



May 16, 2022

The Honorable Michael Regan
U.S. Environmental Protection Agency
EPA Docket Center, OAR
Docket EPA-HQ-OAR-2019-0055,
1200 Pennsylvania Avenue NW
Washington, DC 20460.

Re: Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine
Standards [EPA-HQ-OAR-2019-0055]

Dear Administrator Regan:

The U.S. Chamber of Commerce appreciates the opportunity to comment on the U.S. Environmental Protection Agency's (EPA) Notice of Proposed Rulemaking ("the Proposal") to modify nitrogen oxide (NOx) and greenhouse gas (GHG) emissions standards for highway medium- and heavy-duty engines and vehicles.

The Chamber and its members are proud of their role as a collaborative partner with EPA and state regulators to develop emissions-reducing technologies and implement standards that have led to remarkable progress cleaning up the nation's air. Efforts made to reduce NOx from all sectors of the economy, including heavy-duty highway engines, have been a major factor driving this progress.

Since 1990, economy-wide NOx emissions have declined by nearly 68 percent, led by a 75 percent reduction from highway vehicles.¹ This progress has occurred even as overall vehicle miles traveled have increased by nearly 50%, and it is a primary driver of the 54% decline in total nationwide concentrations of nitrogen dioxide levels during the same time period.²

Continued improvements in advanced technology diesel engines are a key element of this success. According to the Diesel Technology Forum, the latest generation of diesel-powered heavy-duty trucks—equipped with selective catalytic reduction technology and powered by ultra-low sulfur fuel—reduce NOx and fine particle by 98

¹ EPA *Air Pollutant Emissions Trends* data. Available at <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

² EPA, *Our Nation's Air 2021*. Available at <https://gispub.epa.gov/air/trendsreport/2021/#introduction>



percent relative to previous generations of technology.³ Approximately 50 percent of heavy-duty trucks on the road today are powered by these new technology diesel engines, and together they have combined to help avoid more than 27 million tons of NOx emissions.⁴

While this progress has been remarkable, with continued fleet turnover through 2030, cumulative avoided NOx emissions will nearly triple to 74 million tons, while saving American consumers 150 billion gallons of diesel fuel purchases.⁵ Beyond this, there is still a significant opportunity to drive even greater reductions in the future through achievable, cost-effective standards that reflect the latest available emissions control technologies.

Accordingly, the Chamber looks forward to working closely with EPA, states, and industry stakeholders on an effective, workable rule that delivers real-world emissions reductions, particularly in geographic areas with the greatest air quality concerns. As the agency proceeds with this rulemaking, we encourage adherence to the following objectives that should serve as the foundation of an effective rulemaking:

- Regulatory certainty and durability are key not only to achieving sustained emissions reductions over the proposed rule's implementation timeline, but also to creating a stable business environment needed for large investments to meet these types of regulatory requirements.
- Cost-effective, technologically achievable standards that facilitate fleet turnover necessary to drive real-world emissions reductions.
- National harmonization that avoids a patchwork of requirements and compliance obligations among states will help reduce unnecessary regulatory burdens on manufacturers, ultimately speeding implementation.
- Sufficient lead-time and compliance flexibility to allow manufacturers and other stakeholders to plan, adapt, and invest in heavy-duty engine and vehicle technologies in a manner that does not divert resources away from the longer-term transition to zero-emissions vehicles.

While we are supportive of a national standard that drives cutting-edge technology deployment and lowers emissions, the Chamber has strong concerns that, as proposed, EPA's preferred Option 1 fails to adhere to these core principles, and as a

³ *Diesel's Shrinking Share of Emissions Inventory*. Available at <https://www.dieselforum.org/policy/diesel-s-shrinking-share-of-emissions-inventory>

⁴ *Ibid.*

⁵ <https://www.dieselforum.org/files/dmfile/afs---diesel-benefits-2021---final.pdf>



result would likely lead to unintended negative consequences for both the economy and the environment.

Relatedly, we have concerns that the reasoning and factual predicates for aspects of the proposed rule are undermined by weaknesses that give rise to legal vulnerabilities. As EPA acknowledges, section 202(a)(2) of the Clean Air Act provides that standards to regulate air pollutants from mobile sources “shall take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.” Accordingly, as EPA notes, in establishing or revising such standards, “EPA also must consider issues of technological feasibility, compliance cost, and lead time,” and “may consider other factors such as safety,” as well as “the impacts of potential standards on the heavy-duty industry, fuel savings, oil conservation, energy security and other energy impacts.” (See also Clean Air Act section 202(a)(3), as further discussed in the preamble to the proposed rule.) Careful attention to each relevant factor must be given in proposing and promulgating new standards; and to the extent that an agency decision ignores significant factual problems, including questions of practicability, or otherwise is incomplete or erroneous, the agency risks invalidation of its decision pursuant to the Clean Air Act and the Administrative Procedure Act.

While our comments tend to focus primarily on potential impacts to long haul freight trailers and the traditional trucking sector, similar concerns exist with respect to potential impacts on all vehicle classes covered by the rule, including transit buses, commercial delivery vehicles, and vehicles designed for waste removal, construction, agriculture, and more.

Economic Impacts Should be Minimized to Support Continued Innovation and Support this Critical Industry

First, it should be recognized that trucking is enormously important to the economy—it moves 72 percent of goods in America and is the foundation of a well-functioning supply chain.⁶ When trucking costs go up, the costs of nearly all goods go up along with them.

Moreover, long-haul trucking in particular is overwhelmingly comprised of small businesses that are disproportionately vulnerable to changing economic

⁶ Economics and Industry Data, American Trucking Association, <https://www.trucking.org/economics-and-industry-data>



circumstances. According to the Truck and Engine Manufacturers Association, 98 percent of U.S. fleet owners are small businesses operating 20 or fewer commercial vehicles. These small businesses operate on tight margins and typically do not have the financial resources necessary to absorb significant regulatory cost increases, which therefore must be passed on to American consumers in the form of higher costs for shipped goods.

As the White House pointed out at an event in April, trucking costs grew more than 20 percent last year as a surge in demand for goods combined with a decline in trucking employment that preceded the pandemic.⁷ In 2022, sharply increased fuel costs have added to economic burdens on the industry, which also faces major challenges due to supply chain disruptions and labor shortages.

The Chamber's America Works Data Center has documented the ongoing worker shortage crisis in detail.⁸ More than 3 million people have left the workforce since the beginning of the COVID pandemic, and we now have nearly 11.5 million job openings with only 5.9 million unemployed workers. Truck drivers are no exception; the American Trucking Association estimates that the driver shortage has reached an all-time high of 80,000 unfilled jobs.⁹ These circumstances, combined with EPA's proposal, led United Auto Workers Regional Director Laura Dickerson to warn that the rule will create an economic "perfect storm" resulting in "a dramatic loss of jobs in Michigan and in America if the proposed rule by EPA is adopted as written."¹⁰

Accordingly, in light of the ongoing worker shortage crisis, EPA should take extra caution to avoid exacerbating the historic inflation, labor, and supply chain disruptions facing the industry.

Another economic factor that EPA should consider in its regulatory impact analysis is not only the potentially high costs of critical minerals needed to meet these standards, but the forecasted surge in demand for critical minerals in other market segments such as renewable energy, light duty electric vehicles, energy storage, and semiconductors, among others. For example, IEA reports that 40 percent of global platinum demand is for catalytic converters, which also require large amounts of palladium and rhodium. Expected demand growth for these metals is high, and

⁷ April 4, 2022 White House event: The Biden Administration's Unprecedented Actions to Expand and Improve Trucking Jobs. Available at <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/04/fact-sheet-the-biden-administrations-unprecedented-actions-to-expand-and-improve-trucking-jobs/>

⁸ America Works Data Center: <https://www.uschamber.com/workforce/america-works-data-center>

⁹ ATA Driver Shortage Update. Available at https://www.trucking.org/sites/default/files/2021-10/ATA%20Driver%20Shortage%20Report%202021%20Executive%20Summary.FINAL_.pdf

¹⁰ UAW Region 1a comments. Available at <https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1062>



therefore an important factor in the rule’s overall cost. For example, concurrent with this rulemaking, EPA is pursuing more stringent NOx standards for the electric power sector that will also contribute to increased demand for these metals.¹¹ This is just one example of another EPA rulemaking that may contribute to increased demand for—and prices of—pollution control technologies.

Accordingly, EPA should ensure that its cumulative cost impact analysis considers other market demands that could be driven by federal agency regulations, policy initiatives, or business innovation. These types of cross-cutting economic factors have the potential to significantly ramp up costs, increase compliance uncertainty, and challenge long-term regulatory durability.

Compliance Cost Uncertainties and Disparities

EPA openly acknowledges that the proposed rule’s impacts on the cost of new medium- and heavy-duty trucks, and the impacts of its associated unprecedented and untested useful life and warranty requirements, are highly uncertain. Indeed, there is an enormous and troubling disparity—approximately an order of magnitude—between EPA’s compliance cost estimates and those projected by engine manufacturers. Such factual issues merit very careful attention and consideration by the agency.

Specifically, a detailed April 2022 analysis by Ricardo Strategic Consulting forecasts that EPA’s Option 1 would impose incremental compliance costs of \$42,000 per truck.¹² The report concluded that, based on historical cost data, “most OEMs do not experience the steep cost reductions that EPA uses in its analysis of the introduction of new emission-control technologies.” In contrast to the proposed rule, the cost projections of this industry analysis are aligned with a May 2020 study undertaken by the Department of Energy’s National Renewable Energy Laboratory (NREL).¹³ These analyses are partially driven by increasingly lower emissions limits that leave little room for compliance margins, driving engine and vehicle manufacturers to over-design vehicles that can perform their duty cycles under real world conditions.

Similarly, and as EPA notes in the proposal, there is considerable uncertainty surrounding the feasibility of and cost impacts associated with dramatically extended

¹¹ Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, 87 Fed. Reg. 20036 (April 6, 2022).

¹² Review of EPA NRPM and Compliance Cost Assessment, April 25, 2022. Available at <https://drive.google.com/drive/folders/1PdGgvJMGBLNM8pFLd3SXuD8ZS0VcNh-g>

¹³ On-Road Heavy-Duty Low-NOx Technology Cost Study, May 2020. Available at <https://www.nrel.gov/docs/fy20osti/76571.pdf>



useful life and warranty requirements under the rule. As EPA acknowledges, key technical assumptions in the rule pertain to performance and durability data for engines and emissions control systems that have yet to be operated on a broad scale for an extended length of time. Without detailed real-world performance data, such technical assumptions should remain conservative (i.e., they should not be unduly optimistic) and should be expressed in terms of a range.

Instead, the rule applies extremely aggressive assumptions for these technologies that raise serious questions about feasibility and practical achievability. For example, the proposal would nearly double useful life mileage expectations for heavy-heavy duty engines (HDE)—from 435,000 miles to 800,000 miles. The factual basis for proposing such a vast increase seems unclear. The ultimate cost of corresponding warranty requirements is unknown, and while EPA seeks feedback on “uncertainty in how the emissions control technologies would deteriorate in the field and across different vehicle applications,” even the most informed estimates necessarily involve a high degree of uncertainty due to the unprecedented and untested nature of the requirements.

According to the Ricardo report, “EPA’s warranty cost estimation methodology grossly underestimates the expected incremental warranty costs...due to fundamental weaknesses in the Agency’s warranty estimation approach.” This is in large part because EPA assumes that warranty costs rise linearly with mileage, when in fact it is commonly accepted that product and technology failures tend to rise exponentially with increased mileage, particularly in the later years of a vehicle’s operational life.

If EPA’s cost estimates are in fact too low, then other key factors influencing the merits of the proposal—such as anticipated fleet turnover, pre-buy/low-buy impacts and their corresponding emissions impacts—will be affected in turn. We therefore urge EPA to apply conservative and realistic assumptions when addressing uncertain factors pertaining to performance and cost estimates. We also recommend that EPA undertake a sensitivity analysis that considers the potential for modest variations in cost inputs to influence the overall economic and emissions impacts of the rule. For example, even if EPA concludes after further analysis that warranty costs would indeed remain linear throughout an 800,000-mile warranty period, the Agency should undertake a sensitivity analysis estimating cost impacts under an exponential warranty cost distribution.

Potential Unintended Consequences of Slower Fleet Turnover due to Excessive Compliance Costs



As indicated above, steady fleet turnover is arguably the most important factor relevant to ensuring continuing NO_x emissions reductions from the trucking sector. A regulation that adds significant cost for new vehicles, or other significant uncertainties, could delay this progress.

We are particularly concerned that EPA's proposal underestimates the likely negative consequences associated with large scale "pre-buys" prior to compliance deadlines. While EPA's proposal dedicates attention to this issue, stating that "if pre-buy and low-buy behaviors occur, then the initial emission reductions are likely to be smaller than expected."

However, the agency ultimately projects nearly negligible pre- and post-compliance impacts of between zero and two percent of sales. These projections appear low based on recent history—a recent detailed analysis by industry sales consultancy ACT Research details the significantly higher pre-buy/low-buy phenomenon that resulted from prior medium- and heavy-duty rules.¹⁴ Moreover, EPA admits that these projections are guesswork, noting that "existing literature does not provide clear guidance on the relationship between warranty changes, increases in prices due to increased warranty periods, and sales impacts."

If technology and warranty costs exceed EPA's estimates as many industry experts expect, pre-buy behavior will be further incentivized beyond EPA's already low estimates. This could significantly delay emissions reductions benefits that are the central purpose of the rule. Accordingly, prior to finalization of the rule, it should be a top priority for EPA to perform further careful analysis to resolve discrepancies in pre-buy projections. Indeed, a 2022 study by Ramboll finds that under a scenario similar to EPA's proposed Option 1, emissions of nitrogen oxides would actually *increase* between 2.2% and 11.6% due to pre-buy/low-buy effects.¹⁵

Delayed adoption of safety features. Delayed fleet turnover can have impacts beyond just emissions. Slowed fleet turnover delays adoption and use of enhanced automated safety features that are common on newer trucks.

Exacerbation of labor shortages. In addition to delayed adoption of safety features, other technological features and amenities found on newer trucks tend to aid in driver

¹⁴ Pre-Buy/Low-Buy Analysis of Heavy-Duty Sales Effects From Emissions Regulations. Available at <https://static1.squarespace.com/static/624ddf53a2360b6600755b47/t/625cbf7329b4af630a080311/1650245492139/ACT.pdf>

¹⁵ Alternative Regulatory Scenarios for Heavy-Duty Diesel Trucks. Available at https://static1.squarespace.com/static/624ddf53a2360b6600755b47/t/624f66f9ccfff63904f2a967/1649370873280/Ramboll_EMA_Scenarios_10Feb2022.pdf



recruitment—an important priority due to aforementioned labor shortages. The impact of delayed fleet turnover could therefore become a factor negatively impacting driver recruitment efforts.

Opportunity cost impacts associated with diversion of capital away from Zero-Emissions Vehicle (ZEV) investments. Original Equipment Manufacturers (OEM) are undertaking enormous investments to develop zero-emissions vehicles that will power the future transportation system. The Chamber has serious concerns that if finalized as proposed, EPA's rulemaking will require OEMs to divert significant amounts of capital investment -- currently planned for ZEV development -- into compliance with this rulemaking. This would not just impact the trucking industry's efforts to plan for the energy transition; it would have implications for a broad range of economic sectors in the form of customers and fleet owners working to address greenhouse gas emissions throughout their supply chain.

Slower Fleet Turnover Would Reduce Emissions Reductions In Communities that Need it Most

By EPA's own admission, implementing the framework described in Option 2 would also drive more emissions reductions sooner compared with Option 1, helping increase the associated health benefits of the rule to the communities that need it most. This not only would further support the administration's goals to improve air quality, but is expected to reduce the exposure of underserved groups living near areas with large numbers of medium- and heavy-duty traffic.

The framework outlined in Option 2 would provide more of an incentive for turnover of older fleet vehicles due to more familiar technology and lower costs for replacement vehicles, particularly those heavy-duty trucks that were certified prior to model year 2010. Around fifty percent of trucks on the road today are certified to meet EPA's 2010 standards, so a large percentage of the fleet is still emitting significantly higher levels of NOx due to lack of fleet turnover. For example, the emissions from one truck certified to 2006 standards is equivalent to 10 trucks certified to the 2010 standards, and one truck certified to the 1990 standards is equivalent to 30 trucks certified to the 2010 standards. The air quality improvements attributable to retiring these older vehicles are tremendous, especially in communities where there is a large concentration of diesel vehicles.

EPA has often used various program elements to incentive early emissions reductions due to their ability to drive more estimated health benefits. Much as early investments help drive more retirement savings down the road, achieving earlier



emissions reductions allows the time value of those health benefits to accrue over a longer period of time, thus providing more cumulative benefits. EPA has applied various incentives through its averaging, banking, and trading programs under both its mobile source and stationary source regulations. Early reduction credits, emissions reduction multipliers, and other incentives help businesses to take steps to reduce their emissions earlier. EPA does this recognizing that the benefits of earlier reductions, even if the standards are less stringent, will often outweigh potentially larger benefits achieved at a later date.

The opportunities for this rulemaking are similar and illustrate why it is so important to set durable, achievable, and cost-effective standards. The framework described in Option 2 offers the best ability to achieve emissions reductions that will benefit communities most impacted by medium- and heavy-duty vehicles.

Ensuring Sufficient Implementation Time Would Increase Market Adoption of Cleaner Technologies

Technological feasibility and compliance costs go hand in hand. Establishing standards that are technologically feasible will help ensure that standards are achievable and cost-effective. Although the agency views these standards to be technology-forcing, the timeline for actual adoption of those technologies in the marketplace will in significant part depend upon the increased cost to consumers for the new vehicles. Other aspects of the design and successful deployment of new technologies needed to meet more stringent environmental standards can sometimes be difficult for companies and the agency to anticipate.

Many companies are investing significantly in new, lower-emitting and zero-emitting medium-duty and heavy-duty vehicles across various vehicle classes; however, overcoming consumer acceptance is one challenge that is difficult to anticipate and to model. This is a particularly important issue when considering major shifts in technology or compliance costs, as mentioned above.

Other challenges also remain for engine and vehicle manufacturers as consumers and fleet owners may need to make significant investments in charging infrastructure necessary to support zero-emitting vehicles. For smaller fleets, it raises more uncertainty as they will increasingly rely on infrastructure investments made at the federal and state levels. Adding better performing engine or post-combustion emissions control technologies to meet the proposed requirements for Option 2 will pose challenges, and the specific provisions of Option 2, as proposed, should be carefully considered and adjusted to ensure feasibility and to avoid imposing



unnecessary costs and burdens; however, Option 2 would likely not require the same shift in infrastructure that Option 1 would demand.

Some additional costs attributable to Option 1 also merit thorough consideration. First, consumers and fleet owners who choose to adopt zero or near-zero emitting vehicles would need to consider the cost and time needed to install recharging and other fueling infrastructure at appropriate distances across their distribution supply chains to avoid disruptions. Second, EPA should consider the costs due to optimization of distribution routes, as companies would spend significant resources on optimizing their supply chains to reduce operating costs.

Maintaining the Existing GHG Program Would Promote Regulatory Durability

We have concerns about provisions proposed in the rule that would modify the current Phase 2 GHG requirements, which have been in place since 2016. Such changes, if made final, would increase investment uncertainty and erode confidence in private-public partnerships that have helped successfully implement this program. While each business may view the particular impacts of these proposed changes through different lenses, changing provisions that were agreed to years ago would create a moving regulatory target and send mixed signals to the market. The proposed rule does not adequately account for such impacts.

Although significant changes to regulatory programs have occurred across a range of EPA and other federal agency programs during the last few administrations, EPA's medium- and heavy-duty GHG requirements have remained constant following the issuance of the 2016 final rulemaking.¹⁶ This is in no large part due to the commitment by companies to invest and meet the 2016 standards.

Companies are continuing to innovate and bring GHG-reducing technologies, fuels, and other solutions to the medium- and heavy-duty marketplace. EPA may be able to achieve additional GHG emissions reductions through incentives for advanced biofuels, such as biodiesel or renewable diesel, under the Renewable Fuel Standard program. As renewable diesel is a drop-in diesel fuel substitute, it has the potential to reduce GHGs from this mobile source sector without adding significant costs. Aside from this type of incentive, making unanticipated changes to the previously settled phase 2 GHG standards—ahead of EPA's next phase of GHG standards updates—

¹⁶ Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles— Phase 2, 81 Fed. Reg. 73478, October 25, 2016.



would remove some of the stability needed by businesses to invest in this market segment.

Conclusion

The Chamber supports EPA's efforts to continue making progress to reduce emissions from the mobile source sector and strongly recommends that the agency avoid the numerous potential counterproductive economic and environmental consequences that could result from Option 1 of the proposal. Instead, EPA should proceed toward a final rule based on the framework outlined in Option 2, while making sensible modifications and clarifications in the framework as appropriate to ensure feasibility, maximize legal defensibility, and promote reductions in a cost-effective fashion, while reducing unwarranted and unnecessary burdens on innovation and investment.

Thank you for the opportunity to comment on this important rulemaking.

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