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U.S. Environmental Protection Agency
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Mail Code 28221T
1200 Pennsylvania Avenue NY
Washington, DC 20460

Submitted Electronically via regulations.gov

Re: Comments on Proposed Rule, Amendments and Nonconformance Penalties for Model Year 2027 and Later Heavy-Duty Highway Engines and Amendments to Inducement Provisions for SCR-Equipped Diesel Engines, 91 Fed. Reg. 43,154 (July 14, 2026), Docket No. EPA-HQ-OAR-2026-0728

Environmental Defense Fund, Natural Resources Defense Council, Union of Concerned Scientists, Sierra Club, Center for Biological Diversity, Environmental Law & Policy Center, Conservation Law Foundation, and Earthjustice submit these comments to oppose the U.S. Environmental Protection Agency's (EPA or "the Agency") deeply harmful proposed action titled *Amendments and Nonconformance Penalties for Model Year 2027 and Later Heavy-Duty Highway Engines and Amendments to Inducement Provisions for SCR-Equipped Diesel Engines,* 91 Fed. Reg. 43,154 (July 14, 2026) ("Proposal"). EPA's proposed amendments individually and collectively will deeply undermine the emissions reductions the 2023 heavy-duty (HD) vehicle nitrogen oxides (NOx) standards ("2023 Standards") were intended to achieve. *See Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards*, 88 Fed. Reg. 4296 (January 24, 2023) ("2023 Rule"). EPA's proposal to eliminate engine derates from the Diesel Exhaust Fluid (DEF) inducement program alone would result in vehicles operating on our roads and highways with completely uncontrolled engines, wiping away decades of progress in emissions reductions that EPA NOx standards have achieved.

As detailed below, the Proposal unlawfully abdicates EPA's statutory duty to protect public health and the environment from dangerous vehicle emissions. The Proposal is also based on inadequately explained, unsupported, and unreasonable factual findings and conclusions that render it arbitrary and capricious. Furthermore, EPA's rulemaking process fails to comply with the procedural requirements of the Clean Air Act and multiple Executive Orders.

EPA's Proposal will cause immense harm to public health and welfare, the very interests EPA is tasked with protecting. By keeping the numeric standard the same, it might *appear* as though EPA has only made small changes around the edges of the 2023 Rule; but in reality, these changes amount to a wholesale destruction of three decades of emission improvements, likely

resulting in vehicle pollution levels Americans have not experienced since the 1990s. The removal of any derates from diesel engines—the primary mechanism of ensuring compliance with emission requirements—will encourage noncompliance and tampering with emission controls on vehicles and will leave no real backstop to ensure emissions equipment is properly functioning and the equipment has an adequate supply of DEF. Without DEF, emissions from diesel vehicles will increase not by a few percentages but by as much as 100 times. And yet, EPA made no attempt to measure how these changes would increase NOx emissions and or harm Americans.

In two analyses discussed in these comments, the commenters undertook the effort to understand the potential scale of impacts from these changes. If only 2% of HD onroad vehicles did not use DEF, cumulative NOx emissions between 2027 and 2055 would increase between 2.4 and 4.3 million U.S. tons—as much as a 38% increase in the total expected HD NOx emissions. This would result in between $270 and $610 billion in health harms, between 16,200 and 37,300 premature deaths, and between 12.1 and 21.4 million asthma attacks.

If 20% of HD vehicles did not use DEF, cumulative NOx emissions would increase between 23.8 and 42.0 million U.S. tons between 2027 and 2055, as much as a 372% increase in the total expected HD NOx emissions. This would result in between $3.0 and $5.3 *trillion* in health harms, between 156,000 and 347,000 premature deaths, and between 121 and 214 million asthma attacks. In addition to stripping protections from on road vehicles, EPA is also removing any real inducement from large nonroad diesel vehicles including agriculture, construction, and industrial. Emissions from large nonroad diesel vehicles (above 75 horsepower) have decreased by over 77% since 2000 while their fuel consumption has increased by over 30%. All of that progress is at risk under this Proposal.

The benefits of DEF are unquestionable, one $3.50 gallon of DEF will clean up around 50 gallons of diesel and provides up to 54 times the societal health benefits compared to the cost. For an agency tasked with reducing emissions, this Proposal represents a remarkable dereliction of duty. EPA should abandon this illegal Proposal and fully implement and enforce the 2023 Standards.

Table 1: Cumulative impacts between 2027 and 2055 from HD Vehicle non-DEF use

	4 g/bhp-hr			7 g/bhp-hr		
Share of non-DEF Use	**2%**	**10%**	**20%**	**2%**	**10%**	**20%**
NOx Emissions (million US tons)	2.4[a,b]	12.2[a,b]	23.8[c]	4.3[a,b]	21.4[a,b]	42.0[c]
% Increase in NOx Inventory[d]	21%	108%	211%	38%	189%	372%
Monetized Harms ($B)	$270-$350[a]	$1,360 - $1,730[a]	$2,410-$2,990[c]	$480-$610[a]	$2,390-$3,050[a]	$4,250 - $5,270[c]
Premature Mortality	16,200-21,200[a]	81,000 - 106,000[a]	156,000-197,000[c]	28,500-37,300[a]	142,500-186,500[a]	274,000-347,000[c]
ER and Hospital Visits	36,000[c]	182,000[c]	365,000[c]	64,000[c]	321,000[c]	642,000[c]
Asthma Attacks (million)	12.1[c]	60.7[c]	121.4[c]	21.4[c]	106.9[c]	213.7[c]

[a] From ERM / NRDC analysis

[b] Through 2050 instead of 2055

[c] From EDF analysis

[d] Based on 11.3 million tons of cumulative NOx emissions 2027 to 2055. For the NOx emission increases that only go through 2050, this percentage is an underestimate.

TABLE OF CONTENTS

BACKGROUND

A. SCR Technology and Role of DEF Inducements in Ensuring Real-World SCR Performance

EPA has adopted performance-based NOx emissions standards multiple times over the last three decades to curb NOx emissions from new heavy-duty highway engines and vehicles. In each rulemaking, EPA set technology-neutral standards that allow manufacturers to develop the most cost-effective emissions reduction solutions of their choice. To meet both the current NOx standards finalized in 2001, and the 2027 and beyond standards finalized in 2023, most engine manufacturers chose to deploy selective catalytic reduction (SCR) emission control technology. This technology was not mandated by EPA—it was chosen by manufacturers among a set of technologies available to comply with the standards.

SCR requires vehicle operators to maintain an adequate supply of DEF, a urea-based fluid that is injected into exhaust streams to work together with catalysts to reduce NOx emissions into less harmful pollutants. Because an SCR-equipped engine will function even if the SCR system is compromised or offline, inducement provisions that make sure operators maintain an adequate supply of high-quality DEF are critical to ensuring the efficacy of NOx standards. Operating an SCR-equipped engine without DEF can cause NOx emissions to increase to pre-2004 levels.

During the rulemaking process for the 2001 standards, EPA justified the feasibility of the standards and assumed that manufacturers would choose NOx adsorber technology to meet the new standards, based on cost and efficacy. 66 Fed. Reg. 5002, 5049 (Jan. 18, 2001). In fact, EPA discouraged manufacturers from choosing SCR. 66 Fed. Reg. at 5503. EPA stated in the final rule, "we believe there are significant barriers to its general use for meeting the 2007 standards.… In addition to this, there would need to be adequate safeguards in place to ensure the urea is used throughout the life of the vehicle since, given the added cost of urea and the fact that urea depletion would not normally affect driveability, there would be an incentive not to refill the urea tank. This could lead to considerable uncertainties regarding the effectiveness of SCR, even if EPA were to promulgate the regulations that likely would be needed to require the regular replenishment of urea." 66 Fed. Reg. at 5503.

Despite EPA's encouragement to use NOx adsorbers to meet the more protective NOx standards, manufacturers chose to develop SCR technology to meet the standards. 88 Fed. Reg. at 4376. As manufacturers prepared to certify their SCR-equipped engines to the EPA 2010 standards, "EPA was concerned that operators might not take the necessary steps to maintain a supply of DEF to keep the emission controls working properly. To address concerns regarding the design and operation of SCR-equipped heavy-duty highway diesel engines and vehicles, between 2007 and 2012 EPA published three guidance documents, two notices and one request for comment in the Federal Register, and participated in a joint public workshop with CARB." 87 Fed. Reg. at 17,536.

In 2023, EPA adopted more protective heavy-duty NOx standards and codified updated inducement provisions, which included adjustments based on comments on manufacturer designs and operator experiences with SCR. 87 Fed. Reg. at 17,539. The final 2023 Rule requires that

manufacturers induce their operators to maintain an adequate supply of high-quality DEF. Manufacturers do this by designing their engines to "derate" or disable—decrease a vehicle's maximum speed or engine power—if the engine detects an inadequate supply of DEF. This only happens after a long series of visual and audible warnings intended to ensure DEF supply is replenished well in advance of derating. If those warnings are ignored, however, derating requires operators to refill the DEF (or repair damaged aftertreatment components) to make the engine work at full speed again. This requirement ensures that in-use engines are not operating indefinitely without DEF and therefore not emitting NOx at 10- to 100-times controlled levels.

EPA has now proposed to remove the requirement that manufacturers utilizing an SCR-based compliance pathway design new engines to derate or go into a disabled mode. Instead, vehicle operators would continue to be notified by visible and audible dashboard warnings only, but could ignore those warnings at will. The removal of this important provision will allow operators to avoid using DEF, therefore emitting NOx at uncontrolled levels. As discussed below, this provision would result in significant increases in NOx emissions from new vehicles, depending on the number of vehicle hours operated without adequate DEF.

B. Statutory Framework for Heavy-Duty Engine Standards

Section 202(a)(1) directs EPA to prescribe emission standards for motor vehicles and engines, addressing all air pollution which "may be reasonably anticipated to endanger public health and welfare." 42 U.S.C. § 7521(a)(2). EPA's regulations governing certain pollutants—including nitrogen oxides—from heavy-duty vehicles shall "contain standards which reflect the greatest degree of emission reduction achievable" by technology which EPA "determines will be available for the model year to which such standards apply," considering "cost, energy, and safety factors associated with the application of such technology." *Id.* § 7521(a)(3)(A)(i). EPA may revise those regulations based on available information as to "the effects of air pollutants emitted from heavy-duty vehicles or engines and from other sources of mobile source related pollutants on the public health and welfare," while "taking costs into account," *id.* § 7521(a)(3)(B)(i)—though such costs-balancing must reflect the statute's principal public-health mandate. *See Husqvarna AB v. EPA*, 254 F.3d 195, 200 (D.C. Cir. 2001) (noting, in interpreting similar language of section 213, that "[t]he overriding goal of the section is air quality and the other listed considerations, while significant, are subordinate to that goal").

The Act's requirement to promulgate and revise emissions standards for heavy-duty vehicles is a "technology-forcing provision," meaning that "it mandates regulations with which manufacturers can comply only by adopting new technologies as they become available." *Crete Carrier Corp. v. EPA*, 363 F.3d 490, 491 (D.C. Cir. 2004). The statute thereby requires "the agency to project future advances in pollution control capability," so as "to press for the development and application of improved technology rather than be limited by that which exists today." *NRDC v. EPA,* 655 F.3d 318, 322 (D.C. Cir. 1981) (quoting S. Rep. No. 1196, 91st Cong, 2d Sess. 24 (1970)). *See NRDC v. Thomas*, 805 F.2d 410, 428–30 & n.30 (D.C. Cir. 1986) ("Congress intended the EPA ... to engage in reasonable predictions and projections in order to force technology.").

Section 207 further requires manufacturers of new vehicles and engines to "warrant to the ultimate purchaser and each subsequent purchaser" that their vehicles and engines are "designed,

built and equipped so as to conform at the time of sale" with the emissions standards promulgated by EPA under section 202, and that they are "free from defects in materials and workmanship which cause such vehicle or engine" to cease so conforming for the warranty period specified by regulation. 42 U.S.C. § 7541(a)(1). EPA establishes the length of the warranty period for heavy-duty vehicles and engines under Section 207(i), to "ensure that new [vehicles] meet not only the standards on the production line but also the standards in performance." *Center for Auto Safety v. Ruckelshaus*, 747 F.2d 1, 2-3 (D.C. Cir. 1984) (citing 117 Cong. Rev. 33,093). The Act separately obligates EPA to "prescribe regulations under which the useful life of vehicles and engines shall be determined." 42 U.S.C. § 7521(d).

The Clean Air Act prohibits the sale of new vehicles or engines without a certificate of conformity with the regulations promulgated by EPA pursuant to section 202. 42 U.S.C. §§ 7522, 7525(a). The Act also, however, provides for "nonconformance penalties." 42 U.S.C. § 7525(g). By paying such penalties, manufacturers may, under limited circumstances specified by EPA's regulations, sell vehicles and engines "notwithstanding the failure of such vehicles or engines to meet" governing standards. *Id.* That provision avoids "ruling" a technological "'laggard' out of the market," while preventing "any competitive disadvantage for manufacturers which do meet revised standards." *NRDC v. EPA*, 655 F.2d 318, 339 n.35 (D.C. Cir. 1981) (quoting H.R. Rep. No 294, 95th Cong., 1st Sess. 275-76 (1977)); *see* 42 U.S.C. 7525(g)(3)(E) (penalties "shall remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction"). Nonconformance penalties "are meant to be a temporary bridge to compliance for manufacturers that have 'made every effort to comply'"—but not "to bail out manufacturers that voluntarily choose, for whatever reason, not to adopt an existing, compliance technology." *Mack Trucks, Inc. v. EPA,* 682 F.3d 87, 95-96 (D.C. Cir. 2012) (citation omitted). EPA has promulgated regulations establishing the framework for nonconformance penalties, identifying "criteria that must be met in order for a subclass of heavy-duty engines or vehicles to be eligible" for nonconformance penalties, and establishing "the formula for calculating the amount of the penalty when the three criteria are met." *Daimler Trucks N. Am. LLC v. EPA*, 737 F.3d 95, 98 (D.C. Cir. 2013). *See* 40 C.F.R. §§ 86.1103-2016 (setting out criteria) & 86-1114-87 (providing formula).

C. Heavy-Duty Vehicle Emission Standards are Critical to Protect Public Health.

The public health need for heavy-duty vehicle and engine emissions standards is irrefutable. Despite making up less than 6% of vehicles on the road, [1] buses, trucks, and tractor trailers are the largest contributors to ozone-forming NOx emissions from all transportation sources and contribute significantly to harmful volatile organic compound (VOC), carbon monoxide, and fine particulate pollution, as well as air toxics.[2] Every year thousands of Americans suffer from more asthma attacks, cardiovascular disease, and early deaths as a result of the harmful pollutants emitted by these vehicles, especially along trucking routes and near vehicle congestion points.

[1] U.S. Dep't of Transp., BTS, *Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances*, https://www.bts.gov/content/number-us-aircraft-vehicles-vessels-and-other-conveyances.

[2] EPA, Regulatory Announcement: Heavy-Duty 2027 and Beyond: Clean Trucks Final Rulemaking, Dec. 2022. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101695R.pdf.

1. Health impacts of NOx

Vehicle emissions of NOx and VOCs contribute significantly to our nation's harmful air pollution. NOx and VOC emissions are precursors to ozone formation and there is a broad scientific consensus that exposure to ozone is associated with serious public health impacts.[3] Ozone forms when VOCs and NOx react in the presence of heat and sunlight. Rising temperatures due to climate change are exacerbating the problem.[4] NOx emissions also impact particulate matter by forming secondary particles through atmospheric chemical reactions.[5]

As documented by the American Lung Association (ALA), ground-level ozone pollution is harming more people living in the U.S. than any other single pollutant. There are more than 129 million people in the U.S.—nearly 40% of the population—living in 219 counties across 36 states and the District of Columbia breathing unhealthy levels of ozone pollution.[6] ALA also finds that after several years of successful reductions in ozone pollution in many parts of the country—thanks to clean up measures enacted under the Clean Air Act—emissions are showing a distressing reversal in 2025 and 2026.[7]

A longstanding body of scientific research, including numerous EPA assessments, demonstrates that exposure to ground-level ozone harms human health and can cause heart disease, permanent lung damage, aggravation of asthma, and premature death from respiratory causes.[8] In its 2020 Integrated Scientific Assessment for Ozone, EPA concluded that short-term ozone exposure causes respiratory effects, including decreases in lung function, asthma and chronic obstructive pulmonary disease exacerbations, and increases in respiratory-related hospital admissions and emergency room visits.[9] Short-term ozone exposure has also been linked

[3] *See* EPA, *Health Effects of Ozone in the General Population*, https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population.

[4] ALA, *State of the Air* 15 (2026), https://www.lung.org/getmedia/32f0646d-c5de-4501-b0ac-07cd63c974d4/State-of-the-Air-2026-Report.pdf.

[5] *See* EPA, *Basic Information about NO2*, https://www.epa.gov/no2-pollution/basic-information-about-no2.

[6] ALA, *State of the Air* 14 (2026), https://www.lung.org/getmedia/32f0646d-c5de-4501-b0ac-07cd63c974d4/State-of-the-Air-2026-Report.pdf.

[7] *Id*.

[8] *See* EPA, *Health Effects of Ozone in the General Population*, https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population.

[9] EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants*, at IS-1, EPA/600/R-20/012 (Apr. 2020), https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=348522 ("EPA, ISA (2020)").

to cardiovascular effects including cardiac arrest,[10] stroke[11] and arrhythmias,[12] as well as premature mortality.[13]

Long-term exposure to ozone also has significant health implications. It has been linked to respiratory effects, new-onset asthma, development and diagnosis of metabolic syndromes, increased incidence of type 2 diabetes and diabetes related mortality.[14]

Ozone pollution is especially harmful to vulnerable populations, including children, people with respiratory diseases or asthma, older adults, and people who work or recreate outdoors.[15] Children with asthma experience reductions in lung function and increases in respiratory symptoms when exposed to ozone pollution.[16] The Asthma and Allergy Foundation estimates that 23 million adults (nearly 1 in 10) and 5 million children had asthma in the U.S in 2024.[17] Asthma is a top chronic disease among U.S. children and black children are nearly two times more likely to have asthma than white children.[18] Young children are more likely than adults to visit the ER and be hospitalized for asthma.[19] And on average, 9 to 11 people in the U.S. die from asthma each day.[20]

2. Heavy-duty sector NOx emissions have a disproportionate impact on overburdened communities

Meaningful heavy-duty vehicle emissions standards are necessary to ensure that all Americans, particularly those in pollution-burdened communities, can breathe cleaner air.

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[10] Zhiqiang Zong et al., *Association between Snort-Term Exposure to Ozone and Heart Rate Variability: A Systematic Review and Meta-Analysis*, 19 Int'l J. Envy Res. & Pub. Health 11186 (2022), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9517606/; Katherine B. Ensor et al., *A Case-Crossover Analysis of Out-of-Hospital Cardiac Arrest and Air Pollution*, 127 Circulation 1192 (2013), https://www.ncbi.nlm.nih.gov/pubmed/23406673.

[11] Wan-Shui Yang et a1., *An evidence-based appraisal of global association between air pollution and risk of stroke*, 175 Int'l J. Cardiology 307 (2014), https://www.sciencedirect.com/science/article/abs/pii/S0167527314010274.

[12] Qingmiao Shao et al., *Association between air pollution and development of atrial fibrillation: A meta-analysis of observational studies*, 45 Heart & Lung 557 (2016). https://pubmed.ncbi.nlm.nih.gov/27590407/.

[13] Sanghyuk Bae et al., *Non-Linear Concentration-Response Relationships between Ambient Ozone and Daily Mortality*, 10 PLoS ONE 1 (2015); Philippe Collart et al., *Concentration response curve and cumulative effects between ozone and daily mortality: an analysis in Wallonia, Belgium*, 28 Int'l J. Envt Health Res. 147 (2018).

[14] EPA, ISA (2020), *supra*, at IS-8.

[15] *See* EPA website, *Health Effects of Ozone in the General Population*. https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-general-population.

[16] *See, e.g.*, EPA, ISA (2020), *supra*, at 6-120, 6-160; Jaime E. Mirowsky et al., *Differential expression of pro-inflammatory and oxidative stress mediators induced by nitrogen dioxide and ozone in primary human bronchial epithelial cells*, 28 Inhalation Toxicology 374 (2016), https://pubmed.ncbi.nlm.nih.gov/27206323/.

[17] Asthma and Allergy Foundation of America, *Asthma Facts and Figures* (2025), https://aafa.org/wp-content/uploads/2025/04/aafa-asthma-facts-and-figures.pdf.

[18] *Id.*

[19] *Id.*

[20] *Id.*

According to the American Lung Association, even after decades of successful efforts to reduce sources of air pollution, 44% of all Americans—152.3 million people—live in places with unhealthy levels of ozone or particle pollution.[21] And the burden of living with unhealthy air is not shared equally. More than half of all children in the nation live in communities with unhealthy air.[22] And people of color make up about 40% of the national population but represent more than half of the people living in areas with unhealthy air. Hispanic individuals are more than three times as likely to live with unhealthy air than white individuals.[23] And children, older adults, and people with preexisting conditions are more vulnerable to the harmful effects of tailpipe pollution.[24]

Communities situated near major transportation corridors, ports, and warehouses—often low-income communities and communities of color—bear a disproportionate and morally unacceptable burden of vehicle pollution.[25] EPA has estimated that 72 million people live within 200 meters of a truck freight route, and, relative to the rest of the population, people of color and those with lower incomes are more likely to live near truck routes. 88 Fed. Reg. at 4298. Strong vehicle standards have been and continue to be one of the most effective tools to reduce harmful exposure to these pollutants and advance environmental justice.

D. The 2023 Standards are Critically Important to Protect Public Health.

Heavy-duty vehicles, including delivery trucks and vans, refuse haulers, coach buses and short- and long-haul tractor trailers, remain top contributors to our nation's air pollution. Meaningful emissions standards for heavy-duty vehicles are a critical tool in reducing these harmful pollutants.

In January 2023, EPA published more protective NOx emissions standards for heavy-duty vehicles, beginning with model year 2027. 88 Fed. Reg. 4296. It was the first major update to heavy-duty standards in over 20 years, and EPA expected it to reduce NOx emissions from the in-use fleet of heavy-duty trucks by nearly half by 2045.[26] At the time the rule was finalized, EPA estimated that without the updated standards, heavy-duty vehicles would contribute 90% of onroad NOx emissions in 2045.[27]

These cost-effective regulations are set to make significant reductions in emissions of harmful pollutants like fine particulate matter (PM2.5), NOx, and non-methane organic gases

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[21] ALA, *State of the Air* (2026), https://www.lung.org/research/sota/key-findings.

[22] *Id.*

[23] *Id.*

[24] https://www.lung.org/clean-air/outdoors/who-is-at-risk.

[25] *See, e.g.*, Hiroko Tabuchi & Nadja Popovich, People of Color Breathe More Hazardous Air. The Sources Are Everywhere, *The New York Times*, Apr. 28, 2021, https://www.nytimes.com/2021/04/28/climate/air-pollution-minorities.html.

[26] EPA, Regulatory Announcement: Heavy-Duty 2027 and Beyond: Clean Trucks Final Rulemaking, Dec. 2022. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101695R.pdf.

[27] *Id.*

(NMOG) that are linked to serious health problems, including respiratory illnesses, cardiovascular disease, and premature death.

At the time the rule was finalized, EPA estimated that in 2045, the standards will result in public health benefits by preventing the following annually:

- between 860 and 2,900 fewer premature deaths;
- 6,700 fewer hospital admissions and emergency department visits;
- 18,000 fewer cases of asthma onset in children;
- 3.1 million fewer cases of asthma symptoms and allergic rhinitis symptoms;
- 78,000 fewer lost days of work; and
- 1.1 million fewer lost school days for children.[28]

EPA also estimated the 2023 Rule would provide $200 billion in health-related benefits by 2045, exceeding the costs of the rule by as much as $29 billion.

In addition to saving lives, vehicle standards also represent an important part of many states' plans to meet national ambient air quality standards (NAAQS) for ozone and PM2.5 and many states would not be able to meet the health-based standards without meaningful vehicle standards. 91 Fed. Reg. at 43,161.

LEGAL STANDARD

The Clean Air Act prohibits EPA from finalizing rules that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right," or "without observance of procedure required by law." 42 U.S.C. § 7607(d)(9).

To be lawful, an agency action must be "reasonable and reasonably explained." *FCC v. Prometheus Radio Project*, 592 U.S. 414, 423 (2021); *see also FDA v. Wages & White Lion Invs., L.L.C.*, 604 U.S. 542, 567-69 (2025) (citing *Encino Motorcars, L.L.C. v. Navarro*, 579 U.S. 211, 221-22 (2016); *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009); *Motor Vehicle Mfrs. Ass'n of United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)). Specifically, the agency must "articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)). The agency cannot "rel[y] on factors which Congress has not intended it to consider" or "entirely fail[ ] to consider an important aspect of the problem." *Id.* Nor can it "offer[ ] an explanation for its decision that runs counter to the evidence before the agency." *Id.* The agency's decision must be "justified by the rulemaking record." *Id.* Further, "its reasoned analysis must consider the 'alternative[s]' that are 'within the ambit of the existing [policy].'" *Dep't of Homeland Sec. v. Regents of the Univ. of Cal.*, 591 U.S. 1, 30 (2020) (quoting *State Farm*, 463 U.S. at 51). To the

[28] *Id.*

extent the agency uses a cost-benefit analysis, such analysis must be reasonable. *See Window Covering Mfrs. Ass'n v. Consumer Prod. Safety Comm'n*, 82 F.4th 1273, 1288 (D.C. Cir. 2023) ("'an unreasonable assessment of social costs and benefits' can render a rule arbitrary and capricious" (citing *Thompson v. Clark*, 741 F.2d 401 (D.C. Cir. 1984)).

When departing from prior positions, an agency must provide "a reasoned explanation ... for disregarding facts and circumstances that underlay or were engendered by the prior policy." *Fox Television*, 556 U.S. at 515-16. Accordingly, if an agency's "new policy rests upon factual findings that contradict those which underlay its prior policy," or when the prior policy has engendered serious reliance interests, the agency must provide a "more detailed justification than what would suffice for a new policy created on a blank slate." *Id.*; *Wages & White Lion*, 604 U.S. at 568; *Regents*, 591 U.S. at 22. An "'[u]nexplained inconsistency' in agency policy is 'a reason for holding an interpretation to be an arbitrary and capricious change from agency practice.'" *Encino Motorcars*, 579 U.S. at 222 (quoting *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005)). And an agency's failure to adequately consider reliance interests, "independent of the [action's] substantive validity," may "warrant[ ] vacatur and remand." *Capital Power Corp. v. FERC*, 156 F.4th 644, 650 (D.C. Cir. 2025).

A court reviewing an agency action "must exercise independent judgment in determining the meaning of statutory provisions." *Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 394 (2024).

DETAILED COMMENTS

I. The Proposal Is Contrary to Law.

EPA's Proposal to roll back key elements of the 2023 Heavy-Duty NOx Rule is contrary to law in at least three independent respects. First, the Proposal violates the stringency and lead-time requirements of Clean Air Act Section 202(a)(3). Each of the four changes EPA proposes or solicits comment on—(i) reducing useful life for MY 2027–29, (ii) exempting 5% of heavy-heavy-duty engine production from the 35 mg/bhp-hr standard without offsetting credits, (iii) raising the Family Emissions Limit cap, and (iv) resuscitating two-decade-old ABT credits from MY 2004–09—constitutes a revision of the heavy-duty NOx emission standards. These revisions fail to reflect the "greatest degree of emission reduction achievable through the application of technology," as Section 202(a)(3)(A)(i) demands, particularly given EPA's own concession that most manufacturers are on track to meet the existing standards. Moreover, because these changes apply beginning in MY 2027, they violate Section 202(a)(3)(C)'s requirement that revised standards provide at least four years of lead time, which requires that the changes begin no earlier than MY 2032.

Second, EPA's revisions to MY 2027 requirements are unlawfully retroactive. MY 2027 can begin as early as January 2, 2026, and manufacturers have been preparing for compliance since the 2023 Rule was finalized in December 2022—undertaking product design, durability demonstrations, pre-certification testing, and ABT credit generation in reliance on existing requirements. The Supreme Court has held that "a statutory grant of legislative rulemaking authority will not … be understood to encompass the power to promulgate retroactive rules unless that power is conveyed by Congress in express terms." *Bowen v. Georgetown Univ.*

Hosp., 488 U.S. 204, 208 (1988). The Clean Air Act not only fails to confer retroactive rulemaking authority but affirmatively forecloses it: Congress directed EPA to regulate "new" motor vehicles prospectively and established a compliance and certification regime that fixes regulatory obligations at the time vehicles enter commerce. EPA identifies no statutory authority or precedent for retroactively rewriting the rules governing vehicles for the current model year.

Third, the Proposal violates the Clean Air Act's conformity requirements under 42 U.S.C. § 7506(c). Even by EPA's own estimates, the Proposal will permanently increase NOx emissions from regulated vehicles. Those increases will impede attainment of the ozone NAAQS in areas already facing nonattainment—including the South Coast and San Joaquin Valley air basins, as well as the Dallas–Fort Worth and New York metropolitan regions—which rely on heavy-duty NOx reductions to meet their air quality obligations. The conformity provision prohibits any federal action that would "cause or contribute to any new violation of any standard in any area," "increase the frequency or severity of any existing violation," or "delay timely attainment of any standard." 42 U.S.C. § 7506(c)(1)(B). Because the Proposal would increase emissions in nonattainment areas that depend on federal vehicle standards to meet their air quality obligations, it is irreconcilable with these requirements.

A. The Proposal Violates the Stringency and Lead-Time Requirements of Clean Air Act Section 202(a)(3).

The Clean Air Act imposes detailed requirements for the revision of heavy-duty vehicle and engine criteria pollutant standards, including that such standards "reflect the greatest degree of emission reduction achievable through the application of technology" and provide at least four years of lead time. *See* 42 U.S.C. § 7521(a)(3)(A)(i), (C). Although EPA claims it is leaving the standards untouched,[29] the Agency proposes to reduce the standards' useful life, which will significantly increase emissions. EPA also proposes to allow 5% of heavy-heavy-duty engines (HHDE) to meet the legacy 200 mg/bhp-hr standard without offsetting credits in MY 2027-29. This effectively repeals the 2023 Rule's numerical standards (35 mg/bhp-hr) for those engines in those years. The Agency also solicits comment on changes to elements of the ABT program that would directly reduce the stringency of the 2023 Rule's numerical standards. Specifically, the Agency is considering increases to the Family Emissions Limit (FEL) cap, which establishes a maximum certifiable emissions level for covered vehicles, as well as the resuscitation of compliance credits from two decades ago, which would allow manufacturers to produce a fleet of more polluting vehicles that on average exceed the 2023 Rule's numerical standards. These changes violate both Section 202(a)(3)(A)(i)'s "greatest degree of emission reduction achievable" requirement and Section 202(a)(3)(C)'s four-year lead-time requirement.

We begin by explaining the applicability of section 202(a)(3) to these revisions. First, EPA's proposal to reduce the useful life for MY 2027-29 constitutes a revision of the standard, as useful life defines how long the vehicle or engine must be tested to emit below defined levels. *See* 91 Fed. Reg. at 43,227 tbl.4 to para. E (proposed regulatory text). The statute identifies useful life as a key aspect of the standard itself: Section 202(a)(1) states that "[s]uch standards shall be applicable to such vehicles and engines for their useful life (as determined under

[29] *See* 91 Fed. Reg. at 43,160 ("the EPA is not reopening the MYs 2027 and later NOX, PM, HC, and CO standards in this rulemaking").

subsection (d), relating to useful life of vehicles for purposes of certification)[.]" Agency regulations similarly identify useful life as a core component of the standards. 40 C.F.R. § 1036.104 ("Criteria pollutant emission standards—NO_X, HC, PM, and CO") states, "This section describes the applicable NO_X, HC, CO, and PM standards for model years 2027 and later." Subsection (e) of the same section then states, "*Useful life.* The exhaust emission standards of this section apply for the useful life, expressed in vehicle miles, or hours of engine operation, or years in service, whichever comes first, as follows." The preamble similarly explains that "[u]seful life represents the period over which emission standards apply for certified engines," 88 Fed. Reg. at 4359, "the emission standards … must be considered together with their associated useful life periods," 88 Fed. Reg. at 4360, and the 2023 Rule's standards revisions "account for the combined effect of useful life and the final numeric standards on the overall stringency and emissions reductions of the program," *id.* at 4307. The Response to Comments (RTC) removes all doubt, affirming that "this rule sets new more stringent standards through both the numeric level of the standard and the length of the useful life period." 2023 Rule RTC 1312 n.63. The RTC further states that the 2023 Rule considered costs "associated with meeting the final standards over the corresponding final useful life values" "in setting the final standards and consistent with [Clean Air Act] section 202(a)(3)(A)." *Id*. As we demonstrate in section IV, this change to the standards would also significantly increase emissions.

Second, EPA proposes to revise the ABT program[30] by temporarily allowing approximately 5% of MY 2027-29 HHDE production to meet the legacy 200 mg/bhp-hr standard without offsetting credits. The original 2023 Rule had allowed manufacturers this allowance as they transition to the new standards, while requiring the excess emissions be offset from other, cleaner vehicles. EPA's Proposal, however, removes the offsetting requirement, effectively eliminating the 2023 Rule's new numerical standards for those vehicles for three model years, MY 2027-29. This Proposal would directly allow regulated entities to comply with the weaker numerical standard for those vehicles without any offsetting cleaner vehicles or emissions reductions, weakening the emission standard applicable across the entire fleet and significantly increasing fleetwide emissions, as we explain below.[31]

[30] We do not believe that every revision to an ABT provision necessarily revises the standard, as EPA itself explained in the 2023 Rule. *See* 88 Fed. Reg. at 4398. *Compare also, e.g.*, 88 Fed. Reg. at 4398 (2023 Rule) (explaining that the ABT provisions only provided additional flexibilities through an optional compliance pathway and were not part of the standard or subject to Clean Air Act Section 202(a)(3)), *with* 89 Fed. Reg. at 29,590 (Heavy-Duty Phase 3 GHG Rule) ("EPA considered averaging in the standard setting process of the Phase 3 GHG standards, and our assessment is premised upon the availability of averaging in supporting the feasibility of the final standards. While we also considered the existence of other aspects of the ABT program as supportive of the feasibility of the Phase 3 GHG standards, we did not rely on those other aspects in justifying the feasibility of the standards."). Nor do we take a position on the applicability of section 202(a)(3)(A)(i) or 202(a)(3)(C) to any provisions similar to those discussed in this section that EPA may include in future actions. However, as we explain below, this and other ABT changes discussed in this section would directly allow regulated entities to comply with weaker numerical standards across their fleet and significantly increase fleetwide emissions, contrary to the statutory mandate that the standards "reflect the greatest degree of emission reduction achievable."

[31] This and other changes to the ABT program, moreover, arise (at least in part) from EPA's authority under Section 202(a)(1), which provides general authority to establish an ABT program. *See* 89 Fed. Reg. at 27,901 (stating that "the CAA authorizes EPA to establish an ABT program and fleet average standards" based on Section 202(a)(1)-(2)); 87 Fed. Reg. at 27,901 n.532 (explaining that the same argument is also true for "standards under section 202(a)(3)(A)(i), which are also promulgated pursuant to section 202(a)(1)"); 89 Fed. Reg. at 29,471; HD

Third, EPA solicits comment on changes to the FEL cap aspect of the ABT program. These proposed changes, if finalized, would also revise the emission standards and lead to increased emissions. The FEL stands for "Family Emissions Limit," and represents the maximum certification level for any engine families that participate in the ABT program. Even if a manufacturer can offset emissions from dirtier engines with credits from cleaner engines through the ABT program, those dirtier engines cannot emit in excess of the emissions ceiling imposed by the FEL cap. Specifically, "[t]he family emission limits . . . serve as the *emission standards* for compliance testing instead of the standards specified in this section." 40 C.F.R.§ 1036.104(c)(4) (emphasis added).

Fourth, EPA solicits comment on resuscitating ABT credits from MY 2004-09. The Agency identifies over 25,000 Mg of such credits, *see* DRIA 4-5, which were generated two decades ago based on compliance activities associated with an earlier generation of standards and that do not meet the requirements of the 2023 Rule. *See* 88 Fed. Reg. at 4395. If these credits were allowed to be used for compliance with the MY 2027 and later standards, companies could then certify at significantly higher levels of fleetwide emissions—well above the 2023 Rule's 35 mg/bhp-hr standard—and offset those higher emissions with credits whose applicability has long since past. As with the above ABT changes, this provision would directly allow a regulated entity to comply with a weaker numerical standard across its fleet and increase emissions.

Because each of the above four changes—delay to useful life, production allowance for legacy HHDE without offsetting credits, revision of the FEL, and resuscitation of MY 2004-09 credits—revises a heavy-duty engine standard for NOx, Section 202(a)(3) applies to EPA's actions. These proposed changes, if adopted as final, would violate Section 202(a)(3)(A)(i)'s "greatest degree of emission reduction achievable" requirement for many of the same reasons as they are arbitrary and capricious. Because these changes would apply starting in MY 2027, and because these revisions of the 2023 Standards are governed by Section 202(a)(3)(A0(i), they would also violate the four-year lead-time requirement found in Section 202(a)(3)(C), which requires that any revisions begin no earlier than MY 2032. In the balance of this section, we highlight key factual and legal arguments of most relevance to our assertion that these proposed provisions are contrary to law. The discussion in the following paragraphs complements the relevant discussion in the arbitrary and capricious sections below, which we incorporate by reference in relevant part.

First, EPA itself concedes that the existing standards are feasible industry-wide. Thus, the proposed changes, which increase emissions, inherently do not reflect the "greatest degree of emission reduction achievable" as required by statute. The preamble declares that "most truck and engine manufacturers have communicated to the EPA that they will have a full lineup of products ready to meet the MY 2027 standards." 91 Fed. Reg. at 43,157. Yet the Agency proposes and solicits comments on changes, even using the worst-performing company as the common denominator. For example, for the FEL change, EPA claims that "engine manufacturers are generally making progress toward adopting new emissions control technologies to meet the standards; however, *one* engine manufacturer has indicated that an increased FEL cap of 200 mg/hp·hr for up to two MYs could help them in the transition to meeting the MYs 2027 and later

Phase 3 RTC 1344-62 (further explaining the statutory authority for ABT), https://www.epa.gov/system/files/documents/2024-03/420r24007.pdf.

standards." 91 Fed. Reg. at 43,166 (emphasis added). The statute, however, is technology-forcing and prohibits EPA from setting the standards based on the level of the weakest performer, as matter of law. Quoting the 1977 House Report, the D.C. Circuit in *NRDC v. Thomas* concluded that the statute "'clearly' outlaws laggard-based standards":

> whenever standards are to be relaxed, based on what is technologically achievable, there is a danger that the standards will be set on the basis of what the [*International Harvester*] Court termed the "laggard's" technological capability rather than on that of the "technological leader." The Committee plainly does not intend to permit such a result. Revised standards are to be set on the basis of the maximum degree of emission reduction which can be achieved by means reasonably expected to be available for production.

NRDC v. Thomas, 805 F.2d 410, 424, 422 (D.C. Cir. 1986) (quoting H.R. Rep. No. 294, 95th Cong., 1st Sess. 275 (1977)).[32]

The House Report goes on to explain that where the standards might push a technological laggard out of the market, the statutory solution is for EPA to provide that company with nonconformance penalties—not relaxing the standards: "However, in order to assure achievement of the maximum emission reduction which is reasonably projected to be available, while at the same time not ruling the "laggard" out of the market, the Committee provided for further flexibility in this section—i.e., permission for certain nonconforming vehicles or engines to be certified conditional upon payment of a nonconforming technology penalty." *Id.* Thus, even hypothetically assuming one or a limited number of entities truly cannot comply for technological reasons—facts that EPA has failed to adequately demonstrate, as we explain in part VII—EPA must provide nonconformance penalties (NCPs) consistent with the statutory criteria, *see* 42 U.S.C. § 7525(g), and may not weaken the standards industry-wide.

Second, EPA impermissibly grounds its actions in generic uncertainty and self-interested statements by regulated entities, as opposed to record evidence actually demonstrating infeasibility or new factual determinations since the 2023 Rule. For example, with respect to useful life, EPA notes that "some manufacturers" are already

> on target to meet the requirements of the longer useful life periods, including in-use performance. Other manufacturers noted they can potentially meet the certification requirements but expressed concern with the uncertainty of in-use performance of their new technologies over the full useful life for the range of

[32] *See also, e.g., id.* at 422 (quoting H.R. Rep. No. 294, 95th Cong., 1st Sess. 275 (1977)) ("the Committee intends to make clear that revised standards are to be based on the emissions control capability of the best technology projected to be available for production"); *id.* at 423 ("The EPA contends that the thrust of these House Report passages is to eliminate the possibility of laggard-based standards, and that the technological leader concept was introduced mainly as a contrast, to insure that standards were set at a level geared to what the more progressive manufacturers could achieve."). The Court did go on to suggest that the statute allows "the balancing of emissions reduction capability versus cost and other factors to be done on an industry-wide basis," as opposed to based on the single least polluting vehicle, id. at 321, such as a zero-emission vehicle. But here, as explained in the text above, EPA has itself admitted that across the industry "most" manufacturers are able to comply without additional flexibilities. 91 Fed. Reg. at 43,157.

> vehicle applications. Manufacturers suggest that a shorter useful life would give them more time to evaluate their new technologies in the real world and more confidence in the in-use durability over the longer useful life periods.

91 Fed. Reg. at 43,164.

However, such vague interests in having "more confidence" are insufficient under Section 202(a)(3)(A)(i). The statute is technology forcing, and Congress expected EPA to "press for the development and application of improved technology rather than be limited by that which exists today," *NRDC v. U.S. EPA*, 655 F.2d 318, 328 (D.C. Cir. 1981) (quoting S.Rep. No. 1196, 91st Cong., 2d Sess. 24 (1970)), and to force the industry "to develop pollution control devices that might at the time appear to be economically or technologically infeasible." *Union Elec. Co. v. EPA*, 427 U.S. 246, 257, 96 S.Ct. 2518, 49 L.Ed.2d 474 (1976); *see also Int'l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 621 (D.C.Cir.1973) ("Congress was aware that these 1975 standards were 'drastic medicine,' designed to 'force the state of the art.'"). "EPA is not obliged to provide detailed solutions to every engineering problem posed in the perfection of [a particular device]. In the absence of theoretical objections to the technology, the agency need only identify the major steps necessary for development of the device, and give plausible reasons for its belief that the industry will be able to solve those problems in the time remaining. EPA is not required to rebut all speculation that unspecified factors may hinder 'real world' emission control." *NRDC*, 655 F. 2d at 328, 333-34. The 2023 Rule laid out a robust record for its feasibility, and EPA offers no new contrary record evidence on feasibility—beyond a general "uncertainty" of advanced technologies—or even costs savings for the reduced useful life, which the Agency projects as zero. *See* 91 Fed. Reg. at 43,164. Lacking such evidence, EPA cannot show that the proposed changes reflect the greatest degree of emission reduction achievable, as required by Section 202(a)(3)(A)(i).

Third, EPA fails to show how these proposed revisions to the 2023 Standards are consistent with Section 202(a)(3)(C)'s four-year lead-time requirement. That section states:

> Any standard promulgated or revised under this paragraph and applicable to classes or categories of heavy-duty vehicles or engines 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.

42 U.S.C. § 7521(a)(3)(C).

The proposed changes discussed above revise "standard[s] promulgated or revised" under Section 202(a)(3)[33] but EPA has not provided four years of lead-time for them. Because it is already MY 2027 (as the model year can begin as early as January 2 of the prior calendar year[34]),

[33] As the statutory text makes clear, the four-year lead-time requirement applies to any standard revisions, not merely those that increase stringency.

[34] *See* 40 C.F.R. § 1036.801 ("Model year means the manufacturer's annual new model production period, except as restricted under this definition. It must include January 1 of the calendar year for which the model year is named, may not begin before January 2 of the previous calendar year, and it must end by December 31 of the named calendar year."). Thus, MY 2027 can begin as early as January 2, 2026.

four full years of lead-time require that the earliest changes begin in MY 2032.[35] But EPA's proposed changes to useful life and the production allowance are for MY 2027-29. EPA also solicits comment on increasing the FEL and allowing the use of expired MY 2004-09 credits for "MYs 2027 and later." 91 Fed. Reg. at 41,366, 41,367. All of these potential changes begin in advance of MY 2032 and thus violate Section 202(a)(3)(C).

B. The Proposal to Revise MY 2027 Requirements is Unlawfully Retroactive.

EPA's potential revisions of MY 2027 and earlier requirements operate retroactively. MY 2027 can begin as early as January 2, 2026, for manufacturers. *See* 40 C.F.R. § 1036.801 (defining "Model year" to begin as early as January 2 of the prior calendar year). Truck and engine manufacturers and component suppliers have been preparing for MY 2027 compliance for several years, since no later than the finalization of the 2023 Rule in December 2022. *See* 91 Fed. Reg. at 43,157. Many manufacturers, moreover, have already achieved early compliance since MY 2022, generating thousands of compliance credits for use in MY 2027 and later years. *See* DRIA chapter 1. Manufacturers are also already pursuing MY 2027 certification, including product planning, pre-certification testing, developing certification applications, and more. As already noted, due to all these compliance activities taken in reliance on the 2023 Rule, "most truck and engine manufacturers have communicated to the EPA that they will have a full lineup of products ready to meet the MY 2027 standards." 91 Fed. Reg. at 43,157. EPA nonetheless seeks to retroactively revise the MY 2027 and earlier requirements, exceeding its rulemaking authority and gravely undermining the reliance interests of regulated entities and their supply chains.[36]

Many aspects of EPA's Proposal apply retroactively to MY 2027, which as noted above, has already begun. Section III.A-C of the Proposal's preamble proposes to revise the warranty, useful life, and 5% production allowance requirements for MY 2027. *See* 91 Fed. Reg. at 43,161-66. Preamble III.D also solicits comment on increasing the FEL and allowing cross-set averaging in MY 2027. *See id.* at 43,166-68. Certain proposed changes to inducements and other regulatory amendments also apply to MY 2027. *See, e.g., id.* at 43,197. Preamble III.D further solicits comment on allowing the use of credits generated in MY 2004-09, retroactively revising the consequences of compliance activities taken over two decades ago. *See id.* at 43,167.

Despite the evident retroactivity of its action, EPA's Proposal fails to discuss retroactivity at all or explain where it finds statutory authority to undertake a rulemaking with retroactive effect. In fact, EPA lacks authority to make such a retroactive change. "Retroactivity is not favored in the law." *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988). Thus, "a statutory grant of legislative rulemaking authority will not … be understood to encompass the power to promulgate retroactive rules unless that power is conveyed by Congress in express terms." *Bowen*, 488 U.S. at 208. The statute—including the five provisions EPA cites as conferring it the statutory authority for this action—not only fails to confer retroactive rulemaking authority but explicitly and impliedly denies it. *See, e.g.*, *Board of Cnty Comms. v.*

[35] Even were EPA permitted to split the model year as it did in the 2023 Rule, four years of lead-time would still require that the earliest changes begin four years after the finalization of the rule. For example, a standards revisions finalized in late 2026 could take place no earlier than late 2030, i.e., in MY 2031.

[36] We further address reliance interests in part II.C below.

EPA, 72 F.4th 284, 292-93 (D.C. Cir. 2023); *Nat'l Mining Ass'n v. DOI*, 177 F.3d 1, 8 (D.C. Cir. 1999). *Cf. Gen. Motors Corp. v. NHTSA*, 898 F.2d 165, 177 (D.C. Cir. 1990) (affirming NHTSA's conclusion that Congress intended to provide certainty and finality with regard to a vehicle model year's applicable fuel-economy standards, and thus NHTSA's decision not to relax standards after the model year had begun).

The statute reflects Congressional recognition that emissions from the entire vehicle fleet contribute to human health and environmental harms. *See* 42 U.S.C. § 7401 (recognizing that "the increasing use of motor vehicles, has resulted in mounting dangers to the public health and welfare"). To address those emissions, in Section 202(a) Congress chose to focus EPA's regulation on "new" vehicles, and through the gradual process of fleet turnover, to clean up the whole fleet over time. In turn, Section 216 explicitly defines a "new" motor vehicle as "a motor vehicle the equitable or legal title to which has never been transferred to an ultimate purchaser." 42 U.S.C. § 7550(3).[37] Under Section 202 then, EPA only has prospective regulatory authority—over new vehicles where title has never been transferred to an ultimate purchaser. Once a vehicle has been sold and title transferred to an ultimate purchaser, EPA lacks authority to retroactively weaken requirements applicable to such vehicles.[38] Similarly, in listing acts prohibited by law for enforcement purposes, Congress explicitly prohibited the sale of a vehicle "manufactured after the effective date of regulations under this part which are applicable to such vehicle," unless such vehicle is covered by an EPA certificate of conformity. 42 U.S.C. § 7522(a)(1). This provision further clarifies that EPA's Section 202(a) regulatory authority is prospective, applicable only to those vehicles manufactured after their effective date.

EPA's limitation to prospectively regulating new vehicles is supported by the surrounding statutory context. The Section 202(a)(1) power to set and revise standards is based on determining whether emissions from the class of "new" vehicles "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1). The use of the present tense in "cause, or contribute" as well as the phrase "reasonably be anticipated" indicates a predictive evaluation of ongoing and future impacts, and by extension prospective regulation, not retroactive power.[39]

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[37] The statute provides an analogous definition of new motor vehicle engines as "an engine in a new motor vehicle or a motor vehicle engine the equitable or legal title to which has never been transferred to the ultimate purchaser." 42 U.S.C. § 7550(3).

[38] For imported vehicles, the statute defines "new" motor vehicle differently, to mean a motor vehicle "manufactured after the effective date of a regulation issued under [Clean Air Act Section 202] which is applicable to such vehicle or engine." 42 U.S.C. § 7550(3). For imported vehicles as well then, EPA's Section 202(a) regulatory authority is prospective, applicable only to those vehicles manufactured after its regulation becomes effective.

[39] To the extent EPA regards its revision of the MY 2027 standards as only prospectively applicable, that still does not resolve the lack of statutory authority. As explained above, EPA's authority to regulate vehicles in-use derives from standards and other requirements established for new vehicles. We acknowledge the Agency can appropriately adjust requirements for vehicles already in-use, for example, to certificates of conformity to implement the applicable standards or to improve its compliance and enforcement processes, *see, e.g.*, 42 U.S.C. § 7525(b)(2)(A) (authority to "suspend or revoke" certificates). But for the reasons stated in the text, the statute does not authorize the Agency to certify a vehicle to one set of requirements while new and then transform the regulatory program after the vehicle goes in-use.

Similarly, Section 202(a)(2) describes the standards as "tak[ing] 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." *Id.* § 7521(a)(2). That is, EPA must evaluate the amount of lead-time needed "after" the time of its rule to develop and apply advanced pollution control technologies. The intent of Section 202(a)(2) is to provide sufficient lead-time so that manufacturers can reasonably plan for their compliance. This too indicates prospective operation, not retroactive power.

The statute also specifies more detailed lead-time provisions for discrete applications of the Section 202(a)(1) authority, including for the heavy-duty NOx standards at issue in this rulemaking. For these standards, the statute requires that any revisions "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." 42 U.S.C. § 7521(a)(3)(C). As explained above, EPA's standard revisions for MY 2031 and earlier years violate this provision, and this provision is *a fortiori* inconsistent with a retroactive revision of MY 2027 standards.[40]

The statute also prescribes a compliance program that generally applies to "new" vehicles. *See, e.g.*, 42 U.S.C. §§ 7540(a)(1) (testing), 7541(a)(1) (warranty), 7541(c)(3) (maintenance instructions). For example, Section 206 requires manufacturers to obtain a certificate of conformity demonstrating compliance with EPA's Section 202 regulations. Consistent with prospective regulation, those certificates must be "issued (and in effect)" in advance of the vehicles being sold, lest the manufacturer violate the statute. *See* 42 U.S.C. § 7522(a)(1).[41] Congress did not authorize EPA to retroactively revise those certification terms after certificates have already issued.

The compliance program also requires manufacturers to guarantee that emission standards will be met over the course of the new vehicles' useful life. These continuing requirements are fixed at the time the vehicle is introduced into commerce, and Congress nowhere granted the Agency freestanding authority to post hoc revise certification requirements for vehicles that have already received their certificates. For example, Section 202(a)(1) authorizes EPA to establish standards for "new" vehicles and engines that persist for the "useful life" of "such vehicles and engines." *Id.* § 7521(a)(1). Or for example, Section 207(a)(1) imposes a warranty requirement that requires the vehicle to be "designed, built, and equipped so as to conform at *the time of sale* with applicable regulations," and Section 207(c)(3)(A) requires each

[40] *See also, e.g.*, 42 U.S.C. § 7521(a)(3)(A)(i) (directing that EPA's standards for listed pollutants for heavy-duty vehicles "shall contain standards which reflect the greatest degree of emission reduction achievable through the application of technology which the Administrator determines *will be available* for the model year to which such standards apply," with the future tense "will be available" indicating prospective application (emphasis added)); *id.* § 7521(*l*)(2) (similar "will be available" language for mobile source air toxics authority).

[41] *See also, e.g., United States v. Volvo Powertrain Corp.*, 758 F.3d 330, 333 (2014) ("Under the Clean Air Act, manufacturers of new motor vehicle engines need to obtain certificates of conformity from the Environmental Protection Agency before selling their engines in the United States.").

manufacturer to furnish maintenance instructions "with each new motor vehicle." *Id.* § 7541(a)(1) (emphasis added), (c)(3)(A).[42]

This allocation of power is also reflected in the cooperative federalism scheme of motor vehicle regulation established throughout the Act. Under that scheme, EPA possesses primacy over new motor vehicles, [43] but States and localities retain their police powers over in-use vehicles.[44] EPA's Proposal upends this longstanding statutory scheme by allowing the Agency to retroactively re-write the rules for existing vehicles, thereby intruding on state power. But EPA identifies no statutory authority or administrative precedent for this fundamental transformation of its authority, much less the "exceedingly clear language" required for agency actions that significantly alter the balance of Federal and State power. *Sackett v. EPA*, 598 U.S. 651, 679 (2023).

That EPA seeks to retroactively diminish existing regulatory obligations as opposed to imposing new ones does not salvage its lack of authority. As an initial matter, it is not clear that such a distinction matters for purposes of assessing retroactivity. *See, e.g., Bowen*, 488 U.S. at 208 ("Retroactivity is not favored in the law. Thus, congressional enactments and administrative rules will not be construed to have retroactive effect unless their language requires this result.") In any event, EPA is not merely proposing to diminish existing obligations. Rather, as we explain further in part II *infra*, EPA is also significantly undermining the reliance interests of regulated entities and other stakeholders and impairing the value of past business transactions. For example, EPA is proposing to alter the consequences of already-commenced product-design decisions, durability demonstrations, warranty planning decisions, DEF-inducement designs, ABT credit generation and banking activities, certification applications, and other investments made and activities taken in reliance on the 2023 Rule. EPA's Proposal also penalizes companies that have made investments to timely produce cleaner, compliant vehicles than their competitors and awards windfall benefits to firms that did not, creating perverse incentives that directly undermine the emissions reductions purposes of the Act. EPA's action further threatens to undermine state and local air quality planning, reducing the expected public-health benefits of

[42] *See also* 42 U.S.C. § 7522(c)(4)(A) (a manufacturer may not "sell or lease" a vehicle unless the vehicle complies with warranty and certain other obligations).

[43] EPA's regulatory power over new motor vehicle emissions is subject to the California waiver provision, under which the Agency must waive preemption for California motor vehicle emission standards if they meet certain statutory criteria. 42 U.S.C. § 7543(b).

[44] *See* 42 U.S.C. § 7543(a), (d); *Salt Lake Cnty. v. Volkswagen Grp. of Am., Inc. (In re Volkswagen "Clean Diesel" Mktg., Sales Practices, & Prods. Liab. Litig.)*, 959 F.3d 1201, 1215 (9th Cir. 2020) ("although Congress displaced state emission standards for new motor vehicles in 1967, it has maintained a substantial role for states in post-sale implementation and enforcement ever since" (cleaned up)); *Allway Taxi, Inc. v. City of New York*, 340 F. Supp. 1120, 1124 (S.D.N.Y. 1972) ("The preemption sections ... do not preclude a state or locality from imposing its own exhaust emission control standards upon the resale or reregistration of the automobile. Nor do they preclude a locality from setting its own standards for the licensing of vehicles for commercial use within that locality."); *see also, e.g.*, 42 U.S.C. § 7550 (defining regulated manufacturers as persons who, among other things, make "new motor vehicles," and further defining "new motor vehicle"); *id.* § 7408(f) (requiring the Administrator to make available information about in-use transportation control measures to appropriate Federal, State, and local agencies); *id.* § 7410(a)(5)(i) (limiting the Administrator's authority over indirect source review programs and indicating such authority remains within the power of State and local governments); *id.* § 7511a (State authority and requirements over vehicle inspection and maintenance programs); *id.* § 7512a (same); *id.* §§ 7401(a)(3), 7407(a).

already-finalized rules, and potentially shifting greater burdens onto stationary sources in some states. For all these reasons, the Agency's retroactive weakening of regulations for the current model year contradicts "familiar considerations of fair notice, reasonable reliance, and settled expectations." *Landgraf v. USI Film Prods.,* 511 U.S. 244, 270 (1994).

C. The Proposal Violates the Clean Air Act's Conformity Requirements.

The general conformity rule of the Clean Air Act, 42 U.S.C. § 7506(c)(1), provides in relevant part that:

> [n]o department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved or promulgated under section 7410 of this title.

Here, the Proposal is clearly an "activity" of the federal government, and so it may not be finalized unless it conforms to "an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards," 42 U.S.C. § 7506(c)(1)(A), and will not:

> cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

Id. § 7506(c)(1)(B); *see also* 40 C.F.R. § 93.153. As EPA concedes, the Rule will permanently allow greater criteria pollutant emissions from regulated vehicles, including large increases in NOx emissions.[45] These emissions will increase NOx and other pollutants in States and regions with nonattainment or maintenance plans.

For example, the South Coast Air Basin in southern California is in extreme non-attainment for ozone and relies on NOx reductions for attainment of the ozone NAAQS. Because of the geology, geography, and atmospheric chemistry in the South Coast Air Basin, the South Coast Air Quality Management District is relying on NOx reductions from new vehicles to reduce ozone concentrations. In its 2022 Air Quality Management Plan, the South Coast Air Quality Management District explained that "NOx needs to be reduced by about 67 percent beyond the current 2037 baseline and about 83 percent below current levels."[46] Similarly, the San Joaquin Valley Air Basin is in extreme non-attainment for the ozone NAAQS. The San Joaquin Valley Air Quality Management District relies on NOx reductions of 72% by 2037 to

[45] As we show in later sections, EPA's emissions estimates are arbitrarily low, and we project significantly greater emissions than the agency. That said, even by EPA's own emissions estimates, the Proposal violates the Act's conformity requirements.

[46] S. Coast Air Quality Mgmt. Dist., *Final 2022 Air Quality Management Plan* at ES-4 (2022), https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/03-es.pdf?sfvrsn=95c5bd61_6.

meet the 2015 ozone NAAQS.[47] These are enormous reductions in NOx and will be difficult to achieve in any event. For regions like South Coast and San Joaquin Valley facing the statutory penalties that accompany extreme non-attainment and the difficulty of implementing further reductions in spite of already stringent local standards, every ton of NOx reduction matters.

As another example, the ten-county Dallas-Fort Worth region has been classified as a severe nonattainment area for the 2008 8-hour ozone NAAQS since 2022.[48] In the Dallas-Fort Worth severe nonattainment area, mobile source emissions dominate the NOx inventory, and Texas' SIP relies heavily on NOx reductions to be delivered by federal motor vehicle standards.[49] The New York-Northern New Jersey-Long Island region is also classified as a serious nonattainment area for the 2015 8-hour ozone standard and relies in part on NOx reductions to meet the ozone NAAQS.[50] Any increase in NOx emissions over the lifetime of MY 2027-2028 vehicles will be an additional, material, and continuing hurdle in the way of NAAQS attainment for ozone for these and other areas across the country.[51]

In addition, the Proposal will affect state and local planning decisions in ozone non-attainment areas. Under 42 U.S.C. § 7506(c), conformity applies to long-range metropolitan transportation plans, shorter-term metropolitan transportation improvement programs (TIPs), and transportation projects funded or approved by the Federal Highway Administration or the Federal Transit Administration, under the rubric of transportation conformity. In essence, transportation conformity means that implementation of a metropolitan transportation plan, TIP, or project will not cause any new violations of an air quality standard, increase the frequency or severity of violations of the standard, or delay timely attainment of the standard or any interim milestone.[52] Future transportation projects will need to account for extra NOx emissions from vehicles using new roadways as a result of this Proposal, possibly imperiling desired changes. Past projects may become subject to transportation conformity attack if the project's conformity analysis would be changed by new data showing higher NOx emissions than previously planned because of the Proposal.

Because the Proposal will interfere with achieving and "delay timely attainment" of the ozone NAAQS in the two air districts with the worst ozone pollution in the country, and

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[47] San Joaquin Valley Air Pollution Control Dist., *2022 Plan for the 2015 8-Hour Ozone Standard* (2022), *available at* https://www.valleyair.org/media/q55posm0/0000-2022-plan-for-the-2015-8-hour-ozone-standard.pdf.

[48] *See* EPA, *8-Hour Ozone (2008) Nonattainment Area Ares/State/County Report* (June 30, 2026), https://www3.epa.gov/airquality/greenbook/hnca.html#Ozone_8-hr.2008.Dallas.

[49] *See Revisions to the State of Texas Air Quality Implementation Plan for the Control of Ozone Air Pollution* (Apr. 2024), https://www.tceq.texas.gov/downloads/air-quality/sip/ozone/dfw/naaqs-2008/23107sip_2008-o3-dfw-sev-ad_backup_package.pdf.

[50] *See New York State Implementation Plan for the 2008 Ozone National Ambient Air Quality Standards* (Nov. 2021), https://extapps.dec.ny.gov/docs/air_pdf/sipseriouso3nyma.pdf.

[51] Twenty-seven air basins across the country are in serious nonattainment or worse for the 2015 ozone NAAQS. *See* EPA, *8-Hour Ozone (2015) Nonattainment Areas* (June 30, 2026), https://www3.epa.gov/airquality/greenbook/jnc.html.

[52] *See* U.S. Dep't of Transp., *Transportation Conformity: A Basic Guide for State & Local Officials* at 2 (Feb. 2017), https://www.fhwa.dot.gov/environment/air_quality/conformity/2017_guide/fhwahep17034.pdf.

potentially other regions, as well,[53] it violates the Clean Air Act's transportation conformity requirements and must be withdrawn.

II. The Proposal as a Whole Is Arbitrary and Capricious.

In addition to the statutory violations described above and the flaws discussed in the parts below that render specific provisions of the Proposal arbitrary and capricious, the Proposal as a whole is arbitrary and capricious and must be withdrawn. EPA fails to rationally balance the statutory factors it must consider under Section 202—including reducing dangerous emissions, technological feasibility, lead time, and costs—and unlawfully fails to prioritize the key statutory objective of protecting public health. Indeed, the Proposal would cause massive public health harms. EPA further fails to adequately explain its change in position from just a few years ago when it adopted the 2023 Standards on a robust record with extensive evidentiary analysis regarding the same statutory factors. EPA also fails to adequately consider the interests of the public, States and local governments, vehicle purchasers, manufacturers, and other parties who significantly rely on the 2023 Standards and would be harmed by the Proposal. Lastly, EPA fails to consider a range of reasonable alternatives that would be less damaging to public health and significant reliance interests. EPA should not finalize this arbitrary and unlawful action.

A. EPA Fails to Rationally Balance the Statutory Factors It Must Consider Under Section 202 and Fails to Prioritize Protecting Public Health.

The cumulative impacts of EPA's proposed amendments and the Agency's failure to rationally assess them render the Proposal arbitrary and capricious. Reducing and eliminating harmful emissions is the central aim of Section 202(a)(1) and the Clean Air Act generally. Yet EPA barely acknowledges—let alone justifies with the specificity needed when reversing its prior actions—that the Proposal would harm human health and welfare. The text, structure, and purpose of Section 202(a)(1) demonstrate the key importance Congress gave to emissions reductions and their protection of public health and welfare. Section 202(a)(1) itself defines that core purpose and EPA's duty when setting standards. It orders that the Administrator "shall" prescribe standards that "prevent or control" pollution that "endanger[s] public health or welfare." 42 U.S.C. § 7521(a)(1).

Further, Section 101(a) states Congress' intent in promulgating the Clean Air Act in clear and explicit language, setting forth the "Congressional findings and declaration of [the Act's] purpose." 42 U.S.C. § 7401(a). Congress declared that purpose to be "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare," *id.* § 7401(b)(1); It described "pollution prevention" as "the reduction or elimination, through any measures, of the amount of pollutants produced or created at the source," *id.* § 7401(a)(3). And it stated that "Federal … leadership is essential … to prevent and control air pollution," *id.* § 7401(a)(4). Congress plainly intended EPA's actions not only to decrease pollutants but to eliminate them. *See id.* § 7401(a)(2)-(3), (c). In light of such clear language, EPA cannot balance

[53] The South Coast (Los Angeles area) and San Joaquin Valley air basins are the only areas in the country currently designated by EPA as in "extreme non-attainment" for the 2015 ozone NAAQS. *See* EPA, *8-Hour Ozone (2015) Nonattainment Areas* (June 30, 2026), https://www3.epa.gov/airquality/greenbook/jnc.html.

the Section 202(a) factors in a manner that thwarts Congress' directive and arbitrarily overrides the Act's core function of pollution reduction and public health protection.

EPA correctly notes that the combination of its proposed changes and solicitations for comment on additional flexibilities have significant interactions. *See, e.g.*, 91 Fed. Reg. at 43,168. Individually, these changes dilute the environmental benefits of the program, and taken together, they threaten to decimate the program far beyond what EPA has captured in its DRIA. The proposed changes cumulatively allow continued use of engines three to four times dirtier than allowed by the 2023 Rule for several additional years. The production allowance, FEL cap increase, NCPs, and other changes work together to allow manufacturers to continue certifying portions of the fleet to 200mg/hp-hr standard, roughly three to four times more polluting than the FEL caps (65 mg/hp-hr for 2027-30 and 50mg/hp-hr for 2031+) promulgated in the 2023 Rule. Even in cases where the emissions are offset, this creates the threat of further aggravating pollution, especially in overburdened communities. The cumulative impact of EPA's proposed changes and the Agency's failure to assess them is arbitrary and capricious. The cumulative impact would be extremely damaging to human health and the environment, the adoption rate of clean technologies, and reliance interests, and will cause massive net social harms.

Though EPA styles the Proposal as a mere set of technical amendments to the 2023 Standards, the components of the Proposal will individually and collectively decrease the stringency of the 2023 Standards, harming public health and welfare. EPA thus must meet the burden of justifying an outcome with effects contrary to the statute's primary purpose. It has not. The Proposal is unlawful, arbitrary, and capricious because it effectively reads the mandate to consider and decrease pollution and harm to human health and welfare out of the statute.

1. EPA's consideration of costs and benefits is unreasonable.

EPA may not exclusively account for the certain "benefits" of its Proposal while arbitrarily failing to estimate and monetize corresponding costs. *See, e.g., Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1200 (9th Cir. 2008) (agency "cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards"); *see also California v. Barnhardt*, 472 F. Supp. 3d 573, 623 (N.D. Cal. 2020) ("It is arbitrary for an agency to quantify an action's benefits while ignoring its costs where tools exist to calculate those costs."); *State of N.Y. v. Reilly*, 969 F.2d 1147, 1153 (D.C. Cir. 1992) (where EPA admitted that a previous proposal would provide air quality benefits, the Agency needed to address the foregone air quality benefits in declining to adopt the proposal). An agency's refusal to monetize the value of known environmental harms due to purported uncertainty is arbitrary and capricious. *Center for Biological Diversity v. NHTSA*, 538 F.3d at 1200.

The Agency's assessment of the costs and benefits of its Proposal is a one-sided accounting focused on the Agency's estimates of compliance cost savings. While EPA acknowledges emission increases associated with some parts of its Proposal (useful life, warranty, production allowance), it underestimates those increases and excludes some of the most significant proposed amendments in terms of their impacts on pollution. Despite acknowledging that the pollution increases it estimates are "linked to premature death and other serious health impacts, including respiratory illness, cardiovascular problems, and cancer," EPA assigns these emissions and harms a monetary value of zero. 91 Fed. Reg. at 43,212.

The Agency quantifies and monetizes the compliance-cost savings from weakening the 2023 Rule's emission-related warranty requirements while simultaneously refusing to quantify or monetize the health and environmental disbenefits of the increased pollution that the rollback will cause. *See* DRIA at tbl.6-1, n.b. EPA expressly acknowledges that it "did not quantify or monetize the health disbenefits associated with emissions increases" and states that "[t]he quantified and monetized net benefits associated with the proposed rule are therefore the net cost savings." *Id.* at 75.

EPA's Proposal to eliminate all engine derates from the DEF inducement program will result in a massive increase in emissions from a small number of trucks that could dwarf the benefits of the rest of the compliant fleet. *See infra* part IX. The Agency has failed to assess those impacts in any way. The Proposal to create non-conformance penalties will also unquestionably increase emissions, allowing manufacturers to pay to pollute. *See infra* part VII. Again, EPA undertook no analysis to assess the emissions or health impacts of the proposed addition of NCPs. EPA's proposed changes to the 2023 Rule's ABT program, including raising the FEL cap and removing the credit requirement for manufacturers' utilization of the 5% production allowance, would also increase emissions compared to the 2023 Rule, and EPA has made no attempt to measure those impacts.

EPA only attributes emissions increases to three parts of its Proposal: eliminating the 2023 rule's extended emissions warranty period, delaying the 2023 Rule's useful life term, and removing the credit obligation from the production allowance. EPA fails to monetize any of these emissions. EPA does not project emissions effects from the proposed nonconformance penalties, the replacement of DEF-related derates with audible notifications, or the cumulative interaction of all program changes. EPA asserts that it "cannot project" how manufacturers will use NCPs or how operator behavior will change under notification-only inducements, DRIA at 10, but an agency's inability to make precise projections does not excuse it from considering these effects altogether. EPA's failure to assess how these provisions work individually and collectively to weaken pollution controls renders the cost-benefit analysis incomplete and unreasonable.

Astoundingly, if EPA had monetized only the woefully incomplete set of emissions increases that it does acknowledge, those disbenefits alone would still exceed EPA's asserted cost savings by a factor of 10. EPA ascribes to the Proposal a net cost savings of $12 billion. 91 Fed. Reg. at 43,218. As discussed below, ERM's monetization of EPA's own emission estimates shows that they constitute $98–126 billion in societal costs. EPA's underestimation of these emission impacts and failure to consider the health and economic impacts associated with these emissions is arbitrary and capricious.

In the cost-benefit analysis for rescinding a regulation, the relevant comparison is the difference between the preexisting regulatory baseline, including the promulgated regulation, and the proposed change, or the repeal of the regulation. Therefore, the health benefits of the 2023 Standards are properly understood as foregone benefits under the Proposal, and EPA must quantify and weigh these foregone benefits as costs in assessing the Proposal's impacts. *See* Off. of Mgmt. & Budget, *Circular A-4: Regulatory Analysis* 19 (2003) ("OMB Circular A-4") ("To the extent possible, [an agency] should monetize any ... forgone benefits and add them to the other costs of that alternative.").

EPA's 2023 Rule RIA found that the health benefits of 2023 Standards clearly outweigh compliance costs, projecting present-value health benefits of $14 and $110 billion (201722$) against far smaller compliance costs. EPA, *Regulatory Impact Analysis for Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards*, 9.2-22 tbl.9-19 (2022), EPA-420-R-22-035 ("2023 Rule RIA"). The Agency's failure to engage in any comparable accounting of the costs and benefits of the Proposal is impermissible. By proposing regulatory action that concedes a definite increase in criteria pollutant emissions without quantifying or analyzing the associated negative health impacts, EPA failed to "articulate a satisfactory explanation" and set forth a "rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)). Conclusively, EPA fails to account for the health impacts that Section 202(a) specifically directs it to consider. *See* 42 U.S.C. § 7521(a)(1) (requiring standards applicable to emissions that "may reasonably be anticipated to endanger public health or welfare").

2. EPA fails to analyze or monetize health disbenefits.

EPA asserts compliance cost reductions as a basis for the Proposal. *See* 91 Fed. Reg. at 43,218 tbl.XII-1. But simultaneously, and in a break in practice from prior vehicle standards rulemakings spanning decades, EPA arbitrarily chose not to quantify or monetize the health harms that would occur under the Proposal. *Id.* at 43,218. This choice was arbitrary and capricious and unlawful. Additionally, EPA's decision to jettison its rigorous, peer-reviewed methodology for quantifying health impacts is not adequately explained or justified and is likewise unlawful.

Although the Agency acknowledges that "[t]he proposed program amendments could result in increased emissions" and that "[i]ncreased emissions could also be associated with impacts to air quality, human health, and welfare," the agency explicitly "did not quantify or monetize the health effects associated with emissions changes," and instead simply declares that "[t]he monetized net benefits associated with this proposal are therefore the cost savings presented in Table XII–1." 91 Fed. Reg. at 43,218. To explain why it did not conduct air quality modeling, though recognizing that "EPA is obligated to present the Agency's best scientific understanding and the implications of that science when developing policies and regulations," the Agency merely asserts vaguely that "historically, the EPA's analytical practices may not have presented the full range of uncertainties and associated confidence level regarding the potential benefit estimates from reduction in exposure to PM2.5 and ozone." *Id.* at 43,212. These assertions are wholly conclusory and contravene the requirement of reasoned agency decisionmaking.

Regulatory cost-benefit analysis under Executive Order 12866 requires that the Agency assess "all identifiable costs and benefits," including "direct effects as well as indirect benefits and costs," and that "the same standards of information and analysis quality that apply to direct benefits and costs ... be applied to ancillary benefits and countervailing risks." Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Oct. 4, 1993). Without a full quantification of both the costs and benefits of the Proposal and a reasoned comparison and weighing of the two estimates, EPA has not calculated net benefits; instead, it has only estimated compliance cost reductions while ignoring the foregone health benefits of the provisions of 2023 Standards that it proposes to

amend and that will not accrue under the Proposal. EPA's selective and biased accounting is unreasoned and arbitrary. *See, e.g.*, *California v. Barnhardt*, 472 F. Supp. 3d at 612 ("It is arbitrary for an agency to quantify an action's benefits while ignoring its costs where tools exist to calculate those costs.").

Indeed, during the interagency review process for the Proposal, numerous commenters noted the emissions and health related analyses that EPA undertook for the 2023 Rule, asking EPA to address the emissions and health impacts of the Proposal, and explain why it did not undertake similar modeling.[54] Interagency commenters similarly questioned EPA's assertions that both air quality modeling and "benefit per ton" monetized values introduce uncertainties rendering them inappropriate for this Proposal.[55]

EPA has estimated and monetized the public health benefits of its motor-vehicle emission standards for decades. Despite EPA's long history of quantifying and monetizing public health benefits, including the estimates in the 2023 Rule EPA now proposes to reverse, the Proposal abruptly abandons this practice. By refusing to quantify, monetize, and weigh the health disbenefits associated with the Proposal, EPA arbitrarily disregards decades of guidance from experts, its own formal economic analysis guidelines, and a large and longstanding body of empirical evidence documenting the strong relationship between pollution exposure, morbidity, and mortality.[56] EPA's abandonment of its established practice—and the failure to consider health impacts in regulatory decisionmaking—runs afoul of substantive and procedural statutory requirements, and the Agency's failure to explain this stark change in policy renders the Proposal arbitrary and capricious. *See Fox Television*, 556 U.S. at 515 (when an agency chooses to depart from a prior position, it must "provide reasoned explanation for its action . . . display[ing] awareness that it is changing position" and "show that there are good reasons for the new policy"); *Encino Motorcars*, 579 U.S. at 222 ("[A]n 'unexplained inconsistency' in agency policy is 'a reason for holding an interpretation to be an arbitrary and capricious change from agency practice.'" (citation omitted)).

EPA's existing methods, which the agency now refuses to apply, rigorously account for uncertainty and, if anything, underestimate the true health benefits from emission reductions. EPA's own Science Advisory Board has affirmed those tools as "essential tools in estimating the scale of health benefits," described them as "scientifically robust," and found EPA's three-tiered

[54] 12756 2060-AW83 HD Amendments NPRM Preamble RLSO 20260612__EO 12866 EPA Passback1, EPA-HQ-OAR-2026-0728. (Comments include "It appears that EPA conducted photochemical air quality modeling that considered geographic elements as part of the 2023 rule. Can you expand on why it was not feasible to update the air quality modeling for this rule?"; "We suggest that EPA consider including some more explanation of the rule's costs (qualitatively is fine) and why, despite them, EPA judges its action reasonable.").

[55] *See id.* (Comments include "It appears that EPA presented multiple monetized benefit estimates in the 2023 rulemaking for PM2.5 and Ozone. Suggest clarifying why the numbers provided by EPA in that rulemaking did not address the uncertainties discussed in this sentence."; "EPA acknowledges here that BPT was developed as a simplified screening tool. The subsequent statements suggest that this simplicity renders it unfit for purpose here. However, that argument also raises questions about why EPA did not undertake a new photochem. AQ analysis."; "Reviewers would like to understand the practical considerations here related to uncertainty. Please elaborate.").

[56] *See* OMB Circular A-4, *supra*, at 26-27, 40-41; U.S. EPA. 2024. *Guidelines for Preparing Economic Analyses* (3rd edition), Report number EPA-240-R-24-001. Washington, DC.

uncertainty approach to be "fundamentally a sensible one."[57] To the extent that EPA believes there is uncertainty in the estimation of health benefits from the provisions of the 2023 Standards that EPA now proposes to amend, it is abundantly evident that the benefits are not zero. The foregone health disbenefits flowing from EPA's Proposal are clearly non-zero and are indeed substantial.

EPA's choice to abandon its established practice of quantifying human health impacts is arbitrary and runs afoul of substantive and procedural requirements of the Clean Air Act. EPA identifies no new scientific evidence or flaw in the existing scientific literature that could justify entirely failing to quantify or monetize health benefits wholesale. An agency that proposes to weaken health-protective standards must grapple honestly and thoroughly with the public health consequences of that choice. EPA has not done so here.

B. On Many Issues, EPA is Unreasonably Changing Position from the 2023 Rule without Significant New Record Evidence.

As explained below in more detail for each part of the Proposal, EPA's record is largely unchanged since the 2023 Rule, and the Agency does not adequately explain why so many changes are needed a few years later, just as the new program is beginning to be implemented. Indeed, EPA has not identified evidence based on the new program implementation that suggests changes are needed. Rather the Agency appears to reweigh the same considerations available at the time of the 2023 Rule, arriving at new factual and policy determinations without an adequate explanation.

Even assuming some manufacturers and vehicle types may need additional flexibilities since the 2023 Rule, EPA does not explain why so many new flexibilities are all needed at the same time. As explained below, EPA has also not demonstrated the NCP criteria given the existence of other flexibilities.

C. EPA Fails to Adequately Consider and Weigh Reliance Interests.

In setting emission standards, EPA must comply with the requirements of reasoned decision-making: it must acknowledge policy changes, explain why it is adopting the new policy, and adduce a more detailed justification where the new policy undermines serious reliance interests or contradicts prior factual findings. *See generally Wages & White Lion,* 145 S. Ct. at 917–18 (citing *Encino Motorcars,* 579 U.S.at 221–22; *Fox Television*, 556 U.S. at 515; *State Farm*, 463 U.S. at 43). As the D.C. Circuit recently explained, agencies must assess whether their actions affect reliance interests—in that case, the interests of entities that incurred significant financial obligations based on longstanding agency policies—and, if so, must explain "why these financial concerns were unjustified, entitled to no weight, or outweighed by other considerations," *Capital Power Corp.*, 15 F.4th at 650. Here, EPA failed to identify some serious reliance interests altogether and, where it did note them, proffered no reasonable explanations for overriding them.

[57] EPA Sci. Advisory Bd., *Transmittal of the Science Advisory Board Report, Review of BenMAP and Benefits Methods* 37 (Jan. 17, 2024). https://www.regulations.gov/document/EPA-HQ-OAR-2025-3297-0047.

Agencies that change their position on prior policies must consider the reliance interests that have arisen from those prior positions. They must both be "cognizant that longstanding policies may have engendered serious reliance interests that must be taken into account," and also provide "[a] reasoned explanation ... for disregarding facts and circumstances that underlay or were engendered by the prior policy." *Wages & White Lion*, 145 S. Ct. at 918 (citing *Encino Motorcars*, 579 U.S. at 221-22 (internal quotation omitted)). Stated another way, when rescinding a rule, an agency, because it is "not writing on a blank slate," must "assess whether there were reliance interests, determine whether they were significant, and weigh any such interests against competing policy concerns." *Regents,* 591 U.S. at 33.

That EPA here *is* changing its position is indisputable, as it reverses the determinations it made just three years ago on the structure of major components of the 2023 standards and its compliance and enforcement mechanisms. The Proposal thus triggers the obligation to provide detailed explanations of why the Agency's prior positions were wrong and its new policies suddenly outweigh the many reliance interests in the prior rule. But EPA's scant discussion of reliance interests is inadequate and fails even to identify some of them.

EPA asks commenters to identify reliance interests, 91 Fed. Reg. at 43,161; but the Agency must identify them itself, and explain and weigh them against its new approach *in its Proposal.* Not doing so deprives the public of the ability to comment on what factual determinations EPA might make and what rationale it might advance to justify a final rule. After asking *commenters* to identify reliance interests, EPA promises to determine only in the final rule "whether they are significant, and [to weigh] such interests against competing rationales." *Id*. The Proposal is patently insufficient. Should EPA, in a final rule, address reliance interests beyond the few paragraphs it has spared them here, the agency must first open a new comment period, which would then be the "first occasion" for "meaningful commentary." *Fertilizer Inst. v. EPA,* 935 F.2d 1303, 1311 (D.C. Cir. 1991) (a final rule is not a logical outgrowth of a proposal if it states new arguments and evidence).

The Proposal harms the reliance interests of the public, vehicle purchasers, businesses that have invested in timely compliance, and States and local governments relying on the 2023 Rule to attain NAAQS, among other stakeholders. *See* 91 Fed. Reg. at 43,159 (explaining that "most truck and engine manufacturers" are ready to fully meet the MY 2027 standards on time).

1. EPA fails to recognize the reliance interests of vehicle purchasers and the public.

EPA's proposals to create NCPs, to amend the ABT program to increase credit availability and increase the FEL cap, to reduce the length of useful life for some vehicles, and to remove extended warranties will all reduce availability of vehicles that are compliant with the 2023 standards for purchasers of MY 2027 and later vehicles. The broader set of amendments in this proposal will result in significant increases in tailpipe pollution. EPA says nothing about vehicle purchasers' reliance interests in buying and operating cleaner cars or the public interest in living, working, and recreating in communities where vehicles emit less of the pollutants that

damage their health and welfare.[58] This is a remarkable lapse in light of the central importance Congress placed on EPA's obligation to protect the public from the harm caused by air pollution. *See, e.g., Massachusetts v. EPA*, 549 U.S. 497, 532 (2007) (in Section 202(a), "EPA has been charged with protecting the public's 'health' and 'welfare'").

Additionally, the changes to warranty and useful life in particular will, even by EPA's estimates, drastically increase operating and maintenance costs on vehicle purchasers and operators. As explained below, EPA fails to adequately justify its assumption that warranty savings for manufacturers will be passed on to consumers, who may therefore end up worse off due to this rule. Furthermore, second and later purchasers who bear the brunt of repairs later in the vehicles' lives will be harmed. EPA fails to address reliance interests of purchasers who may have been developing purchase plans on the basis of reduced operating and maintenance costs in reliance on the 2023 Rule's provisions.

EPA falls far short of its duty to provide what should have been a fulsome, science-backed discussion of the Proposal's air quality and health and welfare impacts and a monetization of those harms, including impacts on purchasers, operators, and the public, who will be exposed to higher levels of air pollution under this Proposal. In 2023, EPA offered a detailed assessment of the health and environmental benefits of emission control under the 2023 Rule. 88 Fed. Reg. at 4,313–26; 2023 Rule RIA at ch. 4–6. EPA was obligated to perform new modeling and a harm assessment of the Proposal to overcome its prior contrary record and explain its decision to dismantle the 2023 Rule. *See State Farm*, 463 U.S. at 53. EPA entirely fails the *State Farm* test.

2. EPA fails to recognize States' reliance interests in attaining and maintaining the National Ambient Air Quality Standards.

EPA's Proposal impermissibly overlooks States' significant reliance interests in the 2023 Heavy Duty standards for purposes of meeting their National Ambient Air Quality Standards (NAAQS) obligations. EPA acknowledges parties "may have relied" on the MY 2027 heavy-duty program for purposes of NAAQS compliance and planning obligations. 91 Fed. Reg. at 43,161. However, EPA seeks to minimize and fails to consider legitimate reliance interests by claiming both that the foregone emission reductions associated with the Proposal are relatively small and a relatively short amount of time has passed since the promulgation of the 2023 rule, and that mobile-source standards "are just one consideration among many involved in planning to attain the NAAQS and related obligations." *Id*. EPA completely fails to recognize, let alone address, that States *have* relied on the 2023 Heavy Duty standards as part of meeting their NAAQS compliance and planning obligations, and that the proposed delay *will* significantly undermine such obligations.

Namely, the latest two releases of EPA's own Motor Vehicle Emission Simulator (MOVES) model, MOVES4 and MOVES5, updated the previous versions by accounting for the 2023 Heavy Duty standards in EPA's mobile source emissions inventory. 88 Fed. Reg. at 62,567 (announcing release of MOVES4); 89 Fed. Reg. at 99,862 (announcing release of MOVES5).

[58] The entirety of EPA's discussion of reliance interests is found on less than one Federal Register page, 91 Fed. Reg. at 43,161.

EPA's MOVES modeling is a critical tool for States in meeting their State Implementation Plan (SIP) obligations for attaining and maintaining air quality in compliance with the life-saving NAAQS standards. For States with areas that are in nonattainment with the NAAQS, the Clean Air Act sets forth certain nonattainment SIP requirements that States typically meet by utilizing the MOVES modeling platform and inputs along with other stationary source models. For example, Clean Air Act Section 182(c)(2)(A) requires that States with ozone nonattainment areas classified as Serious areas must submit a nonattainment SIP that includes an attainment demonstration based on photochemical grid modeling. 42 U.S.C. 7511a(c)(2)(A). Additionally, Clean Air Act Section 172(c)(3) requires that all States with ozone nonattainment areas, regardless of their classification, must include in their nonattainment SIPs an emissions inventory of actual emissions from all sources of the relevant pollutant in the nonattainment area and that is "comprehensive, accurate, [and] current." 42 U.S.C. 7502(c)(3).

States generally meet these nonattainment SIP requirements for mobile sources by using the most current version of MOVES. As EPA itself has stated, in part by citing Clean Air Act Section 172(c)(3)'s requirement that SIP inventories be based on the most current information and applicable models, "MOVES5 should be used in ozone, CO, PM, and nitrogen dioxide SIP development as expeditiously as possible, as there is no grace period for the use of MOVES5 in SIPs." 89 Fed. Reg. at 99,864. EPA's release of MOVES5 thus "engendered serious reliance interests that must be taken into account." *Encino Motorcars,* 579 U.S. at 222 (quoting *Fox Television*, 556 U.S. at 515). "It would be arbitrary and capricious to ignore such matters." *Id.* at 515, 129.

Yet, ignoring such matters is precisely what EPA is doing here. For example, many states' nonattainment SIP obligations for the 2015 ozone NAAQS are ongoing. A significant number of areas in those states are classified as Serious for the 2015 ozone NAAQS, and their nonattainment SIPs were due January 1, 2026. *See* State Implementation Plan Submittal Deadlines and Implementation Requirements for Reclassified Nonattainment Areas Under the Ozone National Ambient Air Quality Standards, 90 Fed. Reg. 5651. This deadline was established on January 17, 2025, after EPA released MOVES5 and indicated that States should use the updated modeling for ozone SIPs given the statute requires the use of current information for certain nonattainment plan elements. States have accordingly used MOVES5 in developing their Serious area nonattainment plans for the 2015 ozone NAAQS.[59] However, EPA's current Proposal undercuts a major input and assumption in MOVES5, which again, was updated partly to account for the 2023 Heavy Duty standards.

Additionally, EPA as part of its MOVES5 release started a two-year transportation conformity grace period. During this grace period, states and local agencies can use MOVES4 for transportation conformity purposes until December 11, 2026, after which they must then use MOVES5. 89 Fed. Reg. at 99,865.

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[59] *E.g.,* West Michigan Attainment State Implementation Plan Elements for the 2015 Ozone National Ambient Air Quality Standard Serious Element Attainment Demonstration at 20, submitted by the Department of Environment, Great Lakes, and Energy to EPA. https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/AQD/State-Implementation-Plan/Notices-and-Activities/west-michigan-2015-ozone-naaqs-serious-elements.pdf?rev=201479221fc14cc2a628ed64b796d2a9&hash=3D013713A8082DA1CB8C360BBE0FFBA7.

SIPs that rely on modeling inputs and assumptions that inaccurately include now-repealed, delayed, or otherwise substantively altered measures are not approvable as meeting relevant Clean Air Act requirements, as these measures do not exist in their original form as a legal matter. For example, the validity of an emissions inventory projection or attainment demonstration that relies on certain emission reductions would be greatly distorted by the delay or repeal of the regulations responsible for those reductions. EPA's own analysis for its Proposal shows there *will* be a resulting increase in NOx emissions. 91 Fed. Reg. at 43,210. EPA thus cannot rationally conclude that analyses that counterfactually include the emission reductions from the delay rule still show compliance with the Clean Air Act's nonattainment SIP requirements for "accurate" and "current" emissions inventories, and for modeled attainment demonstrations.

Notably, EPA has not concurrently updated MOVES4 or MOVES5 to reflect any delay or weakening of the 2023 Heavy Duty standards. EPA is required to "reexamine" its approach to the MOVES modeling "if a significant factual predicate" changes, *Bechtel v. FCC*, 957 F.2d 873, 881 (DC. Cir. 1992), as would be the case if it were to proceed with the Proposal (which it legally cannot, for reasons described in this comment letter). EPA "has a similar obligation to acknowledge and account for a changed regulatory posture the agency creates—especially when the change impacts a contemporaneous and closely related rulemaking." EPA has failed to meet these obligations, bringing into question the legal approvability of States' SIPs that rely on its now fatally inaccurate MOVES modeling.

EPA's disapproval of a nonattainment SIP or a State's failure to submit a nonattainment SIP carry serious statutory consequences, such as potential imposition of a Federal Implementation Plan and mandatory sanctions. EPA's weakening of the 2023 Heavy Duty standards would call into question the legal basis for approving SIPs that rely on these standards, including as part of either the MOVES4 or MOVES5 modeling, and States that have already missed their ozone nonattainment SIP deadlines may face further delay as they consider next steps in light of EPA's undercutting of its own modeling. EPA is thus "not writing on a blank slate" in implementing the 2015 ozone NAAQS, and proposing to weaken the 2023 Heavy Duty standards without at all addressing either the attendant emissions impacts on the MOVES 4 and MOVES5 modeling, and any nonattainment SIPs that rely on these models, is arbitrary and capricious. *Regents*, 591 U.S. at 32-33.

EPA's failure to adequately consider the States' reliance interests in the MY 2027 heavy-duty program for purposes of the meeting their NAAQS obligations is further exacerbated by its perfunctory and misleadingly benign claim that "emissions from mobile sources are just one consideration among many involved in planning to attain the NAAQS and related obligations." 91 Fed. Reg. at 43,161. EPA fails to address both its own previous statements, as well as those from State regulators, that NOx emissions from mobile sources are a critical aspect of attaining and maintaining the ozone and PM NAAQS. In promulgating the 2023 Heavy Duty standards, EPA estimated that without that final rule, heavy-duty engines would represent 90% of the onroad NOx inventory in calendar year 2045. EPA then highlighted that "reducing NOx emissions is a critical part of many areas' strategies to attain and maintain the [NAAQS] for ozone and PM; many state and local agencies anticipate challenges in attaining the NAAQS, maintaining the NAAQS in the future, and/or preventing nonattainment." 88 Fed. Reg. at 4310. EPA went on to highlight that "many state and local agencies have asked the EPA to further

reduce NOx emissions, specifically from heavy-duty engines, because such reductions will be a critical part of many areas' strategies to attain and maintain the ozone and PM2.5 NAAQS." 88 Fed. Reg. at 4397

However, in now claiming that mobile sources are merely one consideration in NAAQS planning, EPA completely fails to address its prior assertions to the contrary regarding States' and local agencies' legitimate reliance interests in the 2023 Heavy Duty standards as a key component to meeting their NAAQS obligations. Furthermore, EPA's suggestion that there are other considerations in NAAQS planning seemingly implies that emission reductions from other source categories, such as stationary sources, are the means by which States and local agencies can meet their NAAQS obligations to compensate for the NOx increases associated with EPA's deregulatory revision to the 2023 Heavy Duty standards. However, as EPA itself previously acknowledged, "many state and local agencies commented on the [proposal for the 2023 rule] that heavy-duty vehicles are one of their largest sources of NOx emissions. They commented that without action to reduce emissions from heavy-duty vehicles, they will have to adopt other potentially more burdensome and costly measures to reduce emissions from other sources under their state or local authority, such as local businesses." 88 Fed. Reg. at 4313. EPA now fails to grapple with any of these issues, neglecting to provide "a reasoned explanation ... for disregarding facts and circumstances that underlay or were engendered by the prior policy." *Fox Television*, 556 U.S. at 515-16.

Additionally, EPA fails to account that the Agency *itself* is concurrently proposing to reconsider regulations intended to reduce NOx emissions from stationary sources. For example, EPA has proposed to reconsider its disapproval of a number of states' interstate transport SIPs for the 2015 ozone NAAQS, which if finalized would cut back or eliminate programs intended to ensure reductions of emissions from upwind states that are affecting air quality in downwind states. 91 Fed. Reg. at 4026. EPA is thus playing a shell game in which it claims that its Proposal to roll back critical NOx emission reduction measures from mobile sources does not affect reliance interests because there are other tools and sources to address for attaining and maintaining the NAAQS, yet EPA concurrently is rolling back those other measures as well, leaving the States and public with no actual NOx emission reductions to be found under the cup. EPA's abject failure to account for legitimate reliance interests in the 2023 Heavy Duty standards is thus arbitrary and capricious.

EPA fails to adequately consider the reliance interests of regulated manufacturers and suppliers of pollution control technologies.

3. EPA fails to adequately consider the reliance interests of regulated manufacturers and suppliers of pollution control technologies.

EPA is damaging the reliance interests of regulated original equipment manufacturers (OEMs) and industry partners. The Agency's proposed rollback devalues prior capital commitments and disadvantages businesses that proactively invested in lower-emission vehicle technologies along the previously adopted timeline. Companies across the entire automotive supply chain—including manufacturers and suppliers—depend on stable EPA rules to plan ahead, balance costs, allocate capital wisely, and "level the playing field." By rolling back established heavy-duty standards, EPA will undermine these industry-wide investments.

EPA acknowledges repeatedly in the proposed rulemaking that most manufacturers are prepared to meet the 2027 NOx emissions standard and some are also prepared to meet the longer useful life period.

- "Truck and engine manufacturers as well as the component supply industry have been preparing for several years to meet the MYs 2027 and later NOX, PM, HC, and CO standards and other requirements finalized in the 2023 Final Rule. Over the past year, most truck and engine manufacturers have communicated to the EPA that they will have a full lineup of products ready to meet the MY 2027 standards." 91 Fed. Reg. at 43,157 and 43,159.
- "EPA understands that manufacturers have already solidified their technology designs for MY 2027 engines, and the Agency believes that manufacturers are likely to maintain a steady design technology for MY 2028 and 2029." 91 Fed. Reg. at 43,158.
- "The EPA notes that most engine manufacturers are on track to meet the MY 2027 standards. The EPA acknowledges that there was substantial work required to meet these standards, including implementing new technologies and demonstrating compliance with new test procedures." 91 Fed. Reg. at 43,160.
- "As noted previously, most engine manufacturers are on track to meet the MY 2027 standards." 91 Fed. Reg. at 43,160.
- "In meetings with manufacturers over the past year about their readiness for the MY 2027 program, some manufacturers have indicated that they are on target to meet the requirements of the longer useful life periods, including in-use performance." 91 Fed. Reg. at 43,163.

All leading heavy-duty engine and vehicle manufacturers have also announced publicly that they have developed engines ready to meet the 2027 standards. In January 2026, Traton's International unveiled plans for its integrated powertrain designed to comply with EPA's 2027 emissions standards.[60] And soon after, Daimler,[61] Cummins,[62] Volvo[63] and PACCAR[64] all announced EPA 2027 compliant engines. The proposed amendments that allow for delaying the rollout of these compliant engines will harm the companies that are the most prepared.

The Proposal will also harm suppliers. According to comments from MECA, "Suppliers invested billions in R&D, supply chain development, and tooling since 2022 final rule" and

[60] Keiron Greenhalgh, "International Lines Up EPA 2027 S13 Powertrain," Transport Topics (Jan. 8, 2026), https://www.ttnews.com/articles/international-epa-2027-s13.

[61] Kevin Linger, "Detroit Unveils Gen 6 Heavy-Duty Engines for EPA 2027," Fleet Equipment (Feb. 17, 2026), https://www.fleetequipmentmag.com/detroit-gen-6-engines-launch-dtna/.

[62] Keiron Greenhalgh, "Cummins' 2027 X15 Diesel Makes Public Debut," Transport Topics (Mar. 23, 2026), https://www.ttnews.com/articles/cummins-x15-diesel-engine.

Volvo Group press release, "Volvo Trucks unveils its most fuel efficient engine ever, ready to meet new regulations," (May 4, 2026). https://www.volvogroup.com/en/news-and-media/news/2026/may/volvo-trucks-unveils-its-most-fuel-efficient-engine-ever--ready-.html.

[64] Keiron Greenhalgh, "Paccar Teases Launch of 2 EPA NOx 2027-Compliant Engines," Transport Topics (Feb. 11, 2026). https://www.ttnews.com/articles/paccar-launch-epa-2027-engines.

"[g]iven suppliers' long technology-development cycle, stable emission standards are critical for US manufacturers' investments and job creation."[65] For example, Pilot Company facilitates over 30 million DEF transactions annually across 900 dispenser locations and distributes DEF to another 4,000 locations across 47 states.[66] A change in the inducement provisions could significantly impact Pilot's business. A Pilot representative stated that the company is "concerned with proposals that would weaken the current DEF inducement framework," and that "EPA must carefully consider the broader impact of these changes on the trucking industry, fuel retailers, and the national DEF supply chain."[67]

D. EPA Fails to Consider Alternatives.

The Proposal's failure to meaningfully consider reasonable alternatives is arbitrary and capricious. Agencies are required to consider "significant and viable and obvious alternatives" to their proposed action. *Dist. Hosp. Partners, L.P. v. Burwell*, 786 F.3d 46, 59 (D.C. Cir. 2015); *see Spirit Airlines, Inc. v. DOT*, 997 F.3d 1247, 1255 (D.C. Cir. 2021) ("[T]he failure of an agency to consider obvious alternatives has led uniformly to reversal." (internal quotations omitted)); *Ky. Mun. Energy Agency v. FERC*, 45 F.4th 162, 188 (D.C. Cir. 2022) (finding FERC's lack of consideration of an alternative "amounts to failure of reasoned decisionmaking"). Courts have repeatedly affirmed the need to consider alternatives, particularly where an agency is reversing a prior action. *See, e.g.*, *State Farm*, 463 U.S. at 51 (finding that NHTSA had arbitrarily failed to explain its rejection of option requiring airbags despite its prior finding "that airbags are an effective and cost-beneficial life-saving technology"); *Pub. Citizen v. Steed*, 733 F.2d 93, 100 (D.C. Cir. 1984) (setting aside suspension of rule because NHTSA "failed to explain why alternatives, which the rulemaking record indicates were available to the agency, could not correct" problem agency relied on as basis for suspending rule); *Delaware Dept. of Nat. Res. & Env't Control v. EPA*, 785 F.3d 1 (D.C. Cir. 2015) ("alternative way of achieving EPA's objective ... should have been addressed and adequate reasons given for its abandonment"); *Shieldalloy Metallurgical Corp. v. NRC*, 624 F.3d 489 (D.C. Cir. 2010) ("[A]gencies must evaluate parties' proposals of 'significant and viable' alternatives." (citing *Farmers Union Cent. Exch., Inc. v. FERC*, 734 F.2d 1486, 1511 n.54 (D.C. Cir. 1984))).

EPA has failed to consider specific alternatives for each discrete proposal, as explained below, and it has failed to consider alternatives to proposing all these changes at the same time. For example, to the extent the Agency determines there are legitimate feasibility concerns, it should consider whether finalizing only one of the proposed flexibilities, such as NCPs, may suffice to address those concerns.

As discussed above, EPA issued guidance earlier this year and last year modifying the inducement schedule for HDDEs. At the time EPA issued their guidance, they failed to justify

[65] Manufacturers of Emission Controls Association, *Commercial Vehicle Industry Benefits from Regulatory Stability Based on Emission Standards Achieved through Cost-Effective Technology Solutions*, Presentation to OMB, June 12, 2026.

[66] Transcript of Pilot Company testimony, virtual public hearing for Proposal (July 29, 2026), p. 103. Transcript available EPA Docket No.EPA-HQ-OAR-2026-0728-0150 https://www.regulations.gov/document/EPA-HQ-OAR-2026-0728-0150.

[67] *Id.* at 105–06.

why the changes were necessary or make any effort to calculate the potential emissions impact. However, in this Proposal EPA fundamentally fails to consider whether those changes were sufficient to address their concerns and have allowed virtually no time for that guidance to go into effect in order to collect actual data. John Deere said in a press release earlier this month that only 80% of the software updates related to EPA's previous guidance will be available by the end of the year and the "remaining updates expected to rollout through 2027."[68] This clearly indicates there has not been nearly enough time to adequately consider whether the changes EPA has made are already sufficient.

For agricultural equipment, John Deere, which accounts for at least 50% of the U.S. tractor market,[69] came to a settlement with the Federal Trade Commission and five states over an antitrust lawsuit on July 8, 2026. The FTC said this settlement will "ensure farmers can enjoy the right to repair their own John Deere tractors and farm equipment."[70] Specifically, one of the provisions of the settlement is to "make available to farmers and independent repair providers…repair resources [for]...restarting a machine following an emissions-related shutdown."[71] EPA should allow enough time to assess whether this change resolves the issues motivating the changes to the inducements for nonroad vehicles. And, if this type of action does substantially change the experience of John Deere equipment owners with respect to the emission control technology, EPA should consider this type of action improving the ability of owners to lawfully repair their vehicles instead of the scorched earth approach EPA has taken in this Proposal.

III. The Emissions Warranty Proposal Is Arbitrary and Capricious.

EPA's proposal to revert to MY 2026 warranty periods for heavy-duty engines is arbitrary and capricious for numerous reasons. The Agency ignored important aspects of the problem by treating warranty as a mere purchase-price issue and waving off emissions increases it admits will occur as a result of the changes it proposes; failed to adequately justify its change in position regarding the maintenance, tampering, serviceability, and defect reporting benefits of lengthier warranty periods; and undertook a flawed cost-benefit analysis that underestimates the emissions impact of the proposed warranty periods, ignores the public health costs of increased emissions, and understates the increased maintenance costs of the Proposal. For the reasons stated below, EPA should withdraw its proposal to shorten warranty periods and maintain the MY 2027 and beyond warranty periods established in the 2023 Rule.

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[68] John Deere, Updated EPA Guidance Supports John Deere Efforts to Keep Customers Productive in the Field (August 18, 2026), https://www.deere.com/en-us/john-deere-news/updated-epa-guidance.

[69] Daniel Ess & Matthew Bax, *Red Then Green: Tractor Market Leaders Through the Years*, Farm Progress (Dec. 24, 2025), https://www.farmprogress.com/farming-equipment/how-john-deere-conquered-the-tractor-market-while-international-harvester-lost-its-red-dominance.

[70] Press Release, Fed. Trade Comm'n, FTC, States Secure Settlement with Deere & Company, Advancing Farmers' Right to Repair (July 8, 2026), https://www.ftc.gov/news-events/news/press-releases/2026/07/ftc-states-secure-settlement-deere-company-advancing-farmers-right-repair.

[71] *Id.*

A. EPA Faithfully Executed Section 207 In Establishing Longer Warranty Periods in the 2023 Rule, Which Was Based on a Robust Record.

Section 207 requires manufacturers of new vehicles and engines to "warrant to the ultimate purchaser and each subsequent purchaser" that their vehicles and engines are "designed, built, and equipped so as to conform at the time of sale" with the emissions standards promulgated by EPA under Section 202, and that they are "free from defects in materials and workmanship which cause such vehicle or engine to fail to conform" for the warranty period specified by regulation. 42 U.S.C. § 7541(a)(1). EPA establishes the length of the warranty period for heavy-duty vehicles and engines under Section 207(i), so as to ensure "that new [vehicles] meet not only the standards on the production line but also the standards in performance." *Center for Auto Safety*, 747 F.2d at 2 (quoting 116 Cong. Rec. 33,093 (1970) (statement of Sen. Muskie)).

This is precisely what EPA did in the 2023 Rule, when the Agency expanded the emission-related warranty periods for MY 2027 and later heavy-duty engines. 88 Fed. Reg. at 4,308, tbl.I-4. EPA's decision to lengthen regulatory warranty periods was not a secondary or optional feature of the 2023 Final Rule. Rather, EPA determined that, alongside other changes, the extended warranty periods "increase the likelihood that engine emission controls will be maintained properly through more of the service life of heavy-duty engines and vehicles." 88 Fed. Reg. at 4,362. In this way, the extended warranties were an essential component of the in-use compliance framework necessary to support standards that must achieve the greatest degree of emission reduction achievable. The new warranty periods for different primary intended service classes were designed to "reflect the difference in average operational life of each class," and warranty mileage was increased to be three or even more than four times longer than the preexisting standard, depending on the class. 88 Fed. Reg. at 4,362-63 As a result, the 2023 Rule's warranty mileages "cover about 80 percent of the corresponding final useful life mileages." 88 Fed. Reg. at 4,364-65. Additionally, the years-based warranty for all classes was doubled from 5 to 10 years and an hours-based warranty value was added to account for distinct use patterns of different engines and vehicles. 88 Fed. Reg. at 4,308, 4,365.

EPA carefully considered several factors in 2023 that justified the extended warranty periods, finding that longer warranties would improve maintenance, reduce tampering, improve repair processes, and provide better defect information. First, EPA found that the prior warranty periods had not changed since 1983, despite vast increases in vehicle operational lifespans, useful life, and aftertreatment complexity. 88 Fed. Reg at 4,362. As a result, the warranty periods covered only a fraction of heavy-duty engines' regulatory useful life—as low as 22% of useful life, and no more than 54%—rather than the significantly larger portions of engines' useful life covered by the new warranty periods. *Id.* Second, and relatedly, EPA found that the "revised warranty periods are expected to result in better engine maintenance and less tampering, which would help to maintain the benefits of the emission controls." *Id.* This is because "emission-related repairs would be covered by manufacturers for a longer period of time," such that owners would have less economic incentive to avoid the cost of repair or tamper with systems. *Id.* at 4,363. Third, EPA found that longer warranty periods would provide more incentive "for manufacturers to evaluate the complexity of their repair processes," which could lead to simplified repair processes "in terms of how systems are serviced and how components are replaced," potentially reducing repair costs. *Id.* Fourth, "longer regulatory emission warranty

periods would increase the period over which the engine manufacturer would be made aware of emission-related defects" under 40 C.F.R. § 1068.501(b). *Id.* As EPA explained, after the end of the warranty period, manufacturers would not necessarily know about possible defects because "repair facilities are less likely to be in contact with the manufacturers and they are less likely to use OEM parts." *Id.* Fourth, EPA considered commenters' concerns regarding the length of the waiver periods and carefully crafted warranty periods to consider the "distinct use patterns" of vehicles and to be "within the range of periods over which we expect manufacturers have access to failure data," limiting the need for conservative estimates of warranty costs. 88 Fed. Reg. at 4,364-65. Finally, EPA estimated "18 percent fewer NOx emissions in 2045 due to the longer useful life and warranty periods reducing the likelihood of tampering and mal-maintenance after the current useful life periods of heavy-duty CI engines." 88 Fed. Reg. at 4,419.

In sum, EPA developed a robust record showing that extending warranty periods to be more co-extensive with engine useful life is warranted by various relevant factors to help ensure "that new [vehicles] meet not only the standards on the production line but also the standards in performance." *Center for Auto Safety*, 747 F.2d at 2-3 (quoting 116 Cong. Rec. 33,093 (1970) (statement of Sen. Muskie)).

B. EPA's Proposed Warranty Rollback Is an Arbitrary and Capricious Exercise of Its Authority Under Section 207, and the Agency Has Not Adequately Justified Its Change in Position.

Under Section 207, the regulatory warranty is meant to ensure that new vehicles and engines are "free from defects in materials and workmanship which cause such vehicle or engine" to fail to conform with emissions standards over the life of the engine. 42 U.S.C. § 7541(a)(1). In other words, warranty is designed to ensure the real-world efficacy of the standards, which in turn must "reflect the greatest degree of emission reduction achievable through the application of technology" under Section 202(a)(3)(A)(i). The technology-forcing regime in that provision therefore limits the bounds of reasonable agency action for changes to emissions-related warranty. As described in more detail below, reducing the warranty period as EPA proposes increases the amount of time that operators drive without assurance that manufacturers will repair emissions equipment, which will lead to heightened emissions from tampering and mal-maintenance as operators seek to reduce their repair costs. It also reduces the incentives for manufacturers to build durable emissions controls, leading to failures that increase emissions as vehicles and engines age. Indeed, EPA itself estimates that the warranty period reductions will significantly increase emissions, although it underestimates the true impact. For all of these reasons, EPA's proposal to reduce warranty periods goes against the Clean Air Act's imperative for standards to reflect the greatest degree of emission reduction achievable through the application of technology, rendering the proposal unreasonable.

In short, EPA's proposal ignores the emission reduction aim of its warranty authority, as well as the extensive record in the 2023 Rule justifying longer warranty periods. Instead, EPA treats the issue of emission-related warranty as essentially a purchase-price issue—or in EPA's own words, "a straightforward cost-saving opportunity." 91 Fed. Reg. at 43,159. EPA's thin justification for its proposed warranty periods fails the test of reasoned agency decision making on its own merit, and EPA fails to provide a reasoned explanation for completely reversing its prior position.

1. EPA's proposed warranty period is unreasonable, and EPA fails to reasonably explain its decision.

First, EPA must explain how drastically shorter warranties remain adequate to protect the real-world emission reductions guaranteed by Section 202 standards. Instead, EPA estimates that shortened warranty periods will cause 36,000 tons of added NOx emissions in 2055, accounting for 12% of the emission benefits of the 2023 Rule, 91 Fed. Reg. at 43,162, but dismisses that emissions impact as "relatively small," *id.* at 43,163, without further explanation. Yet more than a tenth of emissions reductions is clearly not small. And as explained in Part III.B.4 below, EPA's emissions estimate significantly undercounts the benefits of the extended warranty. None of this is a surprise, since the proposed warranty periods are significantly shorter than engine useful life, let alone the actual operational life of such engines, which can last up to 1.2 million miles before a rebuild.[72] Furthermore, the agency must account for the severe public health harms from these emissions increases, including those to already overburdened communities along freight corridors, yet it entirely fails to do so.

It is not enough for the Agency to model significant emissions increases and then essentially turn a blind eye to those emissions and their harms to public health and welfare. Instead, EPA must explain why these emissions are so insignificant that the shortened warranty periods are justified; calling the emissions "relatively small" with no further explanation is insufficient. The purpose of Section 207 warranties is to ensure that engines continue to achieve emission standards throughout their life, and it is unreasonable for the Agency to write off the significant emission and health impacts of its proposed warranty periods. At the very least, EPA must adequately explain why it is justified in ignoring these impacts.

Second, even EPA's main rationale—allegedly high emission-related warranty costs—is inadequately explained. Instead of presenting new empirical data or field studies, EPA rests its policy shift on the unsupported assertion, based on representations from manufacturers, that "costs *could* be significantly higher for certain applications.," *Id.* at 43,162 (emphasis added). Yet EPA fails to explain which applicants it is referring to, how widespread the supposed cost increases would be, the magnitude of the "significantly higher" costs, or whether these cost increases are anything more than speculative. The sole example EPA provides is an unverified, self-reported OEM claim that warranty coverage "could exceed $15,000 for some [heavy heavy-duty] engines intended for use in low-mileage vocational vehicles for which the engine would be covered by warranty until the 10 year limit." *iId.* This speculative, anecdotal claim stands in stark, unexplained conflict with EPA's own estimate, which places the average per-engine warranty cost savings for Heavy Heavy-Duty Engines (Heavy HDE) at $5,358—roughly one-third of the OEM figure. DRIA at 1, tbl.ES-2. EPA cannot rely on unvalidated industry claims, while ignoring its own technical and economic modeling; by EPA's own evidence, the alleged high-cost case it points to is an outlier. EPA cannot "offer[ ] an explanation for its decision that runs counter to the evidence before the agency." *State Farm*, 463 U.S. at 43. Even assuming the accuracy of EPA's unsupported example, the fact that a narrow category of vehicles "could" have warranty costs above $15,000 is not a sufficient basis to reduce the warranty period as to all vehicles.

[72] *See* CARB, Heavy-Duty Low NOx Program Public Workshop, at 5 (Jan. 23, 2019), EPA-HQ-OAR-2019-0055-0599, att. 2.

Additionally, EPA's cost rationale focuses almost exclusively on initial truck buyers, ignoring secondary and tertiary markets. As documented in the RTC for the 2023 Rule, residual regulatory warranty coverage adds tangible resale value in the secondary market and protects subsequent owners—who are typically smaller fleets or independent owner-operators running older vehicles deeper into their operational useful life.[73] Shortening the regulatory warranty strips away this residual equity protection, shifting catastrophic repair costs onto secondary owners who are the least equipped to absorb them and the most likely to defer repairs or bypass failing aftertreatment hardware when faced with expensive out-of-pocket bills. EPA acknowledges that "the post-warranty period for which owners would be responsible for emission-related repairs would be lengthened," 91 Fed. Reg. at 43,163, n.26, and it provides an estimate of what those additional repair costs may be, DRIA at 76, tbl.6-1. EPA fails, however, to grapple with the ways that shortening the regulatory warranty removes residual protection and increases the risk that later owners will face higher repair burdens or defer repairs. Furthermore, older vehicles, which are significantly more likely to be driven by secondary and later owners, are concentrated in already overburdened communities.[74] As a result, the emissions harms from deferred repairs by secondary and later owners will fall disproportionately on communities of color and lower-income households.

This reveals another flaw with EPA's cost rationale: rather than represent simply a societal cost savings, some portion of the savings that EPA identifies are actually transfers of warranty costs passed to consumers. More fundamentally, EPA's projected cost savings are driven almost entirely by reductions in manufacturer warranty obligations, yet EPA fails to justify its assumption that manufacturers will actually pass on those cost reductions to consumers. Under the Proposal, emission-related repair costs that would otherwise be covered by manufacturers are shifted to vehicle owners and operators through shorter warranty periods and lower mileage thresholds. According to EPA, the Proposal still results in net cost savings because manufacturer warranty savings exceed the increase in owner/operator costs, and EPA assumes that manufacturers "may pass on some, if not all, of the savings to vehicle purchasers in the form of a lower-priced product." 91 Fed. Reg. at 43,212. However, the assumption that manufacturers will pass on cost savings to consumers is not well supported, given that the heavy-duty engine/heavy-duty vehicle market is not perfectly competitive and that the ultimate value of a warranty to consumers is opaque due to lack of perfect information. As a result, it is entirely plausible that manufacturers retain a portion of the savings—which EPA seems to acknowledge is a possibility when it says that "some, if not all," savings will be passed on. *Id.*

[73] "To better understand the secondary market value of such residual warranties, CARB staff conducted an online survey in April 2021 as part of Goal #2, and collected 694 responses from fleets and owner/operators and from five dealers. The survey results indicate that the remaining residual warranties do in fact add value to vehicles sold in the secondary market, with the value increase averaging approximately $2,000 for a 2 years/200,000 miles period of residual warranties, and $4,000 for a 4 years/400,000 miles residual period." 2023 Rule RTC at 589.

[74] "We agree that older trucks are more likely to operate in port drayage and other communities with environmental justice concerns." 2023 Rule RTC at 993. *See, e.g.*, Julia Chernova, Taking a Breath: Lessons For the Port of Oakland From the Clean Trucks Program At the Ports of Los Angeles and Long Beach, 10 Golden Gate U. Envtl. L.J. 87 (2018).

Despite this possibility, EPA elsewhere indicates that the entire warranty savings will be passed on to consumers. 91 Fed. Reg. at 43,158 ("The EPA expects that manufacturers will pass these savings on to purchasers. Thus, the EPA expects purchasers to save up to $37 billion in emission-related warranty savings"). Yet EPA fails to provide support for its assumption that cost saving will be passed to consumers. For example, EPA does not provide a quantitative pass-through rate, nor does it cite evidence demonstrating that warranty cost savings will be reflected in vehicle prices. Yet this assumption is key to EPA's cost rationale because the proposal simultaneously increases the owner-paid emission repair costs. Based on EPA's cost estimates, approximately 68% of the projected manufacturer warranty savings are offset by the increased owner/operator repair costs. 91 Fed. Reg. at 43,158, tbl.I-1. As a result, vehicle owners only experience a net benefit if a substantial portion of the warranty savings is passed through by manufacturers. Despite this, EPA has not shown how much of the warranty savings may be passed on to consumers. Without a clearly defined pass-through rate, it is difficult to determine whether the proposal provides a net economic benefit to vehicle owners or primarily benefits manufacturers through reduced warranty obligations. EPA therefore fails to adequately justify shortening the emissions warranty periods based on these supposed cost savings.

Third, EPA's own market evidence cuts against treating longer warranties as unwanted coverage—EPA's other rationale for reducing warranty periods. EPA asserts that shortening regulatory warranties benefits a subset of fleet buyers by removing allegedly unwanted additional costs that "*may* not align with [their] preferences or usage patterns." 91 Fed. Reg. at 43,163 (emphasis added). Yet EPA's claim is speculative, inadequately supported by just a single source, *id.*, and removes valuable warranty protections based on the needs of an unspecified subset of the fleet. Moreover, market evidence from the 2023 rulemaking record cuts directly against EPA's premise. The 2023 record included evidence that many owners already purchase extended warranties, with some analyses showing substantial uptake of warranties exceeding current federal minimums. For example, CARB's warranty cost analysis for MY 2022 heavy-duty program was based on survey evidence that roughly 85% of the heavy-duty market takes coverage beyond the federal minimum, and that roughly 40% of those buyers take at least 500,000 miles—five times the 100,000-mile federal floor EPA proposes to restore.[75] This uptake of extended warranties is unsurprising, given that repair costs and downtime can be a significant burden for drivers. EPA cannot arbitrarily assume that eliminating mandatory regulatory warranty coverage improves economic welfare by focusing on the alleged needs of a minority of fleets, without accounting for the concrete value that most primary fleet purchasers and subsequent owners place on long-term warranty protection.

Furthermore, voluntary extended warranties are not a substitute for regulatory warranties because voluntary extended warranties do not align manufacturer financial incentives with fleetwide durability, do not provide universal repair coverage across all operators, and fail to generate systematic, legally binding defect-reporting information comparable to a federal regulatory warranty framework. Data from CARB's Emissions Warranty Information Reporting system demonstrate why fleetwide manufacturer accountability is critical: out of 308 heavy-duty

[75] CARB, Staff Report on Warranty Cost Study for 2022 and Subsequent MY Heavy-Duty Diesel Engines , at 21 tbl. IV.A.2 (Dec. 2021), https://ww2.arb.ca.gov/sites/default/files/2022-01/warranty_cost_study_final_report.pdf; *see id.* at 91 ("85 percent of new heavy-duty trucks are historically covered by extended warranties purchased separately or provided without additional cost").

engine families flagged for elevated warranty claim rates, 299 families required component replacements in systems capable of triggering SCR inducements or engine derates.[76] Relying on voluntary extended warranties leaves systemic aftertreatment defects unaddressed at the fleet level, exposing operators to frequent downtime and increased operating costs.

In short, EPA assigns overriding importance to alleged high upfront warranty costs, which it fails to adequately justify, while dismissing the emissions impacts of its Proposal and ignoring the emission reduction purpose of Section 207. In doing so, EPA arbitrarily and capriciously relies on factors Congress did not intend it to consider, fails to consider important aspects of the problem, and fails to reasonably explain its decision. *State Farm*, 463 U.S. at 43.

2. EPA has not adequately justified its change in position, and in doing so, fails to consider important aspects of the problem.

When departing from prior positions, an agency must provide "a reasoned explanation ... for disregarding facts and circumstances that underlay or were engendered by the prior policy." *Fox Television*, 556 U.S. at 515-16. Accordingly, if an agency's "new policy rests upon factual findings that contradict those which underlay its prior policy," or when the prior policy has engendered serious reliance interests, the agency must provide a "more detailed justification than what would suffice for a new policy created on a blank slate." *Id.* at 515; *Wages & White Lion*, 604 U.S. at 568–69.

In the 2023 Rule, EPA thoroughly evaluated industry cost concerns and selected warranty periods that deliberately balanced emission-control durability against purchase price and fleet turnover dynamics. Because the Proposal departs from that prior position, the Agency must provide "a reasoned explanation ... for disregarding facts and circumstances that underlay or were engendered by the prior policy" and must provide a "more detailed justification than what would suffice for a new policy created on a blank slate." *Fox Television*, 556 U.S. at 515-16. The present Proposal fails to provide the required reasoned explanation for why its prior findings, detailed in Part III.A above, regarding maintenance incentives, anti-tampering, serviceability, and defect reporting are no longer controlling.

Indeed, EPA essentially ignores these factors and the robust record EPA developed in 2023. Although EPA acknowledges it previously relied on "long-term improvements to component quality and serviceability" to justify longer warranty periods, it does nothing more than dismiss these benefits as "uncertain," without any data or further analysis. 91 Fed. Reg. at 43,162. Likewise, EPA states that it "believes" its proposed shortened warranty periods "would continue to ensure that the regulated industry would design and warrant robust emission control technologies," yet it provides no data or analysis to support this, let alone explain why its prior positions on maintenance incentives, anti-tampering, serviceability, and defect reporting are invalid. 91 Fed. Reg. at 43,163. EPA's out of hand dismissal and silence as to its prior positions is a far cry from the "more detailed justification" for disregarding the facts underlying its prior

[76] Comments of the California Air Resources Board in Response to the U.S. Environmental Protection Agency's Request for Comments on Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards, at 82 (May 2022), EPA Docket No. EPA-HQ-OAR-2019-0055-1186, att. 2, *available at* https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1186.

policy that it is required to provide, *Fox Television*, 556 U.S. at 515, particularly given the extensive record EPA developed on these issues in the 2023 Rule.

Another central justification of the 2023 Rule's warranty periods was that the prior warranty periods created a large gap between useful life and warranty protections, as MY 2026 warranty periods covered a mere 22% to 54% of engine useful life. 88 Fed. Reg at 4,362. EPA's Proposal recreates this significant coverage gap, yet EPA fails to even acknowledge this issue, let alone justify it. Reverting to MY 2026 warranty durations while retaining longer regulatory useful-life obligations creates a severe structural gap: engines will be legally required to meet emission standards, but vehicle owners—rather than manufacturers—will carry the entire financial burden of additional emission-related repairs. This dynamic creates direct financial incentives for vehicle operators to defer necessary maintenance or resort to illegal emission-control tampering.

According to EPA's DRIA modeling, under the proposed rollback, Heavy HDEs could be expected to operate in commercial service for 3 to 5 years with applicable emission standards but zero manufacturer repair obligation. DRIA at 15, tbl.2-2. For urban transit buses, the uncovered operational window modeled by EPA spans an extraordinary 8 to 9 years. DRIA at 15, tbl.2-2.

Worse yet, this coverage gap widens dramatically over time. Beginning in MY 2030, when regulatory useful life finally increases to 11 years or 650,000 miles while the warranty remains permanently frozen at 5 years or 100,000 miles, roughly 550,000 miles of legally regulated commercial operation—over 84% of the vehicle's regulated life—will be left completely uncovered by federal warranty protection. DRIA at 13, tbl.2-1. By maintaining the low warranty period at the same time EPA ultimately appropriately increases the regulatory life to better reflect expected lifetime of an engine, EPA exacerbates the very problem it tried to fix in the 2023 Rule, all while failing to acknowledge or justify this concern.

The risk of recreating a multi-year coverage gap between warranty and useful life is underscored by the physical engineering of modern diesel aftertreatment. Uncontrolled heavy-duty diesel engines produce raw, engine-out NOx emissions in the range of at least 3.0 to 4.0 g/bhp-hr[77] and, based on some manufacturer data, even higher levels of emissions. *See* Part IX.D. To meet the pre-2027 standard of 0.20 g/bhp-hr, SCR systems must operate at greater than 90% conversion efficiency. To achieve the MY 2027 standard of 0.035 g/bhp-hr, aftertreatment systems must maintain 98–99% conversion efficiency.

Because compliance depends on sustaining conversion efficiency in the high nineties, comparatively modest hardware degradation carry very large consequences for tailpipe emissions. EPA's own emission modeling quantifies them. For MY 2027-28 Heavy HDEs, EPA assigns a NOx aftertreatment sensor failure a 1,629% NOx emission effect and a complete aftertreatment malfunction a 3,339% effect, rising to 1,643% and 3,386% respectively for MY 2029 and later. DRIA at 17, tbl.2-4. These are EPA's own tampering and mal-maintenance

[77] Southwest Research Institute, *Demonstration of Low NOx Technologies and Assessment of Low NOx Measurements in Support of EPA's 2027 Heavy Duty Rulemaking*, at 230-35, tbls.A-1–A-6 (Dec. 9, 2022), EPA-HQ-OAR-2019-0055-2964; Southwest Research Institute, *Further Development and Validation of Technologies to Lower Oxides of Nitrogen Emissions From Heavy-Duty Vehicles: Low NOx Demonstration Program – Stage 3*, at 189 (April 2021), EPA-HQ-OAR-2019-0055-0934.

factors, drawn from MOVES, and they describe what happens to a single truck when the aftertreatment system stops working as designed. By rolling back warranty coverage to 100,000 miles, EPA leaves truck owners entirely unassisted in maintaining these complex, highly sensitive systems across 550,000 miles of regulated commercial operation, and it reduces the incentive of manufacturers to design parts to withstand operation for these hundreds of thousands of warranty-free miles.

EPA has quantified what this shift costs the people who own these trucks, though as described below it underestimates these costs. Under the No-Action case, lifetime emission-related repair costs for a MY 2027 HHDE long-haul combination truck total $21,415. DRIA at 44, tbl.3-10. Under the proposed action they rise to $28,712—an increase of $7,297 paid out of pocket by owners rather than by the manufacturer that built the hardware. DRIA at 44, tbl.3-10. For HHDE short-haul combination trucks the increase is $6,396, which more than doubles the owner's repair burden; for urban transit buses it is $2,270. DRIA at 44, tbl.3-10. EPA acknowledges these costs, DRIA at 76, tbl.6-1, but it never addresses who bears them or when. These distributional impacts are critical: any warranty savings are captured once, at purchase, by the first owner. But the repair cost arrives years later and falls disproportionately on the second and third owners, typically smaller fleets and owner-operators running these vehicles deep into a useful life during which the standards still apply and the warranty no longer does. When such secondary owners face out-of-pocket repair costs exceeding thousands of dollars for complex catalyst or sensor replacements, necessary maintenance will be deferred, causing individual trucks to emit raw, 1990s-era pollution levels while in active commercial service. This is precisely the problem EPA sought to solve in extending warranty periods in the 2023 Rule, but EPA does not address this significant issue. This failure renders the Proposal arbitrary and capricious because EPA has failed to justify its departure from its prior position or address these important aspects of the problem.

EPA fails to justify its departure from its prior position even as to its central rationale—cost. EPA contends new information it learned since the 2023 Rule shows that warranty costs "could be significantly higher for certain applications." 91 Fed. Reg. at 43,162. In providing its sole example of potentially heightened costs, however, EPA notes that those costs are "consistent with the 2023 Final Rule emission-related warranty cost analysis." *Id.* at 43,162, n.22. EPA cannot justify its departure from its prior position based on cost if the cost evidence before it now, by its own admission, essentially conforms with the evidence that was before it in 2023. Otherwise, EPA fails to present any specific cost data to support rationale, even though it "requested information from the top 14 highway and nonroad diesel engine manufacturers" about "warranty claims, failure rates, and repair information." 91 Fed. Reg. at 43,196. EPA's failure to disclose this data or any analysis of it to the public is unlawful, and it also suggests that the data does not support the agency's speculative claims of higher costs. EPA fails to carry its burden of explaining its change in position, let alone making a "rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)).

3. EPA has failed to consider reasonable alternatives to reverting to MY 2026 warranty periods.

The 2023 Rule's lengthened warranty periods were justified by an extensive record, and EPA should maintain those periods. However, EPA has an obligation when proposing a new approach to "consider the 'alternative[s]' that are 'within the ambit of the existing [policy].'" *Regents*, 591 U.S. at 30 (quoting *State Farm*, 463 U.S. at 51). EPA fails to consider any alternatives to reverting to MY 2026 warranty periods. For example, the Agency should have considered the merits of adopting a warranty period somewhere between its Proposal and the periods in the 2023 Rule, which could have reduced costs while minimizing the issues with the drastically shortened warranty period it proposed. EPA did not do so. EPA also failed to consider reducing the warranty period as to only a subset of vehicle types for which there may be actual evidence of significant, excessive warranty-related cost increases. These failures render the Proposal arbitrary and capricious.

4. EPA's cost-benefits analysis of the warranty proposal is arbitrary and capricious.

EPA's cost-benefit analysis is unreasonable, rendering the Agency's warranty rollback arbitrary and capricious. *See Window Covering Mfrs. Ass'n v. Consumer Prod. Safety Comm'n*, 82 F.4th 1273, 1288 (D.C. Cir. 2023).

First, EPA admits its proposed shortened warranty periods will increase emissions but assigns a $0 valuation to public health disbenefits. EPA projects that rolling back the emission warranty will increase national NOx pollution by approximately 36,673 tons in calendar year 2055, effectively erasing 12% of the total NOx reduction benefits promised by the 2023 Final Rule in that year. 91 Fed. Reg. at 43,162; DRIA at 20, tbl.2-7. Notably, EPA's inventory modeling attributes this entire NOx surge solely to altered hardware aging profiles, completely ignoring additional real-world emissions resulting from mal-maintenance (such as unaddressed Diesel Exhaust Fluid dosing failures) stemming from the Agency's concurrent proposal to eliminate performance derates. 91 Fed. Reg. at 43,208 n.145, 43,211. Despite documenting tens of thousands of additional tons of NOx, VOCs, and PM2.5 entering the air annually, EPA arbitrarily assigns a value of $0 to these public health and environmental disbenefits in its net benefit calculations. *See generally* DRIA at 75–77 (Comparison of Benefits and Costs). Treating admitted surges in toxic criteria air pollution as economically worthless while fully monetizing manufacturer compliance cost savings is a textbook violation of rational administrative decision-making.

Second, EPA's already significant emissions estimates meaningfully understate the emissions caused by its warranty rollback, rendering its analysis arbitrary and capricious. EPA's analysis is deficient in at least three respects. First, EPA dilutes the impact of its Proposal by including the emissions of all onroad HDVs, rather than only those impacted by the Proposal (i.e., MY 2027+ vehicles). Second, real-world measurement data of SCR-equipped heavy-duty diesel vehicles indicate that EPA/MOVES may be significantly underestimating emissions as vehicles age; real-world NOx emission rates for applicable vehicles age 6+ exceed MOVES rates by a factor of ~2.5-5.6. Third, EPA assumes that its proposed warranty revisions and inducements do not impact tampering and mal-maintenance (T&M) failure frequency rates (i.e., default T&M frequency rates are consistent across No-Action and Action cases). Consequently,

vehicle emission rates at the end of useful life are the same across cases, despite likely increases in T&M failure frequency that would result from proposed revisions.

Regarding the first deficiency, when focusing exclusively on MY 2027+ vehicles, the Proposal's impact on annual and cumulative emissions is much more significant, particularly for NOx and CO, as shown in this table produced by Environmental Resources Management (ERM) on behalf of commenter NRDC:

Table 2: Percent increase in NOx and CO emissions of Onroad MY 2027+ vehicles, Action vs. No-Action case

	NOx		**CO**	
	Annual	Cumulative	Annual	Cumulative
2027	94%	94%	3%	3%
2030	83%	90%	3%	3%
2035	30%	62%	2%	3%
2040	18%	36%	1%	2%
2045	14%	27%	1%	2%
2050	13%	22%	1%	1%

By comparison, the DRIA indicates that NOx only increases 4.2% in 2030 relative to the No-Action case because it includes the emissions of all on-road HDVs, rather than only those impacted by the Proposal (i.e., MY 2027+ vehicles). DRIA at 21, tbl.2-8.

As to the second deficiency, comparisons with real-world NOx measurements from SCR-equipped heavy-duty diesel vehicles indicate that MOVES increasingly underestimates emissions as vehicles age.[78] Real-world NOx measurements generally align with MOVES at earlier ages but exceed MOVES estimates by roughly 2.5 to 5.6 times for vehicles age 6 and older.[79] To account for this discrepancy and deterioration rates that are not fully captured by MOVES, Environmental Resources Management (ERM) performed a sensitivity analysis on behalf of commenter NRDC to estimate the emissions impact of applying age-specific adjustment factors derived from measured emissions data to EPA MOVES for diesel long-haul combination trucks (MOVES source 62) ages 6+. Real-world NOx measurements for SCR-equipped vehicles were obtained from the University of Denver FEAT Heavy database and the Brigham Young University Heavy-Duty Vehicle Emissions database. Vehicles were verified as SCR-equipped using EPA certification records, and age-specific average emission rates were developed from measurements collected between 2010 and 2024. Emission rates were capped at the oldest ages with sufficient observations (age 7 for MHD and age 9 for HHD). Detailed results

[78] *See* Amber Gurecki Allen et al., *Comparison of Road-Side Emissions Measurements from Heavy-Duty Diesel Vehicles to MOVES5*, 16 Atmosphere 1244 (2025), *available at* https://doi.org/10.3390/atmos16111244.

[79] A. Allen et al, *Heavy-Duty Diesel Vehicle Deterioration: Impact of Vehicle Age and Emission Control Technology on NOx Emissions*, presented at the Coordinating Research Council Real World Emissions Workshop (2026).

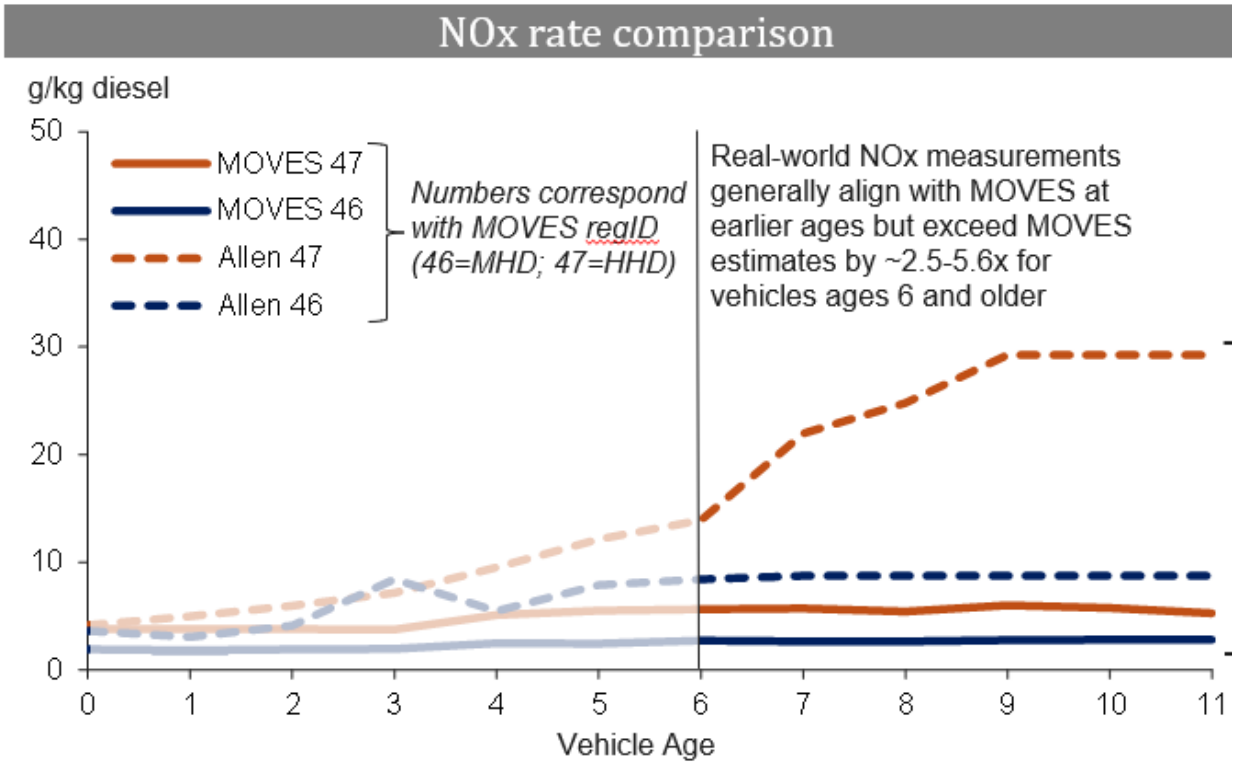
are provided in the spreadsheet "HDV_rollbacks_emission_analysis_summary_data," tab "Real_World_NOx," uploaded to the docket with our comments.

These age-specific adjustment factors are shown in the table and graph below: real-world measurements are available for regID 46 ages 0-10 (i.e., adjustment factor for age 10 applied for all subsequent years) and real-world measurements are available for regID 47 ages 0-11 (i.e., adjustment factor for age 11 applied for all subsequent years):

Table 3: Comparison of MOVES and real-world NOx emission rates, by vehicle age

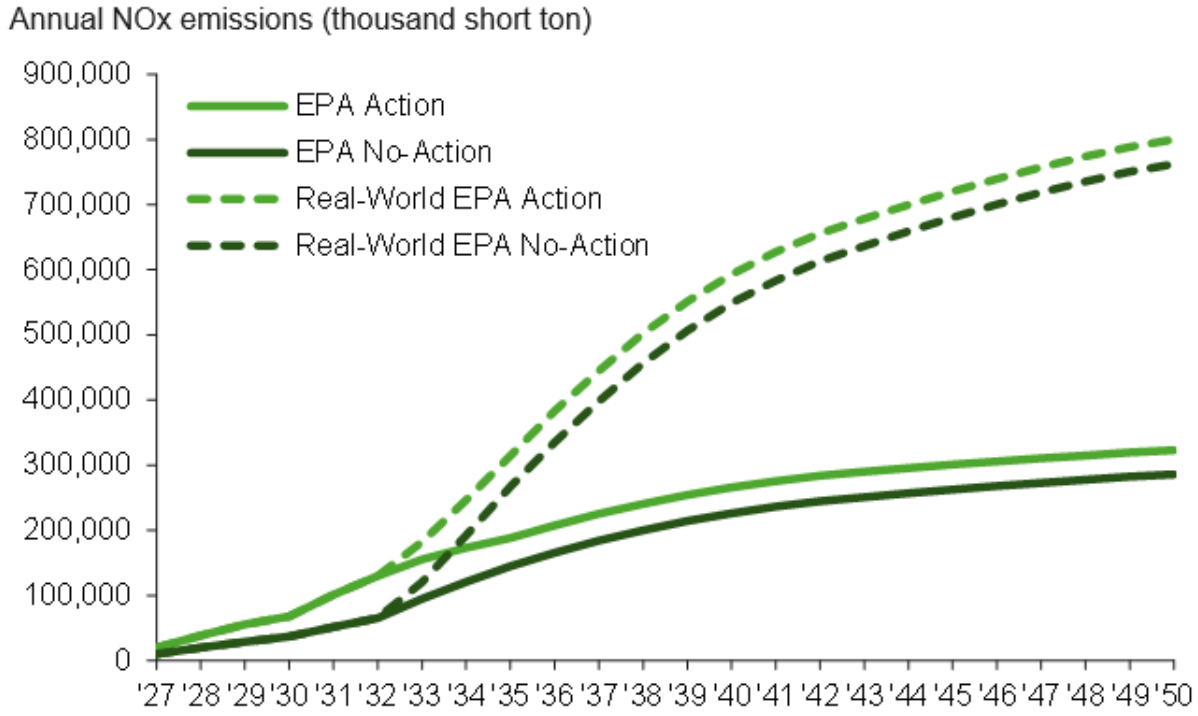
	MOVES ID		NOx rate (g/kg diesel, by vehicle age)											
Source	Source	Reg	0	1	2	3	4	5	6	7	8	9	10	11
EPA MOVES	62	46	1.92	1.83	1.90	1.93	2.47	2.42	2.71	2.65	2.65	2.74	2.80	2.80
EPA MOVES	62	47	3.77	3.78	3.77	3.73	5.11	5.51	5.65	5.73	5.40	6.02	5.74	5.27
Allen et al.	62	46	3.62	3.05	4.13	8.42	5.48	7.89	8.41	8.74	8.74	8.74	8.74	8.74
Allen et al.	62	47	4.17	4.97	5.97	7.15	9.53	12.15	13.88	21.95	24.79	29.25	29.25	29.25
Allen vs. MOVES	62	46							3.10	3.30	3.30	3.19	3.13	3.13
Allen vs. MOVES	62	47							2.46	3.83	4.59	4.86	5.09	5.55

Figure 1: NOx Rate Comparison



Based on these updated NOx emission rates, ERM modeled much higher annual NOx emissions (for M&2027+ vehicles only) for both the Action and No-Action cases, as shown in the graph below:

Figure 2: Annual NOx Emissions



Accordingly, ERM's sensitivity analysis shows that the DRIA's projected NOx emissions (for both the No-Action and Action cases) are significantly underestimated. Real-world measurements show substantially higher NOx emissions from older SCR-equipped vehicles than predicted by MOVES, indicating that long-term deterioration in emissions may be greater than currently modelled. Indeed, long-haul combination trucks are responsible for over half of all HDV NOx emissions; application of these real-world rate adjustments significantly increase NOx emissions across both Action and No-Action cases (>150% increase in annual emissions by 2050).

The discrepancy between MOVES and real-world measurements may reflect the influence of maintenance practices, tampering, repair decisions, or other in-use factors that are not fully captured in the model. In other words, these real-world data indicate that T&M frequency may be higher than currently assumed by EPA and MOVES, and if MOVES incorporated more accurate, real-world emission rate data, increasing the T&M frequency rate in the Action case would result in even higher incremental emissions relative to No-Action. Consequently, the extended warranty and useful life provisions of the 2023 Final Rule—which would likely reduce current T&M frequency—provide a larger real-world emission benefit than estimated by EPA. This Proposal makes changes, including reducing the warranty periods, reducing useful life, and chances to inducements that would increase T&M frequency. Indeed, vehicle emission rates after expiration of the emission-related warranty are extremely sensitive to T&M effects (both failure frequency rates and emission effects). Accordingly, EPA is very likely underestimating the emissions impact of its proposed changes to the warranty periods.

Regarding the third deficiency, EPA wrongly assumes that the proposed warranty revisions do not impact T&M failure frequency rates (i.e., default T&M frequency rates are consistent across Action and No-Action cases). As noted above, real-world measurements indicate that the MOVES model is likely underestimating the influence of maintenance practices, etc., and that therefore T&M failure frequency may currently be higher than assumed by EPA and MOVES. However, warranty and useful life have a direct impact on T&M frequency: EPA notes that "[t]he new useful life periods require manufacturers to demonstrate at the time of certification that the emission controls on their MYs 2027 and later engines are durable over the longer periods," 91 Fed. Reg. at 43,157, and the required maintenance intervals for the longer useful life are at a lower frequency than those under the current useful life.[80] Additionally, EPA noted that longer warranty periods incentivize manufacturers to reduce in-use failures, 91 Fed. Reg. at 43,162, which directly impacts T&M frequency. In other words, EPA itself has identified that the T&M frequency is directly related to the proposed changes but has not modeled its impact.

In addition to the ways EPA has stated its Proposal would affect T&M frequency, it is important to note one that the Agency failed to consider: its proposed elimination of inducements is further likely to impact the rate of maintenance. Inducements serve a purpose, to ensure that operators that would otherwise not be impacted by faults in the aftertreatment system promptly repair any such issues, thus avoiding harmful emissions related to faulty pollution controls. 91 Fed. Reg. at 43,194. As noted in Section IX.A, EPA has not detailed why the sudden elimination of the central tool manufacturers have used to ensure emissions controls operate over the entire lifetime of the engine would not impact such operation. In fact, the converse is true—elimination of inducements is likely to reduce the frequency with which emissions controls are maintained. This represents another way in which EPA's Proposal would be expected to have a lower rate of maintenance and thus higher T&M failure frequency.

Because EPA's Action and No-Action cases assume the same T&M emissions effect, any increase in T&M failure frequency because of proposed revisions will increase Action case emissions. To demonstrate the impact of changes to T&M frequency rates on Action case emissions, ERM has modelled a range of scenarios that reflect different levels of increased T&M frequency. Detailed results are provided in the spreadsheet "HDV_rollbacks_emission_analysis_summary_data," tab "Warranty_UsefulLife_T&M," uploaded to the docket with our comments.

As shown in the tables below, even a modest 10% increase in T&M failure frequency significantly increases Action case emissions and results in much higher incremental emissions relative to the No-Action case than presented in the DRIA. ERM modeled this by increasing default MOVES T&M failure frequency rates, applied to all potential failures (e.g., a 10% increase in T&M frequency results in a 10% increase in the T&M adjustment factor).

[80] EPA explicitly notes this, proposing to reduce maintenance intervals due to the shorter useful life for MY 2027-2029: "The EPA is proposing to revise Table 1 to paragraph (a)(2) of § 1036.125 to allow shorter minimum maintenance intervals for catalyst substrates and particular filter substrates before MY 2030, consistent with proposal to delay the longer regulatory useful life periods for heavy-duty engines." 91 Fed. Reg. at 43,169.

Table 4: Increase in Action case emissions from 10% increase in T&M failure frequency rate

	Annual (short ton)			Cumulative (short ton)		
	2030	2040	2050	2030	2040	2050
NOx	3,063	17,559	21,215	8,556	132,471	332,011
PM2.5	3	21	25	8	152	387
VOC	11	65	71	28	493	1,196
CO	592	3,923	4,756	1,625	29,015	73,737

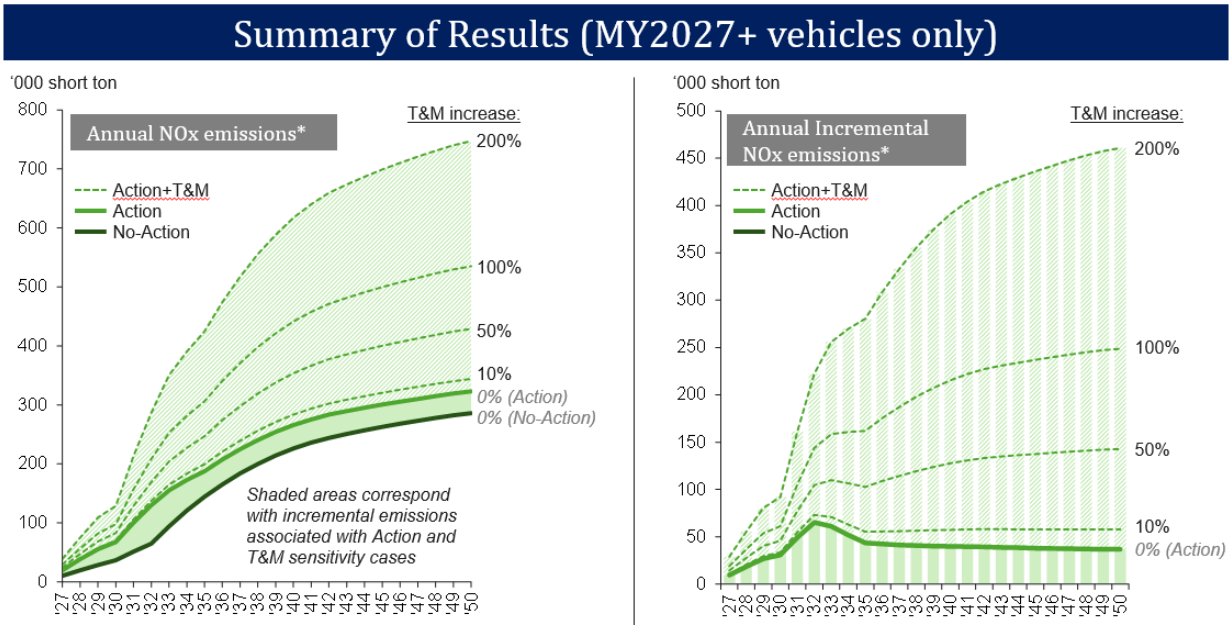
Table 5: Increase in emissions relative to No-Action case from 10% increase in T&M failure frequency rate (short ton and percent increase in incremental emissions)

	Annual (short ton)			Cumulative (short ton)		
	2030	2040	2050	2030	2040	2050
NOx	33,659 *(10%)*	57,325 *(44%)*	57,852 *(58%)*	94,041 *(10%)*	692,407 *(24%)*	1,270,961 *(35%)*
PM2.5	32 *(10%)*	70 *(42%)*	71 *(55%)*	88 *(10%)*	812 *(23%)*	1,521 *(34%)*
VOC	95 *(13%)*	186 *(53%)*	187 *(61%)*	257 *(12%)*	2,165 *(30%)*	4,049 *(42%)*
CO	6,488 *(10%)*	12,413 *(46%)*	12,793 *(59%)*	17,822 *(10%)*	145,771 *(25%)*	272,935 *(37%)*

As these tables show, the emissions impact of the Action case is highly sensitive to changes in T&M frequency rates. For example, a 10% increase in T&M rates increases cumulative Action case NOx emissions (2027-2055) by around 6.5%.

The following graph shows the impact of a wider range of T&M rate increases on emissions, as modeled by ERM.

Figure 3: Summary of Results (MY 2027+ Vehicles Only)



As noted above, EPA unreasonably failed to quantify or estimate the societal costs associated with increased emissions caused by the warranty rollback. In doing so, EPA ignored significant social costs, presenting a skewed cost benefit analysis. ERM estimated health and societal impacts of the DRIA Action case and sensitivity analyses based on various T&M frequency rates using incremental state-level emissions and per ton values derived from EPA's CO-Benefits Risk Assessment (COBRA) tool.[81] ERM performed all analyses at a national level and downscaled data using MOVES state-level Vehicle Miles Traveled (VMT) apportionment by vehicle type. Detailed state- and national-level health and societal impacts are provided in the spreadsheet "Action_T&M_health_impacts," uploaded to the docket with our comments. ERM modeled emissions through 2050; to enable 2027-2055 cumulative values, 2051-2055 values were assumed to stay constant for both emissions and COBRA factors.

Based on ERM's analysis, the below table provides estimates of premature mortality and total societal health costs resulting from incremental emissions associated with 1) the DRIA Action case and 2) a 10% increase in T&M failure frequency rates:

[81] For the purposes of this analysis, ERM used incidence and monetary value (2024$) per ton factors (2% discount). CO was not included in this analysis because COBRA factors were only available for NOx, PM2.5, and VOC.

Table 6: Cumulative health impacts (2027-2055; low-high estimates) associated with Action case and 10% increase in T&M frequency rate

	Mortality	Societal costs (2024 billion USD)
Action	5,850-7,690	$98-$126
10% T&M increase	2,300-3,010	$38-$49
Total	**8,150-10,700**	**$137-$175**

As this table shows, the Action case has significant societal costs that EPA failed to quantify. Additionally, a 10% increase in T&M frequency rates increases Action case premature mortality and societal costs by around 40%.

Finally, EPA's cost analysis is flawed in a few ways. First, EPA's cost analysis is methodologically asymmetric. EPA counts 100% of the upfront warranty "cost savings" for every vehicle purchased through the final analysis year of 2055. DRIA at 42. However, the Agency defines "lifetime" out-of-pocket emission repair costs incurred by truck owners strictly "through the final year of this analysis, 2055." DRIA at 40, 76, tbl.6-1. This methodology creates a severe analytical asymmetry: vehicles purchased in the later years of the modeling window (e.g., a MY 2050 or MY 2054 truck) receive full credit for upfront purchase-price warranty savings, but the corresponding emission repair expenses and pollution impacts that occur over those vehicles' 10- to 15-year operational lives beyond 2055 are truncated or completely omitted. This temporal mismatch artificially inflates upfront savings while disregarding long-term repair costs, understating the true costs of the rollback and biasing the net program calculations in favor of the rollback.

Second, the underlying cost inputs in EPA's analysis are based primarily on American Transportation Research Institute (ATRI) studies published in 2019 and 2021, adjusted to 2024 dollars, but more recent data are now available. ATRI releases updated repair and maintenance cost estimates every year that reflect current trucking industry operating conditions and costs.[82] EPA must incorporate these updated values into its analysis. ERM, on behalf of NRDC, compared the marginal repair and maintenance costs between the older studies and the newest study released in July 2026, as shown below:

Table 7: Comparison of repair and maintenance costs across ATRI studies

Source	Repair cost per mile (2024$/mi.)	Repair cost per hour (2024$/hr.)
2021 ATRI study	0.198	7.90
2026 ATRI study	0.201	9.11

[82] American Transportation Research Institute (ATRI), An Analysis of the Operational Costs of Trucking: 2026 Update (2026), https://truckingresearch.org/wp-content/uploads/2026/07/ATRI-Operational-Costs-of-Trucking-07-2026.pdf.

Using the 2026 ATRI data and updated MOVES5.R2 activity projections used in the DRIA, ERM recalculated the emission-related repair cost inputs applied in EPA's analysis. When incorporated into EPA's methodology, the updated costs increase the estimated value of owner/operator repair costs by approximately $900 million (present value, 3% discount rate, 2024 dollars). Detailed results have been provided in a spreadsheet titled "Emissions_related_repair_cost_results," uploaded to the docket with our comments.

In sum, EPA meaningfully underestimates the emissions caused by its warranty rollback, fails to account for the billions of dollars of societal costs caused by those emissions, and understates the repair costs of its action, rendering its analysis arbitrary and capricious.

IV. EPA's Useful Life Proposal Is an Arbitrary and Capricious Exercise of Its Authority under Section 202(D).

Section 202(d) directs the EPA Administrator to prescribe regulations establishing the regulatory useful life over which motor vehicle emission standards apply. For heavy-duty engines and vehicles, Congress established a statutory baseline floor of 10 years or 100,000 miles, "whichever first occurs," but explicitly authorized EPA to mandate longer useful life periods whenever the Administrator determines that "greater values are appropriate." 42 U.S.C. § 7521(d). In establishing useful life, EPA should exercise its discretion so as to enable the greatest achievable emissions reductions. In the 2023 Rule, EPA did just that after concluding that existing useful life periods failed to reflect the actual operational lifespan of modern commercial vehicles and left engines unregulated over hundreds of thousands of miles of heavy commercial use. 88 Fed. Reg. at 4,306-07. EPA developed a robust record to support the 2023 Rule and found the MY 2027 standards and longer useful-life periods feasible and consistent with Section 202. 88 Fed. Reg. at 4,359-62.

EPA now proposes to temporarily withdraw and delay those longer useful life periods for MY 2027 through 2029, reverting to the legacy MY 2026 useful life durations during those years. EPA fails to adequately explain its change in position. The Agency acknowledges that any gap between regulatory useful life and real-world operational life "represents miles and years of operation without an assurance that emission standards will continue to be met." 91 Fed. Reg. at 43,163. Yet EPA nonetheless proposes to delay implementation of extended useful life periods, effectively reducing the aggregate stringency of the MY 2027–2029 program by allowing heavy-duty engines to emit uncontrolled pollution during the second half of their operational lives without manufacturer accountability. What's more, EPA "does not expect manufacturers who have products ready for MY 2027 to change their emissions control technology plans for the MYs 2027 through 2029 period because of this proposed change," and it assumes zero cost savings from this Proposal. 91 Fed. Reg. at 43,164. EPA has acted arbitrarily and capriciously by proposing a regulatory rollback that lacks a cost-saving rationale, while creating compliance ambiguity and weakening environmental protection, as explained in further detail below.

A. Useful Life Is an Integral Component of Regulatory Stringency Under Section 202(A)(3)(A)(I) of the Clean Air Act.

Regulatory useful life is an integral part of the emission standard. Under Section 202, heavy-duty criteria pollutant standards must reflect the "greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the model year to which such standards apply." 42 U.S.C. § 7521(a)(3)(A)(i). As EPA itself affirmed in the 2023 Rule, it set "new more stringent standards through both the numeric level of the standard and the length of the useful life period." 2023 Rule RTC at 1312 n.63. The numeric standard and the useful life period are deeply interrelated; a numeric standard is only as effective as the duration over which it is required to be maintained in real-world service.

B. Existing Regulatory Flexibilities Already Accommodate In-Use Uncertainty Without Weakening Useful Life, and Longer Useful Life Periods Remain Feasible.

When EPA finalized the longer useful life periods in 2023, it did so based on a robust record. The Agency built a comprehensive suite of compliance flexibilities specifically designed to cushion manufacturers against in-use durability uncertainties. These mechanisms included accelerated-aging bench testing procedures, a 15 mg/hp-hr in-use compliance margin added on top of certification limits for MHDE and HHDE, and added portable emission measurement system (PEMS) accuracy margins. 91 Fed. Reg. at 43,163.

Although EPA acknowledges these flexibilities associated with in-use uncertainty in the Proposal, it fails to offer any explanation or data showing why these multi-layered safeguards are suddenly inadequate to manage in-use uncertainty. 91 Fed. Reg. at 43,163. To the contrary, EPA affirmatively reports that manufacturers are currently "actively applying the accelerated aging procedures for their MY 2027 engine certification and the EPA continues to receive data on those activities." 91 Fed. Reg. at 43,163. In other words, even the Proposal's record indicates that manufacturers are applying the regulatory tools established in 2023, and EPA has presented no new data or technical studies demonstrating that longer useful life periods are infeasible.

Indeed, EPA does not really contest that the useful life periods adopted in the 2023 Rule remain feasible. Rather, EPA's principal contention as to feasibility is merely that some OEMs have "expressed concern with the uncertainty of in-use performance of their new technologies over the full useful life for the range of vehicle applications." 91 Fed. Reg. at 43,164. As EPA frames it, this uncertainty is based on "limited data" about compliance during the longer useful life periods. 91 Fed. Reg. at 43,157, 43,164. But such generic OEM uncertainty, with no data to back it up, cannot override the Clean Air Act's technology-forcing mandate, particularly on this record. As described above, EPA does not contest the compliance flexibilities meant to address in-use durability uncertainties. Additionally, the "limited data" EPA invokes does not accurately reflect the record on emission control durability at these mileages. The 2023 Rule's useful life determination was grounded in a multi-year, EPA-funded laboratory program in which a 2017 Cummins X15 heavy heavy-duty engine was aged under the DAAAC accelerated aging protocol

and emission-tested at the equivalents of 435,000, 600,000, and 800,000 miles.[83] EPA reproduced those results in the 2023 Final Rule as Tables III-7 through III-10 and relied on them to conclude that the MY 2027 standards were feasible at a 650,000-mile useful life. 88 Fed. Reg. at 4,341-42.

EPA fails to rebut this data, despite relying on OEMs' self-interested durability concerns to reverse its position. And EPA's rationale has a more fundamental flaw: generic uncertainty about real-world compliance with a new standard is not a reasonable basis to conclude technology is infeasible; rather, such uncertainty is inherent in new regulatory programs at the outset. OEMs have had the full statutory lead time to test and design systems to comply with the extended useful life period, and regulated industries routinely test designs to meet new standards without having complete data. EPA's reliance on uncertainty when its own study provides evidence that such concerns are misplaced is unfounded, especially without any countervailing data.

Moreover, despite relying on self-reported OEM concerns, EPA admits that most OEMs "will have a full lineup of products ready to meet the MY 2027 standards." 91 Fed. Reg. at 43,159. Regarding useful life, EPA acknowledges that "some manufacturers have indicated that they are on target to meet the requirements of the longer useful life periods, including in-use performance." 91 Fed. Reg. at 43,163-64. On its face, this concession proves that extended useful life is technologically feasible for MY 2027. Even as to those OEMs with "concerns," EPA reports that these manufacturers say "they can potentially meet the certification requirements" and the Agency acknowledges that OEMs "have spent four or more years developing and testing engines, both in the laboratory and in vehicles with their low volume pre-production engines, to ensure that their engines will be durable and able to meet the standards for the longer useful life." 91 Fed. Reg. at 43,164. Furthermore, EPA does not contest the continued technology feasibility of the emissions control technologies identified in the 2023 Rule.

EPA's deference to OEM concerns about "compliance uncertainties" and preference to collect more data from commercialized products also violates the core statutory architecture of the Clean Air Act. Section 202 is fundamentally technology-forcing: Congress expected EPA to "press for the development and application of improved technology rather than be limited by that which exists today," *Natural Res. Def. Council, Inc. v. EPA*, 655 F.2d 318, 328 (D.C. Cir. 1981) (quoting S. Rep. No. 1196, 91st Cong., 2d Sess. 24 (1970)), and to force the industry "to develop pollution control devices that might at the time appear to be economically or technologically infeasible," *Union Elec. Co. v. EPA*, 427 U.S. 246, 257, (1976). *See also Int'l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 621 (D.C. Cir. 1973) ("Congress was aware that these 1975 standards were 'drastic medicine,' designed to 'force the state of the art.'").

Technology-forcing regulations inherently require predictive engineering projections. Indeed, "premising protective emission standards on rapid technology adoption has been a mainstay of section 202(a) regulation since the earliest days of the Act." 2024 Multipollutant

[83] Southwest Research Institute, *Demonstration of Low NOX Technologies and Assessment of Low NOx Measurements in Support of EPA's 2027 Heavy Duty Rulemaking*, at 1-2, 31, 52-53 (Dec. 9, 2022), EPA-HQ-OAR-2019-0055-2964; *see also* EPA, *Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards – Regulatory Impact Analysis*, 115-18, tbls.3-8–3-10 (Dec. 2022).

Rule RTC at 314 (https://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P1019WE6.pdf). The history of catalytic converters demonstrates this well. "In 1971, EPA finalized standards for MY 1975, just three model years away, based on catalytic converter technology,' even though they were "not yet in widespread commercial production." *Id.* at 315. EPA required them because it believed they would become available in "the lead-time permitted." *Id.* Despite industry opposition that the "technology would not be ready in time," automakers made the deadline and "began installing catalytic converters on their vehicles that achieved 85% reductions in emissions." *Id.* The technology-forcing principles behind requiring catalytic converters, which were not yet commercially available when the rule was adopted, apply with even more force here, since the technology in the 2023 Rule were already commercially available.

In short, the simple fact that newly engineered MY 2027 engines have limited real-world commercial mileage today is not a reasonable basis to weaken useful life.

C. The Delay Penalizes Front-Runner Manufacturers and Undermines Reliance Interests.

By rolling back environmental protections based on the performance of technological laggards, EPA undermines the reliance interests of frontrunner (and even average) manufacturers who complied with the law, invested heavily in research and development, and successfully engineered MY 2027 products capable of meeting longer useful life standards on schedule. Regulatory stability is essential for capital-intensive commercial vehicle manufacturing, and EPA is obligated to consider these reliance interests. 91 Fed. Reg. at 43,161 & n.17. EPA's assurance that the proposed revisions "relieve obligations in a manner that promotes compliance and cost savings without undermining existing investments in compliance," 91 Fed. Reg. at 43,161, is asserted, not demonstrated. To the contrary, EPA admits that some manufacturers "are on target to meet the requirements of the longer useful life periods, including in-use performance," and it has delayed the useful life periods to accommodate uncertainty among an unspecified number of laggards. 91 Fed. Reg. at 43,163-64. In other words, EPA is effectively penalizing companies that proactively invested in clean engine technology while granting administrative relief to reluctant competitors, creating a perverse regulatory incentive structure. Moreover, this signals to the regulated community that aggressive opposition and delayed investment will be rewarded with rule rollbacks, directly undermining future technology-forcing standards under the Clean Air Act.

D. EPA's Projection of Zero Cost Savings Exposes the Absence of a Rational Economic Basis.

A central defect of the proposed useful life delay is that it fails to provide economic benefit to offset its regulatory disruption, further reinforcing the insufficient rationale for weakening useful life. EPA expects manufacturers that have already finalized hardware designs and incurred the necessary expenses to certify their MY 2027 engines will not alter their emissions-control hardware or reduce production expenditures for a temporary three-year delay. 91 Fed. Reg. at 43,164; DRIA at 38-39. As to those manufacturers "that have not completed their durability demonstration for the longer useful life," EPA speculates that they could see a "a small reduction in testing costs that manufacturers could pass on to their customers." 91 Fed. Reg. at 43,164. Yet even EPA appears to acknowledge that such unspecified, small cost savings are too

uncertain to account for, choosing to "project[] no change in costs" from the proposed change to useful life. 91 Fed. Reg. at 43,164. Because truck buyers will receive zero (or at best, a speculative, minimal) purchase-price discount and manufacturers will realize no cost savings, EPA's proposal to delay useful life lacks even a basic cost-reduction justification.

E. The Proposed Useful Life Delay Undermines Emissions Benefits and Inflates Credit Values.

Under the proposed delay, the gap between regulatory useful life and operational life widens dramatically for MY 2027–2029 engines. For Heavy HDEs and urban transit buses, useful life reverts from 650,000 miles back down to 435,000 miles—leaving 215,000 miles of active commercial operation completely unmonitored and unprotected by federal standard. DRIA at 13, tbl.2-1. This is precisely thegap that the 2023 Rule sought to close, because otherwise the gap is liable to be filled with increased emissions.

Given all this, it is unsurprising that in the 2023 Rule, EPA estimated "18 percent fewer NOx emissions in 2045 due to the longer useful life and warranty periods reducing the likelihood of tampering and mal-maintenance after the current useful life periods of heavy-duty CI engines." 88 Fed. Reg. at 4,419.

EPA now asserts that its Proposal to change useful life for MY 2027-2029 HHDEs will have "no impact on NOx inventory … in the analysis years with the exception of urban buses." 91 Fed. Reg. at 43,211. This is absolutely incorrect. EPA models the emission changes from different useful life by shifting the time point where the emissions rate from a vehicle reaches its final level which it remains at for the remainder of the miles driven. So by shifting the end of useful life sooner, MY 2027-2029 vehicles spend more years at the highest emission rate. This concept is shown in Figure 2-1 of the DRIA. In addition to looking at the simple formula EPA uses, one can also look at the emissions EPA reports in its DRIA for NOx (Table 2-13). The increase in emissions from NOx reaches a maximum in 2032 with over 65,000 tons before dropping to around 40,000 tons in 2039 and very slowly sloping down to around 37,000 tons by 2055. This pulse of increased emissions between 2031 and 2034 is exactly the signal of the increased emissions from the changes to the useful life. In the Preamble, because EPA only considers 2030, 2040, 2045, and 2055, the Agency misses the emissions increase from the change in useful life. EPA could not claim that no change in NOx inventory occurred if it had correctly examined the DRIA where the annual emissions are listed or instead displayed the impacts as cumulative instead of annual. Yet, as with EPA's emissions estimates for the warranty rollbacks, EPA's assertion that changing useful life will have no impact on NOx inventories ignores the fact that shortening useful life periods will increase the likelihood of T&M, leading to increases in emissions. The critiques of EPA's approach to emissions estimates in Section III.B.4 above therefore apply here as well. In particular, though it is impossible to know how much T&M rates will increase because of shortened useful life, EPA's failure to model or consider that obvious possibility or accurately capture the ways its changes to useful life increase emissions is arbitrary and capricious.

F. Delaying Useful Life Retroactively Inflates Credit Values and Weakens Early Program Stringency.

A severe consequence of delaying useful life is that it retroactively increases the trading value of banked emission credits, artificially diluting real-world pollution reductions during the early years of the program. 91 Fed. Reg. at 43,164-65. In the 2023 Final Rule, EPA established an exchange calculation where Heavy HDE credits earned under pre-2027 rules are "used at a 1.49 times greater rate than earned" when applied against a 650,000-mile useful life standard, reflecting the fact that MY 2027 standards cover significantly more operational miles. 91 Fed. Reg. at 43,165. By delaying the 650,000-mile useful life requirement to MY 2030, EPA enables manufacturers to surrender banked credits at face value (a 1.0 exchange rate) against MY 2027–2029 engines. 91 Fed. Reg. at 43,165. EPA admits that this policy shift "will positively impact the NOx credits manufacturers have accrued from selling MY 2022 and later engines" and allow OEMs to "extend the use of credits already earned for a longer period and/or apply those credits to a larger volume of engines." 91 Fed. Reg. at 43,165.

Based on projected MY 2027 compliance (*see* Section V.A.), it is estimated that the delay in useful life will result in a reduction of 41,576 Mg NOx credits' worth of deficits needed to be offset in MY 2027-2029 for manufacturers to be in compliance with the regulation, a larger sum than the number of credits with which manufacturers are projected to enter MY 2027. Whether that reduction simply acts as a windfall to increase credit availability for manufacturers to offset obligations in the future or reduces manufacturers deployment of cleaner engines in the MY 2027-2029 timeframe, those 41,576 Mg NOx credits represent a minimum level of metric tons of NOx emissions impact directly resulting from the increased availability of credits.[84]

Unlike prospective early-action credit pathways that accelerate the market introduction of cleaner technologies, this retroactive credit windfall delivers zero environmental benefit. It simply permits manufacturers to further offset real-world tailpipe emissions using less stringent, discounted credits, further eroding the pollution reductions promised to communities. Despite this, EPA fails to quantify the increased emissions due to this change.

G. EPA Improperly Fails to Monetize Public Health and Environmental Disbenefits.

EPA treats pollution increases as having zero economic cost. DRIA at 75. Ignoring well-established epidemiologic methodologies for valuing premature mortality, asthma exacerbations, and cardiovascular hospitalizations resulting from mobile source criteria pollution renders EPA's benefit-cost calculations fundamentally asymmetric and legally flawed. As detailed in Section III.B.4, increased T&M rates (which would also be caused by the useful life rollbacks) will increase emissions, causing significant social costs.

[84] As noted in Section V.e, the actual real-world impacts of the delay in useful are much greater, owing to the effect useful life has on tampering and mal-maintenance as well as the longer expected lifetime of the engines compared to the useful life. UCS modeling shows that delaying the implementation of the useful life has a significant impact on the emissions associated with MY 2027-2032 engines, leading to an increase of at least 340,000 tons NOx, a 15% increase in the total lifetime emissions associated with those engines. This proposed change alone would result in approximately 1,600 to 2,100 additional premature deaths and $24.2 to $28.4 billion in health-related harms.

H. Permanent Retention of Pre-2027 Useful Life Periods Is Indefensible and at Least Doubles Environmental Harm.

EPA requests comment on whether it should indefinitely freeze useful life periods at MY 2026 levels. 91 Fed. Reg. at 43,165. This permanent rollback is even less defensible than the proposed delay for the reasons described above. Additionally, according to EPA's own modeling, a permanent useful life freeze would nearly double the long-term environmental damage, increasing annual national NOx emissions by 61,255 tons in 2055, compared to 36,673 tons under the proposed action. DRIA at 20, tbl.2-7; DRIA at 23, tbl.2-11. Even this significant increase in emissions is almost certainly a meaningful underestimate of emissions, however, because EPA underestimates the emissions increases that will be caused by the useful life rollbacks for largely the same reasons detailed in Section III.B.4. MOVES underestimates NOx emissions compared to real world data, and the permanent rollback of the useful life periods would certainly increase T&M rates, yet EPA does not take that into account. Furthermore, EPA concedes that under a permanent freeze, it "would expect manufacturers to change the design of the emissions controls" to take cost and durability out of the aftertreatment hardware. 91 Fed. Reg. at 43,165; DRIA at 33. This admission confirms that a permanent freeze would trigger a harmful hardware-level backslide in commercial vehicle emission controls.

V. The Proposed Changes Related to Availability of Heavy-Duty Engine Credits for Compliance Are Arbitrary and Capricious and Will Lead to Dangerous Increased Emissions.

Under the averaging, banking, and trading (ABT) provisions of the heavy-duty engine emissions standards for NOx, manufacturers can earn credits (or incur debits) against the required emissions standard by certifying engines to an emissions limit below (or above) the required standard. 40 C.F.R. § 1036.705. Credits are used to offset any debits for an engine class. If there are sufficient credits available to offset all debits, a manufacturer can be deemed to be in compliance with a program even if not all their engines are certified to the required level.

The volume of credits is calculated in Megagrams based on the emission standard (in mg NOx/bhp·hr), the engine family's family emission limit (FEL) (in mg NOx/bhp·hr), the average work performed over the duty cycle (in bhp·hr/mi.), the number of engines eligible to participate in the averaging, banking, and trading program within the given engine family during the model year (MY), and the full useful life (FUL) associated with the standard applicable to the engine service class.

Because the magnitude of credits or debits is related to the FEL and FUL of the standard, EPA's proposed changes to the FEL cap and FUL have a substantial impact on the technology deployment necessary to meet the NOx standards due to differences in credit usages. This is equally true for provisions of the Proposal that alter any credit-related provisions, such as the HHDE legacy exemption.[85]

[85] In the final rule, a number of engines equivalent to 5% of the 2023-2025 HHDD production of a manufacturer were allowed to be certified to the 2007/2010 standards and sold in the 2027-2029 period if manufacturers had

The analysis by the Union of Concerned Scientists (UCS) described below[86] first quantifies the baseline availability of credits projected to be used under the current rules, discusses two proposed changes that are arbitrary and capricious (elimination of credit requirement from the 5% production allowance and extension of MY 2004-2009 credits), and then examines the emissions impacts of EPA's proposed credit-related changes. The analysis shows that the proposed changes that impact credit flexibilities—including the delayed useful life requirements described above, exemption of legacy engines from credit application, and extending the usage of MY 2004-2009 credits—leads to significant increases in emissions, which will result in damage to Americans' health and welfare. EPA does not adequately justify these changes, nor does the Agency appropriately consider their impacts on emissions and health, and therefore the standards are arbitrary and capricious and fail to "reflect the greatest degree of emission reduction achievable," as Congress instructed. 42 U.S.C. § 7521(a)(2).

A. EPA Failed to Assess Credit Availability; Our Analysis Projects Significant Availability of Transitional Credits to Comply with MY 2027+ Standards.

While EPA has provided its assessment of the credits available to manufacturers through MY 2024, DRIA tbls.1-2–1-8, it has not provided sufficient detail to understand how these credits may relate to engines sold or already on sale for MYs 2025 and 2026 which will yield additional credits, nor has the Agency provided sufficient information to estimate how these credits could be used.

To estimate transitional credits entering MY 2027, UCS used three primary data sources: 1) EPA engine production data through MY 2023;[87] 2) factory production data of heavy-duty engines in North America;[88] and 3) EPA certification data.[89] The engine production data through MY 2023 includes engine family and model information, which allows for the production information to be tied to certification data. To extrapolate these production values to MY 2024-2026, a manufacturer's total engine sales for each engine class were normalized based on the engine production data, which includes information on installed vehicle weight class.[90] MY 2024-2026 certification data includes engine families that are not represented in the EPA-reported production data—in order to extrapolate those data, UCS relied upon information

sufficient available credits to offset the emissions impacts of the engines. 88 Fed. Reg. at 4400. EPA has proposed to exempt these legacy engines from requiring their harmful emissions to be offset, 91 Fed. Reg. at 43,165.

[86] UCS, NOx Credit Calcs for 2027 Rollback.xlsx (data set).

[87] Data released by EPA's Office of Air and Radiation on January 29, 2026, in response to Freedom of Information Act Request 2025-EPA-03605.

[88] Omdia. 2026. Vehicle Production – North America Monthly. Dataset (collection). https://omdia.tech.informa.com/collections/afcit025/vehicle-production---north-america-monthly. Retrieved May 2024, December 2024, May 2025, December 2025, and May 2026 datasets on July 30, 2026.

[89] EPA. 2026. Heavy-Duty Highway Gasoline and Diesel Certification Data (Model Years: 2015 – Present). Dataset (updated June 2026). https://www.epa.gov/system/files/documents/2026-03/heavy-duty-gas-and-diesel-engines-2015-present.xlsx. Retrieved July 29, 2026.

[90] Because production data for 2026 was only available through May, we utilize the partial data for year-to-date (YTD) sales through May for 2024 and 2025 to estimate what share of annual sales typically occur through the first five months of the year and scale May 2026 YTD sales accordingly.

available in each family on engine power, volume, fuel, and other relevant characteristics to find an analogous engine family.[91]

Table 8: Projected Transitional Credits for Heavy-duty Diesel Engines (Mg NOx)

LHDD, Discounted	2022 EPA	2022 est.	2023 EPA	2023 est.	2024 EPA	2024 est.	2025 est.	2026 est.	Total	Trades	Adjusted
Cummins							442	451	893		893
Ford			1,176	1,165	1,278	1,313	938	1,030	4,422		4,422
GM					322	295	38	31	391	214	605
International			214	212					214	-214	0
MHDD, Discounted											
Cummins		91	64	106	10	7	5	2	81		81
Ford			197	209					197		197
HHDD, Discounted											
Cummins		572	261	957	582	568	426	489	1,758		1,758
Detroit Diesel	3,903	3,639	4,728	4,664	105	114			7,936		7,936
International							364	526	890		890
PACCAR						1,993	1,349	1,306	2,655		2,655
Volvo						696	607	1,686	2,293		2,293
MHDD, Partial											
Cummins					111	88	55		166		166
Detroit Diesel								34	34		34
Ford					400	408	292	320	1,012		1,012
HHDD, Partial											
Cummins					534	580	520	1,845	2,899	-64	2,835
Detroit Diesel					9,657	10,794	10,734	8,343	28,734		28,734
PACCAR									0	64	64

Because the published EPA certification information does not provide any data on whether the engine is certified to any requirements specific to the 2027 rules, it is not possible for commenters to explicitly identify the transitional program a manufacturer is planning to use for a given engine.[92] In order to assign credit generation for MY 2025 and 2026, UCS has closely matched MY 2024 credit generation reported by EPA, using test date as the first-best proxy certification to the additional requirements of the MY 2027+ standards.[93] For manufacturers that had not yet certified any engines to the additional requirements required for

[91] Most engine families are carried over year-to-year (e.g., Detroit Diesel DD15TCO VIII -- PDDXH14.8TCC [2023] □ RDDXH14.8TCC [2024]). However, in the case where an engine may be redesigned, there is frequently commonality between the previous- and next-generation engine models that allow for identification of engine family analogs (e.g., Detroit Diesel DD15TCO VIII -- RDDXH14.8TCC [2024] □ SDDXH14.8NXC [2025]).

[92] In other words, EPA failed to provide sufficient data for the public to assess this and other aspects of its proposal; as a result, we have made our best, reasoned effort to estimate this analysis to understand the impacts of the agency's proposal. To permit adequate public comment on its proposal, EPA should provide sufficient data and renewed opportunity for public notice and comment.

[93] Where this assumption failed to align with EPA's published MY 2024 credits, UCS relaxed this proxy and adjusted the transitional credit category for an engine family to align with the published MY 2024 results.

credit under the Partial Credit transitional program, all engines are assumed to be credited under the Discounted Credit transitional program.

Table 8, above, shows the resulting projected transitional credits earned, by manufacturer, engine class, and transitional credit program. UCS' projected MY 2022-2024 data (gray columns) are shown for comparison, but EPA's credit totals from the Proposal are used for MY 2022-2024 in aggregating manufacturers' credit banks for MY 2022-2026. Comparing the projected credit totals to EPA's in the years of overlap (MY 2022-2024) shows general agreement for most manufacturers. For PACCAR and Volvo HHDEs in MY 2024, however, there are families of engines expected to generate significant volumes of credits that do not show up on EPA's balance sheet.[94] Because the credit totals in MY 2022-2024 are limited to only those confirmed by EPA, any uncertainty is limited to MY 2025-2026, data which EPA has not provided. Table 8 shows EPA could project estimates for 2025 and 2026 credit generation, which it failed to do, and shows significant credit generation, particularly in the HHDE segment. For completeness, credit trading reported by EPA is included (the column "Trades") to better reflect manufacturers' credit balances entering MY 2027 (the column "Adjusted"). While it is likely that more manufacturer-to-manufacturer trading may occur given the large volumes of available credits, no additional trading has been projected.

Total transitional credit generation is estimated between MY 2022-26 at 54,575 Mg, which is more than twice the MY 2022-24 banked credits recognized in the DRIA. This roughly 55,000 Mg of transitional credits confers on the industry a sizable cushion for compliance. For comparison, this includes over 47,000 Mg of HHDE credits, which is *nearly 3 times* the amount of credits (17,206 Mg) needed to offset all legacy engines under the 5% production allowance, despite EPA's allegation that manufacturers lack insufficient offsetting credits. These credits are sufficient to offset more than two-thirds of LHDEs and more than one-third of HHDEs sold in MY 2027-2029 meeting (or exceeding, in the case of legacy engines) the maximum FEL cap of 65 mg/bhp-hr (*see* part V.D. below).

B. EPA's Proposal to Eliminate the Credit Requirement from the 5% Production Allowance Is Arbitrary and Capricious.

EPA's Proposal would materially weaken the MY 2027 standards package for up to 5% of Heavy HDE production. In the 2023 Final Rule, EPA created a limited MY 2027-2029 production volume allowance under which manufacturers could certify up to 5% of Heavy HDE U.S.-directed production volume to pre-MY 2027 requirements, but only if they used NOx credits to offset the excess emissions. DRIA at 6. EPA now proposes to eliminate that credit requirement, allowing those engines to meet MY 2026 requirements, including a NOx FEL at or below 200 mg/hp-hr, *without* offsetting credits. Waiving the offset requirement in this way would practically repeal the MY 2027 standard for applicable vehicles from MY 2027-29, subjecting them to the far weaker standards from the 2007 Rule with no need for any additional improvements from other portions of the fleet.

[94] The Volvo D13N-455CA (RVPTH12.8CA3) model of its popular DD13N line of engines is certified to an FEL of 0.1 g/bhp-hr, and one of the models of PACCAR's high-volume MX-13 engine (RPCRH12.9C01) is certified to an FEL of 0.05 g/bhp-hr, both of which would be expected to generate credits against EPA's standard.

EPA fails to justify this exemption from the credit offset requirement. EPA says some manufacturers lack sufficient NOx credit balances to use the existing flexibility, and that only four NOx credit trades have occurred since MY 2012. 91 Fed. Reg. at 43,165–66. In making this assertion, the Agency impliedly concedes, as our analysis above shows, that there are in fact more than sufficient credits industry-wide to fully offset the 5% production allowance several times over.

Thus, the crux of the Agency's assertion appears to be that although sufficient credits exist industry-wide, firms will not be able to trade them. But the regulations themselves expressly permit trading. And EPA's statements shows only that trading has been limited historically, not that trading is unavailable or that EPA may lawfully waive the offset requirement. Half of those trades have occurred in the past few years for transitional credits applicable to the MY 2027+ standards according to data provided in the Proposal.[95] This suggests that the incentive to trade more increases with the advent of the MY 2027 standards, firms will in fact be able to trade more, as explicitly allowed by regulation. In short, EPA should explain why manufacturers cannot use available tools such as intra-fleet averaging, banking, trading, current MY 2022–2026 transitional credits, or targeted NCPs before granting free emissions headroom.

EPA's own DRIA, along with the UCS analysis above, show that manufacturers continue to hold substantial credit balances, at least 22,742 Mg NOx certified by EPA through MY 2024 and nearly 55,000 Mg NOx estimated transitional credits in total through MY 2026. EPA failed to explain its assertions that manufacturers lack credits, and cannot rely on undisclosed non-confidential credit-bank data, projected credit needs, and trading opportunities. EPA should also explain why the existing credit bank and future averaging opportunities are insufficient for the limited 5% allowance. EPA's DRIA states the Agency receives manufacturer credit balances annually and has NOx credit balances through MY 2024, and further notes that emissions data, including ABT credit information, cannot be treated as confidential business information. DRIA at 7 & n.3. Without that information, the public cannot assess whether EPA is simply relieving certain manufacturers of the cost of obtaining credits.

EPA's NCP proposal further undercuts the need for a free exemption. EPA separately proposes NCPs for Medium HDE and Heavy HDE precisely for situations where manufacturers may be unable to meet MY 2027 standards for technological reasons. 91 Fed. Reg. at 43,184-85. NCPs are the statutory mechanism Congress provided for nonconforming engines, and they must be structured to account for excess emissions, increase over time to preserve incentives for compliance, and remove competitive disadvantage to compliant manufacturers. 42 U.S.C. § 7525(g)(3)(C)-(E). EPA cannot rationally invoke technological transition concerns to justify both a penalty-based statutory pathway and a separate exemption from the MY 2027 standards. If EPA shows that manufacturers need relief because of true technological laggard status, EPA can use and must properly calibrate the NCP mechanism. If the issue is instead that some

[95] General Motors received 214 Mg of MY 2023 Discounted credits for the LHDD engine class from International according to the difference in Tables 1-7 and Tables 1-4–5 of the Draft RIA. PACCAR received 64 Mg of MY 2024 Partial credits for the HHDD engine class from Cummins Inc. according to the difference in Tables 1-7 and Table 1-5 of the Draft RIA. Those two trades would represent half of the four trades noted by EPA.

manufacturers lack credits, EPA must explain why existing ABT tools, targeted credit trading, or appropriately priced NCPs are insufficient before creating a free pass for the same reasons.

C. EPA's Extension of the Availability of MY 2004-2009 Credits Is Arbitrary and Capricious.

EPA solicits comment on allowing manufacturers to use pre-MY 2022 NOx credits in the MY 2027-and-later program. In practical terms, EPA acknowledges that this would mean allowing use of credits generated in MYs 2004-2009, 91 Fed. Reg. at 43,167, of which there are approximately 27,787 banked credits according to the DRIA. DRIA at 5 tbl 1-2. For context, we project manufacturers to enter MY 2027 with 54,575 Mg of transitional credits from MY 2022-2026, so extending these credits without any discount would represent a 51% increase in available credits. Even a discount of 40%, consistent with the Discounted Transitional Credits program, would yield a 31% increase in credit availability, a tremendous windfall for manufacturers for whom these credits went unused because they were able to fully transition their fleet to meet the MY 2010+ standards before exhausting these credits. It would be of comparable magnitude to the proposed exemption for the 5% legacy engine volume allowance.[96]

Some of these credits may have been generated under early incentive programs that overcredited the emissions reductions associated with the certified FEL in an effort to encourage earlier adoption of the technology needed to achieve the MY 2010+ standards, which means they are already credits in excess of certified emissions reductions. 66 Fed. Reg. at 5046, tbl.III.D-2. The vast majority of these credits were the result of overachieving against standards set at levels achievable without modern diesel emissions controls, as noted by EPA. 91 Fed. Reg. at 43,167.

Allowing use of these legacy credits "generated by engines without modern emission controls and relative to different test procedures and standards," 91 Fed. Reg. at 43,167, would be arbitrary and capricious. EPA's 2023 Final Rule rejected allowing credits generated from MYs 2004-2009 to be used for this reason, *id.* (citing 88 Fed. Reg. at 4395), and the Agency provides no reasoned basis for reversing that position.

Allowing use of MY 2004-2009 credits would significantly dilute the environmental benefits of the early years of the new program, undermine reliance interests in the 2023 Final Rule, reduce the incentive to transition to new cleaner engines, and confer windfall economic benefits for firms based on compliance activities taken approximately two decades ago under a different regulatory regime. A retroactive grant of windfall benefits based on past behavior does not improve efficiency or benefit consumers. *See, e.g.*, *Belmont Mun. Light Dep't v. FERC*, 38 F.4th 173, 186 (D.C. Cir. 2022) ("[T]his Court has long held that '[a] reward for past behavior . . . does not induce future efficiency and benefit consumers.'") (citing *San Diego Gas & Elec. Co. v. FERC*, 913 F.3d 127, 138 (D.C. Cir. 2019) (internal quotation marks and citation omitted)). EPA provides no reasoned basis for allowing the usage of these credits, beyond suggesting that "some manufacturers have expressed an interest in using" them in lieu of other compliance flexibilities. 91 Fed. Reg. at 43,167. EPA does not explain why the existing

[96] We estimate the legacy engine amounts to a credit of 17,206 Mg NOx emissions credits, while applying a 40% discount to the 27,786 Mg of MY 2004-2009 credits would equate to an increase in available credits of 16,672 Mg NOx emissions credits.

compliance flexibilities, or the other new flexibilities EPA proposes such as NCPs, are insufficient to address feasibility or lead-time concerns. EPA should not allow pre-MY 2022 credit usage unless it provides a record-based explanation demonstrating that their use would preserve the MY 2027 program's emissions benefits, avoid competitive distortions, and maintain incentives for timely deployment of modern NOx-control technology.

D. Compliance Projections for the MY 2027+ Standards Show That EPA's Proposal Will Result in Significant Numbers of Additional Engines at or Exceeding the Maximum FEL of the MY 2027+ Rule.

1. Compliance under current standards (Baseline)

EPA has not made public any certification data for MY 2027 or later engines, so commenters cannot know precisely to what FEL manufacturers' announced "MY 2027-compliant" engines are certified.[97] For our analysis, we projected compliance in MY 2027 and beyond using the following assumptions:

1. MY 2027+ sales are projected to be identical to the average of MY 2023-2026 sales.
2. Manufacturers will carry forward and continue to sell to the maximum allowable extent legacy engines (5% of HHDD sales for 2023-2025) in the MY 2027-2029 period.
3. Manufacturers will additionally pull forward and continue to sell any MY 2026 engines with certification levels at or below an FEL of 0.065 g NOx/bhp-hr, with the assumption that such engines are capable of being certified to the increased FUL and other requirements of the 2027+ NOx standards.
4. It is then assumed any engines with an FEL > 0.065 g NOx/bhp-hr will be replaced by an engine certified to that maximum allowable FEL (0.065 g NOx/bhp-hr[98]) and all other requirements of the 2027+ NOx standards.

[97] All major HHDD manufacturers announced the availability of EPA-compliant HHDDEs in 2027: Cummins and Volvo announced their 2027-compliant products at the ACT Expo (https://enginetechforum.org/policy-insider-blog/posts/industry-ready-to-deliver-cleanest-diesel-engines-yet-for-epa-2027); International affirmed its certification at the beginning of 2026, before the 2027 ordering period commenced (https://news.international.com/2026-01-07-International-Confirms-EPA-2027-Readiness-with-Proven-S13-Integrated-Powertrain); and PACCAR teased its 2027-compliant engines for investors in February of 2026 (https://www.ttnews.com/articles/paccar-launch-epa-2027-engines).

[98] The maximum allowable FEL according to the regulation shifts from 0.065 g NO_x/bhp-hr to 0.050 g NO_x/bhp in 2031. However, for simplicity UCS did not make that change to limit the ranges of years shown, and because UCS has not attempted to allocate what share of more highly polluting engines will fall in an individual model year. By using the 0.065 g NOx/bhp-hr cap in all years, the UCS analysis acts to illustrate the minimum number of engines sold exceeding the 0.035 g NOx/bhp-hr standard. The reduction in the maximum FEL cap acts to limit the maximum credits used on an engine—to the extent that a manufacturer chooses to allocate sales we have identified as FEL = 0.065 g NO_x/bhp-hr to the lower FEL of 0.050 g NO_x/bhp-hr, such sales would require half as many credits, and therefore a manufacturer could sell twice as many 0.050 g NO_x/bhp-hr engines as the OEM could sell of 0.065 g NO_x/bhp-hr engines. For example, if the UCS analysis were to show compliance with sales of 150 engines with an FEL of 0.065 g NO_x/bhp-hr over MY 2030-2032, that could either be 150 sales of FEL = 0.065 g NO_x/bhp-hr engines in MY 2030 or 100 sales of FEL = 0.065 g NO_x/bhp-hr engines in MY 2030 and 50 sales of FEL = 0.050 g NO_x/bhp-hr engines in each of MY 2031 and MY 2032.

5. To the extent that a manufacturer's Transitional Credit balance is insufficient to offset the NO_x credit deficits of its fleet, the FEL = 0.065 engines are replaced by engines with an FEL = 0.035 g NOx/bhp-hr until the manufacturer is in compliance over the entire 2027-2032 time period.

While trading is a viable compliance tool, and manufacturers have already taken advantage of this, the UCS analysis has hypothetically assumed that no trading will occur for the purposes of simplification. This conservative assumption results in the expiration of credits for some manufacturers in all scenarios which, if utilized through trading, would decrease the number of 0.035 g NOx/bhp-hr engines deployed.[99]

Table 9 indicates the sales volume associated with compliance under the current standards and above projected credit accrual. It is worth noting that this analysis hypothetically assumes manufacturers in this scenario unable to take full advantage of the 5% legacy engine allowance due to manufacturer-specific availability NOx engine credits to offset the certified increase in emissions associated with these engines and our choice to not model trading given the limited time in the comment period. However, there is more than sufficient availability of credits industrywide—such trading was simply not modeled in the UCS analysis, as stated above. Were such trading modeled, even greater harmful emissions increases would be observed in the analysis resulting from EPA's Proposal.[100]

Table 9: Baseline diesel engine sales volumes and share by engine class and FEL for MY 2027-2032

	MY 2027-2029 sales						MY 2030-2032 sales					
	LHDD		MHDD		HHDD		LHDD		MHDD		HHDD	
FEL < 0.035	0	0.0%	367	0.1%	12,149	1.5%	0	0.0%	367	0.1%	12,149	1.5%
FEL = 0.035	107,719	32.8%	434,516	92.3%	493,494	62.1%	263,697	80.3%	466,540	99.1%	692,335	87.1%
FEL = 0.065	220,841	67.2%	35,949	7.6%	253,173	31.9%	64,863	19.7%	3,925	0.8%	90,077	11.3%
Legacy	0	0.0%	0	0.0%	35,745	4.5%	0	0.0%	0	0.0%	0	0.0%

2. Projected compliance under the proposed delay of the FUL requirements to 2030

EPA has proposed delaying the changes to the required full useful life (FUL) by three years, from 2027 to 2030. This is arbitrary and capricious, as explained above. This change to FUL has an immediate impact on compliance by multiplying the relative effectiveness of all credits earned by about 50%.

[99] Expiration of credits is unlikely to occur based on comparable ABT programs. Under the light-duty vehicle greenhouse gas emissions regulations, for example, manufacturers have generally sold credits to rival automakers rather than let such credits expire, and some manufacturers have even shifted from credit generators to credit purchasers throughout the history of the market, indicating an active marketplace during times of increasing standards (e.g., Figure 5-13, EPA-420-R-24-022).

[100] As explained below, EPA failed to provide sufficient time for public comment, and the agency should provide additional time for public comment so that commenters can perform this and other important analysis further highlighting the grave defects in the proposal.

Because the FUL is reduced, the credited amount of lifetime emissions associated with a truck is reduced accordingly. To the extent an engine is certified at an FEL greater than the standard, thus requiring the availability of NOx credits to offset the deficit, such an engine would require substantially fewer emissions credits. As a result, if EPA does not discount its transitional credit program to offset this proposed change, manufacturers will be able to sell significantly more engines certified to FELs above the standard in 2027-2029 without any change to deployment of engines sold prior to 2027.

Table 10: Diesel engine sales volumes and market share by engine class and FEL for MY 2027-2032 under the proposed 3-year delay in FUL from 2027 to 2030

	MY 2027-2029 sales						MY 2030-2032 sales					
	LHDD		MHDD		HHDD		LHDD		MHDD		HHDD	
FEL < 0.035	0	0.0%	367	0.1%	12,149	1.5%	0	0.0%	367	0.1%	12,149	1.5%
FEL = 0.035	58,250	17.7%	428,150	90.9%	454,945	57.3%	263,697	80.3%	452,963	96.2%	593,236	74.7%
FEL = 0.065	270,310	82.3%	42,315	9.0%	287,236	36.2%	64,863	19.7%	17,502	3.7%	189,176	23.8%
Legacy	0	0.0%	0	0.0%	40,231	5.1%	0	0.0%	0	0.0%	0	0.0%

The UCS analysis indicates that as a result of this delay, from MYs 2027-2032 manufacturers would sell *over 200,000 more engines at or exceeding the maximum FEL of the 2027+ regulation* (representing 6.5% of HDDE sales), including nearly 4,500 more legacy engines certified to today's standards. These over 200,000 additional dirtier trucks can each operate for hundreds of thousands of miles and decades to come, vastly increasing pollution and endangering public health throughout the nation, and especially in overburdened freight corridors (*See* below part V.E.).

EPA claims that the delay in full useful life by three years "is intended to mitigate manufacturer concerns regarding compliance uncertainties for the extended period over which manufacturers have limited data and provide manufacturers with additional lead time to refine emission control systems before the engines are subject to the longer regulatory useful life." 91 Fed. Reg. at 43,164. However, this delay will result in an increase in emissions due to the averaging, banking, and trading flexibilities of the rule, which EPA must mitigate.

If EPA ultimately decides to finalize the delay in full useful life—which it should not, as explained above—the harms of this delay could be at least somewhat mitigated by discounting the Transitional Credits accordingly, multiplying the given credits earned by a factor equal to the ratio of the average newly proposed FUL and the average finalized FUL currently on the book, where the average is taken over the number of years such credits can be applied (e.g., for Discounted Credits 2027-2029). Alternatively, a single discounting factor could be used based on the sales-weighted average certified emissions.[101] In this case, an additional 40% discount would be applied to Discounted Credits as a result of the 3-year delayed FUL, and a 20% discount would be applied to any earned Partial Credits. Such a discount is consistent with the Agency's approach when finalizing the new NOx standards to require credits from legacy engines to be

[101] Here we weigh the ratio of the old and new FULs by the average sales for MY 2024-2026 for each engine class, the average transient cycle conversion factor (CF) for engines in that engine class, and the FUL for each engine class.

offset at a FUL of 650,000 miles even though the engines were only certified to a FUL of 435,000 miles.[102]

Based on UCS credit projections (Table 11), this would reduce the increase in legacy engines sold from MY 2027-2029 to just 223 from the baseline, and the increase of engines with FEL >= 0.065 from MY 2027-2032 by 45,499, a 78% reduction from our estimated levels of compliance under the FUL delay as proposed.

Table 11: Diesel engine sales volumes and market share by engine class and FEL for MY 2027-2032 under the proposed 3-year delay in FUL from 2027 to 2030 with compensatory discounts on transitional credits

	MY 2027-2029 sales						MY 2030-2032 sales					
	LHDD		MHDD		HHDD		LHDD		MHDD		HHDD	
FEL < 0.035	0	0.0%	367	0.1%	12,149	1.5%	0	0.0%	367	0.1%	12,149	1.5%
FEL = 0.035	84,358	25.7%	431,584	91.7%	497,366	62.6%	263,697	80.3%	460,572	97.8%	675,225	85.0%
FEL = 0.065	244,202	74.3%	38,881	8.3%	249,078	31.3%	64,863	19.7%	9,893	2.1%	107,187	13.5%
Legacy	0	0.0%	0	0.0%	35,968	4.5%	0	0.0%	0	0.0%	0	0.0%

While discounting may help mitigate the impact on credits, this does not fully mitigate the real-world impact of the FUL delay. Because manufacturers would be certifying vehicles to a reduced FUL, this would result in a substantial increase in emissions over the lifetime of the vehicle because the parts themselves would be more susceptible to failure over the vehicle's lifetime.[103]

3. Projected compliance after exempting legacy engines from credit application

EPA is also proposing to exempt a limited number of HHDDEs from the requirement that the emissions associated with their much higher FEL be offset with emissions reductions elsewhere, as explained above. 91 Fed. Reg. at 43,165–66. This will directly lead to increases in the emissions associated with new HHDDEs.

In establishing the production allowance, the 2023 Rule explicitly balanced flexibility for manufacturers with the Agency's statutory mandate to reduce emissions.[104] The 2023 Rule also

[102] "Manufacturers would calculate negative credits using a value for useful life of 650,000 miles to align with the credit calculation for engines that will be generating credits under 40 CFR part 1036 starting in model year 2027 (*see* Equation IV–I for credit calculation). The inclusion of useful life and work produced over the FTP in the calculation of credits addresses some commenters' concern regarding the production of engines with higher power ratings and longer useful life periods under the production volume allowance," 88 Fed. Reg. at 4402.

[103] *See* Section 2.2.2.1 of the Draft RIA for a discussion of the relationship between warranty, FUL, and real-world emissions rates.

[104] "We believe requiring emission credits to certify engines under the production volume allowance better protects the expected emission reductions from the final rule than limiting the production allowance to specific vehicle categories. Our approach is consistent with some commenters' recommendation to finalize a program that required the use of emission credits to protect vulnerable impacted communities by ensuring that lower-emitting engines are produced earlier to generate the credits necessary to produce engines certified under this allowance," 88 Fed. Reg. at 4401.

noted in its justification that this structure would inherently require the production of engines with lower emissions to generate credits,[105] in contrast to the Agency's assumption in this Proposal that manufacturers should have a ready bank to offset these more highly polluting engines.[106]

Nonetheless, in spite of manufacturer or agency claims to the contrary, manufacturers *are* sitting on large banks of transitional credits, as shown above, which are largely already sufficient to offset the majority of the engine production allowed under this loophole.[107] Since, under EPA's Proposal, these credits will no longer be used to offset the emissions from the legacy engines, manufacturers will be free to use them to offset increased sales of engines certified to the highest allowable FEL.

As shown in the table below, this proposed loophole would not only increase the number of legacy engines sold in MY 2027-2029 by over 6,600, but it would lead to over 160,000 more engines with an FEL >= 0.065 g NOx/bhp-hr sold in MY 2027-2032. In total, over one-quarter of all HHDDEs sold in MY 2027-2032 could have a FEL >= 0.065 g NOx/bhp-hr or higher under this proposed change. Because the legacy provision only affects HHDD NOx credits, all of these more highly polluting engines are in the largest and longest-lived engine category, leading to the worst average impacts.

Table 12: Diesel engine sales volumes and market share by engine class and FEL for MY 2027-2032 under the proposed exemption of credits for legacy HHDD engines under the production allowance

	MY 2027-2029 sales						MY 2030-2032 sales					
	LHDD		MHDD		HHDD		LHDD		MHDD		HHDD	
FEL < 0.035	0	0.0%	367	0.1%	12,149	1.5%	0	0.0%	367	0.1%	12,149	1.5%
FEL = 0.035	107,719	32.8%	434,516	92.3%	390,286	49.1%	263,697	80.3%	466,540	99.1%	634,694	79.9%
FEL = 0.065	220,841	67.2%	35,949	7.6%	349,764	44.0%	64,863	19.7%	3,925	0.8%	147,718	18.6%
Legacy	0	0.0%	0	0.0%	42,362	5.3%	0	0.0%	0	0.0%	0	0.0%

[105] "First, we are requiring manufacturers to use credits to certify engines under the production volume allowance, which will inherently result in the production of lower-emitting engines to generate the necessary credits," 88 Fed. Reg. at 4401.

[106] "The EPA is proposing this change because the Agency has heard from multiple engine manufacturers that they do not have sufficient NO_x credit balances to use the existing flexibility that was designed to provide additional lead time for low-volume vehicles applications that face unique engineering and packaging constraints," 91 Fed. Reg. at 41365

[107] Baseline compliance in Section I.B.1 shows credits available to offset 84.4% of the allowed exemption even while further allowing for the certification of 31.9% of MY 2027-2029 HHDDEs to the maximum FEL, even under the constraint that manufacturers do not trade credits. If manufacturers currently projected to use credits to offset engines certified to the maximum FEL of 0.065 g NO_x/bhp-hr were planning on producing more 0.035-certified engines, there are more than sufficient transitional credits available to offset the entire legacy engine fleet, directly contradicting the agency's assertion on credit availability.

4. Projected compliance under the proposed delay of the FUL requirements to 2030 and after exempting legacy engines from credit application

Combining the legacy exemption with the three-year delay creates a complementary impact between the two scenarios since the three-year delay acts as a multiplicative effect on credits, and more credits are available to offset FEL = 0.065 g NOx/bhp-hr engines since no credits are required for legacy engines. The results are shown in the table below.

Combining the Agency's proposed 3-year delay of the FUL with its proposed legacy engine exemption would lead to *more than one-third of HDDEs sold in MY 2027-2032 to be certified to the maximum FEL (0.065 g/bhp-hr) or higher*.

Table 13: Diesel engine sales volumes and market share by engine class and FEL for MY 2027-2032 under the proposed exemption of credits for legacy HHDD engines under the production allowance with a 3-year delay in FUL from 2027 to 2030

	MY 2027-2029 sales						MY 2030-2032 sales					
	LHDD		MHDD		HHDD		LHDD		MHDD		HHDD	
FEL < 0.035	0	0.0%	367	0.1%	12,149	1.5%	0	0.0%	367	0.1%	12,149	1.5%
FEL = 0.035	58,250	17.7%	428,150	90.9%	331,550	41.7%	263,697	80.3%	452,963	96.2%	554,661	69.8%
FEL = 0.065	270,310	82.3%	42,315	9.0%	408,500	51.4%	64,863	19.7%	17,502	3.7%	227,751	28.7%
Legacy	0	0.0%	0	0.0%	42,362	5.3%	0	0.0%	0	0.0%	0	0.0%

The change in certified engine sales resulting from these provisions is summarized in Figure 4. Because our analysis simplifies compliance strategy to the highest FEL allowed, these totals may actually underestimate the number of engines sold with a certified FEL > 0.035 g NOx/bhp-hr (*see* footnote 98) and are meant to be illustrative only.

Figure 4: Engine sales in MY 2027-2029 and MY 2030-2032 by engine class and credit scenario

E. The Proposal's Changes to NOx Credit Availability Will Result in Significant Emissions and Health Impacts.

The substantial increase in sales of more highly-polluting diesel engines as a result of credit flexibilities, outlined above, leads directly to real-world emissions increases. However, those emissions increases are not captured entirely on the certification cycle, which ignores the effects of deterioration, mal-maintenance, and tampering, which are impacted by features of the rule including FUL and warranty—in other words, the real-world emissions increases will be larger than the certified Mg NOx emissions associated with the credits directly. Here, UCS uses

the population and emissions data supporting the MOVES inputs[108] along with sales-averaged cycle work over the FTP to generate lifetime real-world emissions estimates for each engine class that scale with the certified FEL.[109]

UCS did not model any manufacturer pursuing credits under the 2026 Service Class Pull Ahead Credits program. Therefore, all transitional credit-related provisions involve credits which expire after MY 2032. For this reason, the UCS analysis focuses below on impacts from MY 2027-2032 vehicles.

MOVES aggregates a number of failure modes for different parts of the aftertreatment system, along with their impact on real-world emissions, to model the impact of mal-maintenance and tampering over a vehicle's life.[110] Because the UCS analysis was conducted outside of the MOVES model and therefore not limited to the structure of MOVES, and because changes in real-world emissions relative to certification are of primary interest, one small adjustment to the calculation of lifetime emissions for a vehicle was made relative to the approach in MOVES. Because NOx aftertreatment malfunction is the dominant source of mal-maintenance and tampering emissions according to EPA's MOVES model,[111] UCS considered only this increase in emissions. In contrast to MOVES, the emissions associated with failure to certification emissions we thus do not scale with certification but assume instead the same engine-out emissions for failure regardless of certified FEL (to engine-out emissions of 4 g NO_x/bhp-hr on the FTP cycle[112]). In other words, all differences in certified FEL at zero-miles are associated with differences in the effectiveness of the aftertreatment system.[113]

A graphic illustration of the approach taken for each vehicle and regulatory class is shown in Figure 5. These curves are then aggregated by sales share to estimate an average lifetime emissions profile for each regulatory class under given assumptions on tailpipe certification (FEL), FUL, and warranty. Tailpipe emissions over time have the characteristic shape shown in EPA's documentation ("Tailpipe Emissions"). Per vehicle, this is then weighted by the annual VMT for each vehicle type over time ("Annual VMT") and the probability that a vehicle survives to a given year ("Survival Rate"). The total result is shown graphically, illustrating the total emissions for a vehicle over time ("Survival-weighted Emissions"). This procedure was conducted for each vehicle and regulatory class and aggregated across each regulatory class to assign the expected lifetime emissions associated, on average, with an engine

[108] EPA. 2024. Population and Activity of Onroad Vehicles in MOVES5. EPA-420-R-24-019. EPA. 2024. Exhaust Emission Rates for Heavy-Duty Onroad Vehicles in MOVES5. EPA-420-R-24-015.

[109] The limited window of time to comment on this proposed rule necessitates some estimation to cover the full range of proposed changes to compliance with the 2027+ HDE NO_x regulations. With additional time it would be possible to fully model the real-world emissions impacts within a stock model like MOVES, and EPA should conduct this modeling.

[110] EPA, MOVES 5 Technical Documentation, Appendix B.

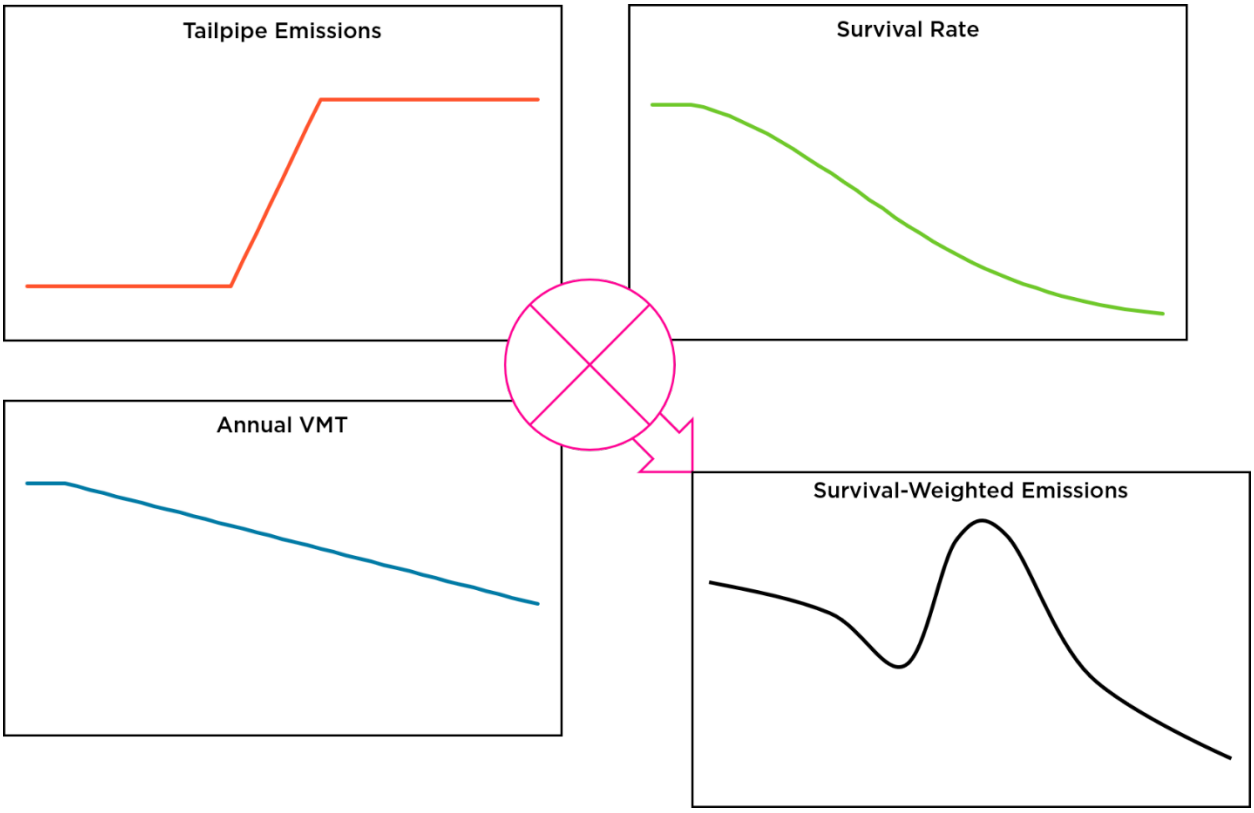
[111] *Id.*, multiplying the values of Tables B-7 and B-8.

[112] Draft TSD, tbl.3-5.

[113] This represents a conservative assumption on the emissions associated with FELs certified above the average standard, particularly since such a large share of lifetime emissions of a truck are associated with mal-maintenance and tampering.

in each regulatory class. All changes in the lifetime emissions are related to changes in the tailpipe emissions over time associated with changes to FEL and FUL.

Figure 5: Schematic diagram of the process used to estimate real world emissions for a vehicle class a la EPA MOVES



Using these averages for each regulatory class and the projected sales due to compliance summarized in Figure 4 enables the calculation of the relative real-world emissions changes due to the crediting provisions of the rule. Table 14 summarizes these UCS results in light of the proposed changes to the warranty for these engines, which directly affects the lifetime emissions associated with MY 2027-2032 HDDEs.

Table 14: Estimated change in lifetime emissions for MY 2027-2032 HDDEs due to the proposed changes to FUL and legacy engine exemptions under current and proposed warranty requirements

	Current Warranty Requirements			Proposed Warranty Requirements		
Scenario	NO_x Emissions (tons)	Δ (tons)	Δ (%)	NO_x Emissions (tons)	Δ (tons)	Δ (%)
Baseline	2,262,160	--	--	2,909,908	--	--
FUL Delay	2,602,410	340,250	15.0	3,284,489	374,580	12.9
5% Legacy Exemption	2,289,660	27,499	1.2	2,934,785	24,876	0.9
FUL Delay + 5% Exemption	2,624,052	361,892	16.0	3,305,136	395,227	13.6

Because these are changes in lifetime emissions for the MY 2027-2032 HDDEs, there is not a single calendar year for which to ascribe the emissions. However, the NOx-related benefit-per-ton estimates for internal combustion engines are largely constant in terms of net present value,[114] so it is not an unreasonable estimate to assign all costs at a fixed benefit-per-ton value. Since the dominant source of benefits is avoided premature mortality, the same logic applies to estimating the additional premature deaths associated with the crediting provisions, for which we've used EPA's COBRA model to estimate.[115]

Table 15 summarizes the total health-related impacts for the proposed changes to warranty, FUL, and legacy engine credits. In contrast to Table 14, the changes to warranty are explicitly included to illustrate the compounding effect of the proposed changes to the NOx regulations. While these estimates are not a replacement for more detailed emissions modeling, they provide a reasonable look at the harms caused by each of the proposed provisions. For context, UCS projects MY 2027-2032 engine sales in total of just under 3.2 million engines, so these health-related costs come to an average up to $27,200 per engine, far in excess of the purported reduction in costs associated with the proposed changes.

[114] Discounting to 2025 the NPV (at a 2% discount rate) of the benefits of reducing a ton of NO_x yields $60,322 (2030), $60,214 (2035), and $58,847 (2040) of ozone related health benefits, compared to $60,200 (2025), a range of just -2.2 to +0.2%. For PM-related health benefits, the values are $10,597 (2030), $10,829 (2035), and $10,699 (2040) and $22,100 (2030), $21,985 (2035), and $21,325 (2040) compared to $10,800 (2025) and $23,200 (2025) for the low and high estimates, respectively, differences of -1.8 to +0.2% and -5.2 to -4.7%. EPA. 2024. Sector-based PM2.5 and Ozone Benefit Per Ton Estimates. Dataset. https://gaftp.epa.gov/benmap/bpts/archives/2024%20bpts/. Accessed August 18, 2026.

[115] https://cobra.epa.gov/.

Table 15: Monetized health-related harms and additional premature fatalities over the lifetime of MY 2027-2032 HDDEs associated with proposed changes to regulations of NOx emissions

Scenario	NO_x Emissions (tons)	Δ (tons)	Additional Health-related Harms ($B)	Additional Premature Fatalities (#)
Baseline	2,262,160	--	--	--
FUL Delay	2,602,410	340,250	$24.2 B to $28.4 B	1,600 to 2,100
5% Legacy Exemption	2,289,660	27,499	$2.0 B to $2.3 B	130 to 170
FUL Delay + 5% Exemption	2,624,052	361,892	$25.7 B to $30.2 B	1,700 to 2,300
Warranty Changes	2,909,908	647,748	$46.0 B to $54.0 B	3,100 to 4,000
Warranty Changes + FUL Delay	3,284,489	1,022,328	$72.6 B to $85.3B	4,900 to 6,400
Warranty Changes + 5% Legacy Exemption	2,934,785	672,625	$47.8 B to $56.1 B	3,200 to 4,200
Warranty Changes + FUL Delay + 5% Exemption	3,305,136	1,042,975	$74.1 B to $87.0 B	5,000 to 6,500

VI. The Additional Flexibilities That EPA Proposes Are Arbitrary and Capricious.

A. EPA's Proposal to Increase the NOx FEL cap to 200 mg/hp-hr Is Arbitrary and Capricious.

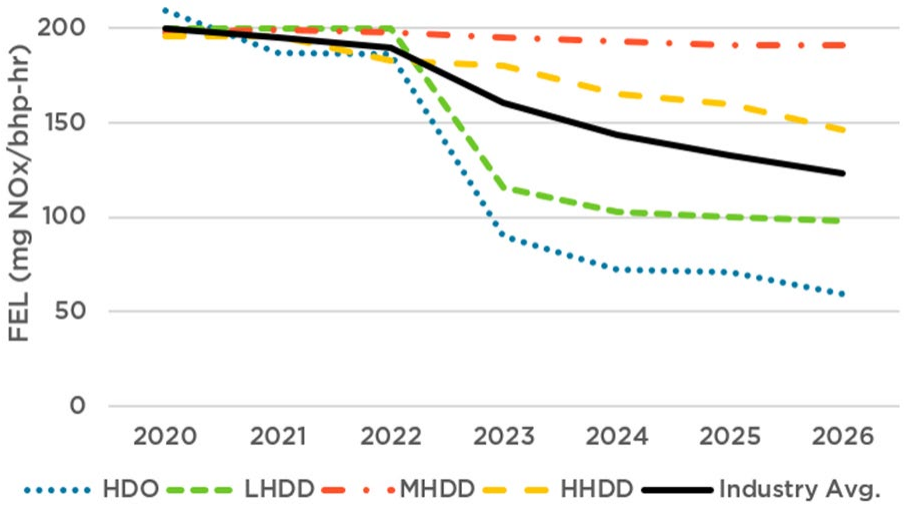
EPA solicits comment on increasing the NOx FEL cap to allow OEMs to certify engines to as high as 200mg/hp-hr. The Agency indicates that the vast majority of engine manufacturers can meet the existing FEL caps and that only "one engine manufacturer has indicated that an increased FEL cap of 200 mg/hp-hr for up to two MYs could help them in the transition to meeting" the standards. 91 Fed. Reg. at 43,166. Even taking the Agency at its word, the fact that weakening life-saving health protections "could help" one OEM in meeting the standards is arbitrarily capricious, given the statute's primary purpose to reduce emissions and technology forcing nature.

The 2023 Rule explicitly rejected an FEL cap of 200 mg/hp-hr, noting that "the difference between the current standard (approximately 200 mg/hp-hr) and the standards we are finalizing for MY 2027 and later suggests that FEL caps lower than the current standard are appropriate to ensure that available emissions control technologies are adopted."[116] Furthermore, setting an FEL cap below the current standard is consistent with prior heavy-duty engine rulemakings where there was a substantial difference between existing and new standards. 69 Fed. Reg. 38,997 (June 29, 2004); 66 Fed. Reg. 5,111 (Jan. 18, 2001).

[116] "Specifically, by finalizing FEL caps below the current standards, we are ensuring that the vast majority of new engines introduced into commerce include updated emissions control technologies compared to the emissions control technologies manufacturers use to meet the current standards," 88 Fed. Reg. at 43,93.

Industry itself pushed for an FEL cap at or below 100 mg/hp-hr, highlighting competitiveness concerns.[117] The industry broadly is in a position to comply with a lower FEL and has prepared accordingly. At the time of finalization, the agency noted that the average NO_x performance already falls well below the current 200 mg/bhp-hr standard. 88 Fed. Reg. at 4398. See also Chapter 3.1.2, EPA-420-R-22-035. As shown in the Figure below, since finalization, the average NO_x performance has dropped significantly. Using estimated sales data (*see* Section V.D), we project an average MY 2026 certification level of 123 mg NOx/bhp-hr.

Figure 6: Production-weighted average FEL certification, by engine class, over time



It should be noted that this is not just the result of a few extremely low-emitting engines—across most engine classes there are significant marketshare certified at or below the current level of 200 mg/bhp-hr (Table 14). More than one-third of heavy-duty engines sold this year are already certified below the 65 mg/bhp-hr FEL cap of the MY 2027 standards. And because these are MY 2026 engines, they do not yet reflect the widespread deployment across major platforms announced by engine manufacturers for MY 2027 (Section VII.B). As suggested by manufacturer comments when the rules were finalized, engine manufacturers are already deploying and/or are well prepared to deploy the more advanced emissions control strategies envisioned when the 2023 Standards were finalized, so setting a FEL cap above the 65 mg NOx/bhp-hr limit risks pulling back on such deployments.

[117] "To further prevent unintended consequences, EPA should reduce the FTP/RMC NOx FEL cap to be no higher than 0.100 g/bhp-hr for all service classes. Setting that lower FEL cap also will help to mitigate the competitive problems described above," comments of Truck and Engine Manufacturers, EPA-HQ-OAR-2019-0055-1203-A1, p. 135, and PACCAR Inc., EPA-HQ-OAR-2019-0055-1346-A1, pp.35-36. "To further prevent unintended consequences, EPA should constrain the NOx FTP/SET FEL cap for MY 2027 and later to be no higher than 100 mg/hp-hr for all service classes. Depending on other details in the final rule, setting the FEL cap at some value between 50-100 mg/hp-hr may be more appropriate. Setting that lower FEL cap also will help to prevent the competitive problems described above," comments of Cummins Inc., EPA-HQ-OAR-2019-0055-1325-A1, p. 9.

Table 16: Estimate of MY 2026 engine sales that are certified to an FEL below 200 mg/bhp-hr, by engine class

Engine Class	FEL <= 150 mg/bhp-hr	FEL <= 100 mg/bhp-hr	FEL <= 65 mg/bhp-hr
HDO	98.0%	98.0%	98.0%
LHDD	57.0%	57.0%	46.1%
MHDD	9.3%	7.0%	0.1%
HHDD	43.3%	25.0%	8.9%
Industry Avg.	**54.4%**	**46.9%**	**37.3%**

Further, EPA correctly notes the significant negative impacts on competition and reliance that would ensue, not to mention the potential for continued production of dirty engines and negative impacts on the communities in which those engines operate, as documented in the 2023 Rule. To the extent EPA wishes to finalize a higher FEL cap, it must publish a supplemental proposal that actually describes the factual bases (e.g., new analysis of technology, costs, and emissions) for such an approach, not merely point at vague concerns from one manufacturer.

EPA's solicitation for comment on other ways to weaken the FEL run into the same problems are also contrary to law and arbitrary and capricious.

B. EPA's Proposal to Allow Credit-Trading Across Averaging Sets Is Arbitrary and Capricious.

EPA should not further allow NOx credit use across averaging sets. EPA has long barred cross-set credit use because credits generated in one heavy-duty engine class may not equal real-world reductions in another, and EPA reaffirmed in 2023 that separate sets avoid competitive disruptions and environmental risks.

Cross-set credit use would let excess emissions in one class be offset by over-compliance in another, reducing incentives to clean up each class and delaying controls in harder-to-clean categories. It also risks shifting higher-emitting engines into overburdened communities near freight corridors, ports, and heavy-duty traffic hubs without ensuring those communities receive offsetting reductions. As EPA notes, cross-set credit use would also have anticompetitive impacts against businesses who only manufacture one class of vehicle.

EPA has not shown any specific discount would cure these environmental and competitive harms. To the extent EPA wishes to finalize increase cross-set averaging, it should at minimum repropose a specific cross-averaging set usage program with discounting and other restrictions, and it should demonstrate that any cross-set transfers would not unduly delay the introduction of control technologies in any class, and ensure emissions benefits, including to overburdened communities.

VII. EPA's Proposed Creation of Nonconformance Penalties Is Arbitrary and Capricious.

Under the Clean Air Act, manufacturers are permitted to produce engines that do not meet applicable emission standards only "if such manufacturer pays a nonconformance penalty as provided under regulations promulgated by the Administrator after notice and opportunity for

public hearing." 42 U.S.C. § 7525(g); *see* above, Background. The statutory framework contemplates such nonconformance penalties ("NCPs") as a last-resort mechanism for "technological 'laggard[s],'" rather than yet another compliance alternative for manufacturers with ready access to a buffet of extensive flexibilities. *See NRDC v. EPA*, 655 F.2d 318, 339 n.35 (D.C. Cir. 1981) (quoting H.R. Rep. No. 95-294, at 275-76 (1977)).

Clean Air Act Section 206(g) directs that the level at which NCPs are set "shall be increased periodically to create incentives for the development of production vehicles or engines which achieve the required degree of emission reduction," 42 U.S.C. § 7525(g)(3)(D), and "shall remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction," *id.* § 7525(g)(3)(E). These directives reflect Congress's general technology-forcing mandate for truck and engine standards, designed to push the industry toward innovation by setting standards that require the development and use of new technologies. *See* above, Background. And more specifically, Congress's directives reflect its understanding of NCPs as a "temporary bridge to compliance" rather than a permanent compliance pathway. *See Mack Trucks, Inc. v. EPA*, 682 F.3d 87, 95-96 (D.C. Cir. 2012). Congress presupposed a world in which most manufacturers do in fact comply with emission standards, and only a residual few require the nonconformance penalty mechanism—and only then, for a temporary period as they work to comply with the actual emission limits.

EPA's regulations implementing Section 206(g) support this framework. Since being promulgated in 1985, the regulations make NCPs available only when three criteria are met: (1) the emission standard becomes more difficult to meet; (2) "[s]ubstantial work is required to meet" the emission standard; and (3) EPA finds that a manufacturer is likely to be noncomplying "for technological reasons." *See* 40 C.F.R. § 86.1103-2016; 50 Fed. Reg. 35,374 (Aug. 30, 1985) (establishing these three basic criteria); *see also* 91 Fed. Reg. at 43,183.

EPA, like Congress and the courts, has long understood NCPs as a "temporary alternative" to conformance with the emission standards, intended only for "some manufacturers (technological laggards)" who "might be unable to comply initially and would be forced out of the marketplace." 50 Fed. Reg. at 35,374; *see also* 77 Fed. Reg. 4736, 4737 (Jan. 31, 2012). EPA has explained that a purpose of Section 206(g) "was to avoid, at least temporarily, the problem of technological laggards being driven out of the market because of their inability to meet technology-forcing emissions standards." 50 Fed. Reg. at 35,375.

Here, EPA's proposal to establish NCPs for diesel-fueled medium heavy-duty engines and heavy heavy-duty engines is arbitrary and capricious. Although EPA purports to "rely on the existing NCP regulatory principles established in previous NCP rules," 91 Fed. Reg. at 43,184, EPA's decision to make NCPs available and its subsequent setting of the NCP rate both fail to comport with Congress's intentions and EPA's related regulations, both of which intend that emission standards be protective and broadly implemented, with exceptions to conformity requirements limited and temporary. As threshold matters, EPA fails to adequately show that NCPs are technologically necessary, as intended by Congress and required under the Agency's own regulations, *see* 40 C.F.R. § 86.1103-2016 (establishing a "technological laggard" as a requirement for NCP establishment); H.R. Rep. No. 95-294, at 275-76 (describing the intent that NCPs apply only to a technological "laggard"), and fails to assess the emissions impacts of introducing NCPs, obscuring the impacts of the proposed rule.

Compounding these omissions, EPA's NCP calculations themselves are arbitrary and capricious, even had the Agency established the threshold requirements. As explained above, the Clean Air Act intended NCPs only to be a "bridge," set at a level that both encourages ultimate compliance and does not provide a competitive advantage to manufacturers utilizing NCPs. 42 U.S.C. § 7525(g)(3)(D)-(E). When EPA established the criteria for setting NCPs more than 40 years ago, the Agency explained the importance of correct NCP calculations, emphasizing that NCPs are to be calculated so that technological "leaders would not suffer an economic disadvantage compared to nonconforming manufacturers, because the NCP would be based, in part, on the amount of money the laggard and his customer saved from the nonconforming engine or vehicle." 50 Fed. Reg. at 35,374. Correctly calculating NCPs is central to the statutory bargain Congress struck in Clean Air Act Section 206(g). If the penalty is too low, the NCP becomes a discounted compliance pathway. If it is too high, it may defeat the narrow safety-valve function Congress intended for a genuine technological laggard. As has been shown in other Clean Air Act contexts, if the price of noncompliance with an emission standard is lower than the cost of compliance, firms may simply choose not to comply and treat the penalty as a cost of doing business.[118] Not only would this result in forgone emissions reductions, but it would be manifestly unfair to entities who have complied with the standards without utilizing NCPs. Such an outcome would be contrary to congressional intent, and EPA therefore must calibrate NCPs with care. Courts likewise have treated this competitive-protection requirement as fundamental. *See Mack Trucks, Inc.*, 682 F.3d at 94-95 (observing that the Clean Air Act "expressly demands that EPA 'remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction'" (quoting 42 U.S.C. § 7525(g)(3)(E))).

Here, numerous aspects of EPA's proposed NCP methodology and price calculation are arbitrary and capricious, including: EPA's proposal to treat the NOx standard as if it is a single FTP-based standard; EPA's proposed weakening of the Annual Adjustment Factor; various proposals impacting NCP pricing, including DEF costs, fuel costs, and use of cost data; EPA's proposal to adopt a flattened marginal cost methodology; and EPA's proposal to allow credits to reduce NCP compliance levels. The threshold and technical errors in EPA's NCP analysis threaten to undermine important air quality benefits, and are arbitrary and capricious. Each is discussed below.

A. EPA Has Not Shown that NCPs Are Necessary.

As explained above, EPA must make three findings to determine that it is appropriate to establish NCPs: that the relevant emission standard is more difficult to meet, that substantial work is required to meet it, and that a manufacturer is likely to be noncomplying for technological reasons. 40 C.F.R. § 86.1103-2016; *see also* 91 Fed. Reg. at 43,184-85. Here, EPA has not satisfied the third and most important requirement. The Proposal does not show that any manufacturer is a true "technological laggard," much less that NCPs are technologically necessary notwithstanding the extensive compliance flexibilities already available for the MY 2027 program.

[118] *See, e.g.*, Nathan Atkinson, *Profiting from Pollution*, Yale J. Reg. Bulletin (June 1, 2023), https://www.yalejreg.com/bulletin/profiting-from-pollution/.

EPA's own historical formulation makes clear that the technological-laggard requirement is not met merely because a manufacturer says it is not ready to comply or because compliance would be costly. EPA has long understood a technological laggard to be "a manufacturer who cannot meet a particular emission standard *due to technological (not economic) difficulties* and who, in the absence of NCPs, might be forced from the marketplace." 77 Fed. Reg. at 4738 (emphasis added); *see also* 91 Fed. Reg. at 43,184. EPA's Phase I rule called the technological laggard requirement "a key concept in the NCP availability scheme." 50 Fed. Reg. at 35,376.

The D.C. Circuit has likewise emphasized that NCPs are reserved for manufacturers that face genuine technological barriers despite efforts to comply. In *Mack Trucks, Inc.*, the court explained that NCPs are intended for manufacturers "that have 'made every effort to comply,'" and are not designed "to bail out manufacturers that voluntarily choose, for whatever reason, not to adopt an existing, compliant technology." 682 F.3d at 95-96 (quoting *United States v. Caterpillar, Inc.*, 227 F. Supp. 2d 73, 88 (D.D.C. 2002)). That principle naturally flows from the statutory design. As explained above, Congress adopted the NCP provisions to allow EPA to maintain technology-forcing standards without forcing a true technological laggard from the market, while preserving incentives to develop compliant engines and protecting manufacturers that achieve the required emission reductions. *See* 42 U.S.C. § 7525(g)(3)(C)-(E); *Daimler Trucks N. Am. LLC v. EPA*, 737 F.3d 95, 98-99 (D.C. Cir. 2013).

EPA's record support for a technological-laggard finding is inadequate. EPA makes only general statements to support its finding: that the Agency "has information indicating that multiple engine manufacturers will likely be unable to demonstrate their technology of choice will meet the MY 2027 NOx standards for some engines in these two engine categories by January 2, 2027," 91 Fed. Reg. at 43,185; that without NCPs, "one or more engine manufacturers will be forced to stop selling specific engine families until their development process is complete," *id.*; and that this conclusion is "based on multiple meetings the EPA has had with individual engine and vehicle manufacturers over the past year, and detailed confidential information provided by engine and vehicle manufacturers regarding the development status of Medium and Heavy HDEs," *id.* None of that information has been made public in any meaningful form, barring the public from evaluating whether the manufacturers' alleged difficulties are genuinely technological rather than economic, strategic, or the result of delayed investment choices. This omission is especially problematic because EPA simultaneously acknowledges that "most truck and engine manufacturers have communicated to the EPA that they will have a full lineup of products ready to meet the MY 2027 standards." 91 Fed. Reg. at 43,158. EPA has not explained why the few alleged delays amount to technological impossibility rather than ordinary resource allocation, business planning, or preference for a particular technology path.

Regulated entities within the heavy-duty industry have publicly questioned EPA's technological laggard finding, cautioning that "EPA's proposed NCPs carry significant legal risks associated with meeting the requirements of the Clean Air Act."[119] Daimler Truck North America told EPA, "[W]e believe there is little evidence to suggest there is a technological

[119] Transcript of Daimler testimony at virtual public hearing for Proposed Rule, (July 29, 2026) p. 79. Transcript available at EPA Docket No. EPA-HQ-OAR-2026-0728-0150 https://www.regulations.gov/document/EPA-HQ-OAR-2026-0728-0150

laggard in the heavy heavy duty segment, and we encourage EPA to carefully study the statements manufacturers have made about technology readiness, and consider whether this demonstrates the intent of the Clean Air Act."[120]

In fact, *all* manufacturers of heavy heavy-duty engines have publicly announced they have engines available to meet the emission standards without EPA's newly proposed changes, including without utilizing NCPs:

- In February 2024, Cummins announced what it touted as the "most efficient heavy-duty diesel engine ever," which it said was "launching in North America to meet aligned 2027 regulations."[121]
- In February 2026, Daimler Truck announced "its new Gen 6 heavy duty engine portfolio," explaining that "the next evolution of its popular engines is fully compliant with the EPA's 2027 standard and will be available for all heavy-duty Freightliner and Western Star trucks."[122]
- In January 2026, International announced its new powertrain which "meets [EPA's] emissions requirements for 2027 model year trucks," "confirm[ing] EPA 2027 readiness," and explaining that the powertrain "was engineered with foresight—anticipating regulatory changes long before they arrived." The announcement quoted International's Executive Vice President, Commercial Operations, Dan Kayser, who said, "We've been preparing for EPA 2027 for years. Our customers won't face surprises, only the same proven powertrain." He further described the new powertrain as "a reliable solution without unnecessary complexity."[123]
- In February 2026, PACCAR's Chief Technology Officer John Rich stated in an article that "[t]o meet the 35-milligram mandate, we will introduce two all-new proprietary engine platforms…simultaneously improving emissions, fuel economy and durability." While Rich bemoaned the cost of developing new technologies, he also stated that "[p]roprietary engines are Paccar's core competency."[124]
- In May 2026, Volvo "unveil[ed] its most fuel efficient engine ever," explaining that it is "ready to meet new regulations," and that "Volvo's new engine is designed to meet the

[120] *Id.* at 80.

[121] Cummins, press release, *Cummins announces innovative next generation X15 diesel engine, part of Cummins HELM 15 liter fuel agnostic platform, launching in North America to meet aligned 2027 regulations* (Feb. 29, 2024), https://www.cummins.com/en-na/news/releases/2024/02/29/cummins-announces-innovative-next-generation-x15-diesel-engine-part. See also https://www.cummins.com/en-na/news/releases/2026/07/23/cummins-announces-phased-model-year-2027-product-launch-plan.

[122] Daimler Truck, press release, *Daimler Truck introduces new heavy-duty diesel engine generation in North America* (Feb. 23, 2026), https://www.daimlertruck.com/en/newsroom/pressrelease/daimler-truck-introduces-new-heavy-duty-diesel-engine-generation-in-north-america-53372228.

[123] International, press release, *International Confirms EPA 2027 Readiness with Proven S13 Integrated Powertrain* (Jan. 7, 2026), https://news.international.com/2026-01-07-International-Confirms-EPA-2027-Readiness-with-Proven-S13-Integrated-Powertrain.

[124] Keiron Greenhalgh, *Paccar Teases Launch of 2 EPA NOx 2027-Compliant Engines*, Transport Topics (Feb. 11, 2026), https://www.ttnews.com/articles/paccar-launch-epa-2027-engines.

EPA's 35-milligram NOx standard and comply with emissions requirements in all 50 states." Volvo explained that "[t]he new engine reduces nitrogen oxide (NOx) emissions by over 80 percent compared with current standards, delivering the power to support cleaner operations without compromising capability." Volvo promised that "[t]he new engine will be available across all Volvo truck models and has been developed in parallel with Volvo's production operations, dealer network, and service infrastructure to support the transition when the EPA 2027 standards take effect on January 1, 2027."[125]

But following EPA's proposed rule changes, manufacturers' stories have changed. Four of the five heavy-duty manufacturers have announced they will now sell or are considering selling both conforming *and* nonconforming engines, despite their earlier confirmation that they had technologically compliant engines ready. And, they have been clear that these decisions are based on finances, strategy, and preferences, rather than true technological necessity. In response to EPA's Proposal:

- Cummins announced a plan, in July 2026, to continue to sell its current engines in parallel with their compliant engines.[126]
- Despite being "the first of the North American heavy-duty truck and engine makers to debut EPA 2027-compliant engines," International's executive leadership said following the changes in the Proposal, "We can, of course, also choose to continue with the current platform if that is financially more viable," explaining that now, "we have really good optionality."[127]
- PACCAR summed up the proposed NCPs not as a technological necessity, but an economic "advantage." PACCAR's CEO Preston Feight said on an earnings call in July 2026, "The way it's currently proposed is we would expect to see NCPs running at something like $6,000-$7,000 range per truck. As you noted, the cost of fully compliant 35 milligram engines would likely be higher than that…if the numbers stay where they are and at $6,000 to $7,000, there's still an advantage for [customers] in taking the current product." PACCAR made these statements while also announcing that it "beat both profit and revenue forecasts in the second quarter," and "PACCAR Parts posted record quarterly revenue of $1.75 billion."[128]
- Volvo suggested that, if EPA allows a pathway to do so, it will continue to offer its existing engines. Volvo Group President and CEO Martin Lundstedt said, "I think the

[125] Volvo, press release, *Volvo Trucks unveils its most fuel efficient engine ever, ready to meet new regulations* (May 4, 2026), https://www.volvotrucks.us/news-and-stories/press-releases/2026/may/volvo-trucks-unveils-its-most-fuel-efficient-engine-ever/.

[126] Cummins, press release, *Cummins announces Phased Model Year 2027 Product Launch Plan* (July 23, 2026), https://www.cummins.com/en-na/news/releases/2026/07/23/cummins-announces-phased-model-year-2027-product-launch-plan.

[127] Keiron Greenhalgh, *International mulls phasing in EPA 2027 engine introduction*, Transport Topics (July 24, 2026), https://www.ttnews.com/articles/tration-earnings-q2-2026.

[128] Investing.com, *Earnings call transcript: PACCAR beats Q2 2026 estimates as truck demand improves* (July 28, 2026), https://www.investing.com/news/transcripts/earnings-call-transcript-paccar-beats-q2-2026-estimates-as-truck-demand-improves-93CH-4817741.

most important is that we will keep the optionality for our customers to choose the solution that they prefer."[129]

Rather than indicating a technological need, these post-Proposal manufacturer statements confirm that makers of heavy heavy-duty engines and trucks intend to use NCPs not because compliant technology is unavailable, but because selling current-generation, higher-emitting engines may be cheaper or commercially preferable. That is inconsistent with the statute and EPA's own NCP framework, which do not intend for manufacturers to elect higher-emitting engines because the penalty is less costly than deploying compliant technology. This flatly contradicts Congress's direction that NCPs, rather than providing an additional option for all, "shall remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction," 42 U.S.C. § 7525(g)(3)(E).

EPA's asserted basis for finding a laggard here is merely that the Agency has unspecified information "indicating that multiple engine manufacturers will likely be unable to demonstrate *their technology of choice* will meet the MY 2027 NOx standards for some engines in these two engine categories by January 2, 2027." 91 Fed. Reg. at 43,184 (emphasis added). There is substantial daylight between a manufacturer claiming that its "technology of choice" cannot meet the standards and a showing that the manufacturer cannot comply for technological reasons. The technological-laggard criterion asks whether a manufacturer is unable to meet the standard because the relevant technology is not available or cannot be successfully applied in time, despite appropriate compliance efforts. It does not ask whether a manufacturer prefers a different compliance pathway, wants to continue selling higher-emitting engines while refining a preferred design, or would rather avoid the cost of deploying technology that other manufacturers have adopted. EPA simply has not shown that manufacturers lack feasible compliance options.

EPA's failure is compounded by the substantial compliance flexibilities already built into the MY 2027 program and the additional flexibilities EPA now proposes. The 2023 Final Rule already provided averaging, banking, and trading flexibilities; NOx Family Emission Limit ("FEL") caps of 65 mg/hp-hr for MYs 2027 through 2030 and 50 mg/hp-hr for MYs 2031 and later; transitional credit provisions; and a 5% production volume allowance for heavy heavy-duty engines in MYs 2027 through 2029. 91 Fed. Reg. at 43,161, 43,167-68. EPA now proposes additional relief, including changes to warranty periods, delays in extended useful life provisions, expanded access to the production volume allowance, inducement revisions, and potential further credit flexibilities. *Id.* at 43,158-68. But EPA does not explain why any of the flexibilities from the 2023 Final Rule, let alone the additional ones proposed here (which are themselves unnecessary and unlawful, as explained in these comments), are insufficient to address any claimed compliance concerns. Nor does EPA analyze whether manufacturers could use credits, FELs, production allowances, carryover provisions, or other transitional mechanisms instead of NCPs. This silence is significant because NCPs are supposed to be a *last-resort* mechanism for true technological laggards, not just one of another group of optional flexibilities. If existing flexibilities allow manufacturers to avoid being driven from the market while continuing to move toward compliance, EPA must explain why NCPs remain necessary. The Agency has not done so, instead proposing to add NCPs to an already extensive set of

[129] Volvo AB (VOLVF) Q2 FY2026 Earnings Call Transcript, Yahoo! Finance (July 17, 2026), https://finance.yahoo.com/quote/VOLVF/earnings/VOLVF-Q2-2026-earnings_call-536667.html?guccounter=1.

compliance flexibilities, and thereby weakening the standards and reducing incentives for timely deployment of available clean technology.

Nor has EPA justified keeping the evidence supporting its finding about the appropriateness of NCPs entirely out of public view. EPA's assertion that its finding rests on confidential manufacturer information does not excuse the Agency from providing a meaningful public explanation. If "multiple" manufacturers are indeed involved, EPA should be able to present anonymized or aggregated information without revealing proprietary data. For example, EPA could provide nonconfidential summaries of NOx test results, affected engine families, compliance-level ranges, production-volume ranges, and technology-package performance. It could describe, without identifying manufacturers, the performance of key control technologies such as cylinder deactivation systems, electric heaters, exhaust temperature management, and precious metal loading. EPA's claim that the Agency cannot provide at least a summary of the technical basis for its conclusion that engines using these or other NOx-control packages cannot comply—particularly where manufacturers have already reported they intend to have compliant product lineups—is arbitrary and capricious.

EPA should not finalize NCPs unless it demonstrates, with record support, that the regulatory technological-laggard criterion is met and is met separately for MHDEs and HHDEs. And even if EPA ultimately concludes that some NCP availability is justified, the Agency must ensure that NCPs do not undermine the standards themselves and must set them at an appropriate level to preserve the Clean Air Act's protections. Section 206(g) requires NCPs to account for additional pollution, to increase over time to preserve incentives to develop compliant engines, and to remove any competitive disadvantage to manufacturers that meet the required reductions. 42 U.S.C. § 7525(g)(3)(C)-(E). EPA's Proposal risks transforming NCPs from a temporary safety valve into a compliance loophole. Manufacturer statements, detailed above, confirm this. EPA should reject any approach that allows manufacturers to treat NCPs as yet another option in a menu of flexibilities, rather than a narrowly confined mechanism for genuine technological laggards facing unavoidable, temporary nonconformance. Failing to appropriately price NCPs violates the Clean Air Act's mandates that NCPs create incentives for compliant production engines and remove competitive disadvantages for those manufacturers that do conform to the standards. EPA's NCP calculations here fail on that front as well, as will be explained below.

B. EPA Has Failed to Assess the Emissions Impact of Introducing NCPs.

Even if EPA could satisfy the technological laggard requirement, EPA's Proposal arbitrarily and entirely fails to assess the emissions impact of introducing NCPs, which is an "important aspect of the problem," *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). NCPs authorize certification and sale of engines that exceed the otherwise applicable emission standard. EPA's Proposal recognizes that manufacturers using NCPs may certify engines above the 35 mg/hp-hr NOx standard, and EPA proposes an upper limit of 200 mg/hp-hr. 91 Fed. Reg. at 43,154, 43,185-86, 43,293-94. An engine at that upper limit would have a compliance level nearly six times the numerical NOx standard. EPA therefore cannot plausibly say that the emissions impacts are too peripheral to analyze.

EPA's explanation that it cannot accurately project the degree to which firms may use NCPs is insufficient. EPA routinely models regulatory flexibilities using assumptions, and in this same Proposal EPA modeled the emissions impacts of other program changes. Uncertainty about exact NCP utilization does not excuse EPA from conducting scenario analysis, estimating upper and lower bounds, or using available information about likely manufacturers, engine families, production volumes, and compliance levels—information EPA must have had in order to determine the existence of technological laggards. *See, e.g.*, 91 Fed. Reg. at 43,185 (noting determination of technological laggards is "based on multiple meetings the EPA has had with individual engine and vehicle manufacturers over the past year, and detailed confidential information provided by engine and vehicle manufacturers regarding the development status of Medium and Heavy HDEs"); *id.* at 43,158 ("Over the past year, most truck and engine manufacturers have communicated to EPA that they will have a full lineup of products ready to meet the MY 2027 standards."); *id.* at 43,161 ("The EPA is aware that some manufacturers' MY 2027 Medium HDE and Heavy HDE development programs have experienced technical challenges, and that some diesel engine families are at risk of not being completed in time for a January 2027 introduction.").

C. EPA's Proposed NCP Methodology Is Inappropriate for a Multi-Cycle NOx Standard.

EPA's proposed NCP methodology is unlawful and arbitrary because it treats the NOx standard as though it were a single FTP-based standard, when EPA's 2027 heavy-duty NOx program is expressly designed around multiple standards and test cycles. EPA acknowledges that the MY 2027 NOx standards are 35 mg/hp-hr over both the Federal Test Procedure ("FTP") and Supplemental Emission Test ("SET") duty cycles, and 50 mg/hp-hr over the Low Load Cycle ("LLC"). 91 Fed. Reg. at 43,184. Each cycle serves a distinct function, designed to require NOx emission control over different on-highway driving situations, including transient mid/high load operation, steady-state operation, and low-load operation. 88 Fed. Reg. 4296, 4305 (Jan. 24, 2023).

Despite the multi-cycle structure, EPA proposes to only consider NOx emission performance over the FTP when determining the value of the NCP. *See* 91 Fed. Reg. at 43,193 ("The EPA is proposing that the [NCP] compliance level be based on engine testing over the FTP duty cycle."). But the penalty amount for the vehicle or engine granted the NCP would be driven by FTP performance alone, even though the NOx program requires compliance across FTP, SET, and LLC operating conditions. *See* 91 Fed. Reg. at 43,294 (quoting proposed text of 40 C.F.R. § 1071.85).

This approach is arbitrary and capricious and runs contrary to Clean Air Act Section 206(g). As explained above, Congress required NCPs to "take into account the extent to which actual emissions of any air pollutant exceed allowable emissions under the standards," to increase periodically to create incentives for compliant production engines, and to remove any competitive disadvantage to manufacturers that achieve the required emission reductions. 42 U.S.C. § 7525(g)(3)(C)-(E). Those requirements cannot be satisfied by a penalty formula that prices only one dimension of nonconformity while disregarding whether the same engine fails, and by how much it fails, the other NOx standards that EPA adopted to secure emission control under different real-world driving conditions. A penalty based only on FTP performance cannot

assure that the NCP reflects the engine's actual shortfall from the full suite of 2027 NOx requirements.

Under EPA's Proposal, for example, a manufacturer could certify an engine family with an FTP compliance level only slightly above 35 mg/hp-hr, pay a comparatively small NCP (calculated only on that small FTP exceedance), and still avoid paying any penalty that reflects the cost or emissions consequences of failing to meet the SET or LLC standards. If the NCP is keyed only to FTP performance, it may not capture the cost of the technologies needed to achieve steady-state or low-load NOx control.

At a minimum, EPA must either calculate NCPs based on the degree of nonconformity with each applicable NOx standard, or explain—with record support—why an FTP-only Compliance Level adequately accounts for nonconformity over SET and LLC cycles. If EPA elects not to develop separate SET- and LLC-based penalty components, it should at least include in the NCP the full incremental cost of meeting the SET and LLC requirements. Otherwise, EPA is rewarding manufacturers that optimize for FTP while failing to deliver the emissions benefits required under the full MY 2027 program (i.e., including the other two test cycles). EPA's proposed methodology is therefore inconsistent with both the structure of the 2027 NOx standards and the statutory design of Section 206(g). NCPs are supposed to price the degree of emission nonconformity and preserve incentives to achieve the required emission reductions. A penalty formula based only on FTP performance cannot rationally perform that function for a regulatory program built on FTP, SET, and LLC standards, and EPA's proposed methodology is therefore arbitrary and capricious.

D. Weakening the Annual Adjustment Factor Is Arbitrary and Capricious.

EPA requests comment on weakening the Annual Adjustment Factor ("AAF") formula that increases NCP values over time. Specifically, EPA considers (1) removing the exponent from the AAF calculation entirely, or (2) replacing the exponent "i" with "i-1" to reduce the rate of escalation. *See* 91 Fed. Reg. at 43,191-92. Either change would be a significant departure from EPA's longstanding approach of using an annual adjustment factor, established in 1985 and maintained through seven subsequent NCP phases.

The existing AAF formula serves a critical statutory function: Clean Air Act Section 206(g)(3)(D) requires that NCPs "shall be increased periodically to create incentives for the development of production vehicles or engines which achieve the required degree of emission reduction." 42 U.S.C. § 7525(g)(3)(D). The accelerating escalation built into the current formula ensures that NCPs do not become a permanent compliance pathway, a fact that EPA acknowledges. *See* 91 Fed. Reg. at 43,191 ("The AAF includes a term to increase NCP values over time, with the goal of preventing manufacturers from relying on NCPs as a long-term compliance strategy."). Under the existing approach, according to EPA, if 50% of engines in a class continue to use NCPs, the penalty would increase by 40% in year two and 130% by year three. *Id.* By the fourth year, the value of the NCP would increase more than five-fold. *Id.* This acceleration is intentional. It implements the mechanism Congress intended to ensure NCPs remain a temporary bridge for technological laggards and to prevent manufacturers from treating NCPs as a long-term alternative to compliance with the standards.

Removing or weakening the exponent would undermine this statutory design. EPA's stated rationale—that accelerating NCPs as the existing formula does could become "cost-prohibitive to the point that certifying with NCPs is no longer a marketable option," *id.*—inverts the purpose of Section 206(g). Continued reliance on NCPs is supposed to become increasingly unattractive, thereby incentivizing manufacturers to achieve actual compliance. Otherwise, manufacturers could rationally treat NCPs as a priced compliance option and delay the investment needed to achieve the required emission reductions. That risk is especially serious here because EPA is proposing NCPs while also proposing or considering numerous other flexibilities.

EPA requests comment on retaining the current formula and on two options. The first option ("Option 1") removes the exponent entirely. The second option ("Option 2") changes the exponent to i -1 instead of i. For the example EPA provides in the Proposal, which is repeated above (50% of engines for one OEM need to purchase an NCP), Option 1 would reduce the penalty by 14% in Year 2 (1.2 vs 1.4), 39% in Year 3 (1.4 vs 2.3), and 69% in Year 4 (1.6 vs 5.2). For Option 2, the penalty would again be reduced by 14% in Year 2 (1.2 vs 1.4), 31% in Year 3 (1.6 vs 2.3), and 50% in Year 4 (2.6 vs 5.2). EPA provides no justification for why such a drastic change in NCP pricing compared to the previous times EPA implemented NCPs is warranted.

Table 17: Annual Adjustment Factor for Current Formula and Two Options for Varied NCP Purchase Share

	NCP purchase share	Current	Option 1	Option 2
Year 1	10%	1.00	1.00	1.00
	25%	1.00	1.00	1.00
	50%	1.00	1.00	1.00
Year 2	10%	1.12	1.11	1.11
	25%	1.18	1.13	1.13
	50%	1.40	1.20	1.20
Year 3	10%	1.25	1.21	1.22
	25%	1.40	1.25	1.29
	50%	2.30	1.39	1.58
Year 4	10%	1.40	1.32	1.35
	25%	1.76	1.39	1.54
	50%	5.23	1.61	2.60
Year 5	10%	1.59	1.43	1.52
	25%	2.35	1.54	1.93

Additionally, the example EPA provides in the text of the Proposal is quite an extreme one where an OEM needs to purchase NCPs for 50% of either their MHDEs or their HHDEs. Given that almost all of the OEMs have announced 2027-compliant engines, it seems inconceivable that one of the OEMs would need to purchase NCPs for half of their engines for many years running. If instead we examine a scenario where an OEM needs to purchase NCPs for 10% of their fleet for multiple years, the increase in penalty under the current formula is much less substantial, with a 12% increase in penalty for Year 2 compared to Year 1, a 25% increase for Year 3, and a 40% increase in Year 4. This multiplier effect is crucial to ensure that OEMs do not use NCPs as a long-term compliance strategy and deprive Americans of the emission reductions Congress intended in enacting the Clean Air Act. Given that several OEMs (*see* above) have already said they plan to sell noncompliant engines and purchase NCPs because it makes financial sense, having an escalating penalty is particularly important.

EPA should therefore retain the existing AAF formula, consistent with its longstanding regulations. If anything, the record supports preserving a strong escalator because EPA has not

quantified emissions impacts of NCP use and has not shown that manufacturers will use NCPs only for a short and unavoidable transition period. Weakening the AAF would reduce the statutory incentive to complete compliant production engines, increase the risk that NCPs become simply another compliance pathway, and further disadvantage manufacturers that invested in the MY 2027 standards on time.

E. The NCPs Are Priced Incorrectly.

1. <u>EPA should include full lifetime DEF Costs and should correct its DEF-cost methodology for high mileage applications.</u>

EPA requests comment on whether to include DEF costs for only the first two to four years of an engine's life, rather than full lifetime DEF costs, in calculating the NCPs. 91 Fed. Reg. at 43,190. EPA should reject that approach. Limiting DEF costs to an arbitrary two-to-four year period would systematically underestimate the cost of compliance and would set NCPs below the level required by Section 206(g)(3)(E), which mandates that NCPs "shall remove any competitive disadvantage to manufacturers whose engines or vehicles achieve the required degree of emission reduction." 42 U.S.C. § 7525(g)(3)(E).

EPA's current inclusion of lifetime DEF costs is correct. EPA explains that its proposed NCP values include direct manufacturing costs, indirect costs, and "incremental lifetime DEF consumption." 91 Fed. Reg. at 43,186. EPA also acknowledges that including lifetime DEF costs is consistent with prior NCP rules in which EPA included lifetime fuel and DEF costs. *Id.* at 43,190 & n.84 (explaining that, for example, the Phase VII rulemaking included lifetime DEF and fuel costs, *see* 77 Fed. Reg. 54,384 (Sept. 5, 2012)). That historical approach should be retained.

Heavy-duty trucking businesses operating MY 2027 heavy-duty engines incur the full lifetime cost of increased DEF consumption associated with meeting the MY 2027 standards, for as long as that engine remains in service. Purchasers consider those operating costs when comparing a vehicle with an engine that meets the MY 2027 standards against a vehicle with an engine certified above those standards through payment of an NCP. If the NCP reflects only two to four years of increased DEF consumption, the NCP would fail to capture a material cost advantage associated with selling a higher-emitting engine over the remainder of the vehicle's useful operating life. That would disadvantage compliant manufacturers in precisely the way that Section 206(g)(3)(E) forbids. Thus, to remove any competitive disadvantage from compliant manufacturers, the NCP must account for the full cost of increased DEF consumption, not only for two to four years. EPA's historical approach of including lifetime DEF costs (discounted at 7%) is correct and should be retained.[130]

EPA should also correct its DEF-cost methodology for high mileage applications. EPA proposes to calculate lifetime DEF costs using vehicle population sales-weighting across each vehicle segment of medium heavy-duty and heavy heavy-duty engines, respectively, and then use a single lifetime DEF-cost value for medium heavy-duty engines and a single value for heavy heavy-duty engines in the NCP calculation. Draft TSD at 11-13, 15, 20. That averaging

[130] Commenters maintain that a lower discount rate, i.e., 2% or 3%, is more appropriate.

approach likely understates the competitive advantage for noncomplying engines used in high-mileage applications. An engine used in a large motor home or other low-mileage application will consume far less DEF over its life than an engine used in a long-haul tractor driven tens of thousands, and often more than 100,000, miles per year. Averaging across those uses may be administratively simple, but it can materially underprice the NCP for the very applications where lifetime DEF savings are largest.

This underpricing risks creating competitive distortion—just what the statute directs EPA to avoid. *See* 42 U.S.C. § 7525(g)(3)(E). If the NCP is based on an averaged DEF cost diluted by lower-mileage applications, it will not remove the competitive disadvantage to the compliant manufacturer. An adjustment that does not increase the administrative burden but is more consistent with the statutory intent of NCPs would be to use the 90th percentile mileage for determining DEF costs for a category rather than the sales-weighted average.

2. EPA should ensure OEMs are not able to game the NCPs with fuel savings.

In the 2004 and 2012 NCPs, EPA included fuel costs in its calculation. The relationship between increased NOx and improved fuel economy is well established, which would allow a vehicle with the same emission controls to be more fuel efficient with higher NOx emissions. Because of the value of fuel savings to fleet owners, EPA must ensure that NCPs are priced correctly to stop OEMs from gaming the market and reducing the efficacy of the program for reasons disallowed by the Clean Air Act.

3. EPA should use real-world data to set NCP price.

In the 2004 NCP, EPA used real manufacturer cost data, submitted to EPA as CBI, to appropriately price the NCP. EPA also collected such information for the 2012 NCP. Given EPA's numerous assertions about the multiple OEMs demanding NCPs, there should be no problem aggregating their data for their pre-2027 compliant engines and their 2027-compliant engines including all the information about DEF and fuel usage associated with each engine. EPA makes no mention of either receiving or asking for this information. In order to accurately price the NCPs for them to serve their function of neither penalizing nor benefiting those who purchase them, EPA must use real world data.

This would enable EPA to create an actual cost curve for engines. Currently, the 50th and 90th percentile costs are based on EPA's assumptions for technology and compliance costs developed for the 2023 Rule. Why would EPA rely on projected technology costs when there are plenty of actual 2027 compliant engines it could use instead?

F. EPA Should Not Adopt a Flattened Marginal Cost Methodology.

EPA requests comment on an alternative approach to calculating the marginal cost, which would result in constant slopes of $22/mg and $38/mg for Medium and Heavy HDE, respectively—far below the proposed MC50 of $72/mg and $82/mg. EPA justifies this request by noting that it used this approach in the Phase VII rulemaking (77 Fed. Reg. 54,384 (Sept. 5, 2012)). However, Phase VII was the only NCP rulemaking—out of eight phases spanning nearly 40 years—in which EPA used this flattened marginal costing approach. The existence of a single

departure from EPA's standard methodology in unique data-gap circumstances does not justify abandoning that methodology where actual compliance cost data is available. Moreover, the flattened methodology would substantially reduce NCP values, weakening incentives for near-compliant engines to close the remaining emissions gap—contrary to the statutory purpose of removing competitive disadvantage for complying manufacturers.

Here, the Agency has empirical data demonstrating that marginal compliance costs vary between the upper limit and the standard. The Agency relies on cost data derived from the 2023 Final Rule's technology cost teardown studies, which examined real aftertreatment systems and quantified the costs of specific emission control technologies. Unlike Phase VII, EPA can estimate the marginal cost of compliance near the standard based on actual technology costs—specifically, the incremental cost of reducing emissions from 65 mg/hp-hr to 35 mg/hp-hr using e-heater technology or cylinder deactivation. Because EPA has empirical data that shows marginal compliance costs are in fact higher as the compliance level approaches the standard, it would be wrong to assume—in contradiction to the data—that marginal compliance costs are constant across the full 165 mg/hp-hr range from the upper limit to the standard.

VIII. EPA Should Not Extend the Specialty-Vehicle Alternate-Standards Provision for Certain Hybrids.

EPA proposes to extend through MY 2030 the allowance for "vehicles with a hybrid powertrain in which the engine provides energy only for the Rechargeable Energy Storage System" to use alternate standards derived largely from nonroad engine programs, while reducing the cap from 1,000 to 200 vehicles per year.

EPA should not apply this provision to extended-range electric vehicles (EREVs) used as ordinary highway vehicles: unlike amphibious vehicles, low-speed vehicles, or all-terrain vehicles with portal axles, EREVs are not true specialty vehicles but an emerging highway powertrain architecture that should be certified under the highway heavy-duty standards.

Extending the allowance risks creating a pathway for OEMs to avoid certifying highway hybrid powertrains by designing vehicles around generator engines certified to weaker nonroad-derived alternate standards, especially because EPA itself says the allowance applies only when no suitable fully certified highway engine is available, while the availability of the alternate pathway may deter manufacturers from developing such engines. This would undermine Section 202(a)(3)(A)(i)'s technology-forcing purpose and would also put EREVs on an uneven playing field relative to other hybrids, including PHEVs.

If EPA chooses to extend the allowance, EPA still should categorically exclude highway EREVs from this specialty-vehicle provision, retain the 200-vehicle annual cap, keep the MY 2030 sunset, and require a rigorous showing that no suitable highway-certified engine exists before any vehicle may use the alternate standards.

IX. EPA's Proposals Regarding DEF Inducements Are Arbitrary and Capricious.

A. EPA's Proposal to Replace SCR-Related Performance Derates with Visible and/or Audible Notifications Would Arbitrarily Undermine In-Use Conformance With The NOx Standard.

Inducements are the mechanism EPA has relied on since 2007 to give reasonable assurance that operators will maintain quality DEF supply and refrain from tampering, so that SCR systems—and the NOx standards that depend on them—actually deliver their intended reductions in use, not merely on the certification test cycle. As EPA explained in the 2023 Final Rule, "[o]perating an SCR-equipped engine without DEF or certain components like an SCR catalyst could cause NOx emissions to increase to levels comparable to having no NOx controls at all." 88 Fed. Reg. at 4376. EPA has relied on derate-based inducements since its 2007 SCR certification guidance, refined that approach through subsequent guidance documents, and then codified and further narrowed it in the 2023 Final Rule to reduce false triggers while preserving the inducement's core function.

EPA now proposes to eliminate mandatory engine performance derates and vehicle speed restrictions—which automatically restrict engine power or maximum speed when an SCR system detects an empty Diesel Exhaust Fluid (DEF) tank, poor-quality/diluted DEF, or system tampering—and replace them with simple dashboard lights and audible buzzers. 91 Fed. Reg. at 43,194. EPA frames the proposed change solely as a response to operator frustration with "false inducements"—instances where sensor faults or software bugs trigger engine derates even when DEF tanks are full, 91 Fed. Reg. at 43,198 —and suggests that simple audible and visual notifications may reduce tampering with SCR systems. But EPA nowhere analyzes whether notifications will secure the same DEF-supply and anti-tampering compliance derates have provided. Nor does EPA explain why, after nearly two decades of incremental refinement demonstrating that derates can be tailored to work effectively, wholesale elimination—rather than continued refinement—is the most reasonable path forward.

EPA has successfully implemented technology-forcing mobile source standards for decades. *NRDC v. EPA,* 655 F.2d 318, 328 (D.C.Cir.1981) ("Congress intended the agency to project future advances in pollution control capability. It was 'expected to press for development and application of improved technology rather than be limited by that which exists today.'" (quoting S. Rep. No. 91-1196, at 24 (1970))). Emission control technologies often experience growing pains. The learning from implementation leads to better products and smoother-operating SCR systems, as it has across prior generations of emission control technology, such as catalytic converters and closed loop controls. The EPA cites false-negatives as one reason for abandoning its appropriate derating strategies entirely, but shares only anecdotal evidence to indicate how widespread this issue can be and argues repeatedly that changes in the 2023 Rule, subsequent guidance, and targeted suggestions in this Proposal should limit false inducements. Even if these incidents occur in-use, more sophisticated control algorithms can address false-negative diagnostic flags. EPA should hold manufacturers and operators to account for ensuring in-use compliance with clean engine standards rather than responding to anecdotal technical challenges by eliminating proven compliance assurance mechanisms. Accordingly, EPA should abandon this unreasoned and harmful Proposal.

First and foremost, EPA presents no evidence to show that a notification-only package adequately ensures in-use emissions performance. Replacing physical performance inducements with passive notifications removes the primary incentive for vehicle operators to maintain compliant DEF dosing and perform necessary emissions repairs. This is because an operator suffers zero immediate mechanical loss of function when an SCR system stops dosing DEF. Inducements that deliberately link the operational capability of the vehicle to the functional state of its emissions control system are therefore critical. The Agency frames the change solely as a response to operator frustration, without analyzing whether notifications alone will actually secure the same level of DEF-supply and anti-tampering compliance that derates have provided. To the contrary, EPA's proposed shift arbitrarily undermines real-world compliance with the MY 2027 NOx standards.

Second, EPA's premise that operator frustration with derates is a principal driver of tampering is not supported by the record and ignores other, potentially, more likely explanations for non-compliance. EPA provides no data to support this assertion. And to the extent tampering is widespread, the motivation may be economic: operators seeking to save money and time on DEF refills, or to offset perceived reductions in engine power from DPF systems, rather than responding to frequent false derates. Weakening inducements from derates to audiovisual notifications will only make non-compliance easier and more frequent for economically motivated operators. EPA provides no data distinguishing these motivations.

Third, it is unreasonable for EPA to rely on the problem of false inducements (based on anecdotal evidence) to justify replacing derates for insufficient DEF when more targeted interventions could address any such false inducements. Most false inducements have nothing to do with insufficient DEF quantity, so removing derate inducements for an empty DEF tank does nothing to address concerns with those false inducements. For example, EPA notes that it "has recently identified UQS as having among the highest failure rates of any SCR components and that using alternative detection methods (e.g., NOx sensors) could further improve SCR system robustness and reduce unnecessary inducements." 91 Fed. Reg. at 43,196 (noting that "EPA's preliminary assessment of warranty data...suggests that UQS failures are a significant source of warranty claims and DEF-related inducement"). But UQS sensors measure DEF quality, so removing derate inducements for inadequate DEF *supply*, as opposed to quality, does nothing to address this issue, even assuming there are problems with UQS failures. Furthermore, EPA issued revised guidance in March of this year to try to address UQS failure. 91 Fed. Reg. at 43,196. More generally, EPA now "expect[s] that, due to the improvements the EPA made in the 2023 Final Rule to reduce the number and type of tampering triggers and to reduce the number of false inducements, these inducements would occur only if there was a problem not easily solvable by adding DEF." 91 Fed. Reg. at 43,199. In other words, to the extent false derates will even be much of a problem after the 2023 Rule's improvements go into effect, they will "mostly occur because the engine's diagnostic system has difficulty detecting the difference between tampering and faulty components." *Id.* Even assuming for sake of argument that EPA is correct that derates should be removed in such cases, they are unrelated to inadequate supply of DEF, and it is therefore irrational to eliminate derates due to empty DEF tanks in response to such false inducements.

Moreover, EPA offers targeted solutions for avoiding false inducements. For example, EPA proposes a number of modifications to OBD requirements to improve reliability and avoid

false derates. 91 Fed. Reg. at 43,200. Assuming for the sake of argument that these proposals have merit, it is unreasonable for EPA to broadly eliminate derate inducements as a solution to supposed frustration with false inducements when EPA itself believes more targeted solutions exist.

In short, if specific diagnostic sensors or software algorithms generate false-positive inducements, the solution is for EPA to refine those diagnostic protocols and software parameters. Abolishing a primary enforcement mechanism that guarantees in-use compliance, rather than fixing specific diagnostic bugs, is arbitrary and capricious.

B. EPA's Proposal Is Arbitrary and Capricious Because the Agency Changed Its Position from the 2023 Final Rule Without Adequate Explanation, in Violation of the Change-In-Position Doctrine.

EPA does not identify any significant new data on heavy-duty SCR-related inducements since the 2023 Rule which would support their determination that derates are no longer necessary. Instead, EPA cites the same operator frustration rationale that it expressly considered and addressed in 2023. The 2023 Final Rule implemented a series of targeted measures to balance compliance assurance against operator concerns: it narrowed tampering triggers to focus on "open circuit" faults associated with actual component disconnection; adopted graduated derate schedules calibrated to vehicle operating speed, replacing the prior 5 mph final inducement with a 25 mph final derate; required improved driver information including fault codes and countdowns; mandated that generic scan tools be capable of resetting inducements after repairs; and adopted lengthened warranty and useful life periods to incentivize manufacturers to improve component durability. An agency reversing a considered policy determination must acknowledge the change and give a reasoned explanation for disregarding the facts underlying the prior policy; EPA has not done so. *See, e.g., Encino Motorcars, LLC v. Navarro*, 579 U.S. 211, 221 (2016) (agency must provide "a reasoned explanation" for a change in position).

EPA's failure to adequately justify rolling back inducements is particularly egregious, since the purpose of this policy change is to actively prevent illegal behavior. Contrary to the Agency's dubious arguments, it remains self-evident that removing derating schemes altogether will certainly facilitate the very practices the Agency is purporting to prevent and significantly increase emissions.

Indeed, the Proposal's simultaneous rollback of warranty and useful life requirements directly undercuts its stated rationale: if operator frustration stems primarily from defective sensors and component failures, then weakening the requirements designed to hold manufacturers accountable for component durability will predictably worsen—not ameliorate—the false-inducement problem. Crucially, EPA itself admits in the preamble that false inducements are heavily driven by hardware aging and physical degradation, noting for example that "wiring harness degradation due to age or corrosion in connectors after hundreds of thousands of miles can provide inaccurate readings." 91 Fed. Reg. at 43,198. This admission exposes the fundamental contradiction at the heart of EPA's Proposal: (1) EPA admits false inducements are caused by aging wiring harnesses and corroded sensors. → (2) EPA proposes rolling back Warranty & Useful Life, freeing OEMs from repairing aged components. → (3)

Instead of holding OEMs accountable for in-use hardware performance, EPA eliminates derates entirely. → (4) *As a result*, Manufacturers build cheaper, less durable sensors; operators ignore dashboard warnings; real-world NOx emissions surge by up to +3,339%. *See* DRIA at tbl.2-4.

By proposing to gut emission warranty coverage simultaneously eliminating performance derates, EPA creates a dangerous feedback loop. Manufacturers are stripped of financial liability for aging, corroded sensors, while truck operators are given freedom to ignore dashboard lights when those sensors fail. The ultimate cost of this regulatory collapse will be paid by overburdened communities in the form of thousands of tons of unmitigated, illegal toxic air pollution.

In a similar vein, the Proposal acknowledges that the lack of DEF or the use of poor quality DEF can damage aftertreatment components leading to catastrophic damage - to both the hardware and the environment. Cummins for example, has noted that the urea dosing injector can be damaged without continuous flow.[131] The proposal to remove derates exacerbates this problem by allowing trucks to operate longer, even indefinitely, before DEF can be refilled. This will have the effect of accelerating the deterioration of aftertreatment components and increasing emissions in another perverse feedback loop. Furthermore, EPA claims (anecdotally) that there is negative public sentiment about SCR systems, DEF, and derates. This Proposal is a misguided attempt to pass the blame for derates from the regulated agency onto the engine manufacturers, who may feel forced to continue to derate engines during the warranty period to protect the hardware even if the regulatory impetus becomes voluntary. EPA and the manufacturers (and perhaps the insurance industry) should work together to inform the public of why inducements like derating are critical for reducing emissions as well as maintaining proper functioning engines. Just as much of the public learned to maintain their vehicles by regularly changing tires, motor oil, windshield wiper fluid, engine coolant, brake fluid, and transmission fluid to prevent catastrophic damage, the trucking industry, who are arguably more technically savvy than the general public, can learn to replace DEF appropriately and ensure that their costly engines are well-maintained in order to avoid catastrophic damage.

Further, EPA itself acknowledges that "vehicle owners and operators have not yet experienced the inducement requirements finalized in the 2023 Final Rule." 91 Fed. Reg. at 43,197. Yet the Agency acknowledges that the 2023 Rule "made several changes to reduce the severity of inducements." 91 Fed. Reg. at 43,196-97. EPA thus has no basis to conclude that the 2023 Rule's solutions are not working when the Agency lacks any real-world experience with their implementation, and the Agency even indicates that the changes made in the 2023 Rule may at least partially address its concerns.

EPA's own data undercuts the inference that operator complaints reflect a flaw in the derate mechanism itself, rather than a diagnostic-accuracy problem that is separately correctable. The CARB survey EPA cites—which found that 37% of surveyed derate events were attributable to failed sensors, not inadequate DEF supply, poor DEF quality, or tampering—was submitted during the 2023 rulemaking. EPA and CARB agreed that the evidence supported narrowing tampering triggers and improving component durability through lengthened warranty

[131] Aftertreatment FAQ, Cummins Inc., https://www.cummins.com/en-na/components/aftertreatment/faq (last visited Aug. 28, 2026).

requirements. 2023 RTC 718, 744. That record supports improving sensor reliability, not eliminating the inducement mechanism while simultaneously rolling back the warranty requirements designed to address sensor-reliability problems.

There is no data in the record demonstrating widespread technical problems with SCR technology leading to unwarranted derates. To the contrary, EPA now "expect[s] that, due to the improvements the EPA made in the 2023 Final Rule to reduce the number and type of tampering triggers and to reduce the number of false inducements, these inducements would occur only if there was a problem not easily solvable by adding DEF." 91 Fed. Reg. at 43,199. The warranty data EPA cites has not been made public, and the Agency concedes it has not fully analyzed this data. This renders EPA's action premature. Even after analysis, EPA should determine whether any increased warranty claims reflect transitory phenomena associated with new technology implementation—a well-documented pattern in mobile source regulation—rather than fundamental flaws in derate-based inducement design.

EPA's own record confirms that high-quality DEF supply is not a meaningful burden justifying elimination of the derate backstop. EPA acknowledges that DEF "has become widely available and widely used" at retail stores and diesel refueling stations nationwide. 91 Fed. Reg. at 43,195. Because "refilling DEF is easy and DEF is readily available at retail stores and diesel refueling stations nationwide," EPA now says "it should not require much time to find and refill DEF to resolve the audible notification." 91 Fed. Reg. at 43,198. But this cuts both ways. If DEF is as available as EPA says, the burden of maintaining an effective inducement mechanism is also correspondingly modest, and EPA has not explained why wholesale elimination—rather than addressing the sensor-driven false-trigger problem—is the reasoned response.

EPA's failure to disclose relevant SCR warranty data violates Clean Air Act Section 307(d)(3). EPA notes that it "requested information from the top 14 highway and nonroad diesel engine manufacturers" about "warranty claims, failure rates, and repair information." 91 Fed. Reg. at 43,196. Yet despite receiving and relying on this data, EPA fails to disclose any of it. Section 307(d)(3) requires EPA to include in the rulemaking docket "all data, information, and documents" on which the proposed rule is based. As noted earlier, even CBI can be anonymized or aggregated to remove identifying information. By withholding the SCR warranty data, EPA denies the public any opportunity to comment on information that could support, refute, or contextualize the Agency's claims about the need for the proposed changes.

C. EPA's Sole Reliance on Seatbelt-Reminder Research to Support Eliminating Derates Is Misplaced and, by the Agency's Own Admission, Does Not Translate to the DEF Context.

EPA seeks support for the conclusion that notifications can substitute for derates from two studies concerning audible seatbelt reminders in passenger cars. Yet EPA simultaneously recognizes the contexts are not comparable: "There are clearly differences in the use of seatbelts and the use of DEF. For example, the financial impact is different; the use of DEF increases the operating cost of a diesel-fueled vehicle while the use of a seatbelt is free. The risks are also different; not wearing a seatbelt can have severe repercussions for the operator, including serious injury or death, while currently not using DEF can result in a vehicle speed derate." 91 Fed. Reg. at 43,198. Drivers in many States also face civil fines for driving without seat belts which, unlike

DEF levels, law enforcement can visually observe in a moving vehicle. EPA's sole reliance on seatbelt studies of limited relevance to replace a decades-old, proven inducement regime with audiovisual reminders is arbitrary and capricious.

EPA's inapt comparison exposes the arbitrary nature of its Proposal. Audiovisual reminders can increase seatbelt usage because operators are motivated to avoid immediate injury, death, or civil penalty. By contrast, absent engine derates, not using DEF has no immediate negative impact on the operator. It would not be irrational for some operators to ignore an audiovisual reminder rather than incur the cost of refilling DEF or a potentially larger expense of an aftertreatment component repair. Even a small increment of noncompliance would multiply the emissions of the heavy-duty fleet (*see* part IX.D). Behavioral studies premised on the risk of death or injury cannot reliably predict operator behavior in a context where the operator experiences cost savings and virtually no direct negative consequences.

The seatbelt studies also involved passenger-vehicle drivers, not commercial heavy-duty operators subject to incentive structures distinct from the safety-motivated compliance EPA relies on in the seatbelt context, including mileage-based pay, delivery schedules, and Hours-of-Service constraints. EPA cites no DEF- or SCR-specific behavioral data to support its premise that audiovisual notifications alone will secure comparable compliance to derates.

Given the absence of any SCR- or DEF-specific evidence, and EPA's own acknowledgment that the seatbelt analogy is imperfect, EPA has failed to satisfy its obligation under Section 307(d) to ground this significant policy reversal in reasoned, record-based analysis.

D. EPA's Proposal Is Arbitrary and Capricious Because the Agency Has Failed to Account for or Quantify the Health and Welfare Impacts of Eliminating Derate-Based Inducements from Onroad Diesel Vehicles, and Its Cost Analysis Is One-Sided.

Because EPA is proposing to weaken a compliance mechanism that directly affects in-use emissions, it was incumbent on the Agency to analyze whether and to what extent emissions will increase. The Agency's failure to conduct this analysis, coupled with its admission that it cannot project the emissions effects of the change, also renders the Proposal arbitrary.

Because an operator suffers zero immediate mechanical loss of function when an SCR system stops dosing DEF, physical performance inducements (such as progressive speed and power derates) were established as critical compliance infrastructure. Inducements deliberately link the operational capability of the vehicle to the functional state of its emissions control system. Replacing mandatory derates with passive dashboard lights or audible warnings removes the only safeguard that operates on the vehicle itself in real time that prevents a truck from operating indefinitely as an uncontrolled polluter.

Empirical data from state regulators and EPA's own emission inventory modeling confirm the catastrophic emissions surges that occur when SCR systems fail or are neglected:

- *California Air Resources Board (CARB) Failure Quantification:* CARB's testing demonstrated that operating a heavy-duty diesel vehicle with depleted, contaminated, or

tampered DEF increases tailpipe NOx emissions to levels six- to ten-times higher than baseline emissions. *See* CARB Comments, EPA-HQ-OAR-2019-0055-1186, att. 2, at 79–80, 96. When operators dilute DEF with water to bypass purchasing real urea, NOx emissions spike to eight to ten times baseline levels. *Id.* at 96.

- *EPA MOVES Modeling Emission Factors:* EPA's own DRIA documents even higher emission multipliers. An aftertreatment NOx sensor failure increases running NOx emissions by 1,629% for MY 2027–2028 engines. Complete aftertreatment system malfunctions cause an astounding 3,339% increase in NOx emissions. *See* DRIA at 17, tbl.2-4.

Without mandatory performance derates, vehicle operators face zero immediate operational consequences for ignoring empty DEF tanks or bypassing failing sensors. In commercial freight operations where daily vehicle uptime and fuel/fluid expenses directly dictate profit margins, relying on driver warnings increases the chance that maintenance will be deferred and tampering will go uncorrected, flooding communities along freight corridors with uncontrolled NOx pollution.

Despite this potential for significant emissions and public health impacts, EPA characterizes the cost of this change only in terms of manufacturer software-development savings. EPA fails to quantify any corresponding increase in NOx emissions that could result if notifications prove less effective than derates at compelling DEF replenishment and deterring tampering, despite the availability of methods to estimate such increased mal-maintenance and tampering based on MOVES, as EPA has done for other provisions of this Proposal. *See* DRIA ch. 2 & MOVES documentation.

EPA's preamble contains a fatal admission. EPA acknowledges that it "is not able to accurately project the degree to which SCR systems would be ineffective due to low DEF levels, low-quality DEF, or component-level tampering that can lead to improper DEF dosing, and therefore the Agency cannot project any associated increase in emissions." 91 Fed. Reg. at 43,210. EPA further admits it "is also unable to estimate whether the proposed removal of derates under this Proposal would result in a reduction in emissions due to reduced user frustration and fewer instances of in-use tampering." 91 Fed. Reg. at 43,210. This is an extraordinary concession: EPA proposes to eliminate a compliance mechanism it has relied on for nearly two decades without any ability to project whether the change will increase or decrease emissions. An agency action premised on the hypothetical and counter-intuitive claim that it will reduce tampering and maintain compliance, when the Agency admits it cannot estimate the emissions effects in either direction, is the definition of arbitrary and capricious decision-making.

Where the Agency has failed to estimate the emissions impacts of removing derates from the Proposal, we present the following analysis for the Agency's consideration. It stands to reason that when engine derates are removed, a fraction of the fleet will operate without DEF and simply ignore the audiovisual warnings, perhaps even tampering to silence the alerts. As noted, there would be strong economic incentive for this non-compliance as it reduces the costs related to continuous DEF refills and maintenance of the urea SCR aftertreatment system. This incentive will be even greater after the brief warranty period has lapsed. To estimate emissions impact it is critical to quantify the emission rates as well as the frequency of non-compliance.

The emission rate of heavy-duty diesel engines with non-compliant NOx aftertreatment can range, but logically the most likely mechanism for increased emissions (if this Proposal were finalized as proposed) is expected to result from failure to fill the DEF tank. In such a case, the NOx emissions would be equal to its engine-out emissions. It is standard to refer to "engine-out" emissions as the emissions rate at the engine exhaust, while "tailpipe" emissions is the emissions rate post aftertreatment (in this case Urea SCR system). We had mentioned earlier that "uncontrolled" engine-out NOx emissions is approximately 3 to 4 g/bhp-hr on the standard test procedure and can vary by engine. In these comments, the term "uncontrolled" is the level of emissions prior to the advent of aftertreatment systems, i.e. meeting the 1998 standard of 4.0 g/bhp-hr (for NOx+HC). However, the engine-out emissions for 2027 diesel engines may be higher than 4.0 g/bhp-hr. One of the advantages of Urea SCR over other aftertreatment systems is that fuel efficiency can be improved by increasing engine-out NOx while tightening the control of tailpipe NOx emissions with increased DEF dosing. There is strong economic incentive for truck operators to minimize overall cost per mile (or trip) so the engine manufacturers balance engine-out NOx, DEF and fuel in order to provide optimum value for their customers. Additionally, as fuel prices increase relative to the price of DEF, the stronger the incentive to increase engine-out NOx. To determine the extent to which engine-out NOx is increased for 2027 diesel engines, it is helpful to look at what the engine manufacturers have stated in the public record:

- *International S13 engine:* This high volume engine is expected to meet the 2027 standards. In numerous public releases, International announced that this engine will have virtually no exhaust gas recirculation.[132] EGR is an effective technology to reduce engine-out NOx.
- *Cummins multiple engines:* In a 2009 DEER conference presentation, Cummins showed on a plot that the sweet spot for minimal fuel and DEF consumption combined is when engine-out NOx is 8.0 g/bhp-hr.[133]
- *Scania DC13 engine:* This high volume engine is expected to meet the 2027 standards with no EGR and NOx controlled with SCR aftertreatment. The elimination of EGR hardware would improve fuel economy and reduce the cost of the engine.[134]
- Throughout the trade journals, engine manufacturers beyond those mentioned above are touting improved fuel economy in their next generation engines as a result of reduction or elimination of EGR systems amongst other techniques.

In earlier rules, EPA stated that EGR reduces NOx by approximately 50%. This puts all three manufacturers cited above with engine-out NOx emissions in the range of 6 to 8 g/bhp-hr,

[132] International Press Release, "International confirms EPA 2027 readiness with proven S13 Integrated Powertrain," Jan. 7, 2026, https://news.international.com/2026-01-07-International-Confirms-EPA-2027-Readiness-with-Proven-S13-Integrated-Powertrain

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[133] Donald Stanton, "Technology Development for High Efficiency Clean Diesel Engines and a Pathway to 50% Thermal Efficiency," Cummins presentation at Deere Conference (Aug. 5, 2009).

[134] Dieselnet, "Scania introduces Euro VI engine without EGR," June 10, 2014, https://dieselnet.com/news/2014/06scania.php.

or roughly 100% higher than "uncontrolled" emissions. Therefore, we can expect non-compliant 2027 diesel engines to emit 170 to 229 times the 35mg/bhp-hr standard.

Because an engine-out rate of 4 g/bhp-hr reflects pre-2004 standards, and an engine-out rate of 7 g/bhp-hr is a conservative upper range reflecting the above information indicating rates up to 8g/bhp-hr may be common, we therefore present estimated NOx emissions caused by vehicle operation without DEF using both engine-out emission levels.

Environmental Resources Management (ERM), on behalf of commenter NRDC, estimated the potential impact of operators of heavy-duty diesel vehicles (HDDVs) not refueling their DEF tanks. In order to model this, ERM used the public version of MOVES (MOVES5), but effectively recreated MOVES5.R2 (which EPA utilized in the DRIA) by incorporating updated activity data provided by EPA. The full data from ERM's analysis can be found in the spreadsheet titled "HDV_rollbacks_emission_analysis_summary_data," tabs "DEF_VMT_Share" and "DEF_compliance_VMT," uploaded to the docket with our comments.

To understand the relative magnitude of emission impacts associated with increased VMT without DEF, ERM took two approaches. First, ERM estimated the increase in NOx emissions if a consistent share of all annual VMT occurs without DEF (share applied to all onroad vehicles MY 2027 and later). Second, ERM also estimated the increase in NOx emissions if only a share of operators drove specific distances between filling up DEF tanks (assuming 5,000 VMT per DEF tank across all vehicle types). This second analysis looked at two variables: (1) the share of vehicles that do not always operate with DEF, and (2) the average distance driven without DEF by these vehicles before the DEF tank is refilled. For both approaches, ERM estimated emissions using two engine-out NOx rates – 4 and 7 g/bhp-hr.

ERM's analysis shows significant emissions impacts across a range of reasonable assumptions. As we have repeatedly stressed, due to the removal of engine performance derates and inducement requirements, it is very likely that vehicle operation without DEF will be higher in the Action case. Whether all vehicles drive a small share of miles without DEF or a few vehicles drive a large share of miles without DEF, NOx emissions can increase significantly due to a relatively small increase in vehicle operation without DEF because engine-out NOx rates are orders of magnitude higher than the standards.

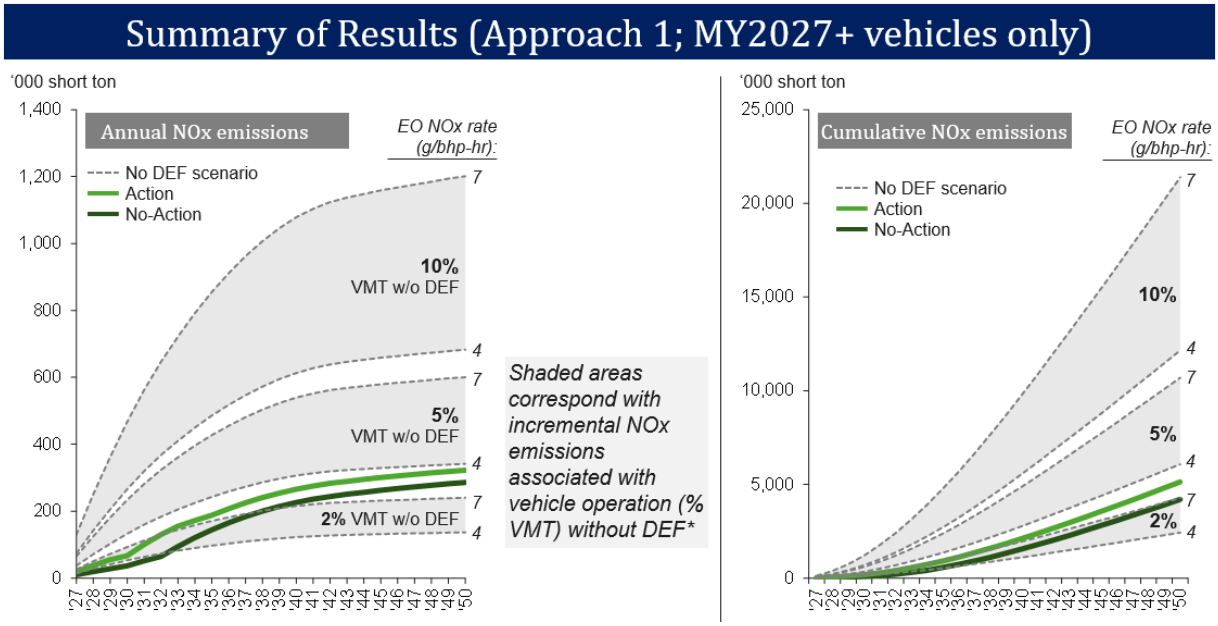
Specifically, using the first approach, ERM estimated the NOx emissions associated with vehicle operation without DEF as shown in the table below, which provides the incremental annual and cumulative NOx emissions associated with vehicle operation without DEF, by engine out NOx rate and VMT share.

Table 18: Incremental NOx emissions associated with vehicle operation without DEF

EO NOx (g/bhp-hr)	VMT share w/o DEF	Annual (short ton)			Cumulative (short ton)		
		2030	2040	2050	2030	2040	2050
4	2%	53,203	122,627	136,543	137,611	1,113,552	2,431,676
4	10%	266,015	613,134	682,715	688,053	5,567,759	12,158,380
7	2%	93,608	215,751	240,235	242,121	1,959,216	4,278,336
7	10%	468,039	1,078,756	1,201,175	1,210,607	9,796,081	21,391,681

ERM also provided graphs showing the following results.

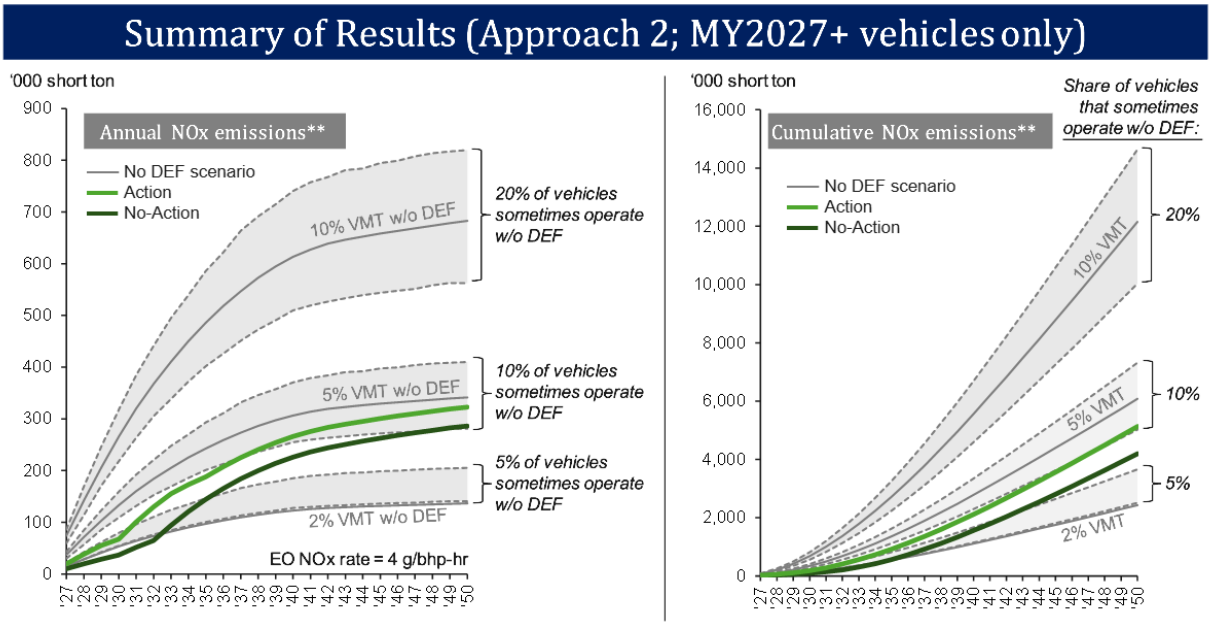
Figure 7: Summary of Results (Approach 1; MY 2027+ Vehicles Only)



** Relative to baseline scenario of no miles driven with empty DEF tank and current HDV NOx standards, i.e., 0.035 g/bhp-hr for LHD, 0.05 g/bhp-hr for M/HHD). Because incremental emissions associated with vehicle operation without DEF are calculated independently from DRIA cases and only reflect the emissions increase associated with driving without DEF (i.e., increase is potentially applicable to both the Action and No-Action cases), results are not inherently additive to either DRIA case. Action and No-Action case emissions shown to illustrate relative magnitude of NOx emissions when diesel HDVs operate without DEF (at EO rates)*

ERM's second approach yields the following results, using an engine-out rate of 4 g/bhp-hr.

Figure 8: Summary of Results (Approach 2; MY 2027+ Vehicles Only)



** *Relative to baseline scenario of no miles driven with empty DEF tank and current HDV NOx standards, i.e., 0.035 g/bhp-hr for LHD, 0.05 g/bhp-hr for M/HHD). Because incremental emissions associated with vehicle operation without DEF are calculated independently from DRIA cases and only reflect the emissions increase associated with driving without DEF (i.e., increase is potentially applicable to both the Action and No-Action cases), results are not inherently additive to either DRIA case. Action and No-Action case emissions shown to illustrate relative magnitude of NOx emissions when diesel HDVs operate without DEF (at EO rates)*

- *Notes on charts:*
  - *Shaded areas correspond with incremental NOx emissions associated with vehicle operation without DEF**
  - *Lower range of shaded areas correspond with **4,205** VMT before operators refill DEF*
  - *Upper range of shaded areas correspond with 10,000 VMT before operators refill DEF*

MY27+ derate schedule*

Vehicle type	VMT
High-speed	7,675
Medium-speed	3,815
Low-speed	1,125
Average	**4,205**

*Implied VMT associated with 2023 Final Rule derate schedule; https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1036/subpart-B/section-1036.111

For both approaches, the above values are relative to a baseline scenario in which no miles are driven without DEF and vehicle emission rates are consistent with current NOx standards (i.e., 0.035 g/bhp-hr for LHD, 0.05 g/bhp-hr for M/HHD). Although the current derate schedule does allow for VMT without DEF (i.e., total emissions of the No-Action case would likely be higher than presented in DRIA), it is reasonable to assume that VMT without DEF – and therefore, NOx emissions – will increase under the Action case.

Due to uncertainty in operator behavior, the exact amount of future driver noncompliance due to the inducement changes in the Proposal is impossible to know. ERM estimated a wide range of potential DEF noncompliance levels, from 1% to 100% of annual VMT driven without DEF, and the full results of that analysis are available in the spreadsheet

"HDV_rollbacks_emission_analysis_summary_data," tabs "DEF_VMT_Share" and "DEF_compliance_VMT," uploaded to the docket with our comments. However, the limited range of estimates excerpted above show that even very low levels of VMT driven without DEF can have severe emissions impacts. For example, incremental NOx emissions from driving only 2% of total miles at an engine-out NOx rate of 7 g/bhp-hr are roughly equal to total No-Action case NOx emissions. This scenario is roughly equal to a very plausible scenario in which (1) only 5% of vehicles sometimes operate without DEF (i.e., 95% always operate with DEF) and (2) those vehicles travel the average distance allowed by current derate schedules (4,205 miles) (*see* graph above with summary results of Approach 2).

ERM also quantified the health impacts and related societal costs due to increased emissions resulting from operators driving without DEF as a result of the Proposal's changes to inducements. To do so, ERM utilized COBRA factors (health incidence and monetary value per ton of emissions) to translate increased emissions into health impacts. Because health impacts of emissions are influenced by a variety of factors (geography, emitting source, co-pollutants, etc.), detailed COBRA factors [demarcated by State, sector (heavy-duty highway vehicles), and fuel type (diesel, gasoline, CNG)] were combined with applicable state-level COBRA factors (incidence and monetary value per ton) to produce national health impacts. ERM modeled emissions through 2050; to enable 2027-2055 cumulative values, 2051-2055 values were assumed to stay constant (for both emissions and COBRA factors).

The following updates and adjustments were applied to the modeling. For vehicle stock and emissions, ERM downscaled national data using MOVES method (state-level VMT share of national VMT applied to national vehicle population). For Heavy Duty ZEV sales share forecasts, States were categorized as high or low ZEV share states. High ZEV share States were States that signed the MHD ZEV MOU and/or previously adopted ACT, and low ZEV States were all other States. ZEV sales share ratio between ACT/non-ACT States (modeled by EPA) were applied to high/low ZEV sales share States, respectively. For COBRA factors, national health incidence and monetary value factors associated with each relevant State, sector (highway vehicles), subsector (fuel and vehicle types) and pollutant (NOx, PM2.5, VOC) were pulled from EPA's COBRA model. The factors correspond with national impacts of state-level emissions.

As with its emissions estimates, ERM quantified the health impacts and related societal costs across a wide range of potential VMT driven without DEF (from 2% to 50%), at engine-out rates of both 4 g/bhp-hr and 7 g/bhp-hr. The full analysis is contained in the spreadsheet titled "NoDEF_emission_health_impacts," uploaded to the docket with our comments; that spreadsheet contains further explanation of ERM's methodology in the "contents" tab.

The results of ERM's analysis show significant mortality and societal costs associated with the emissions caused by even low levels of VMT driven without DEF. The following table shows a summary of a subset of results from ERM's analysis, specifically the results for 2% and 10% of VMT driven without DEF at engine-out rates of 4 and 7 g/bhp-hr. Because the emissions underlying this analysis are calculated independently from the Action case and only reflect the emissions increase associated with driving without DEF (i.e., this increase is potentially applicable to both the Action and No-Action cases), results are not provided in context of Action/No-Action cases and are not inherently additive to Action case results.

Table 19: Summary of Results (MY 2027+ Vehicles Only)

Summary of Results (MY2027+ vehicles only)

			Cumulative Impacts* (2027-2055)	
Analysis	**Scenario**		**Mortality**	**Societal Costs (billion 2024 USD)**
	EO rate (g/bhp-hr)	**VMT w/o DEF**	**Mortality**	**Societal Costs (billion 2024 USD)**
No DEF	4	2%	16,200-21,200	$270-$350
		10%	81,000-106,000	$1,360-$1,730
	7	2%	28,500-37,300	$480-$610
		10%	142,500-186,500	$2,390-$3,050

As this table shows, driving only 2% of VMT without DEF at a relatively low engine out NOx rate (4 g/bhp-hr) increases NOx emissions that result in cumulative health impacts that exceed those of the DRIA Action case by nearly 200%.

In sum, ERM's analysis shows that even with conservative assumptions, the proposal to eliminate derate inducements will lead to significant NOx emissions and associated mortality and societal costs. EPA's refusal to even attempt to estimate these emissions and social costs, particularly given the significant risk that the Proposal will increase VMT driven without DEF, is arbitrary and capricious.

EDF also estimated the potential impact of the operators of heavy-duty diesel vehicles (HDDVs) not refueling their DEF tanks. EDF did so using a different methodology from ERM, but the outcome of the analysis is largely consistent with the results of ERM's analysis, further demonstrating the arbitrariness of EPA's failure to estimate emissions or social costs of its inducement proposals. Specifically, EDF utilized several aspects of EPA's MOVES5.R2 fleet emissions model plus estimates of the NOx emissions from HDDVs with failed SCR aftertreatment systems.

Starting with the estimates of the NOx emissions from HDDVs with failed SCR aftertreatment systems. An empty DEF tank completely disables the SCR system, resulting in tailpipe NOx emissions being the same as engine-out levels. The unavailability of DEF for a sufficiently long period of time can also result in permanent damage to the SCR systems even if DEF use is restored. EDF calculated the emissions impact for two levels of engine out NOx, 4 and 7 g/bhp-hr. EPA estimates that NOx emissions from a HHDE with failed SCR would be 4 g/bhp-hr. As discussed earlier in this part, this number is very likely an underestimate based on older generation vehicles. OEMs have announced fuel efficiency improvements with 2027 compliant engines as well as the removal of other NOx control equipment like EGR. (Engine-out NOx emissions increase as fuel efficiency improvements are applied.)

EDF ran MOVES nationally for calendar years 2027-2055 for all HDV classes and fuels. Then determined the NOx emission factors (g/mi) for the 2026 and 2027 model year by age for each HDDV regulatory class and source type. In MOVES, the emissions from vehicles are modeled to have some level of T&M, which raises the emissions above the level OEMs

engineer. In order to understand how removing the SCR system from an engine would impact the change in emissions, we first need to know what the vehicle, absent any T&M, was operating at, the so called "zero-mile emission level." To do this, EDF used the information relating to T&M in Appendix B of EPA's MOVES document addressing HDV emissions to back-calculate the NOx emissions at zero miles for each HDV segment for MY 2026 and MY 2027.[135]

In order to calculate the g/mi NOx for the 4 and 7 g/bhp-hr engine out NOx levels, EDF used the same method EPA has previously used to determine how strengthening of NOx standards would change real world g/mi NOx levels from HDDVs. EDF used the zero-mile emission levels to determine the percentage reduction between model year 2026 and 2027. We then compared these emission reductions to the reductions implicit in the NOx standards: 200 mg/bhp-hr for model year 2026 and 35-50 mg/bhp-hr for 2027. The ratio of the change in NOx emissions per mile and the change in the NOx emission standards is termed R_{in_use}.[2] EPA presents the values of R_{in_use} only for HHDDVs, and then only by operating mode. EDF's approach allowed the calculation of R_{in_use} for average onroad driving for all the HDDV segments. While this is a simplification on EPA's process, given the short comment timing and inadequate information provided by EPA, we believe this is a reasonable methodological choice. Table 20 below includes the zero-mile emission levels for each reg and source type for MY 2026 and 2027 as well as the corresponding R_{in_use}.

[135] Exhaust Emission Rates for Heavy-Duty Onroad Vehicles in MOVES5 (EPA-420-R-24-015), (U.S. EPA, November 2024) (available at https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101CU1O.pdf).

Table 20: Determination of Relevant Factors from MOVES5.R2						
Regulatory Class	Source Type	Vehicle Age at:		Zero Mile Emission Level (mg/mi)		Rin_use
		End of Warranty	End of Useful Life	2026 MY	2027 MY	
42	52	2	4	449	183	0.718
42	53	2	4	311	113	0.772
42	54	2	4	373	128	0.798
46	41	2	5	1,025	352	0.875
46	42	2	5	939	325	0.872
46	43	2	5	799	279	0.868
46	51	2	5	1,092	393	0.853
46	52	2	5	911	336	0.841
46	53	2	5	712	251	0.863
46	54	2	5	725	215	0.939
46	61	2	5	812	269	0.892
46	62	2	5	745	233	0.917
47	41	1	4	1,315	467	0.860
47	43	1	4	982	361	0.842
47	51	1	4	1,425	520	0.847
47	52	1	4	1,264	482	0.825
47	53	1	4	1,019	362	0.860
47	54	1	4	1,030	339	0.895
47	61	1	4	1,071	375	0.866
47	62	1	4	921	324	0.864
48	42	2	10	1,849	420	1.030

Once these zero-mile emission levels were determined, EDF adjusted the NOx emissions for all 2027 and later HDDVs to reflect these emission factors. This "zero mile NOx emission" fleet became the baseline for estimating NOx emissions which included vehicles without DEF. Vehicles without DEF were assumed to emit at either 4 or 7 g/bhp-hr (4,000 or 7,000 mg/bhp-hr) after the expiration of their emission warranty. The impact of removing DEF was estimated as:

$$No\ DEF\ Factor = \left(1 + R_{in-use} \frac{EO\ NOx - MY2027\ standard}{MY2027\ standard}\right)$$

Where R_{in_use} is the value in Table 20, EO NOx is either 4 or 7 g/bhp-hr, and the MY 2027 standard is either 35 or 50 mg/bhp-hr

The resultant "No DEF Factors" are shown in the table below.

Table 21: No DEF Factor Over Zero Mile NOx			
Regulatory Class	Source Type	4 g/bhp-hr	7 g/bhp-hr
42	52	82.4	144.0
42	53	88.5	154.7
42	54	91.4	159.8
46	41	70.1	122.7
46	42	69.9	122.2
46	43	69.6	121.6
46	51	68.4	119.6
46	52	67.4	117.9
46	53	69.2	121.0
46	54	75.2	131.5
46	61	71.5	125.0
46	62	73.4	128.4
47	41	69.0	120.6
47	43	67.6	118.1
47	51	67.9	118.7
47	52	66.2	115.7
47	53	68.9	120.5
47	54	71.7	125.4
47	61	69.4	121.4
47	62	69.3	121.1
48	42	82.4	144.2

For this analysis, EDF assumed that all vehicle owners used DEF through at least the end of their warranty. In order to best represent the impact of the entire Proposal, we used the proposed warranty levels instead of the ones finalized in the 2023 Rule. EDF determined the ages at which each HDDV segment reached the end of its warranty and useful life from estimates presented by EPA in Appendix B of its MOVES document addressing HDV emissions, presented in Table 20.

EDF calculated the impacts for a wide range of non-DEF use share, 2% all the way to 60%. Given the unprecedented nature of this action by EPA, the clear economic rationale for not using DEF, and the Trump Administration's refusal to enforce laws pertaining to vehicle emission control tampering, the share of non-DEF use may be a substantial and it is thus crucial for EPA to consider the possibility of high levels of non-DEF use. The share of non-DEF use was calculated as additional vehicles not using DEF for the remainder of their life after the warranty expires. A different way to think about this exercise would be an additional share of VMT traveled without SCR. These are numerically identical.

The impact of vehicles without SCR was then calculated as the difference between NOx emissions without DEF use and that of the "Zero Mile Emissions" fleet. The formula used to calculate that is as follows:

Incr. Emis.= (No DEF Factor -1) x (MY 2027 zero mile emissions) x (% non DEF use)

The incremental emissions increase from the non DEF use by the share of the fleet were then added to fleetwide NOx emissions from MOVES5.R2 to generate total NOx emission inventories which accounted for the assumed level of DEF avoidance.

The fleetwide NOx emission inventories and the impact of DEF avoidance assuming a range of DEF avoidance and engine-out NOx emission levels of 4 and 7 g/bhp-hr are shown in Table 22.

Table 22: Nationwide HDDV NOx Emissions Vs. DEF Avoidance (1000 US Tons)						
No DEF Rate	0%	2%	10%	20%	40%	60%
Calendar Year						
	HDDV NOx Emissions: 4 g/bhp-hr Engine Out NOx Emissions					
2030	611	645	782	953	1,295	1,637
2040	325	420	801	1,278	2,231	3,184
2050	280	388	818	1,356	2,431	3,507
Cumulative	11,272	13,656	23,190	35,107	58,942	82,777
	Impact of DEF Avoidance: 4 g/bhp-hr Engine Out NOx Emissions					
2030	-	34	171	342	684	1,026
2040	-	95	477	953	1,906	2,859
2050	-	108	538	1,076	2,151	3,227
Cumulative	-	2,383	11,917	23,835	47,669	71,504
	HDDV NOx Emissions: 7 g/bhp-hr Engine Out NOx Emissions					
2030	611	671	912	1,213	1,816	2,418
2040	325	493	1,164	2,003	3,681	5,360
2050	280	469	1,227	2,174	4,069	5,963
Cumulative	11,272	15,470	32,259	53,245	95,218	137,191
	Impact of DEF Avoidance: 7 g/bhp-hr Engine Out NOx Emissions					
2030	-	60	301	602	1,205	1,807
2040	-	168	839	1,678	3,357	5,035
2050	-	189	947	1,894	3,788	5,683
Cumulative	-	4,197	20,986	41,973	83,946	125,918

EDF also conservatively assumes that EPA will not act to allow the retrofit of the reduced inducement provisions to pre-2027 HDVs. If EPA did so, the already enormous impacts shown here would increase even further.

For comparison, Table 23 shows nationwide NOx emissions from HDDVs both without and with the 2027 NOx standards. At just 2% non-DEF use where the cumulative NOx increase is between 2.4 and 4.2 million US tons, the benefits of the 2027 standards, 7.4 million would be dramatically reduced and at 10% non-DEF use, the benefits would be dwarfed by the additional NOx.

Table 23: Nationwide HDDV NOx Emissions Without and With the 2027 NOx Standards (1000 US Tons)			
Calendar Year	Pre-2027 Standards	2027 Standards	Impact of the 2027 Standards
2030	752	611	(142)
2040	612	325	(287)
2050	586	280	(306)
Cumulative	18,649	11,272	(7,377)

1. Health Harms

EDF used the desktop version of EPA's COBRA model[136] to estimate the physical and monetized health impacts of the emission impacts determined using the above methodology. EDF used a discount rate of 2%. Both monetized and non-monetized health impacts per ton of NOx emission from HDDVs were projected for 2028 and between 2030 and 2050 at five-year intervals using emission, population, incidence and valuation input files. Monetized benefits in COBRA are in 2023 dollars. These monetized harms were updated to $2024 using the implicit GDP multiplier used by EPA in its LD proposal to delay the 2027 PM standards (1.024). These health impacts were linearly interpolated for other relevant calendar years through 2050. Health impacts per ton were assumed to remain constant after 2050. Both PM and ozone-related health impacts are included.[137]

The projected health harms are shown in tables 24-26 below.

[136] U.S. EPA, CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA) https://www.epa.gov/cobra.

[137] Data and underlying analysis can be found in "EDF - No DEF Impacts August 2026.xlsx."

Table 24: Projected Health Impacts of DEF Avoidance: Monetized Health Harms (million $2024)			
No DEF Rate	2%	10%	20%
	Lower Limit of NOx Health Impacts		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	$3,478	$17,388	$34,775
2040	$12,885	$64,427	$128,853
2050	$17,353	$86,764	$173,528
Cumulative	$241,480	$1,207,401	$2,414,803
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	$6,124	$30,619	$61,238
2040	$22,691	$113,455	$226,910
2050	$30,558	$152,792	$305,584
Cumulative	$425,245	$2,126,227	$4,252,454
	Upper Limit of NOx Health Impacts		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	$4,372	$21,861	$43,723
2040	$15,996	$79,982	$159,964
2050	$21,386	$106,932	$213,864
Cumulative	$299,262	$1,496,311	$2,992,622
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	$7,699	$38,497	$76,994
2040	$28,170	$140,848	$281,695
2050	$37,662	$188,308	$376,615
Cumulative	$526,999	$2,634,996	$5,269,991

Table 25: Projected Health Impacts of DEF Avoidance: Premature Mortality (Incidence)			
No DEF Rate	2%	10%	20%
	Lower Limit of NOx Health Impacts		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	189	946	1,892
2040	618	3,088	6,175
2050	739	3,694	7,388
Cumulative	15,590	77,949	155,898
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	333	1,666	3,331
2040	1,087	5,437	10,875
2050	1,301	6,505	13,010
Cumulative	27,454	137,268	274,536
	Upper Limit of NOx Health Impacts		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	243	1,215	2,430
2040	781	3,906	7,812
2050	927	4,636	9,273
Cumulative	19,681	98,405	196,809
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	428	2,140	4,280
2040	1,376	6,878	13,756
2050	1,633	8,165	16,329
Cumulative	34,658	173,290	346,580

Table 26: Projected Health Impacts of DEF Avoidance: Morbidity (Incidence)			
No DEF Rate	2%	10%	20%
	ER and Hospital Visits		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	466	2,329	4,658
2040	1,431	7,156	14,312
2050	1,724	8,618	17,236
Cumulative	36,454	182,270	364,541
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	820	4,102	8,203
2040	2,520	12,601	25,203
2050	3,035	15,176	30,352
Cumulative	64,195	320,977	641,955
	Asthma Symptoms		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	163,597	817,987	1,635,973
2040	477,529	2,387,646	4,775,292
2050	564,993	2,824,964	5,649,929
Cumulative	12,135,333	60,676,663	121,353,326
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	288,089	1,440,444	2,880,889
2040	840,925	4,204,627	8,409,255
2050	994,954	4,974,772	9,949,544
Cumulative	21,370,258	106,851,289	213,702,578
	Lost School and Work Days		
Engine-Out NOx (g/bhp-hr)	4	4	4
2030	92,279	461,393	922,787
2040	275,127	1,375,637	2,751,273
2050	326,433	1,632,164	3,264,329
Cumulative	6,988,116	34,940,582	69,881,165
Engine-Out NOx (g/bhp-hr)	7	7	7
2030	162,499	812,497	1,624,994
2040	484,497	2,422,486	4,844,972
2050	574,849	2,874,247	5,748,494
Cumulative	12,306,037	61,530,186	123,060,373

From a societal perspective, the small cost of DEF use is dwarfed by the benefits related to reduced NOx emissions. It takes 527 gallon of DEF to reduce NOx emissions by one U.S. ton; and at $3.50 per gallon, this means DEF costs $1,844 per ton of NOx reduction. The health

benefits of NOx reduction from HDDVs ranges from $90,000–$114,000 per ton in 2027 to $160,000–$200,000 per ton in 2050 using EPA's COBRA model discounted at 2%. As a result, the societal benefits of one gallon of DEF are between $171 and $216 in 2027 and $304 and $380 in 2050. The return on investment to society for using DEF is around 50 times today and almost 100 times in 2050. Because vehicles already have SCR equipment, enabling vehicle owners to stop using DEF by removing all inducements is especially terrible from a cost-benefit perspective.

E. EPA Has Failed to Meaningfully Consider Alternatives.

EPA has failed to consider alternatives to eliminating derates entirely. Although EPA solicits comment on a "more modest schedule of performance derates," 91 Fed. Reg. at 43,200, the Proposal contains no analysis of whether such alternatives would satisfy EPA's stated objectives. This omission is particularly striking given that EPA (presumably with input from the industry) issued revised inducement guidance in August 2025—less than a year ago—that the Agency considered "similarly effective" to the 2023 Final Rule's derate-based requirements. August 2025 Guidance 1. That guidance permitted in-use engines to operate for longer periods at higher speeds before reaching the final inducement—for example, up to 8,400 miles or 160 hours for heavy-duty truck/tractor engines before reaching a 25 mph speed limit, and up to 10,500 miles or 200 hours for motorcoach engines before reaching a 50 mph speed limit. August 2025 Guidance 3. If EPA concluded less than a year ago that these extended derate schedules were "similarly effective" for ensuring SCR compliance, why are derates now so inadequate that EPA proposes replacing them entirely with audiovisual notifications? EPA provides no reasoned explanation for this abrupt reversal.

At a minimum, before abandoning derate-based inducements altogether, EPA must meaningfully analyze whether codifying the August 2025 guidance schedules—or a comparable moderate derate approach—would address operator concerns while maintaining the compliance assurance EPA itself recently found effective. Failing to conduct this analysis renders the Proposal arbitrary. *See, e.g.*, *Yakima Valley Cablevision, Inc. v. FCC.*, 794 F.2d 737, 746 n.36 (D.C. Cir. 1986) ("The failure of an agency to consider obvious alternatives has led uniformly to reversal." (citing cases)).

F. EPA's Proposal to Extend the Notification-Only Framework to New Light-Duty, Medium-Duty, and Nonroad Diesel Engines Is Arbitrary and Capricious.

EPA proposes to extend the same unsupported notification-only framework to new light-duty, medium-duty, and nonroad diesel engines, compounding the emissions risk across the entire diesel fleet.

For light-duty and medium-duty vehicles, EPA proposes extending the notification-based framework no later than MY 2029, reasoning that these vehicles present "the same technology and the same need." 91 Fed. Reg. at 43,206. But this reasoning is internally inconsistent with EPA's own analysis elsewhere in the Proposal. EPA expressly acknowledges that "[t]here are important differences between passenger vehicle operators and heavy-duty truck operators" that EPA "considered when developing the proposed [notification] schedule" for heavy-duty vehicles. *Id.* at 43,199. EPA relies on these differences—including that "truck drivers have

additional professional licensing and training requirements," operate as "commercial vehicle operators" who "are accustomed to paying close attention to warning lights," are subject to Hours-of-Service regulations, and "rely on the vehicle operating as intended to support a business"—to justify its belief that audiovisual notifications will be effective for heavy-duty trucks. *Id*.

Yet when extending the identical notification-only framework to light-duty and medium-duty vehicles, EPA asserts without analysis that these vehicle classes have "the same need" and fails to account for the absence of the very operator characteristics it deemed essential in the heavy-duty context. Light-duty diesel vehicles—including diesel pickup trucks and passenger cars—are typically operated by individual consumers with no professional licensing, no fleet management oversight, no Hours-of-Service requirements, and no commercial incentive structure to ensure they understand or respond to SCR notifications. It is also well documented that many class 2b and 3 diesel owners tamper with, or "delete," their emissions controls to purposely increase emissions.[138] Similarly, many medium-duty operators—delivery drivers, small-business owners, and contractors operating diesel vans or trucks—lack the fleet oversight, formal maintenance protocols, and diesel-specific training that characterize heavy-duty trucking operations. These operators may have no more familiarity with SCR systems than typical light-duty consumers. EPA's failure to explain why notifications will be adequate for vehicle classes that lack the professional training and regulatory structure EPA itself identified as critical to the effectiveness of its heavy-duty notification proposal renders the extension to light-duty and medium-duty vehicles arbitrary and internally contradictory.

G. EPA's Proposal Is Arbitrary and Capricious Because the Agency Failed to Estimate the Emissions and Health Impacts of Eliminating Engine Derates.

For nonroad diesel engines, EPA proposes extending the notification approach no later than MY 2029, reasoning that nonroad engines have "the same technology and the same need" as heavy-duty highway engines. 91 Fed. Reg. at 43,207. But this one-size-fits-all assertion ignores the fundamental differences between the nonroad sector and the heavy-duty highway sector that EPA itself has long recognized. EPA's 2014 guidance for nonroad SCR systems acknowledged that nonroad equipment is "very difficult to transport to a repair facility" and that effective inducements may need to "disable equipment entirely (e.g., limiting a combine harvester to idle)" because "a 40 percent engine derate would not be considered sufficient to prevent operators from being able to perform work." *Id.* At 43,206-207 (citing CISD-14-10). Abandoning this approach for notification-only inducements ignores the unique operational realities of the nonroad sector. More fundamentally, the nonroad sector encompasses a far more diverse range of operators than the heavy-duty highway sector—from professional commercial operators running construction equipment or agricultural machinery to individual consumers operating lawn equipment, portable generators, or small-scale construction tools. EPA's justification for notification-based inducements in the heavy-duty context rested on the characteristics of professional truck drivers: "additional professional licensing and training requirements," operation as "commercial vehicle operators" who "are accustomed to paying

[138] U.S. EPA, Air Enforcement Div., "Tampered Diesel Pickup Trucks: A Review of Aggregated Evidence from EPA Civil Enforcement Investigations," (Nov. 20, 2020), *available at* https://www.epa.gov/sites/default/files/2021-01/documents/epaaedletterreportontampereddieselpickups.pdf.

close attention to warning lights," and regulated operating environments like Hours-of-Service requirements. *Id.* at 43,199. These characteristics are absent for many nonroad operators, particularly individual consumers. A homeowner operating a diesel lawnmower or a small contractor running a portable generator may have no professional diesel-specific training and no fleet management oversight. EPA provides no analysis of why notifications will achieve comparable compliance in a sector where many operators have no more familiarity with emission control systems than a typical light-duty consumer.

EPA also acknowledges an unresolved problem specific to nonroad equipment: much of it operates unattended, without an on-site operator to see or hear a notification. EPA's preamble identifies "portable equipment, such as generators, fans, and compressors, as well as autonomous vehicles, such as farm equipment" as examples of equipment that may operate without an operator present. 91 Fed. Reg. at 43,207. For such equipment, "[v]isible and audible notifications do not have the same meaning if there is no on-site (in-cab) operator." *Id*. EPA concedes it does not yet know how to design effective notifications for unattended equipment and "requests comment" on the question. *Id*. While EPA suggests that "anyone depending on the performance of unattended equipment would need to be able to provide fuel and DEF for continued operation, and would need to be able to respond if the engine goes into a derate condition," *id.*, this observation undercuts EPA's Proposal: if an operator must check on equipment periodically anyway, notifications visible only at that infrequent moment are far less effective than the derate-based inducements that would have prevented emissions noncompliance throughout the entire unattended operating period. A generator running for hours or days at a remote site, or autonomous farm equipment operating across large fields, could accumulate substantial excess emissions before anyone sees a warning light.

Moreover, EPA's own rationale for why audiovisual notifications work undermines their application to unattended equipment. EPA relies on NHTSA's principle that "[a]n optimized warning system balances effectiveness and annoyance, so that the warning is noticeable enough that the occupants will be motivated to fasten their belts, but not so intrusive that an occupant may attempt to circumvent or disable it." 91 Fed. Reg. at 43,198. But for unattended equipment, there is no continuous "annoyance" to motivate compliance—an operator who checks on a generator or compressor for only a few minutes while refueling can easily tolerate a 90-second beep and then walk away, leaving the warning to sound to no one. The brief, periodic annoyance of hearing a notification during occasional check-ins is categorically different from the sustained annoyance experienced by a heavy-duty truck driver who must listen to repeated 90-second tones throughout an eight-hour shift. If the effectiveness of audiovisual notifications depends on sustained annoyance, then notifications are structurally unsuited to equipment that operates unattended for most of its operating hours. EPA's concession that it does not know how to make notifications effective for unattended equipment, combined with its request for public comment on the basic question of how to design such notifications, demonstrates that this aspect of the Proposal is not ready for finalization and cannot satisfy Section 307(d)'s requirement of reasoned decision-making.

There is currently widespread adoption of SCR technology on large nonroad vehicles. MOVES5 estimates that 88% of nonroad vehicles rated above 75 horsepower (HP) have SCR. Even though EPA's nonroad populations are based on data from 1998 to 2000, data for MY 2023 purchased from Power System Research finds a very similar share of SCR adoption on nonroad

vehicles above 75 HP, 89%. For new MY 2026 vehicles, the nonroad vehicles above 75 HP account for 38% of the NOx emissions from nonroad diesel vehicles but 78% of the fuel. These numbers are even more staggering if we look at just vehicles with SCR. For new MY 2026 vehicles, the nonroad vehicles with SCR account for 17% of the nonroad diesel NOx inventory but 68% of the nonroad diesel fuel. By comparison, for MY 2000, nonroad diesel vehicles above 75 HP accounted for 84% of the NOx emissions and 83% of the diesel fuel.

According to MOVES5, new MY 2026 nonroad vehicles in their first year consumed 1.2 billion gallons of diesel and produced 21,000 MT of NOx. New MY 2000 nonroad vehicles consumed 920 million gallons of diesel in their first year and produced 93,000 MT of NOx. While fuel consumption went up over 30%, NOx emissions decreased by over 77%. Much of this reduction is due to the addition of SCR to nonroad vehicles but EPA's Proposal threatens to reverse that progress and increase deadly NOx pollution in communities across the U.S.

EPA fails to consider the impact of the Proposal on the nonroad mobile source sector, which includes construction, agriculture, industrial, lawn & garden, logging, railroad support (excluding locomotives), recreational vehicles, recreational marine (excluding commercial marine vessels), and underground mining equipment. EPA's 2020 National Emissions Inventory (NEI) shows that nonroad vehicles account for almost 10% of all NOx emissions in the United States.[139] Further, nonroad vehicles were responsible for more than a quarter of total NOx emissions across 292 counties.[140] By failing to consider the increase in NOx pollution that will occur from abandoning mandatory derates for nonroad equipment, EPA is endangering public health—particularly in communities with higher proportions of nonroad vehicle emissions.

Using EPA's 2020 NEI, EDF looked at the percentage of NOx emissions from nonroad diesel activities by county, finding that many counties have a disproportionately high share of nonroad emissions.[141] Nonroad diesel sources were responsible for at least 15% of total NOx emissions in 552 counties and at least 10% of total NOx emissions across 1060 counties. These communities are especially vulnerable to increased NOx pollution that may occur due to EPA's proposed changes to inducements.

Counties with a high proportion of NOx emissions coming from nonroad diesel vehicles include urban areas (construction equipment) and agricultural areas (agricultural equipment). *See* Figures below.[142]

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[139] U.S. EPA, 2020 National Emissions Inventory (NEI) Data, https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data. EPA's 2020 NEI Inventory reports that 876,754 tons of NOx come from the nonroad sector, 2,344,997 tons come from the onroad sector, 3,490,738 tons come from the nonpoint sector, and 2,116,780 come from facilities. Off-highway Vehicle Diesel, which would be most affected by EPA's proposed changes, accounted for the majority of nonroad emissions at 621,971 tons of NOx in 2020. Nonroad mobile uses MOVES3 (3.0.3), except for California. It excludes locomotives, and it only includes railway maintenance.

[140] The NEI provided sufficient data for 3329 counties, or 3134 excluding Puerto Rico.

[141] Nonroad diesel excluded Off-highway Vehicle Gasoline, LPG, CNG (SCC Level 2), Gasoline (4-Stroke), LPG (SCC Level 3), and all 2-Stroke or 4-Stroke, CNG, LPG, Inboard/Sterndrive, (SCC Level 4).

[142] Data can be found in "8.18.26_Nonroad_NOx_NEI_2020_csv_gis.csv."

Figure 9.

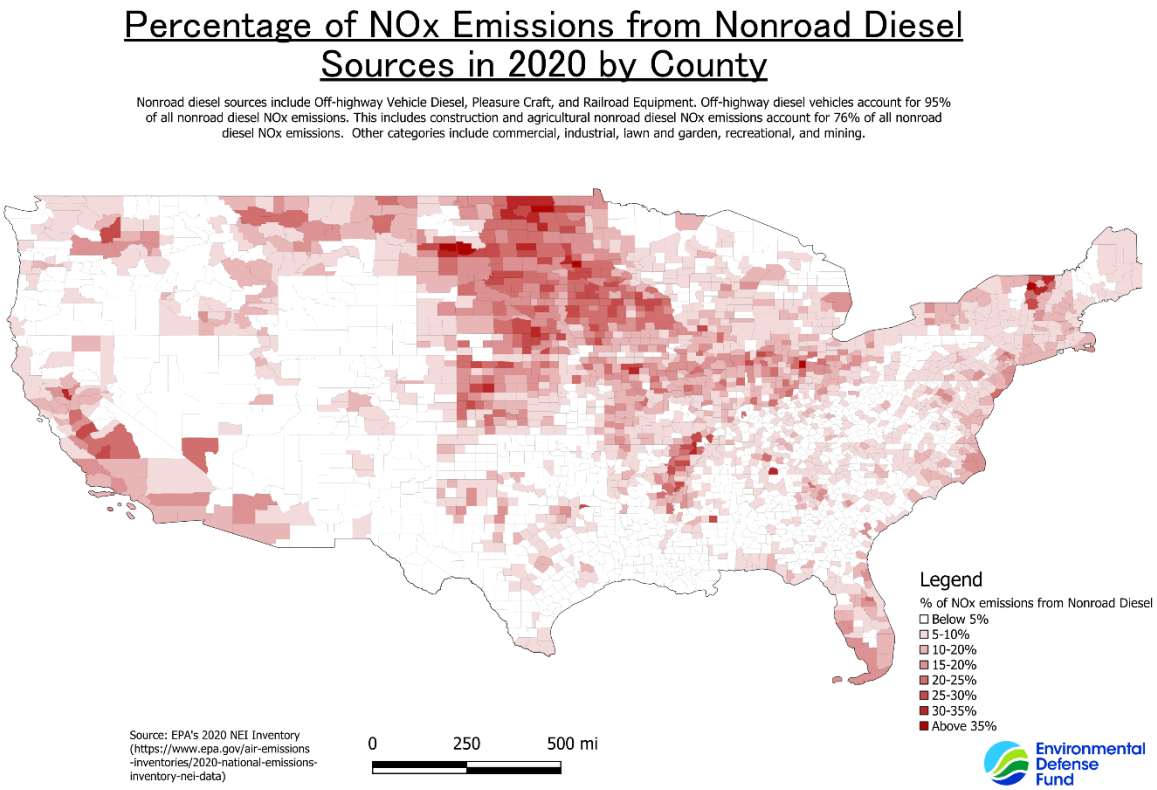
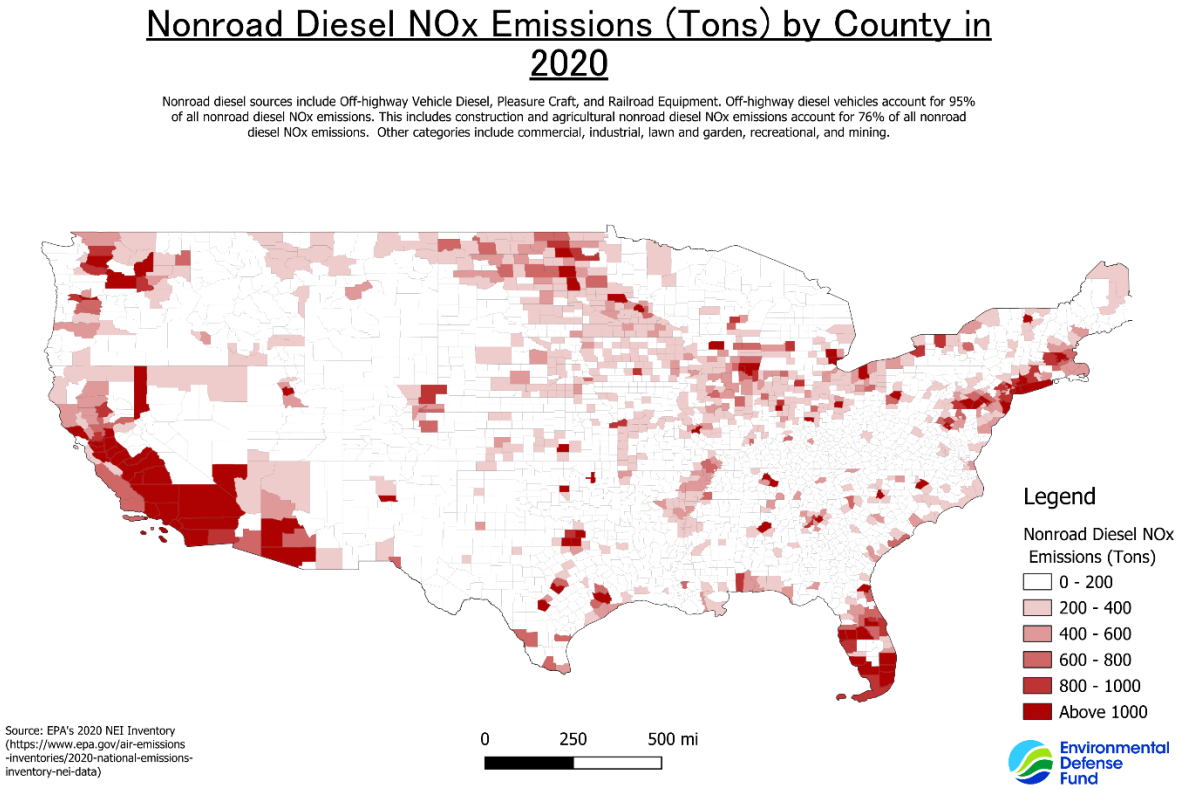

Percentage of NOx Emissions from Nonroad Diesel Sources in 2020 by County
Nonroad diesel sources include Off-highway Vehicle Diesel, Pleasure Craft, and Railroad Equipment. Off-highway diesel vehicles account for 95% of all nonroad diesel NOx emissions. This includes construction and agricultural nonroad diesel NOx emissions account for 76% of all nonroad diesel NOx emissions. Other categories include commercial, industrial, lawn and garden, recreational, and mining.
Legend
% of NOx emissions from Nonroad Diesel
Below 5%
5-10%
10-20%
15-20%
20-25%
25-30%
30-35%
Above 35%
Source: EPA's 2020 NEI Inventory (https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data)
0
250
500 mi
Environmental Defense Fund

Figure 10.



Nationally, construction and agricultural equipment account for the majority of nonroad diesel emissions. EPA's proposed changes will increase NOx pollution for all Americans, but dense urban areas are particularly vulnerable to the increase in nonroad diesel construction emissions and rural areas are at risk from increased agricultural equipment emissions. For example, in Falls Church, Virginia, nearly 60% of the county's NOx emissions come from diesel construction equipment. Across the country, 312 counties have at least 5% of total NOx emissions come from diesel nonroad construction equipment. Diesel agricultural equipment was responsible for at least 5% of total NOx emissions in 995 counties across the U.S., 10% of total NOx in 602 counties and at least 15% across 353 counties. 7 of the top 10 counties with the highest proportion of NOx emissions from agriculture equipment were in North Dakota.

Of the 20 largest counties in the country, 15 of them have at least 10% of all NOx emissions coming from nonroad diesel vehicles. For example, a quarter of Clark County, Nevada's NOx inventory is from nonroad sources. And these areas are spread across the nation from California to New York to Texas, Florida and Illinois.

Table 27: Proportion of Nonroad Diesel NOx Emissions in Largest 20 Counties in the U.S. by Population

County	State	Population	Proportion of NOx from nonroad diesel
Los Angeles County	California	9,996,510	0.11
Cook County	Illinois	5,263,651	0.1
Harris County	Texas	4,734,060	0.1
Maricopa County	Arizona	4,445,025	0.19
San Diego County	California	3,301,110	0.14
Orange County	California	3,186,167	0.13
Kings County	New York	2,722,259	0.11
Miami-Dade County	Florida	2,695,519	0.11
Dallas County	Texas	2,610,802	0.15
Riverside County	California	2,424,446	0.19
Queens County	New York	2,385,541	0.09
Clark County	Nevada	2,275,833	0.25
King County	Washington	2,274,304	0.1
San Bernardino County	California	2,183,200	0.08
Tarrant County	Texas	2,116,194	0.1
Bexar County	Texas	2,015,492	0.08
Broward County	Florida	1,943,437	0.14
Santa Clara County	California	1,931,349	0.09
Wayne County	Michigan	1,789,634	0.06
New York County	New York	1,687,033	0.18

EPA's Proposal to revoke mandatory derates for nonroad equipment will have a significant impact of nonroad emissions across the United States, with some communities being particularly hard hit.

In order to get a sense of the potential emissions increase associated with nonroad diesel vehicles no longer having functioning SCR systems, EDF roughly modeled the different levels of engine out NOx emissions and different rates of non DEF use. This analysis uses the NOx inventory from MY 2026 vehicles in CY2026. The NOx standard set in the 2004 EPA nonroad rule is 0.4 g/kWh. This is equivalent to 300 mg/bhp-hr. We assumed uncontrolled nonroad diesel combustion engine NOx emissions are similar to onroad and used 4 g/bhp-hr and 7 g/bhp-hr. These represent a factor of 13 and 23 times increase, respectively. If 5% of the nonroad vehicles with SCR stop using DEF (only 1.2% of all nonroad diesel vehicles), it would increase the nonroad inventory by 11% with 4 g/bhp-hr and 19% with 7 g/bhp-hr. If 25% of the nonroad

vehicles with SCR stop using DEF (6.0% of all nonroad diesel vehicles), the NOx inventory would increase by 53% for 4 g/bhp-hr and 95% for 7 g/bhp-hr.[143]

Table 28: Emissions Inventory Impacts from Varying Share of Non DEF Use for Year 1 MY2026 Vehicles, assuming 4 g/bhp-hr NOx emissions from engines without DEF

	4 g/bhp-hr				
	5%	10%	15%	20%	25%
w/ SCR (w/ or w/o DEF)	5,941	8,203	10,466	12,728	14,990
w/o SCR	17,810	17,810	17,810	17,810	17,810
Total	23,751	26,014	28,276	30,538	32,801
% increase	11%	21%	32%	42%	53%
SCR engine share	25%	32%	37%	42%	46%

Table 29: Emissions Inventory Impacts from Varying Share of Non DEF Use for Year 1 MY2026 Vehicles, assuming 4 g/bhp-hr NOx emissions from engines without DEF

	7 g/bhp-hr				
	5%	10%	15%	20%	25%
w/ SCR (w/ or w/o DEF)	7,780	11,882	15,984	20,085	24,187
w/o SCR	17,810	17,810	17,810	17,810	17,810
Total	25,591	29,692	33,794	37,896	41,997
% increase	19%	38%	57%	76%	95%
SCR engine share	30%	40%	47%	53%	58%

[143] Data and analysis found in "nonroad_diesel_NOx_2026_analysis_MOVES5.xlsx" included with submission.

As mentioned above, the data EPA uses to project the MOVES5 nonroad fleet is based on population data from between 1998 and 2000. While the share of SCR on nonroad vehicles above 75 HP for MY 2023 real world data is consistent with EPA's projection (around 88%), the total number of vehicles is quite different. EDF purchased OE Link Sales Production-History and Forecast Summary data from Power Systems Research for Agricultural, Industrial, and Construction equipment sales for MY 2023. The total number of new diesel nonroad vehicles in MY 2023 was 704,000. In MOVES5, there are 148,000 new MY 2026 nonroad diesel vehicles. For just large nonroad vehicles (those over 75 HP), MOVES5 has 40,000 and the real-world data for MY 2023 is 224,000. While some of this difference might be explained by what nonroad vehicles are included in the two datasets, looking at specific products like forklifts or excavators shows a similar underestimation of the population of nonroad vehicles in MOVES5. MOVES5 projects 18,500 diesel forklifts and 23,000 excavators were sold in MY 2026. The Power Systems Research data shows that 53,000 forklifts and 47,000 excavators were sold in MY 2023.

Given the potentially large underestimation of the nonroad NOx inventory in MOVES5, the impact of removing actual DEF inducements would be considerably larger as well.

H. Guidance for In-Use Engines.

EPA should not finalize any cross-sector extensions without a record specific to each vehicle and engine class, given the materially different operating conditions, maintenance patterns, and operator presence across these applications. For the same reasons, EPA should not issue guidance allowing manufacturers to retrofit in-use engines and vehicles with notification-only inducements in place of derates. *See* 91 Fed. Reg. at 43,207. If audiovisual notifications are inadequate to ensure compliance for new vehicles—where EPA can require standardized notification designs and improved SCR reliability measures from the outset—there is no reason to expect better results for in-use vehicles, which lack these design improvements and whose operators have grown accustomed to derate-based compliance mechanisms.

I. SCR Reliability Changes.

It is important to monitor and maintain DEF quality. The NOx reduction chemistry that occurs on the Urea SCR catalyst requires precise stoichiometric conditions. When there is excess DEF injected, there will be "ammonia slip," which results in toxic chemicals emitted into the air. When there is insufficient DEF, excess NOx emissions will be emitted from the tailpipe. It is thus imperative that the quality and quantity of urea (or DEF) be properly monitored real time. Analogous to gasoline engines with (multiple accurate) oxygen sensors, DEF systems should operate with multiple sensors (including NOx sensors) within a closed loop control system. Therefore, DEF quality should remain an adjustable parameter and its quality should continue to be measured precisely (at the nominal 32.5% level) with sensors. At a lower concentration (or quality) of DEF, the monitor should feedback to the injector to maintain the correct level of urea dose to reduce the NOx in a closed loop system. In this scenario, there is no need for an alarm as long as the correct urea dosing can be maintained to the catalyst. Of course an alarm should trigger if the DEF is so dilute that it will run out before the next fuel refill or if it cannot keep up with the required rate of NOx conversion.

There is much discussion in the Proposal about freezing conditions. Heavy-duty diesel trucks have had fuel line heaters and glow plugs since the 1980s to liquify diesel fuel when they become gelatinous at low temperatures. This is not sophisticated or even costly technology. There should be no technical barrier to prevent DEF from freezing in cold temperatures. As long as the truck can burn diesel fuel, it should also be able to liquify DEF, even if it is with the waste heat generated from engine combustion. The sensors and audiovisual alarms for DEF quality can ensure that liquified DEF is flowing properly and that the vehicle owner is notified of any continuing issues with the aftertreatment system. Therefore, there should be no special accommodations for trucks in cold geographical locations. Additionally alarms and derating should continue in freezing conditions, possibly allowing for a longer "cold start" window to allow the DEF to thaw.

With a continuously closed loop system as described above, IUMPR (either numerator or denominator) has less meaning. The increment should not be by trip but by time increment: example, seconds, or (at most) minutes of operation. The fault trigger can result from time duration of fault, rather than a discrete number of faults in a small number of monitoring events (trips), any one of which can have error. The solution to decreasing random (fault) error is to collect more data, not less. The example cited in Preamble V.D.3 which describes an improper level reading of DEF would not occur if continuous monitoring would detect decreasing DEF levels over a period of miles. The fault trigger should occur if the DEF tank levels are not changing to within the error level of the tank level meter. An error in the tank level meter doesn't have to trigger an inducement unless the post catalyst NOx sensor detects unusually high levels. This redundancy (rationality monitoring) results in greater reliability and less reliance on the DEF level sensor only. If including a system like this is beyond the scope of this rulemaking, there should be no change to comprehensive monitoring requirements. The expectation is that closed loop systems will improve over time, much as they did for light-duty vehicles.

For systems with multiple SCR catalysts and NOx sensors: such a system could not only minimize ammonia slip, but also help determine catalyst failure and confirm DEF quality and dosing. The second catalyst can also act as a backup to a certain degree if one of the catalysts failed, thus allowing for a delay in derating. An on-board computer should be able to determine how each stage is performing. Again, the solution to false fault codes is more data, not less. A running average can help even out random fluctuations and minimize false alarms.

OBD requirements should remain harmonized with CARB OBD requirements as finalized in the 2023 rule since inducements should not change.

X. The Proposal Is Procedurally Deficient.

EPA's rulemaking process fails to comply with basic procedural requirements of the Clean Air Act, the APA, and multiple executive orders. EPA has denied stakeholders an adequate and meaningful opportunity to engage in this consequential rulemaking process, as well as the consultation and analysis guaranteed by executive order. Those process failures prejudice the public, including the undersigned public interest organizations and our members, who have significant interest in full and timely implementation of the 2023 Standards. The only way for EPA to remedy these myriad procedural infirmities would be to withdraw the Proposal.

A. EPA Has Violated Section 307(d)'s Docketing Requirements by Failing to Publicize Essential Data and Otherwise Has Not Provided an Adequate Notice-and-Comment Opportunity.

EPA's factual assertions rely on manufacturer information—including warranty data, compliance data, and production information—that is within EPA's possession and control but that EPA has declined to include in the rulemaking docket or otherwise make available to the public. Section 307(d) requires that "[a]ll data, information, and documents ... on which the proposed rule relies shall be included in the docket on the date of publication of the proposed rule." 42 U.S.C. § 7607(d)(3).

By failing to timely docket this information, EPA has also deprived the public of adequate notice and a meaningful opportunity to comment. The D.C. Circuit has confirmed that "[a]n agency commits serious procedural error when it fails to reveal portions of the technical basis for a proposed rule in time to allow for meaningful commentary." *Solite Corp. v. EPA*, 952 F.2d 473, 484 (D.C. Cir. 1991).

By withholding the vehicle emissions information underlying its Proposal, EPA has also deprived the public of adequate notice of the Proposal and a meaningful opportunity to comment on its substance, and thereby committed additional, arbitrary, and serious procedural error. *See* 5 U.S.C. § 553(c); *see also, e.g.*, *Gerber v. Norton*, 294 F.3d 173 (D.C. Cir. 2002) ("Th[e] opportunity for comment must be a meaningful opportunity."). To meet the legal standard of adequate notice and a meaningful comment opportunity, an agency must "identify and make available technical studies and data that it has employed in reaching the decisions to propose particular rules." *Solite Corp. v. EPA*, 952 F.2d 473, 484 (D.C. Cir. 1991). The D.C. Circuit has confirmed that "[a]n agency commits serious procedural error when it fails to reveal portions of the technical basis for a proposed rule in time to allow for meaningful commentary." *Id.* (citation omitted); *see also Chamber of Com. of U.S. v. SEC*, 443 F.3d 890, 900 (D.C. Cir. 2006) ("the 'most critical factual material' used by the agency [must] be subjected to informed comment"). In failing to publicize, for the entirety of this comment period, necessary vehicle emissions information on which EPA clearly relied in crafting the Proposal, EPA has deprived the public of a meaningful comment opportunity.[144]

On August 18, 2026, Environmental Defense Fund submitted two FOIA requests seeking records that would enable a meaningful opportunity to comment, including communications referenced in the Proposed Rule between EPA and manufacturers regarding the necessity of NCPs, in-use compliance during the useful life term, emissions warranty cost, the NOx ABT program, the necessity of an increased FEL cap, and other topics relevant to the reasonableness of the Proposal, as well as communications between EPA, owner operators, and manufacturers regarding the appropriateness of changes to the inducement requirements.[145] EDF also requested heavy-duty engine production volume and certification information, which would likewise

[144] And as stated above, to the extent that EPA did not consider this relevant information that is plainly in its control, that failure renders the Proposal arbitrary and capricious, including because EPA has failed to consider an important aspect of the problem. *See State Farm*, 463 U.S. at 43.

[145] *See* FOIA Request No. 2026-EPA-07209 (appended to this comment).

enable public understanding of the claims EPA makes regarding the alleged feasibility, lead time and cost concerns that are the articulated basis for this Proposal.[146]

EPA received repeated calls from the public to extend the comment period appropriately to ensure the public would have reasonable opportunity to submit comments. On July 21, 2026, only one week after the Proposal was published, Natural Resources Defense Council (NRDC) submitted a request for an extension of the public comment period to at least 60 days in total.[147] Multiple other parties have filed requests for an extension of the Proposal's comment period.[148] EPA declined each of those requests.[149]

The 45-day comment period is inadequate for a technically complex rulemaking of this consequence. Because EPA's arbitrary procedural violations have significantly prejudiced the public, incurably tainted this rulemaking process, and would render any final rule unlawful, *see* 42 U.S.C. § 7607(d)(9)(D), EPA should immediately withdraw the Proposal.[150]

B. EPA Failed to Comply with the Endangered Species Act.

EPA violated the Endangered Species Act (ESA) by failing to conduct an effects determination and failing to consult under Section 7 of the ESA. When a federal agency carries out a non-ministerial action that may affect federally listed threatened or endangered species, or their critical habitats, Section 7 of the ESA requires consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. The threshold for determining that an action "may affect" a listed species is very low—"[a]ny possible effect, whether beneficial, benign, adverse or of an undetermined character, triggers the formal consultation requirement." *Growth Energy v. EPA*, 5 F.4th 1, 30 (D.C. Cir. 2021).

That standard is clearly met here. EPA predicts NOx increases in every year through 2055. The DRIA explains that:

> the proposal would result in changes in emissions of pollutants that contribute to ambient concentrations of PM2.5, ozone, NO2, and air toxics. There are a broad

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[146] *See* FOIA Request No. 2026-EPA-07210 (appended to this comment).

[147]Letter from Atid Kimelman, Natural Resources Defense Council to Administrator Zeldin, Environmental Protection Agency (July 21, 2026) (EPA-HQ-OAR-2026-0728-0114).

[148] *See, e.g.*, EPA-HQ-OAR-2026-0728-0114 (comment extension request from the Attorneys General of New York, Colorado, Delaware, Illinois, Maine, Massachusetts, Minnesota, New Jersey, Rhode Island, and the District of Columbia, and the Chief Legal Officers of the City of Los Angeles and the City of New York).

[149] Letter from Aaron Szabo, Assistant Administrator, EPA, to Atid Kimelman, Natural Resources Defense Council (July 31, 2026); Letter from Aaron Szabo, Assistant Administrator, EPA, to Alice Henderson, Environmental Defense Fund (August 27, 2026) (letters appended to this comment).

[150] *See also, e.g.*, Admin. Conf. of the United States, Rulemaking Comments (2011), https://www.acus.gov/document/rulemaking-comments (recommending, for significant regulatory actions like the Proposal, that "agencies should use a comment period of at least 60 days"); Exec. Order 13563, § 2(b) ("To the extent feasible and permitted by law, each agency shall afford the public a meaningful opportunity to comment … on any proposed regulation, with a comment period that should generally be at least 60 days.").

> range of health risks and welfare effects associated with exposure to these pollutants … *including ecosystem effects.*

DRIA at 64 (emphasis added). NOx pollution, for example, has been shown to harm listed species like the federally threatened bay checkerspot butterfly, the Mojave Desert tortoise, the Florida manatee, and several species of freshwater mollusks. These species and their highway-adjacent critical habitats may also be adversely affected by the Proposal, and thus, consultation under the ESA is required.

1. EPA Must Complete ESA Consultation Because the Proposal May Affect Listed Species or Critical Habitats.

Section 7 of the ESA requires a federal agency (here, EPA) to complete formal consultation with the U.S. Fish and Wildlife Service or the National Oceanic and Atmospheric Administration (depending on the location of the species) if the agency determines that any action on its part "may affect" any listed species or critical habitat.

"'May affect' purposefully sets a low bar: 'Any possible effect, whether beneficial, benign, adverse or of an undetermined character, triggers the formal consultation requirement.'" *Growth Energy v. EPA*, 5 F.4th 1, 30 (D.C. Cir. 2021) (citing 51 Fed. Reg. 19,926, 19,949 (June 3, 1986)); *see also Karuk Tribe of Cal. v. United States Forest Serv*., 681 F,3d 1006, 1027 (9th Cir. 2012); *Northern Plains Res. Council v. United States Army Corps of Engr's*, 454 F.Supp.3d 985 (D. Mont. 2020). In carrying out the consultation process, agencies must use the "best scientific and commercial data available" to fulfill the requirements of the ESA. 16 U.S.C. § 1536(a)(2). Only if the federal agency finds that its proposed action "will not affect any listed species or critical habitat in any way"—that is, makes a "no effect" determination—can it skip the consultation process. *In re Ctr. for Biological Diversity & Ctr. for Food Safety*, 53 F.4th 665, 668 (D.C. Cir. 2022).

2. Scientific Evidence Clearly Shows That the Proposal Will Adversely Affect Federally Listed Species, Including Causing Adverse Modification of Critical Habitat and Jeopardy for Some Species.

Fossil-fuel combustion from vehicles produces NOx air pollutants, including nitrous oxide (N2O), as well as nitric acid (HNO3), nitrate (NO3-), and ammonia (NH3), which have contributed to a significant increase in nitrogen deposition in many parts of the United States, resulting in widespread impacts to species and ecosystems. The Proposal would increase NOx emissions from vehicle exhaust, thereby increasing nitrogen deposition in the areas where covered vehicles operate, with resulting harms to listed species and their critical habitat.

Scientific research has clearly established linkages between NOx emissions and harms to federally listed species. A review of the effects of nitrogen pollution on ESA-listed species, based on analysis of U.S. Fish and Wildlife Service and National Marine Fisheries Service documents, found that this threat is "substantial" and "geographically widespread."[151] This review, Hernandez et al. (2016), identified evidence for harm from nitrogen pollution for at least

[151] Daniel L. Hernandez et al., *Nitrogen Pollution Is Linked to US Listed Species Declines*, 66 BioScience 213 (2016), https://academic.oup.com/bioscience/article-abstract/66/3/213/2468675?redirectedFrom=fulltext.

78 federally listed taxa. This includes 50 invertebrates such as mollusks and arthropods, 18 vertebrates such as fish, amphibians, and reptiles, and 8 plants. Harms from nitrogen pollution fell into four main categories: (1) direct toxicity or lethal effects of nitrogen, (2) eutrophication lowering dissolved oxygen levels in water or causing algal blooms that alter habitat by covering up substrate, (3) nitrogen pollution increasing non-native plant species that directly harm a plant species through competition, and (4) nitrogen pollution increasing non-native plant species that indirectly harm animal species by excluding their food sources.

In its 2020 Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur and Particulate Matter, EPA identified 14 ways in which NOx pollution has been shown to have a "causal relationship" to ecological effects, based on a review of the science.[152] Similar to Hernandez et al. (2016), EPA stated that the causal effects of NOx pollution include direct phytotoxic effects, acidification, eutrophication, and changes to physiology, growth, species richness, community composition, and biodiversity.

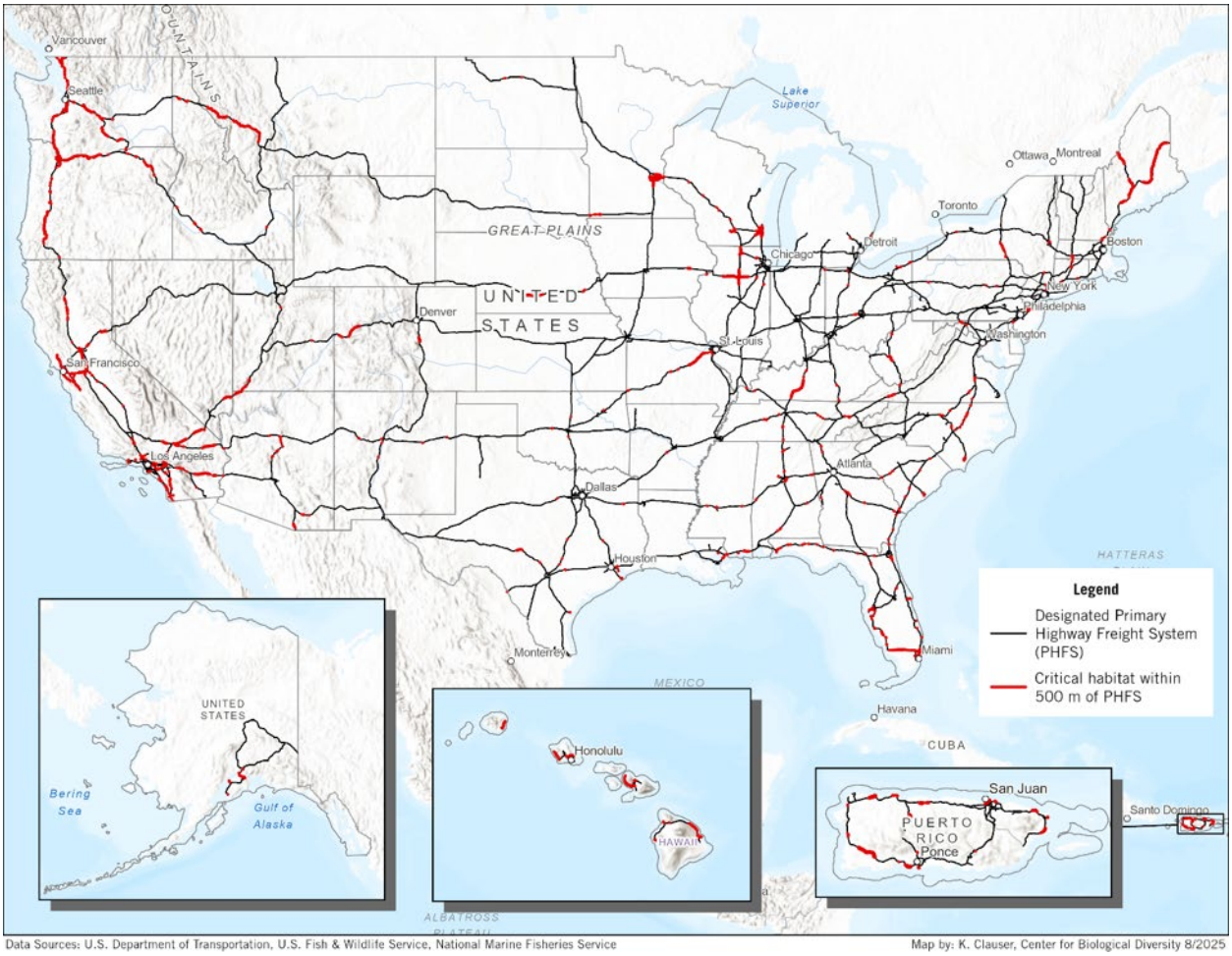
Nitrogen deposition from vehicle pollution is a well-documented harm to listed species. For the bay checkerspot butterfly (Euphydryas editha bayensis), which is restricted to patches of low-nutrient serpentinite soil in the San Francisco Bay area, nitrogen deposition from vehicles has allowed exotic grasses to replace native forbs, including replacing the bay checkerspot's larval host plant and adult nectar sources. NOx pollution has contributed to butterfly population declines and local extirpations. The bay checkerspot population at Edgewood Natural Preserve adjacent to 8-lane Highway 280 was extirpated when non-native plants over-ran larval host plants up to approximately 400 meters from the highway, leading to the loss of 80% of the available habitat. The U.S. Fish and Wildlife Service in its 5-year review for the bay checkerspot found that the level of impact from nitrogen deposition increased with proximity to a major interstate highway.

Similarly, the Fish and Wildlife Service has determined that nitrogen deposition threatens the federally protected Quino checkerspot butterfly (Euphydryas editha quino) and the desert tortoise (Gopherus agassizii) by facilitating the spread of non-native species that displace the butterfly's host plants and the tortoise's forage plants, reducing the nutritional quality of available food for these species. The Florida manatee is also affected by excessive nitrogen deposition allowing micro-algae to out-compete the manatee's natural food sources.

EPA's Proposal will result in vast amounts of additional NOx emissions over the decades during which these higher-polluting vehicles will continue to be on the road, harming nearby species with NOx from their exhaust. We estimate that 249 federally listed species (including subspecies and DPSs) have critical habitat within 500 meters of a national highway freight corridor, as shown in the Figure below, and may be affected by the increased NOx emissions from vehicle tailpipes resulting from the Proposal.

[152] EPA, *Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur and Particulate Matter – Ecological Criteria* at IS-22–IS-24, tbl.IS-1 (2020), https://assessments.epa.gov/isa/document/&deid=349473.

Figure 11.



3. <u>The Proposal Will Result in an Irreversible Commitment of Resources.</u>

Finalization of the Proposal would be an irreversible or irretrievable commitment of resources within the meaning of ESA Section 7(d) because vehicles built without the protections of current law, expected to be on the road for decades, will emit more NOx and other criteria pollutants into the atmosphere than they would under the status quo. These increases in NOx levels will persist until at least 2055 by EPA's own estimates.

Maintaining the status quo is an important rationale for Section 7(d). As EPA Region VI has explained:

> Section 7(d) of the ESA requires that, after initiation of consultation under Section 7(a)(2), a federal agency "shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section." In

> other words, any action taken prior to completion of consultation must not interfere with the ability of the agency to implement reasonable and prudent measures determined to be necessary to avoid jeopardy to a protected species or adverse effects to its critical habitat. Section 7(d) of the ESA is a preventative measure designed to ensure that the status quo is preserved during the consultations process and clarifies the requirements of Section 7(a). *Conner v Burford*, 848 F.2d. 1441 (9th Cir 1988).[153]

Here, the status quo is the protection from harm that the current NOx standards provide. Eliminating that protection will lead to decades of excessive air pollution that will harm endangered species and their habitats.

C. EPA's Rulemaking Process Fails to Comply with Multiple Executive Orders and the Regulatory Flexibility Act.

A separate but related deficiency is EPA's failure to comply with multiple applicable executive orders by either incorrectly concluding that a given executive order does not apply, or—where it acknowledges applicability—failing to satisfy the substantive analytical and consultation requirements.

Executive Order 13132 (Federalism): EPA incorrectly asserts the Order does not apply, despite the Proposal's clear implications for States' ability to attain NAAQS and EPA's own acknowledgment of impacts on state reliance interests.

The Proposal substantially affects States' practical ability to abate criteria pollutant emissions and to achieve attainment under the NAAQS.[154] States without independent regulatory authority rely on federal standards to make progress toward NAAQS attainment and to ameliorate localized air pollution; when the EPA weakens those standards, States are forced to identify more costly and difficult means of achieving necessary emissions reductions.

The Proposal also has more granular consequences. Criteria pollutants affect air quality at the local level. States, particularly those with regions in NAAQS nonattainment, design air quality management plans and SIP obligations around emissions reductions projected to flow from the 2023 Standards. Eliminating anticipated reductions from full implementation of the 2023 Standards directly burdens state and local governments by undermining SIP compliance projections. *See supra* Part II.C (discussing State and municipality reliance on the 2023 Standards in attaining and maintaining NAAQS). Although noting the existence of State reliance, EPA provides no assessment of the Proposal's disruption of State compliance obligations.

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[153] EPA Memorandum, EPA Region VI Endangered Species Act Section 7(d) Determination Relating to Issuance of NPDES General Permit for Offshore Oil and Gas Operations in the Western Gulf of Mexico (NPDES No. GMG290000) (Aug. 29, 2017), *available at* https://www.epa.gov/sites/default/files/2017-09/documents/memo_to_file_-_esa_section_7d_determination.pdf.

[154] States are preempted from adopting or enforcing independent emissions standards for new motor vehicles; however, EPA must grant California a waiver of that preemption upon certain showings, and other states can choose to adopt California's more stringent standards in lieu of the federal standards. 42 U.S.C. §§ 209(a)-(b), 177.

Executive Order 13045 (Protection of Children): EPA acknowledges applicability but fails to explain why the Proposal is preferable to alternatives, despite the documented health benefits to children from the existing standards.

EPA acknowledges that Executive Order 13045—which requires agencies to protect children from environmental health risks—applies, but the Agency does not fully catalog the disproportionate risks that criteria pollutants pose to children and fails to satisfy the Order's central substantive requirement. Per EPA's own summary of the Order, when promulgating a qualifying rule, "EPA must evaluate the effects of the planned regulation on children and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives."[155] The 2023 Rule documented significant projected health benefits to children, including reductions in pediatric asthma attacks, hospital admissions, and premature deaths. *See* 88 Fed. Reg. at 4426. EPA fails to acknowledge that many of these projected health benefits become foregone benefits under the Proposal, nor does the Agency explain why the Proposal is preferable to other reasonably feasible alternatives—such as retaining existing regulatory provisions. EPA's partial acknowledgment of the Proposal's disproportionate risks to children without any explanation of why the proposed course of action is preferable to alternatives fails to comply with the substantive requirements of the Order.

Executive Order 13211 concerns significant regulatory actions that are likely to have a substantial adverse effect on the supply, distribution, or use of energy. EPA asserts that the Order does not apply because the Proposal "is not a 'significant energy action' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy." 91 Fed. Reg. at 43,220. This conclusion directly contradicts EPA's own determination on the preceding page that "[t]his action is an economically significant regulatory action as defined under section 3(f)(1) of Executive Order 12866." *Id.* at 43,218. After conceding that the Proposal clears the threshold of significance under Executive Order 12866, EPA cannot then disclaim that same significance to avoid the analytical obligations of Executive Order 13211. Under the Order, an agency must explain any adverse effects on energy supply, distribution, or use and reasonable alternatives—whenever it proposes a significant regulatory action "likely to have a significant adverse effect on the supply, distribution, or use of energy." Exec. Order No. 13,211, § 4, 66 Fed. Reg. 28,355 (May 22, 2001).

Regulatory Flexibility Act: Finally, EPA concludes that the Regulatory Flexibility Act, which requires agencies to consider the effects of their proposed regulations on small businesses and entities, does not apply to the Proposal "because the rule relieves regulatory burden on the small entities subject to the rule." 91 Fed. Reg. at 43,219. This justification is flawed because EPA fails to consider the impact of the Proposal on small entities that made investments to comply with the 2023 rule over the past three years and do not need the additional flexibilities that EPA now proposes.

[155] *See* EPA, Summary of Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks, https://www.epa.gov/laws-regulations/summary-executive-order-13045-protection-children-environmental-health-risks-and (last updated Feb. 23, 2026).

D. To the Extent EPA Relies on Artificial Intelligence in This Action, the Failure to Disclose That Use Violates Applicable Procedural Requirements.

EPA must disclose whether and how it has used artificial intelligence (AI) in this rulemaking. Specifically, if AI has been used, EPA must describe the AI tools employed and explain how the Agency has used them, including EPA's inputs and the AI tool's outputs. AI can be used appropriately to improve agency efficiency, but its use must be properly moderated and disclosed.

Under the Clean Air Act, EPA is required to accompany its proposed rule with a statement of the rule's basis and purpose. 42 U.S.C. § 7607(d)(3). To be lawful, the Agency must "articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)) The Agency cannot "rel[y] on factors which Congress has not intended it to consider" or "entirely fail[ ] to consider an important aspect of the problem." *Id.* at 43. Nor can it "offer[ ] an explanation for its decision that runs counter to the evidence before the agency." *Id*. The Agency's decision must be "justified by the rulemaking record." *Id.* at 42.

If artificial intelligence is used to generate data, analyze data, or otherwise execute data-processing tasks in the course of EPA's rulemaking, it constitutes a basis used to generate the rule. Therefore, any use of AI to construct the Proposal must be disclosed. Any final rule will similarly be required to disclose any use of AI in the methodology behind the rule. These requirements safeguard against potential errors during rulemaking by providing the public an opportunity to identify and correct such errors. To the extent EPA has used AI in the Proposal—or intends to use it in the final rulemaking—and has failed to disclose that use in the rule's statement of basis and purpose, it removes those safeguards in violation of its statutory obligations.

Additionally, reliance on AI for information or data in any part of the rulemaking must be disclosed as the Agency's decision must be "justified by the rulemaking record," State Farm, 463 U.S. at 43, and a failure to disclose AI use would result in an incomplete record for judicial review. Courts have declared that these disclosures are "the safety valves in the use of ... sophisticated methodology." *Sierra Club v. Costle*, 657 F.2d 298, 334 (D.C. Cir. 1981). These disclosures are necessary to ensure that agency AI adoption remains open to both public inspection and judicial review. If EPA has used AI in this rulemaking and fails to disclose it in the docket, it hides potential errors and biases from public view.

Moreover, any undisclosed use of AI could render EPA's rule unlawful. When an agency uses computer models to formulate a proposed rule, the Agency "must explain the assumptions and methodology used in preparing the model." *U.S. Air Tour Ass'n v. FAA*, 298 F.3d 997, 1008 (D.C. Cir. 2002) (quoting *Small Refiner Lead Phase–Down Task Force v. EPA*, 705 F.2d 506, 535 (D.C. Cir. 1983)). These explanations ensure that the "ultimate responsibility for the policy decision remains with the agency rather than the computer." *Sierra Club*, 657 F.2d at 334-35. Therefore, agencies using AI should disclose, at a minimum, "algorithmic specifications, including the objective function being optimized, the method used for that optimization, and the algorithm's input variables." Cary Coglianese & David Lehr, *Regulating by Robot:*

Administrative Decision Making in the Machine-Learning Era, 105 Geo. L. J. 1147, 1208 (2017).

In addition to statutory requirements, recent executive branch directives require AI-use disclosure. The executive actions reflect the Administration's understanding that agency AI disclosure is necessary for correcting agency errors and shortcomings, in addition to building public trust. For example, the Office of Management and Budget requires in OMB Memo M-25-21 that when an agency uses AI, the agency must "publicly release a summary describing" whether its use is "high-impact." If EPA's rule uses potentially high-impact AI, EPA must follow several additional requirements outlined in OMB Memo M-25-21, app. 4. These requirements include, but are not limited to, ensuring that "individuals affected by AI-enabled decisions have access to a timely human review and a chance to appeal any negative impacts, when appropriate." *Id.* at 17. Even if EPA does not use high-impact AI, the Memo recommends that EPA maintain a "transparent process that seeks public input, comments, or feedback from the affected groups in a meaningful, accessible, and effective manner" regarding AI use.

These OMB guidelines are consistent with key executive action from the first Trump administration. In his December 2020 Executive Order, "Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government," President Trump acknowledged that "the ongoing adoption and acceptance of AI will depend significantly on public trust," and required agencies to "design, develop, acquire, and use AI in a manner that fosters public trust." Exec. Order No. 13,960, 85 Fed. Reg. 78,939 (Dec. 8, 2020). The Order specified that "the design, development, acquisition, and use of AI, as well as relevant inputs and outputs of particular AI applications, should be well documented and traceable." *Id.* Like the Clean Air Act's procedural requirements, this Order compels disclosure in the interest of avoiding hidden errors and biases in agency decision-making and providing the public a meaningful opportunity to comment on agency practice.

For all of these reasons, to the extent EPA used or plans to use AI tools in this rulemaking, it must document its use and any relevant inputs and outputs for the public.

CONCLUSION

For all of the above reasons, EPA must withdraw this illegal and unsupported Proposal.

Respectfully submitted,

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