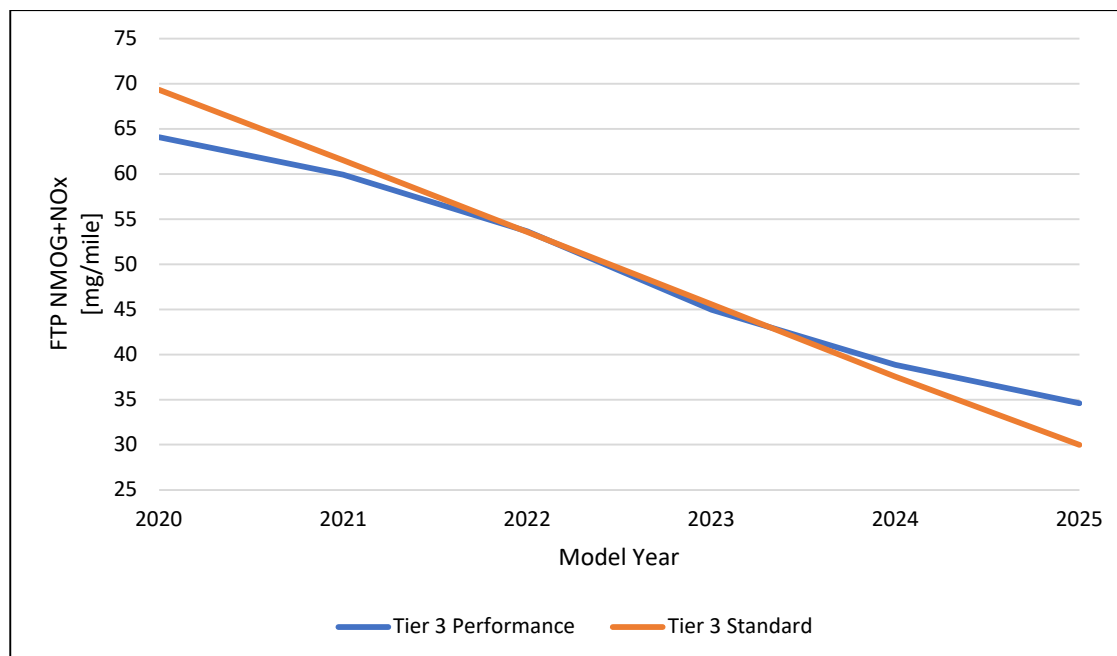
⁵ Multi-Pollutant Rule (*supra* note 2).

⁶ See 42 U.S.C. § 7521(b)(3)(A)(i) and 40 C.F.R. §§ 85.2302, 85.2304, and 86.1803-01 (defining "Model year").

⁷ See Center for Automotive Research. How Automakers Plan Their Products. Jul. 2007. Regulations.gov Docket ID No. EPA-HQ-OAR-2025-3297-0003. Also available at <https://www.cargroup.org/wp-content/uploads/2017/02/HOW-AUTOMAKERS-PLAN-THEIR-PRODUCTS.pdf>.

⁸ See discussion on the U.S. battery electric vehicle market, below.

Figure 1: Light-Duty Program Fleet Average NMOG+NOx Tier 3 Performance and Standard, MYs 2020-2025.⁹



Current Tier 3 performance has implications for the early years of the Tier 4 program. It demonstrates that (on average) manufacturers of ICE vehicles are using previously banked compliance credits to maintain compliance and/or generating debits which will need to be addressed with later excess improvements or credit purchases from other manufacturers. Meeting the Tier 4 standards will first require additional improvements to meet the Tier 3 standards followed by yet more improvements to address the Tier 4 standards in a short time. Also, notwithstanding the Association's position that credit banking and trading should not be considered when determining the feasibility of emissions standards,¹⁰ current Tier 3 compliance levels reduce any available credits that could be carried forward to aid in compliance with Tier 4 standards.

Extending the Tier 3 program would provide manufacturers (particularly those of ICE vehicles) additional time to first meet the Tier 3 program before embarking on the significant additional emissions reductions required under the Tier 4 program.

⁹ Performance data from S&P Global Mobility, FTP NMOG+NOx Emissions Analysis of MYs 2020-2025 Light-Duty Fleet (Dec. 15, 2025), prepared for and funded by Alliance for Automotive Innovation. Production-weighted average standard calculated by Alliance for Automotive Innovation using data provided by S&P Global Mobility and assuming all vehicles certified to 150,000 mile useful life (using a numerically less stringent standard).

¹⁰ See discussion below.

3. *Prior to the Tier 4 Rule, Manufacturers Were Targeting Compliance with California LEV IV Regulations; The Tier 4 Standards Require Greater Emissions Reductions with Inadequate Lead Time*

Prior to the enactment of the Multi-Pollutant Rule, manufacturers were in the process of developing emission control systems to meet California’s “LEV IV” criteria emission rules.¹¹ The LEV IV program required light-duty vehicles to meet a 30 mg/mile FTP NMOG+NOx fleet average standard excluding zero-emission vehicles such as BEVs by MY 2029. Automakers considered these standards challenging given the broad range of emissions levels across existing vehicles in the fleet and the phase-out of BEVs and other zero-emission vehicles from the fleet average.

As of MY 2025, the national FTP NMOG+NOx production-weighted bin fleet average emissions for light-duty program vehicles up to 6,000 lbs. GVWR without BEVs and other zero-emission vehicles was 35.5 mg/mile.¹² Meeting a 30 mg/mile standard without BEVs (as in the LEV IV program) would require manufacturers to improve ICE vehicles by an average 15%.

Under EPA’s original projections for BEV market share,¹³ the Tier 4 standards for vehicles up to 6,000 lbs. GVWR would have had light-duty program ICE vehicles achieve a production-weighted average emissions rate of 34 to 35 mg/mile in MYs 2027-2029 (Table 1). If the projection for BEV market share had been accurate, this standard would not have been unreasonable given the MY 2025 ICE vehicle average of 35.5 mg/mile and ongoing efforts to lower that to 30 mg/mile to meet California regulations.

¹¹ See 13 C.C.R. § 1961.4.

¹² Calculated by Auto Innovators using data compiled by S&P Global Mobility: FTP NMOG+NOx Emissions Analysis of MYs 2020-2025 Light-Duty Fleet: Data File. Dec. 15, 2025. Hereinafter “S&P Global Mobility FTP NMOG+NOx Study”. Prepared for and funded by Alliance for Automotive Innovation..

¹³ Calculated by Auto Innovators using data provided by EPA: U.S. Environmental Protection Agency. Optimization Model for reducing Emissions of Greenhouse Gases from Automobiles (OMEGA). <https://www.epa.gov/regulations-emissions-vehicles-and-engines/optimization-model-reducing-emissions-greenhouse-gases>. Accessed Jun. 29, 2026. OMEGA 2.5.0. Light-duty central case (March 2024) zip\Final\out\2024_02_27_16_06_31_LDV_central_to2055_20240227_Final_vehicles.csv. Hereinafter “Multi-Pollutant Rule OMEGA Output Data”.

Table 1: ICE vehicle NMOG+NOx emission rate required to meet Tier 4 NMOG+NOx standards for light-duty program vehicles assuming projected BEV market shares in the EPA Multi-Pollutant Rule Central Analysis, MYs 2027-2029

Model Year	Tier 4 Fleet Average NMOG+NOx Standard (Up to 6,000 lbs. GVWR) [mg/mile]	Multi-Pollutant Rule Central Analysis Projected BEV Market Share (Up to 6,000 lbs. GVWR)	Implied ICE Vehicle NMOG+NOx Emissions Rate to Meet the Standard [mg/mile]
2027	25	28%	34.6
2028	23	32%	33.9
2029	21	40%	34.8

However, under EPA’s new projections for U.S. BEV market share,¹⁴ much deeper reductions in ICE vehicle emissions become necessary than were anticipated when the Tier 4 rules were finalized (Table 2). By MY 2028 ICE vehicle emissions would need to be reduced to 26.4 mg/mile, then to 24.7 mg/mile by MY 2029.

Table 2: ICE vehicle NMOG+NOx emission rate required to meet Tier 4 NMOG+NOx standards for light-duty program vehicles up to 6,000 lbs. GVWR assuming projected BEV market shares in the NPRM, MYs 2027-2029

Model Year	Tier 4 Fleet Average NMOG+NOx Standard (Up to 6,000 lbs. GVWR) [mg/mile]	NPRM Projected BEV Market Share (Up to 6,000 lbs. GVWR)	Implied ICE Vehicle NMOG+NOx Emissions Rate to Meet the Standard [mg/mile]
2027	25	9%	27.5
2028	23	13%	26.4
2029	21	15%	24.7

EPA-projected BEV market share calculated by Auto Innovators from OMEGA model output files provided by EPA.

Alternatively, if ICE vehicles were to achieve a 30 mg/mile NMOG+NOx FTP fleet average by MY 2027, BEV market share would need to more than triple today’s 5.4% (Q1 2026)¹⁵ to meet the Tier 4 NMOG+NOx standards (Table 3). It is clear that even small differences in achievable ICE vehicle average emissions can have a drastic effect on the BEV market share necessary to meet Tier 4 fleet average NMOG+NOx standards. For example, in MY 2028, the difference between achieving average ICE emissions of about 25 mg/mile (Table 2) and 30 mg/mile (Table 3) is 15% EV market share versus 30% market share, respectively.

¹⁴ Calculated by Auto Innovators using data provided by EPA: U.S. Environmental Protection Agency. Battery Electric Vehicle Projected Market Share Analysis. May 2026. Regulations.gov Docket ID No. EPA-HQ-OAR-2025-3297-0056. Attachment 2025_11_07_15_24_45_LDV_vrfm_a1_20251107.zip. Hereinafter “NPRM OMEGA Output Data”. Values used in Table 2 reflect vehicles up to 6,000 lbs. GVWR.

¹⁵ Alliance for Automotive Innovation. Get Connected. 2026 (Q1). 6. Available at <https://www.autosinnovate.org/posts/papers-reports/get-connected-ev-quarterly-2026-q1>. Accessed July 1, 2026. Hereinafter “Get Connected Q1 2026”.

Table 3: BEV market share required to meet Tier 4 fleet average NMOG+NOx standards for vehicles up to 6,000 lbs. GVWR if ICE vehicles achieve 30 mg/mile on average, MYs 2027-2029

Model Year	Tier 4 Fleet Average NMOG+NOx Standard for Vehicles up to 6,000 lbs. GVWR	BEV Market Share Necessary if ICE Vehicles Average 30 mg/mile NMOG+NOx
2027	25	17%
2028	23	23%
2029	21	30%

a) **Additional NMOG+NOx Emission Constraints Apply in Tier 4**

Furthermore, additional ICE vehicle emissions improvements would be required beyond just those on the FTP. The Tier 4 standards also require each vehicle to meet the same NMOG+NOx bin standard across multiple test cycles, including the more challenging high-altitude FTP and standalone US06 test cycles. In contrast, the Tier 3 and LEV IV standards provided an additional emissions allowance for high-altitude operation and used composite supplemental FTP (US06 and SFTP) standards.

The entirety of EPA’s technical assessment of the feasibility of meeting the same NMOG+NOx standards on the low-altitude and high-altitude FTP test cycles was a single sentence: “Modern engine management systems can use idle speed, engine spark timing, valve timing, and other controls to offset the effect of lower air density on exhaust catalyst performance at high altitude conditions.”¹⁶ No data or vehicle demonstration program was provided.

Auto Innovators continues to believe that meeting the same bin standards at high altitude presents greater challenges than EPA’s assessment appears to reflect. As noted in our comments on the Multi-Pollutant Rule,¹⁷ “cold start emissions are impacted by the lower air density at [high] altitude that cannot be overcome by modern controls.” (Internal quotation marks omitted.) Catalyst warm-up strategies have reduced effectiveness, fuel vaporization differs, and exhaust gas recirculation is reduced by lower air density.

For the purposes of the present proposal to delay the Tier 4 standards, EPA should consider that, at minimum, reducing high-altitude emissions to the same level as sea level emissions requires additional development beyond previously demonstrated levels, compounding the challenges of achieving the now greater ICE vehicle emissions reductions that must occur in a very short time.

¹⁶ Multi-Pollutant Rule (*supra* note 2) at 27936 (light-duty vehicles) and 27938 (medium-duty vehicles).

¹⁷ Available at Regulations.gov, Docket ID No. EPA-HQ-OAR-2022-0829-0701.

b) Tier 4 Also Requires Additional Particulate Matter Emissions Reductions

In addition to significant reductions in NMOG+NO_x emissions, the Tier 4 standards also require additional reductions in particulate matter.

Prior to the Tier 4 rule, automakers had been developing ICE vehicle technologies to meet LEV IV PM standards. The LEV IV PM standards for light-duty vehicles are 1 mg/mile on the FTP and 3 mg/mile on the US06 test cycles, respectively.¹⁸ Although some gasoline-powered ICE vehicles may require particulate filters to achieve these levels, it is generally believed that most can achieve these levels through engine hardware and engine control system improvements. Thus, less than two years prior to when the Tier 4 rule took effect, manufacturers had not generally been developing ICE vehicles to include gasoline particulate filters.

The Tier 4 rule includes a PM standard of 0.5 mg/mile across the FTP, US06, and cold FTP. This level of PM emissions control on gasoline-powered vehicles effectively requires gasoline particulate filters (“GPFs”) (or substitution of battery electric or other zero-emission) vehicles. Although such technology exists and has been in use in Europe, it is present in very few vehicles designed for the U.S. market. Adding the technology to vehicles in the U.S. requires engine bay and/or underbody changes to provide the physical space for the hardware, development of control systems based on different test procedures and standards in the U.S., and more extensive on-board diagnostic monitoring systems.

If EPA’s projections of BEV market share for 2027 had been accurate when the Tier 4 program was adopted, the required phase-in for the PM emissions standards could have been met completely with BEVs in MY 2027, and mostly with BEVs in MYs 2028 and 2029. However, as noted by EPA and assessed further below, these market expectations have not materialized and now appear highly unlikely to come to fruition. As such, more ICE vehicles will need GPF technology developed and applied in a very short timeframe.

4. *The Tier 4 Standards Were Broadly Premised on Rapid U.S. Electric Vehicle Market Growth*

EPA’s assessment of the feasibility of the Tier 4 NMOG+NO_x standards was premised on rapid growth in the U.S. market for electric vehicles, including BEVs. In the Multi-Pollutant Rule’s regulatory impact analysis, EPA provided:¹⁹

“[T]he declining FTP NMOG+NO_x fleet average in this proposal is fully feasible with the introduction of zero emission vehicles such as BEVs. [. . .] Even with

¹⁸ See 13 C.C.R. § 1961.4.

¹⁹ U.S. Environmental Protection Agency. Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles: Regulatory Impact Analysis. EPA-420-R-24-004. Mar. 2024. 3-52 *et seq.* Hereinafter “Multi-Pollutant Rule RIA”.

BEV penetrations as low as 35 percent (e.g., as projected in our No Additional BEVs sensitivity) and considering many existing ICE vehicles already emit below 30 mg/mile, manufacturers would comply with the NMOG+NOX standard with minimal aftertreatment improvements for their remaining ICE vehicles.”
(Emphasis added.)

a) **EPA Has Not Demonstrated a Pathway for Compliance with Tier 4 Standards Absent Rapid Electric Vehicle Market Growth**

Although EPA has also suggested that “[c]ontinued reductions in ICE-based vehicle emissions can provide an alternative pathway to compliance (or, at a minimum, offset the number of BEVs a vehicle manufacturer might choose to produce)”,²⁰ the Agency did not provide any evaluation of specific pathways, particularly not at BEV market shares substantially lower than those projected in the Multi-Pollutant Rule.

Ingevity Corporation provided a thorough analysis of the challenges ICE vehicles face in meeting Tier 4 standards without rapid and sustained growth in the U.S. battery electric vehicle market in a recent comment to EPA.²¹ These include the following:

(1) **Stringency of the Tier 4 NMOG+NOx 15 mg/mile Fleet Average**

The Tier 4 light-duty NMOG+NOx fleet average requirement of 15 mg/mile in 2032 falls below the lowest Tier 3 bin of 20 mg/mi and is more stringent than California’s 30 mg/mi LEV IV standard. Without BEVs counted at Bin 0, nearly all ICE vehicles would need to certify at or below Bin 15 to meet the fleet average.²²

(2) **Compliance Margin and Testing Variability**

Compliance margins are necessary for meeting NMOG+NOx bin standards. The Ingevity analysis suggests at least 7 mg/mi margin is needed simply to account for lab-to-lab and test-to-test variability. At very low bin levels, that fixed variability

²⁰ Multi-Pollutant Rule RIA (*supra* note 19) at 3-53.

²¹ Ingevity Corporation. Comment to EPA regarding *Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards*. Sep. 17, 2025. Available at Regulations.gov Docket ID No. EPA-HQ-OAR-2025-0194-1238.

²² This concern is also applicable in the early years of the Tier 4 program despite the higher fleet average requirements. Although the present NPRM only considers a delay of the Tier 4 program by two to three years, manufacturers have limited resources to develop emissions control systems and cannot afford to redevelop and recertify every vehicle annually or in a short timeframe. Therefore, ICE vehicles developed to meet MY 2027-2029 standards, particularly with much lower BEV market share than previously anticipated, must also consider compliance needs for later years of the Tier 4 program.

becomes a large share of the standard and makes certification risk much higher for lower bins.

(3) **Limited Feasibility of Bins 5 and 10**

Bin 5 is unusable and Bin 10 is likely infeasible for ICE vehicles once compliance margin is considered. This leaves Bin 15 as the lowest realistic ICE pathway (assuming technologies are developed to achieve that level), but even that would require certification levels around 8–9 mg/mile.

(4) **Current Certification Data Do Not Support Broad ICE Compliance**

In the MY 2025 EPA certification database, only one test group out of 479 reported a certification level of 8 mg/mi or below, and only 2% certified into Tier 3 Bin 20. It is unrealistic to expect a significant number of ICE test groups to meet Tier 4 Bin 15 requirements by 2032.

(5) **Expanded Test Cycle Requirements**

Tier 4 requires compliance not only on the FTP cycle at low altitude, but also high-altitude FTP, US06, SC03, HFET, and five new California-derived drive cycles. The Ingevity comment emphasizes that EPA did not demonstrate feasibility for ICE vehicles across these added requirements.

(6) **Insufficient EPA Feasibility and Cost Analysis**

The Ingevity comment describes that EPA relied on BEV deployment in its central compliance modeling and did not conduct an independent technology demonstration, cost analysis, or cost-effectiveness analysis showing that an ICE fleet could meet the 15 mg/mi standard without BEVs in the fleet average.

(7) **Likely Product and Technology Impacts**

Ingevity argues that if the Tier 4 standards remain unchanged, manufacturers may need significant engine downsizing, turbocharging, hybridization, advanced catalysts, or removal of higher-emitting ICE products from the market to meet them. This could limit consumer choice and increase compliance costs.

The central conclusion of Ingevity's comment is that the Tier 4 NMOG+NO_x standards are not merely challenging for ICE vehicles; they function as a de facto EV mandate because any ICE vehicle certified above Bin 15 must be offset by BEVs certified at Bin 0 or removed from the fleet mix.

Although the MY 2027-2029 Tier 4 standards are not as low as the 2032 standards that Ingevity primarily analyzed, the same reasoning is still applicable. Achieving an effective ICE vehicle

fleet average of 24-27 mg/mile in MYs 2027-2029 requires large growth in BEV market share or a large number of ICE vehicles to be developed to meet Bin 15 or 20 requirements with adequate headroom to account both for traditional risks under the standard FTP and expanded risks associated with additional test cycles that require the same level of compliance.

5. *The U.S. Electric Vehicle Market Has Failed to Develop as Anticipated by EPA When It Established the Tier 4 Requirements. (Requests for Comment C-1 and C-9)*

When the Tier 4 program was adopted, BEV sales had steadily grown from 2% market share in 2020 to 8% market share in 2023.²³ EPA projected that BEV market share would reach 17% in 2024 and grow to 39% by 2029 in light of the growing market for electric vehicles; manufacturer announcements of new BEV products; strong government policy support in the form of purchase incentives, funding for electric vehicle charging infrastructure, and supply chain development; falling battery costs; and anticipated consumer acceptance of BEVs.²⁴

However, that market growth did not materialize (Table 4). In 2024 to 2025, the market for BEVs flattened and remained at 8%,²⁵ less than half of what EPA had projected. Thus far in 2026, sales are down even further. U.S. BEV market share was 5.4% in the first quarter of 2026,²⁶ contrasting sharply with EPA's projection of 22.3% for the entirety of 2026.²⁷

²³ Figures compiled by Alliance for Automotive Innovation with data provided by S&P Global Mobility, new vehicle registrations between January 1, 2020 and December 31, 2025.

²⁴ Calculated by Auto Innovators using data provided by EPA: Multi-Pollutant Rule OMEGA Output Data (*supra* note 13).

²⁵ Figures compiled by Alliance for Automotive Innovation with data provided by S&P Global Mobility, new vehicle registrations between January 1, 2020 and December 31, 2025.

²⁶ [Get Connected Q1 2026](#) (*supra* note 15).

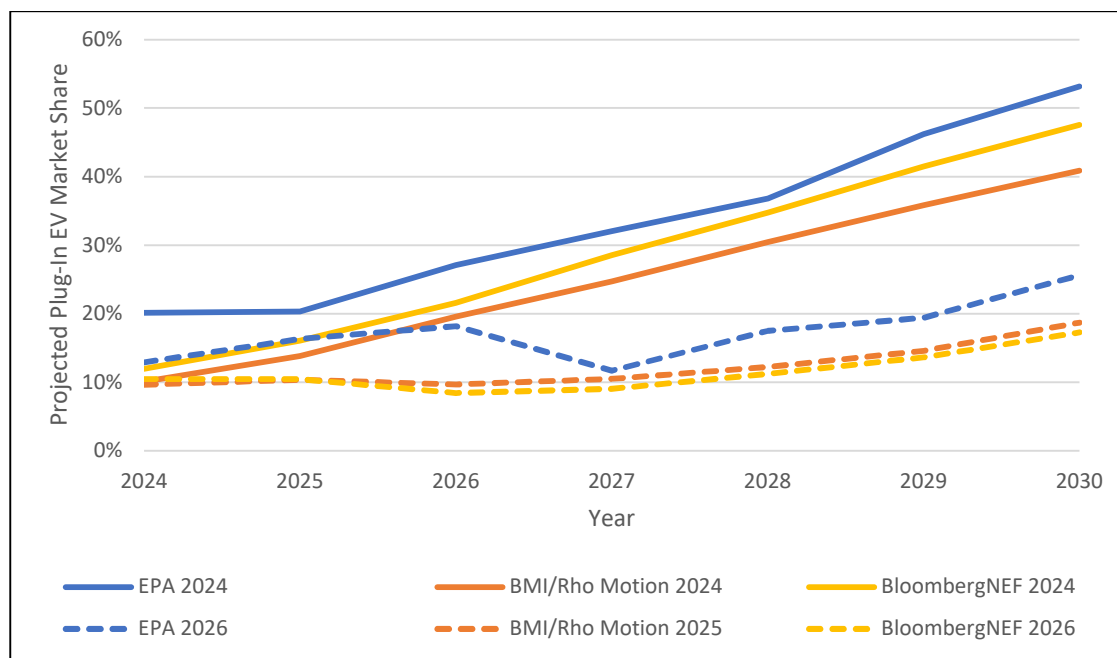
²⁷ Calculated by Auto Innovators using data provided by EPA: Multi-Pollutant Rule OMEGA Output Data (*supra* note 13).

Table 4: Comparison of Historical BEV Market Share to EPA-Projected BEV Market Share in the Multi-Pollutant Rule (Central Analysis)

Year	EPA Multi-Pollutant Rule BEV Projection (Central Analysis)	Historical BEV Market Share
2024	17%	8%
2025	16%	8%
2026	22%	6% (Q1 2026)

Figure 2 demonstrates the dramatic differences between U.S. plug-in electric vehicle market share projections made in 2024 to projections made in 2025 and 2026. Already in 2024, EPA’s projections were somewhat higher than some other contemporary projections. Projections for plug-in electric vehicle market share made after 2024, including EPA’s, were lowered by about 50% to 70% for 2027-2029 compared to what was anticipated in 2024.

Figure 2: U.S. Electric Vehicle (Battery Electric and Plug-In Hybrid Electric) Market Share Projections Made in 2024 and 2026, Various Sources (EPA,^{28,29} BMI/Rho Motion,^{30,31} BloombergNEF^{32,33}).



a) Comments on EPA’s Projected MYs 2027 and 2028 BEV Sales Estimates
(Request for Comment C-9)

EPA’s 2026 projection for U.S. plug-in electric vehicle market share is similar to a number of other projections as described in the NPRM.³⁴ Even so, Auto Innovators suggests that EPA

²⁸ Calculated by Auto Innovators using data provided by EPA: Multi-Pollutant Rule OMEGA Output Data (*supra* note 13).

²⁹ Calculated by Auto Innovators using data provided by EPA: NPRM OMEGA Output Data (*supra* note 14).

³⁰ Benchmark Minerals Intelligence. U.S. EPA Electrification Feasibility: Model. Q2 2024. Prepared for and funded by Alliance for Automotive Innovation.

³¹ Benchmark Minerals Intelligence. EVs and the U.S. Supply Chain: Model. Oct. 2025. Prepared for and funded by Alliance for Automotive Innovation.

³² BloombergNEF. Electric Vehicle Outlook 2024. Jun. 12, 2024. Available at <https://www.scribd.com/document/813627840/Bnef-Ev-Outlook-2024-1>. Accessed Jun. 29, 2026.

³³ BloombergNEF. Electric Vehicle Outlook 2026: Executive Summary. Jun. 16, 2026. Available at <https://about.bnef.com/insights/clean-transport/electric-vehicle-outlook/>. Accessed Jun. 29, 2026.

³⁴ NPRM (*supra* note 1) at 28476.

review its modeling of BEV sales for the final rule and potential future rulemaking. We note that EPA's projections continue to generally run higher than others' projections as shown in Figure 2, above. In the case of battery electric vehicles, EPA's projection for 2028 is a 50% increase over 2027. It is unclear to automakers what the driving factor in BEV sales increasing by 50% in MY 2028 might be.

6. *Changes in the U.S. Market for Electric Vehicles Likely Impacted Manufacturers' Compliance Plans for Both Tier 3 and Tier 4 Standards*

The rapid shift in the BEV market has implications for fleet average NMOG+NO_x compliance by increasing the need for and extent of emission improvements required on ICE vehicles with minimal lead time for emission control system research and development. These challenges are compounded by other new Tier 4 requirements including meeting the same FTP standards at both sea level and high-altitude along with the new standalone US06 standard.

In addition, the unexpected flattening of the BEV market in 2024 through 2026 has likely impacted Tier 3 compliance, reducing available credits to carry forward into the Tier 4 program or even generating deficits that will need to be offset, increasing the challenges posed by the Tier 4 program.

7. *Examples of Low Emission Vehicles Do Not Exemplify Capability to Meet Tier 4 Standards Across Entire, Diverse Fleets of Vehicles*

EPA has previously shown examples of vehicles that were tested with very low emissions in attempts to demonstrate the feasibility of given levels of fleet average emissions standards.³⁵ Such examples fail to tell a complete story and do not in and of themselves demonstrate capability to achieve sub-30 mg/mile fleet average ICE emissions in general, and in particular with very short lead times.

a) *Vehicle Test Results Are Not Used to Determine Fleet Averages*

Under the Tier 3 and Tier 4 fleet average NMOG+NO_x emissions standards, individual vehicles are certified to emission "bins". To certify a vehicle to a given bin, the vehicle must have NMOG+NO_x emissions at or below those required for the bin.³⁶ As explained further below, the tested emissions levels of ICE vehicles are invariably lower than the bin levels a vehicle is certified to.

³⁵ See, for example, Multi-Pollutant Rule RIA (supra note 19) at 3-54 (Table 3-19).

³⁶ See 40 C.F.R. § 86.1811-27(b)(4)(i) (requiring specification of a family emission limit for each test group based on the FTP emission standard to each named bin) and 40 C.F.R. § 86.1803-01 "Family emission limit" (defining a family emission limit as a bin standard selected by the manufacturer that serves as the applicable emission standard for the vehicles in the family or test group in the context of fleet average emissions or emission credits).

The compliance of a manufacturer's fleet with fleet average emissions requirements, such as those under the Tier 4 program, is determined not by individual test results, but by the production-weighted average of the bin levels to which individual vehicles are certified.³⁷ In other words, the tested emission levels have no role in determining compliance with fleet average requirements. They only play a role as one input among many in determining the bin to which an individual vehicle is certified.

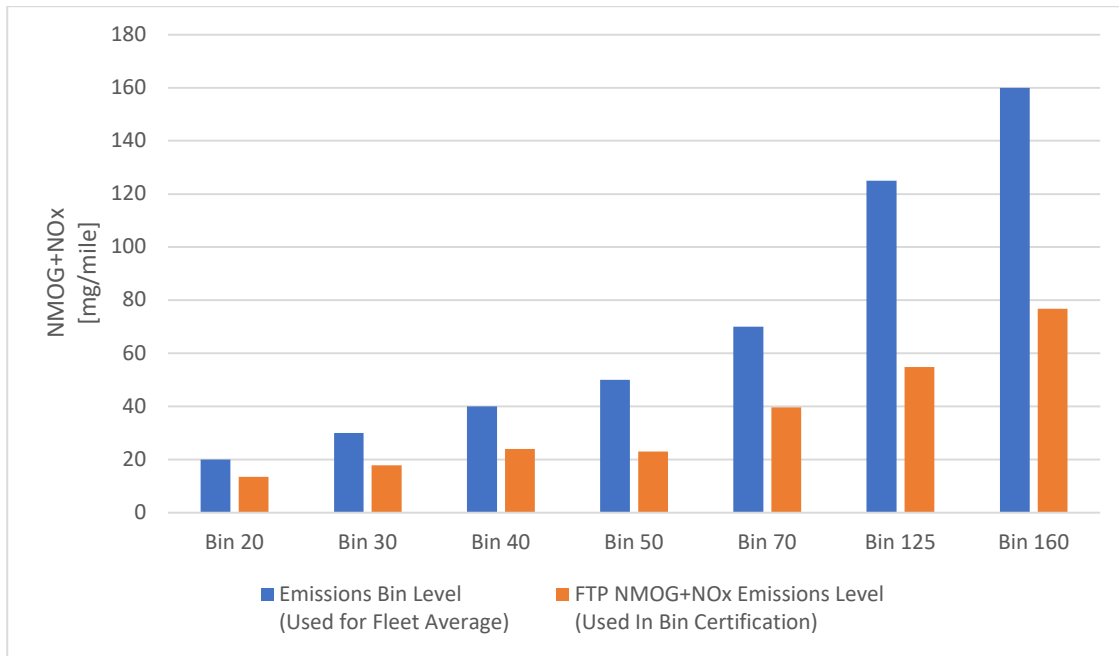
b) **Automakers Plan Significant Headroom Between Tested Vehicle Emissions and Their Bin Certification Levels**

Certification to a specific bin within the NMOG+NO_x standards requires a vehicle to have NMOG+NO_x emissions at or below bin requirements. As noted above, these tested emissions levels are invariably lower than the bin certification level. This is generally called "headroom". This headroom is specifically planned by automakers to ensure that vehicles meet their bin standards regardless of manufacturing variability in engines and emissions control systems; test-to-test variability from drivers, equipment, and other sources; in-use degradation from age, mileage, driver operation, market fuels; and other conditions that might cause individual vehicles to have different test results when new and over time than the vehicles originally tested for certification. Broadly, this is done to mitigate risk of last-minute changes to redesign emission control systems for initial certification and to mitigate risks of vehicle emissions recalls.

The headroom planned to mitigate these risks is significant (Figure 3). For Bin 20, average headroom in MY 2025 was 33% (13.5 mg/mile in a 20 mg/mile bin); for Bin 30, 40%. Average headroom across all bins ranged from a minimum of 33% to a maximum of 56%. These statistics demonstrate that vehicles are not certified to the lowest bin possible based on tested emission levels alone.

³⁷ See 40 C.F.R. § 86.1860-17.

Figure 3: Production-Weighted Average FTP NMOG+NOx Emissions Levels Compared to Bin Certification Level, MY 2025.³⁸



c) Variation in Achievable ICE Vehicle Emissions Over a Fleet of Vehicles Requires Balancing Emissions Levels to Achieve Fleet Average Standards

Fleet average standards work on the concept that for every vehicle that a manufacturer builds with emissions higher than the required average, it offsets those emissions with an equivalent number of vehicles with emissions lower than the required average. For example, if the fleet average standard is 30 mg/mile, for each Bin 50 vehicle a manufacturer builds it would have to produce the equivalent four Bin 25, two Bin 20, 1.33 Bin 15, one Bin 10, 0.8 Bin 5, or 0.67 Bin 0 (battery electric) vehicles or some combination thereof. The further a vehicle is from the required fleet average (above or below), the more weight it will have on the average.

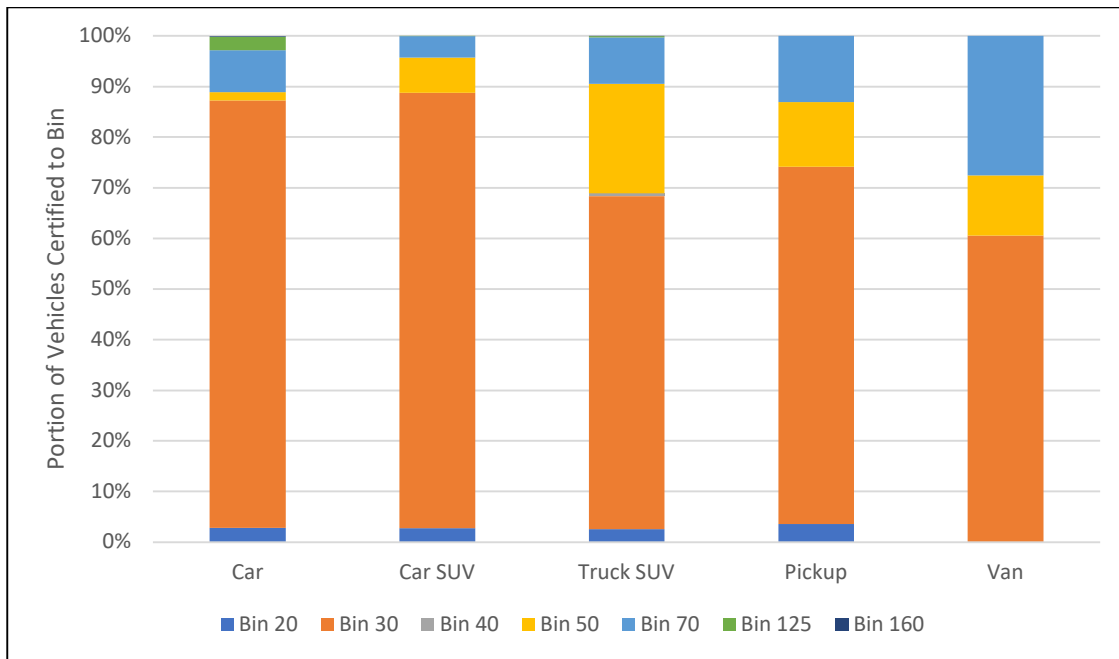
As of June 2026, the lowest demonstrated emissions certification for ICE vehicles is Bin 20,³⁹ providing the least amount of leverage against a 30 mg/mile fleet average standard (Tier 3) or 21 to 25 mg/mile fleet average standard (Tier 4, model years 2027-2029).

³⁸ Calculated by Auto Innovators using data compiled by S&P Global Mobility: S&P Global Mobility NMOG+NOx Study (*supra* note 12).

³⁹ Analysis by Auto Innovators based on data from EPA: U.S. Environmental Protection Agency. Annual Certification Data for Vehicles, Engines, and Equipment. <https://www.epa.gov/compliance-and-fuel-economy->

Emissions levels vary significantly over the fleet, with many higher emission bin vehicles requiring offsetting lower emission bin vehicles. This trend of varied emission bin certification levels holds across vehicle segments and vehicle classes as currently defined (Figures 4 and 5). Although many vehicles can achieve Bin 30, a significant number are certified with higher emissions for various technical reasons (engine design / control, emissions control system design, anticipated vehicle operating conditions / uses, fuel type, etc.).

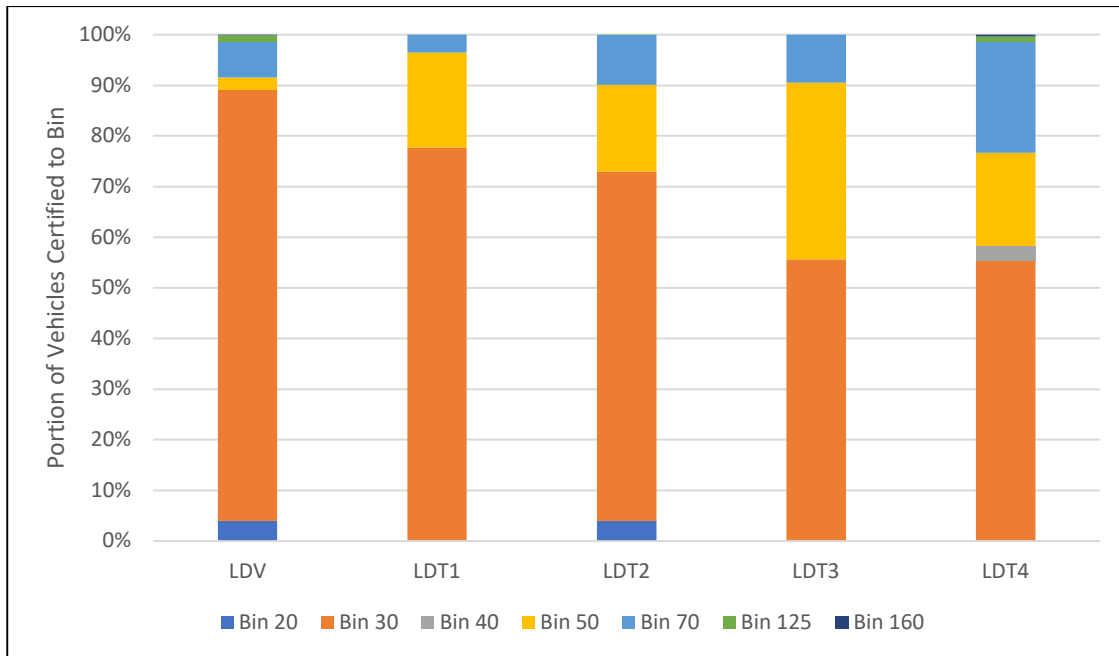
Figure 4: Distribution of Light-Duty Vehicle Bin Certification Levels by Vehicle Type, MY 2025⁴⁰



[data/annual-certification-data-vehicles-engines-and-equipment](#). Certification Data. Light-Duty Vehicles and Trucks. Certified Vehicle Models (Model Years: 2014 – Present) (xls) (June 2026). Accessed June 26, 2026.

⁴⁰ S&P Global Mobility FTP NMOG+NOx Study (*supra* note 12).

Figure 5: Distribution of Light-Duty Vehicle Bin Certification Levels by Vehicle Class, MY 2025⁴¹



d) Examples Provided Have Typically Only Considered Low-Altitude FTP Emissions

Examples of vehicles with very low emissions thus far provided have focused on low-altitude FTP emissions. As noted above, the Tier 4 standards require meeting the same NMOG+NO_x bin certification levels on additional test cycles including high-altitude where emissions are typically higher and on the standalone US06 test cycle. To the limited extent individual vehicle emission levels speak to bin certification levels, the previously established headroom for low-altitude FTP emissions will likely need to grow even larger, putting current bin certification levels at risk and/or requiring additional development work to ensure compliance with Tier 4 bin standards.

e) The Number of ICE Vehicles Certified Below Bin 30 Is Very Small

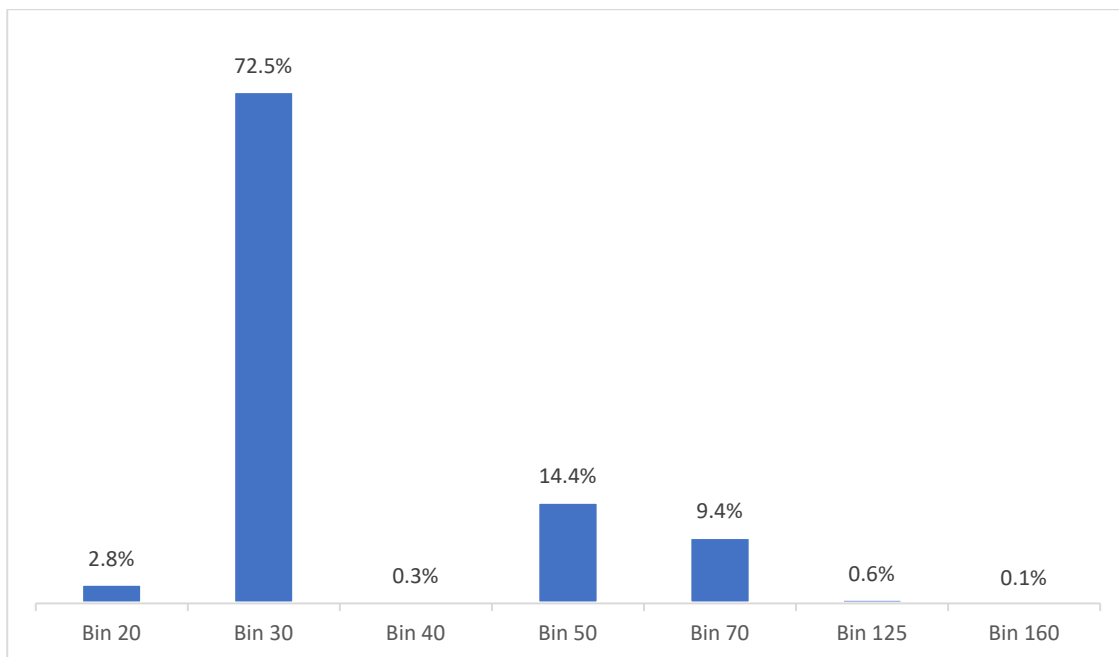
As of MY 2025, less than 3% of ICE vehicles were certified to Bin 20 (Figure 6). The majority were certified to Bin 30, higher than the Tier 4 fleet average NMOG+NO_x standards.

⁴¹ *Id.*

Achieving Tier 4 fleet average NMOG+NOx standards at levels below 30 mg/mile would require the production-weighted majority of the effected vehicles to achieve bin emission certifications at or below those standard levels (25 dropping to 21 mg/mile between MYs 2027 and 2029).⁴²

Even if all or a significant portion of vehicles currently certified to Bin 30 or higher could be recertified to Bin 20 or lower through design improvements and added technology, it would not be reasonable to do so by MYs 2027 through 2028 (or MY 2029), leaving BEVs and other zero-emission vehicles as a part of the requisite technology.

Figure 6: Share of MY 2025 ICE Vehicles Certified to Various Emission Bins.⁴³



B. Any Extension of the Tier 3 Standards Should Include a Similar Extension of Small Volume Manufacturer Provisions

Small Volume Manufacturers (“SVMs”) produce a limited number of sports cars for the U.S. market. As such, they face additional challenges because they do not benefit from the same economies of scale as larger manufacturers. For instance, they cannot leverage shared automotive platforms across multiple brands to reduce production and development costs.

⁴² See discussion of fleet average standards, above.

⁴³ S&P Global Mobility FTP NMOG+NOx Study (*supra* note 12).

Auto Innovators appreciates EPA's recognition of the additional burden placed on SVMs to comply with the 30 mg/mile FTP NMOG+NO_x fleet average standard. To help address these challenges, EPA proposes extending the NMOG+NO_x fleet average standard of 51 mg/mile from MY 2027 to MY 2028 under this NPRM.

However, achieving a more stringent level of 30 mg/mile in MY 2029 will require significant investments, a substantial increase in BEV penetration, and additional development time. These factors translate into considerable costs and technical challenges for SVMs.

In the context of the ongoing revision of the Tier 4 regulation, Auto Innovators requests that EPA maintain the same rationale provided in the Multi-Pollutant Rule in providing specific provisions to SVMs, specifically granting one additional model year for the application of the Tier 3 fleet-average NMOG+NO_x standard. If the Tier 3 program is extended, such an extension should also apply to the Tier 3 SVM provisions (i.e., 51 mg/mile NMOG+NO_x fleet average standard therefore maintained at least until MY 2030, included). This extension should be granted in addition to the delayed implementation provisions already provided to SVMs under the primary program, relative to large-volume manufacturers.

This additional time would support SVMs in achieving compliance with the stringent NMOG+NO_x fleet average requirement in a technically and economically feasible manner.

C. Comments on Extending the Tier 3 Program for a Third Year Through Model Year 2029 (Request for Comment C-4)

Auto Innovators urges EPA to consider extending the Tier 3 program for three full model years instead of the proposed two years. MY 2029 is less than two years away, and automotive manufacturers must make immediate, binding product planning and sourcing decisions for 2029. Limiting the delay framework strictly to MY 2028 creates an immediate compliance cliff for MY 2029 while EPA continues work on Part 2 of the Tier 4 regulatory modifications.

We understand and appreciate that EPA plans to act as quickly as possible to develop and adopt Part 2 of the Tier 4 modifications. Nonetheless, automakers will have to commit resources to comply with the MY 2029 Tier 4 regulations before Part 2 is finalized. Adopting a longer, three-year delay will provide the industry with much needed stability and lead time to allow efficient and cost-effective alignment with EPA's final Part 2 regulatory requirements.

If EPA were to extend the Tier 3 program through MY 2029, such action is not a substitute for the further revisions necessary to the Tier 4 program to make it feasible and cost effective. Automakers need EPA to both finalize this proposal and to conduct a follow-up rulemaking to revise the Tier 4 program as quickly as possible.

II. EPA SHOULD UNDERTAKE A PART 2 RULEMAKING TO REVISE THE TIER 4 STANDARDS AS SOON AS POSSIBLE

EPA’s proposal to extend the Tier 3 program only addresses imminent near-term compliance issues. In the longer term, the Tier 4 program is still premised on a BEV market that is unlikely to develop as originally projected and on adding technologies that achieve only marginal gains at significant cost. There are also additional related issues with test procedures and calculations that still need to be addressed, including some that have lingered since the original Tier 3 rulemaking. In addition, pending changes in regulations outside of EPA’s direct control are likely to fundamentally change the intended stringency of the Tier 4 regulations.

EPA should finalize this proposal and begin formal rulemaking to revise the remaining years of the Tier 4 standards as quickly as possible.

III. IMPLEMENTATION OF A TIER 3 EXTENSION

A. Incorporation of New Tier 4 Emission Bins into the Tier 3 Program (Request for Comment C-2)

Auto Innovators supports adding the newly created Tier 4 emission bins to the Tier 3 program emission bins. The additional bins may allow automakers to certify to a lower bin than they might otherwise certify to under the existing Tier 3 bins as they navigate the transition to a cleaner fleet. Importantly, the additional bins have no environmental impact since the fleet must still meet the same fleet-average requirements. Moreover, as we will discuss below in response to EPA’s Request for Comment C-5, adding these Tier 4 emission bins to the Tier 3 program streamlines the regulatory process for vehicles already certified to Tier 4 emission bins.

B. Regulatory Treatment and Compliance Validity of MY 2027–2028 Tier 4 Certified Vehicles (Request for Comment C-5)

Auto Innovators supports EPA’s proposed initial framework to maintain the validity of Certificates of Conformity (“CoCs”) for interim and final Tier 4 vehicles. However, to avoid significant administrative confusion and factory logistical burdens, we request that EPA formalize explicit cross-compliance provisions. We are particularly concerned about the labels (e.g., the Vehicle Emission Control Information (“VECI”) label) on vehicles that indicate the vehicle conforms to U.S. EPA Tier 4 Bin XX. Recalling vehicles and changing production assembly lines to replace “Tier 4” with “Tier 3” could cost industry and consumers hundreds of millions of dollars and inconvenience customers who might need to bring their vehicles to a dealer to replace a label. This outcome would be consistent with a regulation intended to reduce costs and promote consumer convenience and choice.

Consequently, we request that EPA consider incorporating regulatory language clearly indicating that vehicles already certified to interim and final Tier 4 standards in 40 C.F.R. § 86.1811-27, are

legally obligated to comply only with Tier 3 regulations specified in 40 C.F.R. § 86.1811-17, including all in-use and reporting requirements specified in 40 C.F.R. § 86.1811-17. These vehicles would meet all in-use and On-Board Diagnostics (“OBD”) requirements in 40 C.F.R. § 86.1806-17 (as modified in this rule). Auto Innovators additionally requests that EPA extend this same consideration to certification applications submitted prior to this final rule.

Since vehicles that have already certified to interim or final Tier 4 standards will already have labels indicating as such, we recommend EPA specify that vehicles labeled “Interim Tier 4” or “Tier 4” with model years applicable to the delay (i.e., 2027 and 2028 as proposed in the NPRM, or 2027-2029 as we recommend) are not required to be relabeled but instead “interim Tier 4” and “Tier 4” shall mean the standards applicable under the -17 regulations. Otherwise, manufacturers may need to recall and relabel physical vehicles just to update labels (e.g., the VECI label).

With the changes in this Part 1 NPRM, and the potential additional changes in Part 2, the term “Tier 4” will have multiple possible meanings, including:

- Tier 4 as defined in the original, now infeasible, Multi-Pollutant Rule.
- Tier 4 to effectively mean “Tier 3” for MYs 2027 and 2028 in this Part 1 rulemaking.
- Tier 4 as defined in Part 2 of the Tier 4 modifications.

To avoid confusion, Auto Innovators recommends that EPA consider a new name for the emission standards developed in Part 2 Modifications to the Tier 4 rule (e.g., “Tier 5”).

Given the immediate impact on production vehicles, these changes should go into effect immediately upon publication of the final rule in the *Federal Register*.

IV. COMMENTS ON ABT PROGRAM UTILIZATION AND COST ANALYSIS IMPACTS (REQUEST FOR COMMENT C-3)

A. The Importance of the ABT Program

The utilization of averaging, banking, and trading (“ABT”) in MYs 2027 and 2028 is a fundamental mechanism for manufacturers to maintain compliance during this transitional period and develop an efficient glidepath toward compliance with fleet average requirements that may be required in Part 2 of the Tier 4 modifications. Even during stable regulatory periods, automakers rely on ABT to smooth compliance across model years as new vehicles are introduced and others retired. By allowing ABT, EPA directly mitigates compliance risk or the immediate capital-expenditure spikes associated with rushed hardware redesigns.

B. Credit Banking and Trading Should Not Be Considered When Assessing the Necessary Time to Develop and Apply Requisite Technologies for Tier 4 Compliance.

In its cost assessment, EPA excludes the potential effects of the NMOG+NO_x banking and trading program.⁴⁴ This approach is reasonable and appropriate for both the cost assessment and in the broader context of determining appropriate standards considering the necessary time to develop and apply requisite emission control technologies.

Automakers support credit banking provisions as a useful flexibility to reduce costs by allowing manufacturers to better-align technology application with vehicle program timing. Similarly, credit trading provides additional flexibility to manufacturers to address particularly challenging emissions issues and unforeseen problems. However, both of these features should remain flexibilities, rather than de facto requirements.

If EPA were to explicitly consider credit banking and trading in assessing the feasibility and costs of standards, resulting regulations could effectively require dependence on them. For example, if credit trading is included in such considerations, compliance with the standards could depend on purchasing credits from manufacturers that build only vehicles that do not have emissions, yet that earn credits against such standards.

Congress recognized this issue in establishing credit banking and its explicit allowance of credit trading in the Corporate Average Fuel Economy Program.⁴⁵ Although EPA's emissions programs are not constrained by statutes pertaining to fuel economy, EPA should recognize the concerns Congress sought to address in programs with similar structures.

V. ECONOMIC IMPACTS OF NON-COMPLIANCE AND REVISED PRODUCT PLANS (REQUEST FOR COMMENT C-7)

Automakers must always plan to comply with regulations. Consequently, the question is not the cost of non-compliance with the Tier 4 regulations, but rather the severe economic and logistical disruptions associated with attempting to meet regulations that are demonstrably infeasible because of massive external changes in the market beyond the automakers' control. Because automotive product cycles require long-term stability, enforcing the original timeline could lead to widespread technical changes, massive costs associated with revised, late-stage product plans,

⁴⁴ U.S. Environmental Protection Agency. Revision of Tier 4 Criteria Pollutant Standards, Part 1: Amendments to Phase-In Schedule for Light-Duty and Medium-Duty Vehicles; Draft Regulatory Impact Analysis. EPA-420-D-26-001. May 2026. 1-2.

⁴⁵ See 49 U.S.C. § 32902(h)(3). (Prohibiting the Secretary of Transportation from considering the trading, transferring, or availability of credits when prescribing fuel economy standards.)

as well as potential durability and warranty requirements down the road. Such outcomes would not only punish automakers but also hurt the marketplace, dealers, and customers.

VI. CHALLENGES ASSOCIATED WITH GPF INTEGRATION ON LIGHT- AND MEDIUM-DUTY VEHICLES (REQUEST FOR COMMENT C-8)

The original Tier 4 administrative record contains significant gaps regarding the real-world integration of gasoline particulate filters on light- and medium-duty vehicles within the MYs 2027–2028 (and 2029) timeframe and the need for, or benefit of, such devices, particularly when compared to potential alternative PM standards of 1 mg/mile (FTP) and 3 mg/mile (US06) in line with California LEV IV standards. The California LEV IV PM standards might require GPFs on a small number of vehicles, but automakers believe most vehicles could meet these standards with appropriate and durable engine modifications at a drastically lower cost for the automaker and the customer.

As detailed in our comments on the EPA Multi-Pollutant NPRM,⁴⁶ EPA proposed PM standards that exceed the stringency of the standards California adopted just two years prior. Of note, California has the most severe PM non-attainment areas in the country, and EPA approved a waiver of federal preemption for California’s PM standards.

EPA’s PM requirements phase in at the same time as California’s requirements, creating different state and federal requirements. EPA’s requirements also apply to additional test cycles (US06, SC03, high-altitude FTP, and -7 °C FTP) creating additional challenges. Due to additional hardware, potential laboratory test cell upgrades and/or new build outs, vehicle calibration, on-board diagnostic monitors, warranty, and customer repair and maintenance, these PM standards would add significant direct and indirect costs to vehicles. Further, with additional test cycles, stringent OBD requirements, and absence of consideration of additional implementation costs, EPA inappropriately considered the technology additions as a drop-in with little to no cost.

The Tier 4 record inadequately considered the exceedingly low contribution of light-duty vehicles to PM emission inventories, failed to fully consider adoption and full implementation of the California standards mentioned above as an alternative to its proposal, and did not fully assess costs associated with upgrading laboratories and laboratory practices to precisely and accurately measure PM emissions with statistical certainty.

Considering these significant issues, we are concerned that EPA previously fell short of its rulemaking obligations to engage in reasoned decision-making and articulate a “rational

⁴⁶ Available at Regulations.gov, Docket ID No. EPA-HQ-OAR-2022-0829-0701.

connection between the facts found and the choice made” regarding Tier 4 PM standards when they were adopted in the Multi-Pollutant Rule in 2024.

We look forward to discussing these issues in greater detail with EPA as it develops a Part 2 proposal for further revisions to the Tier 4 standards.

VII. RELIANCE INTERESTS (REQUEST FOR COMMENT C-10)

Reliance interests in the existing MY 2027 through MY 2028 (or MY 2029) Tier 4 emissions standards should not and cannot outweigh Clean Air Act requirements to provide the lead time “necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.”⁴⁷ EPA’s proposal and these comments demonstrate that the Tier 4 standards do not meet these requirements and should be revised. The proposal to extend the Tier 3 program would maintain previously existing standards, addressing lead time and cost concerns in the near-term, while the Agency conducts a more thorough review of the Tier 4 standards in general.

VIII. EPA SHOULD NOT CHANGE THE APPLICABILITY OF THE TIER 4 PHASE-INS

EPA proposes to change references from “light-duty vehicles and light-duty trucks at or below 6,000 pounds GVWR” to “LDV, LDT1, and LDT2” in the Tier 4 standards. These terms are not synonymous, and this change would impose significant near-term compliance challenges on manufacturers as well as expanding concerns with pending changes to vehicle classifications under National Highway Traffic Safety Administration (“NHTSA”) rulemaking proposals. As described further below, EPA should not finalize this change for policy reasons.

Furthermore, the NPRM fails to acknowledge that this is a substantive change and fails to provide a reasonable basis for the change for stakeholders to comment on. In short, such a change in this NPRM would not fulfill the rulemaking requirements of the Administrative Procedure Act. The failure to acknowledge the change and to provide substantive reasoning for it cannot be remedied in a final rule or through a response to these comments. Due to the time sensitive nature of this NPRM, EPA should not issue a supplemental notice or delay this rulemaking to address these flaws. Instead, it should reconsider the proposal given these comments and, if the Agency still believes such change is warranted, provide the requisite acknowledgement and reasoning in the Part 2 rulemaking, inviting stakeholder comment.

⁴⁷ 42 U.S.C. § 7521(a)(1).

A. Immediate Concerns with Vehicle Classification Changes

1. *EPA's proposal would make LDVs with GVWRs greater than 6,000 lbs. subject to Tier 4 standards in MY 2029.*

A number of vehicles classified as LDVs have gross vehicle weights that exceed 6,000 lbs. According to data compiled by S&P Global Mobility from public sources in its Vehicle Technical Intelligence Platform ("VTIP"), there are nearly 100 MY 2026 vehicle model variants that have GVWRs greater than 6,000 lbs. that are certified as passenger cars (i.e. LDVs), including plug-in electric and ICE vehicles.⁴⁸

It is critical to understand that manufacturers of LDVs above 6,000 lbs. have certain prerequisites, currently codified in the Clean Air Act, akin to those of other heavy-duty vehicle manufacturers. Manufacturers of LDVs with GVWRs above 6,000 lbs. need lead time to meet changing regulatory obligations consistent with other vehicles with GVWRs above 6,000 lbs., as provided in CAA § 202(a)(3)(C).

Moreover, manufacturers producing these vehicles have already planned future fleets based on the regulation as written, providing that vehicles above 6,000 lbs. may comply with Tier 4 standards in a later model year. To change the regulation now would impose more stringent standards for those vehicles with no lead time to adjust. Auto Innovators opposes such a change and supports the continued availability of CAA § 202(a)(3)(C) required lead time for vehicles, including LDVs, above 6,000 lbs. GVWR.

EPA has previously indicated that the lead time requirement in CAA § 202(a)(3)(C) is applicable to "heavy duty vehicles", defined in CAA § 202(b)(3)(C) as: "a truck, bus, **or other vehicle** manufactured primarily for use on the public streets, roads, and highways (not including any vehicle operated exclusively on a rail or rails) which has a gross vehicle weight (as determined under regulations promulgated by the Administrator) in excess of six thousand pounds" (*emphasis added*).⁴⁹

This change is not supported by or explained in the preamble to the NPRM and would run contrary to the purpose of the NPRM. It is not clear in the NPRM whether and for what reason EPA intends to abandon the application of the CAA lead time requirements to vehicles,

⁴⁸ VTIP; Auto Innovators analysis; data pulled 6/26/2026.

⁴⁹ See *Multi-Pollutant Emissions Standards for MY 2027 and Later Light-Duty and Medium-Duty Vehicles*, 88 Fed. Reg. 27842 at 29257 (discussing NMOG+NOx step-down in 2030 for vehicles over 6,000 lbs in the context of LDVs); *id.* at 29258 (discussing compliance scenarios and stating "[f]or the heavier vehicle classes, 100 percent of vehicles must comply starting in MY 2030 in a single step under the default compliance pathway, which provides a full four years of lead time as required by CAA section 202(a)(3)(C).")

including LDVs, over 6,000 lbs. Based on the text of the NPRM preamble, it appears that EPA understands that lead time is required for vehicles, including LDVs, with a GVWR over 6,000 lbs. For example, the NPRM is described as “extend[ing] the Tier 3 program through MYs 2027 and 2028 for both light- and medium-duty vehicles by proposing to replace the mandatory Tier 4 standards for light- and medium-duty vehicles up to 6,000 pounds GVWR and proposing to remove the optional Tier 4 standards for **light- and medium-duty vehicles over 6,000 pounds GVWR.**”⁵⁰ The NPRM goes on to describe that the CAA requires lead time “for ‘heavy-duty’ vehicles, defined as those **vehicles** over 6,000 pounds GVWR.”⁵¹ In discussing vehicle classes, the NPRM goes on to indicate that the lead time appropriate for LDVs is based on GVWR and that the lead time is applicable to all *vehicles* over 6,000 lbs:

While the EPA applies several regulatory classes (LDV, LDT, MDPV, MDV) in the structure of its Tier 3 and Tier 4 programs, LDVs and MDVs have different phase-in and lead-time provisions under the CAA based on their GVWR. Per CAA section 202(b)(3)(C), a vehicle with a GVWR over 6,000 pounds is considered a “heavy duty vehicle,” and per CAA section 202(a)(3)(C) standards promulgated for these vehicles “shall apply for a period of no less than 3 model years beginning no earlier than the model year commencing 4 years after such revised standard is promulgated.” Vehicles up to 6,000 pounds GVWR are not subject to lead time or stability constraints. See 40 CFR 86.1811-17 (for Tier 3) and 40 CFR 86.1811-27 (for Tier 4). 40 CFR 86.1803-01 provides the definitions that classify these vehicles necessary to apply the weight-based rules.⁵²

In the preamble of the NPRM, EPA does not state its intent to make a change regarding vehicle classification so as to prevent the CAA lead time requirement from applying to LDVs over 6,000 lbs., nor does it include a reasoned explanation of this change in interpretation. Moreover, there is no explanation as to why such a change would be appropriate or warranted in a rulemaking issued for the explicit purpose of providing the regulated community with relief from infeasible standards.

However, EPA’s proposed regulatory amendments would prevent the CAA lead time requirement from applying to LDVs over 6,000 lbs. The regulations, as currently promulgated, are clear that “**vehicles** above 6,000 pounds GVWR” receive a later phase-in by default.⁵³ The

⁵⁰ NPRM (*supra* note 1) at 28466 (***emphasis*** added).

⁵¹ *Id.* at 28467 (***emphasis*** added).

⁵² NPRM (*supra* note 1) at note 14; *see also* note 15 (acknowledging that LDVs with a GVWR above 6,000 lbs. are subject to a later phase-in requirement under the Multi-Pollutant Rule).

⁵³ *See* 40 C.F.R. § 86.1811-17.

proposed textual amendments to the regulations would have the effect of reading LDVs out of the scope of the CAA 202 lead time requirement. The text of the proposed regulations does not contemplate LDVs in the delayed phase-in.⁵⁴ Amending the regulations in such a manner would treat LDVs over 6,000 lbs. differently than other vehicles over 6,000 lbs. with respect to required lead time. This would not be a minor or technical change. Rather, it would result in significant impacts to manufacturers. Manufacturers have spent years preparing to comply with the regulations as written, inclusive of the default delayed phase-in for LDVs above 6,000 lbs. This change, if finalized, would snap certain LDVs out of the default phase-in for vehicles over 6,000 lbs. GVWR to the earlier phase-in. Manufacturers would be left to meet increasingly stringent requirements without necessary lead time to prepare and comply. This change would therefore increase stringency for some vehicles and harm manufacturers immediately upon finalization, which is an inappropriate result for a proposal designed to delay requirements to give regulatory relief.

Auto Innovators requests that EPA revise these proposed changes to maintain a phase-in schedule consistent with the CAA § 202 lead time requirements for all vehicles, including LDVs, over 6,000 lbs.

B. Future Concerns on Vehicle Classifications

Regulatory stability is critical for automakers, as production cycles are multi-year processes and are already underway for future model years. In addition to the above concerns regarding EPA's proposed removal of the 6,000 lbs. GVWR threshold, EPA's proposed change to use vehicle class designators in place of gross vehicle weight ratings in the Tier 4 regulation is likely to result in a significant number of additional vehicles with GVWRs greater than 6,000 lbs. becoming subject to the Tier 4 standards in MY 2029 as a result of regulatory changes proposed by NHTSA, despite Clean Air Act lead time and stability requirements. Below, we describe this issue further and provide recommendations for technical amendments that would preserve EPA's original intent and ensure regulatory stability, regardless of external changes.

1. *EPA's proposal in combination with a proposed rule from NHTSA would subject a large number of vehicles with GVWRs greater than 6,000 lbs. to Tier 4 standards in MY 2029.*

The LDT3 and LDT4 vehicle classifications are heavy light-duty trucks with GVWRs over 6,000 lbs.⁵⁵ Under current EPA regulations, they have a default Tier 4 phase-in of 100% in MY 2030, with no Tier 4 obligations prior to that year.

⁵⁴ See, e.g., NPRM (*supra* note 1) at 28469, Table 6 (failing to contemplate LDVs over 6,000 lbs. in the phase in schedule).

⁵⁵ See 40 CFR § 86.1803-01, definitions of "Light-duty truck 3", "Light-duty truck 4", and "Heavy light-duty truck".

Heavy light-duty trucks are a subset of light-duty trucks.⁵⁶ Starting in MY 2027 (or in MY 2029 under EPA’s proposal), “light-duty truck” is given the meaning of “light truck” in 40 C.F.R. § 600.002.⁵⁷ That definition in turn refers to vehicle classification procedures in 49 C.F.R. Part 523.

In a separate rulemaking, NHTSA has proposed to modify 49 C.F.R. Part 523 vehicle classification regulations in a manner that would reclassify many current non-passenger automobiles (*i.e.*, light-duty trucks) as passenger cars.⁵⁸ NHTSA’s analysis suggests that over 1.3 million light trucks with GVWRs higher than 6,000 lbs. would be reclassified as passenger cars under its proposal.⁵⁹ By EPA’s regulations, these vehicles would then be LDVs regardless of GVWR because they would no longer meet the 40 C.F.R. 86.1803-01 definition of “light-duty truck”, which is a prerequisite to classification as a heavy light-duty truck.

Therefore, under EPA’s NPRM and in combination with NHTSA’s changes, these current heavy light-duty trucks (all of which have GVWRs greater than 6,000 lbs.) would become subject to the earlier Tier 4 phase-in currently applicable to vehicles up to 6,000 lbs. GVWR without the lead time required under the CAA.

These and other vehicles would also be required to comply with more stringent diurnal evaporative emission standards which are already specified using the LDV, LDT1, LDT2, LDT3, and LDT4 classifications.

On June 30, the Office of Information and Regulatory Affairs received NHTSA’s final SAFE Vehicles Rule III for review, marking key progress towards these issues becoming reality for manufacturers. In light of this development, Auto Innovators encourages EPA to make proactive changes to preserve regulatory stability.

⁵⁶ *Id.*

⁵⁷ *Id.*, definition of “Light-duty truck”, subparagraph (2). Proposed change NPRM (*supra* note 1) at 28481.

⁵⁸ See National Highway Traffic Safety Administration, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule III for Model Years 2022 to 2031 Passenger Cars and Light Trucks; Notice of Proposed Rulemaking, 90 Fed. Reg. 56438, 56616 (Dec. 5, 2026).

⁵⁹ Compiled by Auto Innovators based on data from NHTSA: National Highway Traffic Safety Administration. CAFE Compliance and Effects Modeling System. <https://www.nhtsa.gov/corporate-average-fuel-economy/cape-compliance-and-effects-modeling-system>. Accessed July 1, 2026. Downloads. 2025 NPRM for Model Years 2027-2031 Passenger Cars and Light Trucks. Central & EIS Analysis. LD_EIS.zip\input\market_data_LD_2024_EIS.xls. Vehicles tab. Identification of reclassified vehicles greater than 6,000 lbs. GVWR by comparing columns Y and Z (Regulatory Class and Regulatory Class 2) and filtering by GVWR. Sum of Sales (column W).

2. *Auto Innovators recommends that EPA make proactive technical amendments to ensure regulatory stability across vehicle classifications, regardless of other regulatory changes.*

Regardless of whether NHTSA finalizes its current proposal to modify vehicle classification criteria, the challenge facing automakers is that the stability of what vehicles are “light-duty trucks” under 40 C.F.R. § 86.1803-01 relies on other regulations—namely, the definition of “light truck” in 40 C.F.R. § 600.002, which itself references definitions in 49 C.F.R. § 523.5. Any changes to those underlying regulations potentially affect what vehicles are treated as light-duty trucks for vehicle emissions regulations. Automakers must be able to rely on a light-duty truck remaining a light-duty truck through a given production cycle, so as not to disrupt the finely tuned plans for the overarching fleet.

In adopting another agency’s regulations by reference, EPA opened itself to unintended changes to its own regulatory requirements without notice and comment.

Auto Innovators recommends that EPA proactively change its “light-duty truck” definition in 40 C.F.R. § 86.1803-01 to remove references to 40 C.F.R. § 600.002, thereby cutting the direct link to potential changes in another agency’s regulations and promoting regulatory stability within its own emissions regulations. By removing this reference, EPA retains control of its own regulatory definitions and minimizes the possibility of changes in vehicle classification outside of direct action from EPA. We provide two options to make revisions.

- a) **Option A: Amend 40 C.F.R. § 86.1803-01 by modifying section “Light-duty truck” subsection (2) to remove references to 40 C.F.R. § 600.002.**

Auto Innovators’s preferred regulatory solution is to amend the definition of “light-duty truck” in 40 C.F.R. § 86.1803-01 by removing references to 40 C.F.R. § 600.002:

Light-duty truck has one of the following meanings:

(1) Except as specified in paragraph (2) of this definition, light-duty truck means any motor vehicle that is not a heavy-duty vehicle, but is:

- (i) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle; or
- (ii) Designed primarily for transportation of persons and has a capacity of more than 12 persons; or
- (iii) Available with special features enabling off-street or off-highway operation and use.

(2) ~~Starting in model year 2027, light-duty truck has the meaning given for “Light truck” in 40 CFR 600.002.~~ Vehicles that qualify as emergency vehicles for any reason under § 86.1803-01 are light-duty trucks if they are derived from light-duty trucks.

This change retains the rest of the definition as it currently exists and continues to provide flexibility for emergency vehicles.

- b) Option B: Amend 40 C.F.R. § 86.1803-01 “Light-duty truck” subsection (2) to incorporate the current NHTSA definition for non-passenger automobiles, which is currently included by reference in EPA’s regulations.

Auto Innovators secondarily recommends that EPA amend the definition of “light-duty truck” in 40 C.F.R. § 86.1803-01 by removing references to 40 C.F.R. § 600.002 and instead incorporating existing language from 49 C.F.R. § 523.5:

Light-duty truck has one of the following meanings:

(1) Except as specified in paragraph (2) of this definition, light-duty truck means any motor vehicle that is not a heavy-duty vehicle, but is:

- (i) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle; or
- (ii) Designed primarily for transportation of persons and has a capacity of more than 12 persons; or
- (iii) Available with special features enabling off-street or off-highway operation and use.

(2) Starting in model year 2027⁹, light-duty truck ~~has the meaning given for “Light truck” in 40 CFR 600.002.~~ means an automobile that is not a passenger automobile or a work truck and includes vehicles described in paragraphs (a) and (b) of this section. A medium-duty passenger motor vehicle that meets the criteria in either paragraph (a) or (b) of this section is a non-passenger automobile. Vehicles that qualify as emergency vehicles for any reason under § 86.1803-01 are light-duty trucks if they are derived from light-duty trucks.

(a) An automobile designed to perform at least one of the following functions:

- (1) Transport more than 10 persons;
- (2) Provide temporary living quarters;
- (3) Transport property on an open bed;
- (4) Provide, as sold to the first retail purchaser, greater cargo-carrying than passenger-carrying volume, such as in a cargo van; if a vehicle is sold with a second-row seat, its cargo-carrying volume is determined with that seat installed, regardless of whether the manufacturer has described that seat as optional; or
- (5) Permit expanded use of the automobile for cargo-carrying purposes or other non-passenger-carrying purposes through:
 - (i) For non-passenger automobiles manufactured prior to model year 2012, the removal of seats by means installed for that purpose by the automobile's

- manufacturer or with simple tools, such as screwdrivers and wrenches, so as to create a flat, floor level, surface extending from the forwardmost point of installation of those seats to the rear of the automobile's interior; or
- (ii) For non-passenger automobiles manufactured in model year 2008 and beyond, for vehicles equipped with at least 3 rows of designated seating positions as standard equipment, permit expanded use of the automobile for cargo-carrying purposes or other non-passenger-carrying purposes through the removal or stowing of foldable or pivoting seats so as to create a flat, leveled cargo surface extending from the forwardmost point of installation of those seats to the rear of the automobile's interior.
- (b) An automobile capable of off-highway operation, as indicated by the fact that it:
- (1)
- (i) Has 4-wheel drive; or
- (ii) Is rated at more than 6,000 pounds gross vehicle weight; and
- (2) Has at least four of the following characteristics calculated when the automobile is at curb weight, on a level surface, with the front wheels parallel to the automobile's longitudinal centerline, and the tires inflated to the manufacturer's recommended pressure—
- (i) Approach angle of not less than 28 degrees.
- (ii) Breakover angle of not less than 14 degrees.
- (iii) Departure angle of not less than 20 degrees.
- (iv) Running clearance of not less than 20 centimeters.
- (v) Front and rear axle clearances of not less than 18 centimeters each.

This pathway would ensure that the vehicles classified as “light-duty trucks” for the purpose of criteria emission and evaporative emission standards align with the definition in place when EPA finalized the reference 40 C.F.R. § 600.002.

By providing a proactive solution, EPA promotes regulatory stability, regardless of changes to the broader regulatory environment.

IX. COMMENTS ON OTHER VEHICLE CERTIFICATION AND TEST PROCEDURE TOPICS

A. 40 C.F.R. § 85.2103(d)(1)(v): Rechargeable Energy Storage System Warranty

The Multi-Pollutant Rule (Tier 4) introduced a warranty requirement for the Rechargeable Energy Storage System (“RESS”). Auto Innovators recommends the following actions with respect to this requirement:

- Delay the requirement until at least MY 2029. As currently written, the proposal would require all LDV, LDT1, and LDT2 vehicles to comply with this section as soon as MY

2027.⁶⁰ Our understanding is that EPA maintained this requirement during its Endangerment Finding Rule⁶¹ because it was related to criteria emissions and not greenhouse gas emissions. Since this rulemaking is about criteria emissions, we believe that not including a delay to this requirement in the proposed regulatory text was a technical oversight. EPA should address this in the final rule, delaying the RESS requirement consistent with other amendments and revisit the requirement during Part 2 of the Tier 4 modifications.

- Apply this requirement to full Tier 4 certified vehicles: Unlike most other requirements, the RESS warranty requirement applies to all LDV, LDT1, and LDT2 vehicles in a specific model year, rather than to test groups as they phase into Tier 4. We believe the warranty requirement should be tied to full certification as a Tier 4 vehicle, not to interim Tier 4 vehicles.
- Clarify the requirements in this section in Part 2: The language in this section is overly broad and vague, applying to “all components needed to charge the system, store energy, and transmit power to move the vehicle.” This could be read to require the warranty on tires, wheels, axles, etc. because they all “move the vehicle.” We do not believe EPA intended this warranty requirement to be so broad or vague and would appreciate working with EPA on this during Part 2 of the Tier 4 modifications.

B. Durability and Emission Testing Requirements (40 C.F.R. § 86.1829-15)

Auto Innovators strongly supports and appreciates the technical correction to paragraph (b)(3), which allows for mid-temperature intermediate soak testing only at the 40-minute point rather than requiring testing at three time periods. This is completely consistent with EPA’s explicit intent as discussed in the Multi-Pollutant Rule’s preamble.

We also support the changes in paragraph (b)(2), which requires testing one Emission Data Vehicle (“EDV”) in each Tier 3/Interim Tier 4 Durability Group and each Tier 4 Test Group.

⁶⁰ The current regulation does not require vehicles >6,000 lbs. GVWR to meet 85.2103(d)(1)(v) until first certified to Tier 4 and no later than 31MY. However, this Part 1 proposal removes the GVWR threshold and replaces with vehicle classification (LDV, LDT1, and LDT2) that would expand the scope of vehicles to include any LDV vehicle, regardless of GVWR, needing to comply with this section in 2027MY. This effectively would accelerate warranty requirements after OEM’s have finalized purchasing contracts and financial decisions based on the current regulations.

⁶¹ U.S. Environmental Protection Agency. Rescission of the Greenhouse Gas Endangerment Finding and Motor Vehicle Greenhouse Gas Emission Standards Under the Clean Air Act; Final Rule. 91 Fed. Reg. 7686 (Feb. 18, 2026).

C. Four-Bag Federal Test Procedure Testing Clarifications and Essential Corrections

Auto Innovators understands and appreciates that EPA intends to clarify that non-hybrid vehicles may run a 4-bag FTP, but the language as proposed does not allow for that possibility. We strongly urge EPA to correct the proposed regulatory text to allow the 4-bag FTP for all vehicles. In line with this recommendation, we provide additional technical corrections. Finally, Auto Innovators further recommends that EPA allow use of the 4-bag FTP at both 25 °C and -7 °C and for both gaseous and particulate testing.

1. *The original FTP used four bags. Changes to emissions regulations and modern powertrains support increased use of 4-bag FTP.*

EPA's FTP for light-duty vehicles traces back to the early 1970s, when the Agency adopted the Urban Dynamometer Driving Schedule (“UDDS”)—also known as the FTP-72 or LA-4 cycle—as its standard chassis dynamometer test for measuring tailpipe emissions. The UDDS simulates a city driving route of approximately 7.5 miles with frequent stops, at an average speed of 19.6 miles per hour (“mph”), broken into two phases: an initial 505-second transient segment followed by an 867-second stabilized segment. In its original conception, the full FTP consisted of a cold-start UDDS (collecting emissions in Bag 1 for the transient phase and Bag 2 for the stabilized phase), followed by a 10-minute engine-off hot soak, and then a complete hot-start UDDS (Bag 3 for the hot transient phase and Bag 4 for the hot stabilized phase). This 4-bag structure was intended to capture the full range of in-use driving, from the elevated emissions of a cold engine start through the warmed-up stabilized conditions that characterize most real-world operation.

Over time, EPA and automakers accumulated sufficient test data to recognize that the emissions collected in Bag 4—the hot-start stabilized phase—were statistically indistinguishable from those collected in Bag 2, the cold-start stabilized phase. Because a fully warmed-up catalytic converter and engine produce similar stabilized emissions regardless of whether the preceding start was cold or hot, the hot-stabilized segment was effectively redundant. EPA and automakers moved away from collecting the hot-stabilized segment for testing efficiency. The resulting 3-bag FTP retained the cold-start transient (Bag 1), the stabilized phase (Bag 2), and the hot-start transient (Bag 3), with manufacturers permitted to substitute Bag 2 data in place of a separately measured Bag 4. Under this approach, manufacturers may omit the stabilized portion of the hot-start test (Bag 4) and use the stabilized portion of the cold-start test (Bag 2) in its place. This simplification reduced testing time and equipment demands without sacrificing emissions measurement accuracy, and the 3-bag FTP-75 became the drive cycle for emission measurement in 1975.

The advent of hybrid powertrains introduced a new variable—battery state of charge—that can cause Bag 4 emissions to diverge from Bag 2 emissions. As a result, EPA requires full 4-bag FTP testing for hybrids and plug-in hybrids. While the regulations mandate 4-bag testing for hybrids, they do not prohibit 3-bag testing for conventional internal-combustion vehicles—at

least not as industry has understood them. Nonetheless, we appreciate that EPA has offered to clarify this allowance.

The 3-bag FTP served automakers and the Agency for over 50 years with conventional vehicles. However, the lower PM emissions associated with any PM standard below 3 mg/mile are difficult to measure over a shorter drive cycle range. Automakers have spent years preparing to certify vehicles to lower PM emissions standards but still struggle to distinguish the vehicle PM emissions “signal” from the background “noise” when measuring at levels so close to zero. The single-filter 4-bag FTP consistently yields robust results with reduced (but not eliminated) test-to-test, lab-to-lab, vehicle-to-vehicle, and driver-to-driver variability. While the procedure alone may not be enough to consistently distinguish the signal from the noise, it is one of the best methods available to deliver more robust results.

2. *Auto Innovators recommends that EPA remedy a critical error in the proposed regulatory text that would restrict 4-bag FTP for non-hybrid ICE vehicles.*

EPA clearly establishes in the preamble to this proposed rule that the Agency intends to allow the 4-bag FTP for all vehicles, regardless of powertrain:

...a manufacturer may use the hot-running portion of the urban dynamometer driving schedule (UDDS) from the cold-start UDDS or the hot-start UDDS in the FTP composite emission calculations in 40 CFR 1066.820(b) and (c)(1), if the manufacturer chooses to run a full hot-start UDDS for the purposes of measuring PM with a non-hybrid ICE vehicle consistent with 40 CFR 1066.815(b)(5).⁶²

However, in the proposed regulatory text, paragraph (b)(5) refers to the 3-bag FTP test. The 4-bag FTP is now located in paragraph (b)(6) after the insertion of a new paragraph (b)(2). Because of this cascading shift, the regulatory text as proposed would not allow manufacturers to use the 4-bag FTP test procedure.

To allow 4-bag FTP, EPA must amend 40 C.F.R. § 1066.815(b) to include (b)(6). Auto Innovators further recommends that EPA include (b)(7) so the regulation includes all options. With this change, 40 C.F.R. § 1066.815(b) would read:

(b) *PM sampling options.* Collect PM using any of the procedures specified in paragraphs (b)(1) through ~~(5)~~(7) of this section and use the corresponding equation in § 1066.820 to calculate FTP composite emissions, except that you must use the procedures specified in paragraph (b)(7) of this section for HEV testing at 25 °C.

⁶² NPRM (*supra* note 1) at 28474

3. *Auto Innovators recommends two additional technical corrections for clarity.*

Auto Innovators recommends two minor technical corrections. The first provides clarity in 40 C.F.R. § 1066.815(b)(2):

(2) You may collect ~~a~~ separate PM samples for transient and stabilized portions of the cold-start UDDS and the hot-start UDDS ~~(4-bag FTP)-with four bags~~.

The second corrects a reference in the list of proposed regulatory changes. Change 23⁶³ proposed to amend § 1066.830, while the item amends § 1066.820. Auto Innovators recommends the following correction:

23. Amend ~~§ 1066.830~~ § 1066.820 by revising paragraph (b) to read as follows:

4. *Changes to ensure that manufacturers can utilize the flexibility provided by the four-bag FTP for non-hybrid ICE vehicles*

Auto Innovators welcomes EPA's proposal to clarify that non-hybrid ICE vehicles may utilize 4-bag FTP testing for PM emissions. However, other changes are necessary for manufacturers to fully utilize the test procedure. Auto Innovators recommends that EPA amend its proposal to permit 4-bag FTP testing for non-hybrid ICE vehicles in both the emissions certification and fuel economy litmus contexts. Because EDV emissions testing feeds directly into fuel economy litmus calculations under 40 C.F.R. Part 600, a manufacturer that runs a 4-bag EDV test must be able to process those results through the appropriate 4-bag litmus equations. Without this alignment, the 4-bag option remains administratively unusable even if technically permitted.

- a) EPA's proposal to limit Bag 4 collection for gaseous emissions testing would unnecessarily constrain manufacturers' ability to use 4-bag FTP testing in other contexts.

In this proposal, EPA introduces changes that would prohibit manufacturers from collecting gaseous samples for Bag 4 when testing non-hybrid ICE vehicles using the 4-bag FTP test procedure.⁶⁴ If finalized, this change would introduce a rigid operational constraint that would require a costly rebuild of existing test cell automation software architectures. Implementing and validating these forced software modifications across legacy and modern test cells would impose an unwarranted resource burden on automakers.

Without significant laboratory investments, manufacturers would struggle to collect a PM sample from phase 4 without simultaneously collecting gaseous emissions data from that same bag. By prohibiting gaseous emissions sampling in Bag 4 for non-hybrid ICE vehicles, EPA effectively

⁶³ *Id.* at 28486.

⁶⁴ 91 Fed. Reg. 28486

forecloses the 4-bag option as a practical matter, eliminating one of the most effective techniques available for achieving more reliable PM measurements.

Auto Innovators understands concerns that four-bag testing for gaseous emissions and fuel economy would skew results for non-hybrid ICE vehicles. The recommendations we propose would not materially skew emissions results. Bag 4 is a hot-start measurement: the engine is fully warm, the aftertreatment system is at operating temperature, and catalyst light-off is complete. The elevated gaseous emissions that characterize a cold-start—the primary driver of NMOG + NO_x and CO emissions—are absent in Bag 4. The weighted composite result is therefore not meaningfully affected by inclusion of Bag 4 gaseous data. Additionally, the 4-bag composite weighting equations are not new. EPA currently accepts four bag emissions results for HEV certification. Auto Innovators recommends that EPA extend this proven, existing framework to conventional ICE EDV testing, not introduce new methodology.

- b) [Auto Innovators recommends flexibility for gaseous sampling methods: 40 C.F.R. §§ 1066.815\(c\) and 1066.820](#)

To provide flexibility for gaseous sampling, Auto Innovators recommends that EPA amend 40 C.F.R. § 1066.815(c) as follows:

(c) *Gaseous sampling options.* Collect gaseous samples using one of the following procedures:

(1) You may collect a single sample for a full UDDS (cold-start or hot-start).

(2) You may sample emissions separately for transient and stabilized portions of any UDDS.

(3) You may omit the stabilized portion of the hot-start test (bag 4) and use the stabilized portion of the cold-start test (bag 2) in its place, except as specified in paragraph (c)(4) and (c)(5) of this section.

~~(1) Except as specified in paragraph (c)(2) of this section, you must collect separate gaseous samples for transient and stabilized portions of the cold-start UDDS (bag 1 and bag 2) and for the transient portion of the hot-start UDDS (bag 3). Do not collect a sample for the stabilized portion of the hot-start test (bag 4), even if testing includes vehicle operation over a full hot-start UDDS. Exceptions for certain circumstances apply as follows:~~

~~(4)(2)~~ For HEV testing at 25 °C, you must operate the vehicle over a full cold-start UDDS and a full hot-start UDDS. Collect gaseous samples separately or together for the transient and stabilized portions of each UDDS (bag 1 and bag 2 together or separately, and bag 3 and bag 4 together or separately).

(5) For HEV testing at -7 °C, cCollect gaseous samples for transient and stabilized portions of the cold-start UDDS (bag 1 and bag 2) and for the transient portion of the hot-start UDDS (bag 3). You may optionally run a full hot-start UDDS as described in paragraph (e)(1) of this section for HEV testing at -7 °C.

This language retains the existing options in 40 CFR 1066.815(c) and incorporates EPA's proposed language that would require specific test procedures for HEVs. Auto Innovators recommends that EPA split HEV testing requirements at 25 °C and -7 °C into separate paragraphs for clarity, as reflected above.

Auto Innovators also recommends that EPA allow 4-bag FTP as an option for HEV testing at -7 °C. The purpose of this option is to increase PM filter mass loading to achieve reliable gravimetric measurements, an objective that applies equally at cold temperature test conditions. This proposal raises no fuel economy labeling concerns regarding the 4-bag FTP option for all powertrains—HEVs or non-HEVs—at -7 °C. The -7 °C FTP Bag 4 fuel economy values do not contribute to the litmus evaluation and do not enter the label calculation pathway used for Monroney labeling, nor are the results used for CAFE compliance determinations. Accordingly, allowing a four-bag option at -7 °C presents no risk of affecting downstream certification, labeling or fleet compliance processes.

To align with these recommendations, Auto Innovators recommends a parallel change in 40 C.F.R. § 1066.820 to acknowledge that parts of 40 C.F.R. § 1066.815(c) would require manufacturers to use a 4-bag FTP, while others allow a manufacturer to choose to run a 4-bag FTP:

m_h = the combined mass emissions determined from the hot-start UDDS test interval in grams. This is the hot-stabilized portion from either the first or second UDDS (bag 2, unless § 1066.815(c) requires you to or if you optionally decide to measure bag 4), in addition to the hot transient portion (bag 3).

- c) Auto Innovators recommends flexibility for fuel economy litmus calculations: 40 C.F.R. §§ 600.114-12(c), 600.113(a)(2), and 40 C.F.R. § 1066.815(a)

To enable manufacturers to use 4-bag FTP results for fuel economy litmus testing evaluation, Auto Innovators recommends that EPA amend 40 C.F.R. § 600.114-12(c) as follows:

(c) Fuel economy calculations for hybrid electric vehicles and conventional vehicles that utilize a 4-bag FTP procedure.

Auto Innovators also recommends that EPA amend 40 C.F.R. § 600.113(a)(2):

For vehicles with more than one source of propulsion energy, one of which is a rechargeable energy storage system, or vehicles with special features that the Administrator determines may have a rechargeable energy source, whose charge can vary during the test, or for conventional non-hybrid ICE vehicles utilizing the four-bag FTP

option under 40 C.F.R. § 1066.815, calculate separately the grams/mile values for the cold transient phase, stabilized phase, hot transient phase and hot stabilized phase of the FTP test.

This recommendation does not affect Monroney labeling or CAFE compliance for conventional ICE vehicles. Fuel economy data vehicle (“FEDV”) testing continues under the existing 3-bag protocol, and label values are derived exclusively from FEDV results.

For the very narrow subset of vehicles where EDV 4-bag FTP test data is used for Monroney labeling or for CAFE compliance purposes, Auto Innovators requests that EPA accept and use the 4-bag weighted results.

- d) Auto Innovators recommends an additional conforming change to align with these recommendations.

Auto Innovators also recommends that EPA reject a proposed change related to fuel economy calculations in 40 C.F.R. § 1066.815(a):

(a) *General*. The FTP exhaust emission test sequence for –7 °C and 25 °C testing consists of a cold-start test and a hot-start test as described in § 1066.801. ~~Except as specified, the same procedures apply for gaseous emission measurements you use to calculate fuel economy.~~

EPA’s proposed change introduces unnecessary ambiguity. EPA does not specify a particular type of fuel economy calculation for which manufacturers should use the same procedures as gaseous emission measurements, and the language could be open to interpretation.

X. ON-BOARD DIAGNOSTIC (“OBD”) PROGRAM

A. Auto Innovators supports proposed flexibility to meet “some or all provisions from a later version of California’s OBD requirements.”

Auto Innovators fully supports the targeted technical updates and corrections made to 40 C.F.R. § 86.1806-17, as well as the proposed administrative delay in MY 2027. This relief provides crucial transition time for programs entering the near-term certification pipeline.

OBD regulations are technology-forcing. These regulations require manufacturers to make significant technical changes to one of the most complex systems in a vehicle to meet the regulatory requirements. The 2022 California Air Resources Board (“CARB”) OBD regulations (“2022 CARB regulations”) included in 40 C.F.R. § 86.1806-27—which EPA proposes to rename to 86.1806-29—introduce new requirements, such as significant new requirements for the vehicle’s Cold Start Emission Reduction Strategy (“CSERS”). Manufacturers have expressed feasibility concerns regarding the 2022 CARB regulations required in 40 C.F.R. § 86.1806-27.

Many automakers are still developing the technology needed to meet the requirements expressed in the 2022 CARB regulations.

EPA's change to 40 C.F.R. § 86.1806-17 allowing "some or all provisions from a later version of California's OBD requirements" is a critical component to achieving the intent of this NPRM to address near-term Tier 4 issues. Without this flexibility, automakers may not be able to comply with the 2013 CARB OBD regulations, referenced in 40 C.F.R. § 86.1806-17. Many automakers have started to implement some of the hardware and software changes necessary to meet phase-in requirements in the 2022 CARB regulations (referenced by 40 C.F.R. § 86.1806-27) while still developing the hardware and software to meet other requirements.

One such requirement is SAE J1979-2 implementation. Many manufacturers have already changed portions of their fleet over to the SAE J1979-2 communications protocol to meet the phase-in requirements in the 2022 CARB regulations. Manufacturers made significant investments in software development, validation, and verification testing to facilitate the change to SAE J1979-2. However, the 2013 CARB regulations do not provide compliance options for SAE J1979-2. Reverting from SAE J1979-2 to SAE J1979 classic simply to meet the 2013 regulations in their entirety would be neither productive nor feasible, due to the disruptions such a reversal would cause.

The change EPA proposes in 40 C.F.R. § 86.1806-17 provides manufacturers critical flexibility to continue developing solutions to new technological requirements, like CSERS, while maintaining forward progress on challenges they have already accomplished, like the changeover to SAE J1979-2. Through this proposed language, EPA achieves this rulemaking's goal of delaying standards in which feasibility is called into question.

1. Auto Innovators recommends that EPA include the same flexibility in 40 C.F.R. § 86.1806-29.

Auto Innovators recommends that EPA include in 40 C.F.R. § 86.1806-29(a) the same flexibility to certify to "some or all provisions from a later version of California's OBD requirements." At minimum, we recommend that EPA rescind the proposed change that would require manufacturers certifying to a later version of CARB regulations to meet "a complete later version" and allow industry to discuss this further in the Part 2 Tier 4 Revisions rulemaking.

CARB recognizes that its 2022 OBD regulations include requirements that are technologically infeasible for manufacturers at this moment, and the Agency has made progress on promulgating a regulatory update to provide relief. Prior to the Congressional Review Act resolution rejecting EPA's waiver of California's Advanced Clean Cars 2 program and other regulations in 2025, CARB began drafting a new set of OBD regulations. The Agency proposed amendments to the 2022 OBD regulations in its On-Road Heavy-Duty Engine and Vehicle Omnibus Regulation in

September 2025.⁶⁵ In March, CARB stated publicly that it plans to pursue a standalone OBD rulemaking in 2026.⁶⁶

Auto Innovators asks that EPA extend flexibility to meet “some or all provisions” from a later regulatory version to the 2022 OBD regulations, codified in 40 C.F.R. § 86.1806-29. With this flexibility, manufacturers would be provided with essential regulatory relief without needing to make major system-wide changes overnight.

In this era of heightened regulatory uncertainty, manufacturers seek regulatory flexibility. With MY 2029 rapidly approaching, this change would allow manufacturers to remain on the forefront of OBD technological development, rather than having to wait for future rulemakings and updates from EPA.

B. Modifications of the Federal OBD requirements needed to support this action for MYs 2027 and 2028 vehicles (Request for Comment C-6)

Auto Innovators thanks EPA for the opportunity to provide recommendations on modifications to the Federal OBD requirements necessary for MY 2027 and MY 2028 vehicles. Manufacturers are experiencing unprecedented regulatory instability in the OBD space. Automakers have been working closely with both EPA and CARB to chart a path forward to allow OBD certifications to continue. We provide key recommendations below that would allow OBD certification to proceed uninterrupted and that would streamline the process.

1. Mutual Recognition of Demos and PVET(j)(2) Testing

Auto Innovators recommends that EPA add flexibility to 40 C.F.R. §§ 86.1806-17 and 86.1806-29 to streamline demonstration and PVET(j)(2) testing. These are costly, time-intensive tests. As currently implemented, the strict interpretation of language in 13 C.C.R. § 1968.2(h)(2) and (j)(2.2) may require duplicative testing to satisfy both EPA and CARB requirements. If a manufacturer produces 16 test groups, one agency could require three demonstrations and six PVET tests. If EPA and CARB require testing on different sets of test groups, that manufacturer could need to provide six demonstrations and 12 PVET tests.

Many of the OBD systems CARB certifies are equipped on 50-state vehicles that would also satisfy EPA’s regulatory requirements. Coordinated federal and state testing would minimize the test burden on manufacturers while meeting EPA and CARB testing requirements.

EPA and CARB have cooperated before to minimize testing burden. Under the Tier 3/LEV III regulatory regime, both agencies required manufacturers to submit PM test data for a given

⁶⁵ <https://ww2.arb.ca.gov/rulemaking/2025/orhdomnibus>

⁶⁶ SAE OBD Symposium – Europe, March 2026.

percentage of test groups per MY. Manufacturers proposed test groups for PM testing in a pre-certification test plan submitted to both agencies. The agencies would review the plan and align on a coordinated set of test groups per MY.

To promote regulatory cooperation, Auto Innovators proposes that EPA add a new section 40 C.F.R. § 86.1806-17(a)(10) and a new section 40 C.F.R. § 86.1806-29(a)(14) with the following text:

EPA may mutually recognize and accept vehicle selections and associated testing that have been agreed upon between the manufacturer and CARB under 13 C.C.R. § 1968.2 (h)(2) and (j)(2.2), provided the selected vehicles are covered by a valid Federal Certificate of Conformity.

This language would codify a practice EPA and CARB already use to streamline testing. For decades, EPA and CARB have leveraged each other's strengths and resources, and the agencies have cooperated to certify OBD systems. Manufacturers' experience of OBD certification reflects a single, integrated certification system. Codifying this practice provides the agencies with an explicit regulatory framework to coordinate testing. Aligned testing plans minimize the testing burden for manufacturers. Both agencies and manufacturers would experience long-term benefits through a streamlined and enhanced OBD testing process.

Auto Innovators also encourages EPA to review the HD OBD regulations in § 1036.110 and consider providing the same regulatory streamlining.

2. CCM Readiness

Auto Innovators recommends that EPA provide flexibility to allow manufacturers to implement SAE J1979-2 protocol without a calculated Comprehensive Component Monitoring ("CCM") readiness bit. Manufacturers are experiencing difficulties implementing the active or calculated CCM readiness bit and recommend that EPA provide additional relief to support OBD requirements in MYs 2027-2028 and beyond.

There are hundreds of CCM monitors on each vehicle. Many of these monitors are challenging to complete because the monitors can only enable under specific, narrow environmental and operational conditions. CARB has acknowledged that the current regulatory requirements are infeasible and has gone as far as to provide manufacturers with a short-term alternative compliance strategy. Currently, CARB allows automakers to set readiness for monitors with "extreme conditions" without completing testing. This alternative strategy is limited in scope. Without broader relief, automakers anticipate needing program-by-program exemptions to certify OBD systems.

Recognizing that this requirement is currently infeasible, Auto Innovators recommends that EPA provide a new exemption for these monitors in 40 C.F.R. § 86.1806-27:

(a)(15) The comprehensive component requirements in 13 C.C.R. § 1968.2(g)(4.1.2)(B)(xiv) for gasoline systems and 13 C.C.R. § 1968.2(g)(4.1.2)(B)(xxix) for diesel systems do not apply.

This addition would offer flexibility while manufacturers are continuing to develop compliance strategies for these monitors. Auto Innovators would support sunsetting this provision after MY 2030 and discussing CCM Readiness further during the Part 2 rulemaking.

Vehicles that use the SAE J1979 communications protocol—that is, vehicles that do not use the Unified Diagnostic Services application—show CCM bits as complete automatically. This recommended change would align requirements for vehicles using SAE J1979-2 with vehicles using SAE J1979. Further, allowing manufacturers to show the bit as “complete” for SAE J1979-2 vehicles could minimize issues for customers or Inspection and Maintenance (“I/M”) stations while manufacturers work to implement these requirements. This change aligns with EPA’s intent to provide relief from regulations that raise feasibility concerns.

C. Technical Corrections to 40 C.F.R. § 86.1806-29

Auto Innovators has identified two critical technical corrections necessary in the proposed OBD regulations.

1. *Correct Vehicle Classification References in § 86.1806-29(g)(1)*

In the *Federal Register* entry, EPA proposes the following text:

(g)(1) Manufacturers may delay complying with all the requirements of this section, and instead meet all the requirements that apply under § 86.1806-17 for LDT3, LDT4, MDPV, and MDVs any vehicles above 6,000 pounds GVWR that are not yet subject to all the Tier 4 standards in § 86.1811-29.⁶⁷

EPA clearly intended to strike “any vehicles above 6,000 pounds GVWR” and replace it with the vehicle classifications “LDT3, LDT4, MDPV, and MDVs.” This text is correct in the official EPA redline memorandum, but incorrect in the *Federal Register*. As published in the *Federal Register*, this section includes redundant phrases.

Auto Innovators recommends that EPA correct this section to include only one reference to vehicle class. Specifically, we recommend that EPA strike “LDT3, LDT4, MDPV, and MDVs” and retain references to GVWR.

⁶⁷ 91 *Federal Register* 28482.

2. *Correct 13 C.C.R. § 1968.2 references in 40 C.F.R. § 86.1806-29(a)(11)*

While reviewing the existing Code of Federal Regulations, Auto Innovators identified that 40 C.F.R. § 86.1806-27(a)(11) references the wrong sections of the California Code. As published in the C.F.R., 40 C.F.R. § 86.1806-27(a)(11) reads:

(a)(11) The data reporting and storage requirements in 13 CCR 1968.2(h)(6.1) related to the standardization requirements in 13 CCR 1968.2(g)(8.1) do not apply.

The regulation in 13 C.C.R. § 1968.2(h)(6.1) covers the evaluation protocol for monitoring system demonstrations and does not make sense in this context. Auto Innovators recommends that EPA correct 40 C.F.R. § 86.1806-29(a)(11) to read:

(a)(11) The data reporting and storage requirements in 13 CCR 1968.2(g)(8.1) related to the standardization requirements in 13 CCR 1968.2(h)(5.3.1)(D) and (h)(5.3.2)(A)(iii) do not apply.

XI. CONCLUSION

Auto Innovators appreciates EPA's responsiveness to date, strongly supports this delay proposal and recommends extending it to three years (through MY 2029). As EPA notes, this Part 1 delay is only a first step, and does not address the fundamental, long-term technical and market hurdles of the Tier 4 standards for MY 2029 (or MY 2030) and beyond. We request EPA to act as quickly as possible on Part 2 of this rulemaking to establish realistic, durable, and structurally viable long-term standards.

We look forward to working cooperatively with the Agency and other stakeholders to build a reasonable, workable path forward that protects public health, recognizes consumer needs by promoting vehicle choice and affordability, and preserves the health and competitiveness of the automotive industry in the U.S.