States of California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Minnesota, New Jersey, New York, North Carolina, Oregon, Rhode Island, Vermont, Washington, Wisconsin, the Commonwealth of Massachusetts, and the District of Columbia

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U.S. Environmental Protection Agency
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RE: Comments on "Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicles Standards," 87 Fed. Reg. 17,414 (March 28, 2022)

Attention: Docket ID No. EPA-HQ-OAR-2019-0055

Dear Administrator Regan,

The States of California,[1] Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Minnesota, New Jersey, New York, North Carolina, Oregon, Rhode Island, Vermont, Washington, Wisconsin, the Commonwealth of Massachusetts, and the District of Columbia (States) respectfully submit these comments on the Environmental Protection Agency's (EPA) proposed rule titled "Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicles Standards," 87 Fed. Reg. 17,414 (Mar. 28, 2022) (Proposed Rule or Rule).

The States commend EPA's efforts to strengthen criteria pollutant emission standards for heavy-duty engines for the first time in almost 20 years. Heavy-duty engines are a significant source of pollutants that contribute to ambient levels of ozone and particular matter that are linked to premature death, respiratory illness including childhood asthma, cardiovascular problems, and other adverse health impacts.[2] Indeed, on-road heavy duty vehicles are the largest mobile-source contributor of emissions of nitrogen oxides (NOx)—an ozone precursor—in the

[1] The California Attorney General submits these comments pursuant to his independent power and duty to protect the environment and natural resources of the State. *See* Cal. Const., art. V, § 13; Cal. Gov. Code, §§ 12511, 12600-12612; *D'Amico. v. Bd. of Medical Examiners*, 11 Cal.3d 1, 1415 (1974). The California Air Resources Board joins these comments and is submitting its own comments on the Proposed Rule as well.

[2] 87 Fed. Reg. at 17,444.

country. [3] Impoverished communities and communities of color are disproportionately harmed by heavy-duty truck emissions because they are more likely to live, work, or go to school in areas with high truck activity, such as ports, highways, railyards, and distribution centers.

The transportation sector is also the largest source of greenhouse gas (GHG) emissions in the United States, with heavy-duty vehicles being the second-largest contributor within that sector. Reducing GHG emissions from heavy-duty vehicles is thus an essential element of addressing the growing climate emergency that is already impacting our residents. For instance, during the summer of 2021, multiple deadly heatwaves with record-breaking high temperatures ravaged the western United States while hurricanes of historic force swept across the southern and eastern United States, resulting in mass power outages and producing record-breaking rainfall and fatal flash floods. Scientists project climate change-related impacts like these to worsen, and climate harms will disproportionately impact historically marginalized communities underscoring the urgent need for reductions in GHG emissions from this sector.

Recognizing the critical need to address emissions from this significant source, President Biden's Executive Order 14037, "Strengthening American Leadership in Clean Cars and Trucks," directed EPA to establish new standards for emissions from heavy-duty engines and vehicles beginning with model year 2027 through at least model year 2030. Specifically, EPA is co-proposing two regulatory options for reducing NOx emissions: Option 1 implements stronger NOx standards in a two-step approach by first increasing stringency in model year 2027 and then increasing stringency again for model year 2031; Option 2 sets a one-time stringency for only model year 2027 and would achieve less NOx emissions than Option 1. Option 1 will achieve greater emission reductions than Option 2, will reduce NOx emissions from heavy-duty vehicles by almost 60 percent in 2045, and "will provide society with a substantial net gain in welfare, notwithstanding the health and other benefits [that EPA was] unable to quantify."[4]

The States strongly encourage EPA to adopt Option 1, which is the regulatory option that reflects "the greatest degree of emission reduction achievable" as required by Clean Air Act (CAA) section 202(a)(3) and most closely aligns with the Heavy-Duty Engine and Vehicle Omnibus Regulation (Omnibus Rule) recently adopted by the California Air Resources Board (CARB). Given the record supporting the Proposed Rule, and CARB's robust record supporting the Omnibus Rule, Option 1 is unquestionably both technologically feasible and cost-effective, better addresses the significant impact of emissions from the heavy-duty vehicles on

[3] *Id*. at 17,418. Ozone is created by a chemical reaction in the presence of sunlight between NOx and volatile organic compounds.

[4] EPA, Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards: Draft Regulatory Impact Analysis, § 9.2, pp. 403-4 (March 2022), EPA-HQ-OAR-2019-0055-0979 ("Draft RIA").

environmental justice communities,[5] and enhances the States' ability to attain and maintain national ambient air quality standards for ozone and particulate matter. EPA's proposed adoption of Option 2 would be inconsistent with CAA section 202(a)(3) and would be arbitrary and capricious in light of the rulemaking record.

The States further recommend that EPA not adopt certain compliance flexibilities in the Proposed Rule, to the extent such flexibilities undermine the emission benefits of Option 1. Most notably, EPA should not adopt the proposed interim "in-use" standards—which are based on emissions from vehicles in operation – that are significantly less stringent than the certification standards that new engines must meet.

The Proposed Rule would also further tighten the Phase 2 GHG standards for model year 2027 in certain segments of the heavy-duty vehicles sector based on the better-than-anticipated deployment of zero-emitting vehicles (ZEVs) in certain heavy-duty vehicle classes, especially buses and delivery vans. The States support EPA's general methodology for updating the Phase 2 GHG standards, which preserves their environmental integrity and comports with EPA's legal duties of rational decision-making. However, the States urge EPA to base its update on a more robust projection of ZEVs in the heavy-duty sector that reflects multiple States' ZEV mandates and market conditions that increasingly favor heavy-duty ZEVs. The States also encourage EPA to prioritize new GHG standards for the heavy-duty sector based on proven, cost-effective ZEV technology.

Finally, due to statutory lead time requirements for model year 2027, the States note the importance of finalizing the Proposed Rule as soon as possible but by the end of this year at the latest.

[5] Environmental justice is defined by EPA as the "fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to development, implementation, and enforcement of environmental laws, regulations and policies." EPA, EPA-300-B-1-6004, *EJ 2020 Action Agenda: The U.S. EPA's Environmental Justice Strategic Plan For 2016-2020*, at 1 (Oct. 2016) ("EJ 2020 Action Agenda"). For the purpose of this comment, the term "environmental justice community" refers to a community of color or community experiencing high rates of poverty that, due to past and/or current unfair and inequitable treatment, is overburdened by environmental pollution and the accompanying harms and risks from exposure to that pollution.

I. FACTUAL BACKGROUND

A. Air Pollutants Emitted from Heavy-Duty Vehicles Endanger Public Health and Welfare

Heavy-duty truck engines are a significant source of air pollutants that contribute to ambient concentrations of ozone, inhalable particulate matter ($PM_{2.5}$), and air toxics.[6] Exposure to ozone and $PM_{2.5}$ has serious health effects and is associated with increased risk of premature deaths, emergency room visits, and hospital stays.[7] A range of adverse respiratory effects are linked to these pollutants such as asthma, respiratory inflammation, and decreased lung function and growth.[8]

In particular, $PM_{2.5}$ poses the greatest health risk among air pollutants as the fine particles can lodge deep into the lungs and possibly enter into the bloodstream, causing irregular heartbeat, heart attacks, as well as increased risk of lung cancer.[9] Recent evidence also suggests a causal relationship between $PM_{2.5}$ exposure and a host of other negative health impacts, including male and female reproductive and developmental effects from long-term exposure (*i.e.*, fertility, pregnancy, and birth outcomes), metabolic effects from long-term and short-term exposure, and nervous system effects from short-term exposure.[10] Heavy-duty engine emissions also contribute to ambient levels of air toxics, such as benzene, formaldehyde, acetaldehyde, and naphthalene, that are known or suspected to cause cancer and other serious health effects.[11]

B. Emissions from Heavy-Duty Vehicles Disproportionately Impact Environmental Justice Communities

Emissions from heavy-duty trucks disproportionately endanger residents of environmental justice communities by exposing them to harmful air pollution that causes significant health impacts. Heavy-duty trucks concentrate their emissions along transportation corridors and near ports and warehouses.[12] Communities located near this infrastructure are

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[6] 87 Fed. Reg. at 17,444.

[7] *Id.* at 17,444-51.

[8] *Id.*

[9] EPA Notice of Proposed Rulemaking on the Control of Air Pollution from Airplanes and Airplane Engines: Particulate Matter Standards and Test Procedures, 87 Fed. Reg. 6324, 6331 (Feb. 3, 2022).

[10] *Id.*

[11] Draft RIA at § 4.1.6.

[12] 87 Fed. Reg. at 17,452.

disproportionately lower-income and communities of color and typically face industrial pollution cumulatively with truck emissions.[13] For example, EPA modeling has shown that race and income are significantly associated with living near truck routes nationally, even when controlling for other factors.[14] EPA research has also indicated that people of color are more likely to live within 300 feet of major transportation facilities and go to school within 200 meters of the largest roadways.[15] Likewise, a comprehensive study by the South Coast Air Quality Management District—which covers Los Angeles and the Inland Empire, the largest logistics hub nationwide—found that communities located near large warehouses scored far higher on California's environmental justice screening tool, which measures overall pollution and demographic vulnerability.[16] That study concluded that, compared to the South Coast basin averages, communities in the South Coast basin near large warehouses had a substantially higher proportion of people of color; were exposed to more diesel particulate matter; had higher rates of asthma, cardiovascular disease, and low birth weights; and had higher poverty and unemployment rates.[17]

As the South Coast Air Quality Management District study demonstrates, and as many others corroborate,[18] residents of environmental justice communities near logistics infrastructure

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[13] EPA Memorandum, *Estimation of Population Size and Demographic Characteristics among People Living Near Truck Routes in the Coterminous United States*, at 11-12, Fig. 3, 17-19, Fig. 9 (Feb. 16, 2022) (finding that individuals living near major truck routes are more likely to be people of color and lower-income), EPA-HQ-OAR-2019-0055-0982; *see also* Michelle Meyer & Tim Dallmann, The Real Urban Emissions Initiative, *Air quality and health impacts of diesel truck emissions in New York City and policy implications*, at 7, Fig. 5 (2022) (concluding that Black and Latino individuals in New York City are disproportionately exposed to $PM_{2.5}$ along freight corridors), attached as Exhibit 1; South Coast Air Qual. Mgmt. Dist., *Final Socioeconomic Assessment for Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program and Proposed Rule 316 – Fees for Rule 2305*, at 3-7 (May 2021) (determining that individuals living near warehouses in the logistics-heavy South Coast Air Quality Management District are more likely to be people of color, lower-income, and exposed to high pollution levels), attached as Exhibit 2.

[14] EPA Memorandum, "Estimation of Population Size and Demographic Characteristics among People Living Near Truck Routes in the Coterminous United States" (Feb. 16, 2022), EPA-HQ-OAR-2019-0055-0982, at 20-24.

[15] Chad Bailey, "Demographic and Social Patterns in Housing Units Near Large Highways and other Transportation Sources," at 3 (2011), EPA-HQ-OAR-2019-0055-0126.

[16] South Coast Air Qual. Mgmt. Dist., *Final Socioeconomic Assessment*, *supra* note 13, at 4-5.

[17] *Id*. at 5-7.

[18] *See, e.g.*, Gaige Hunter Kerr, et al., *COVID-19 Pandemic Reveals Persistent Disparities in Nitrogen Dioxide Pollution*, 118 Proc. Nat'l Acad. Sciences 30 (2021), attached as Exhibit 3;

suffer from health effects due to exposure to NOx and associated heavy-duty truck emissions. These issues are particularly acute in our States, which proudly generate a majority of the nation's economic activity associated with the logistics industry, yet also bear its detrimental environmental impacts. Major ports in some of our States handled 61 percent of all container traffic nationwide in 2020, including the three megaports of Los Angeles, Long Beach, and New York and New Jersey, which together accounted for 43 percent of all container traffic.[19] Additionally, Chicago's central location makes it a national leader in intermodal transit.[20] Reflecting historical redlining,[21] the communities near these ports are overwhelmingly

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Mary Angelique G. Demetillo, et al., *Space-Based Observational Constraints on NO_2 Air Pollution Inequality from Diesel Traffic in Major US Cities*, Geophysical Research Letters 48 (2021), attached as Exhibit 4; Paul Allen, et al., *Newark Community Impacts of Mobile Source Emissions: A Community-Based Participatory Research Analysis* (2020), attached as Exhibit 5; Maria Cecilia Pinto de Moura, et al., Union of Concerned Scientists, *Inequitable Exposure to Air Pollution from Vehicles in Massachusetts* (2019), attached as Exhibit 6; Iyad Kheirbek, et al., *The Contribution of Motor Vehicle Emissions to Ambient Fine Particulate Matter Public Health Impacts in New York City: a Health Burden Assessment*, 15 Env't Health 89 (2016), attached as Exhibit 7.

[19] Data from the Bureau of Transportation Statistics, Container TEUs (Twenty-foot Equivalent Units) (2020), https://data.bts.gov/stories/s/Container-TEU/x3fb-aeda/ (ports of Baltimore, Boston, Honolulu, Long Beach, Los Angeles, New York and New Jersey, Oakland, Seattle, South Jersey, Tacoma, and Wilmington combined for 24.956 million TEUs, 61% of 41.24 million TEUs total nationwide; ports of Long Beach, Los Angeles, and New York and New Jersey combined for 17.62 million TEUs, 43% of 41.24 million TEUs) (last accessed May 16, 2022).

[20] Chicago Metropolitan Agency for Planning, *The Freight System: Leading the Way*, at 16 (2017), attached as Exhibit 8.

[21] Beginning in the 1930s, federal housing policy directed investment away from "risky" communities of color. Nearly all of the communities adjacent to the three megaports (the Ports of Los Angeles, Long Beach, and New York and New Jersey) and the intermodal terminals in Chicago were coded red, signifying the least desirable areas where investment was to be avoided. *See* Univ. of Richmond Digital Scholarship Lab, Mapping Inequality, https://dsl.richmond.edu/panorama/redlining/#loc=12/33.748/-118.272&city=los-angeles-ca (Los Angeles, CA), https://dsl.richmond.edu/panorama/redlining/#loc=14/40.678/-74.004&city=brooklyn-ny (Brooklyn, NY), https://dsl.richmond.edu/panorama/redlining/#loc=13/40.704/-74.068&city=hudson-co.-nj (Hudson County, NJ), https://dsl.richmond.edu/panorama/redlining/#loc=13/40.627/-74.233&city=union-co.-nj (Union County, NJ), https://dsl.richmond.edu/panorama/redlining/#loc=12/41.854/-87.772&city=chicago-il (Chicago, IL) (last accessed May 16, 2022).

comprised of residents with lower-incomes and people of color who disproportionately suffer exposures and health impacts from pollution from heavy-duty truck engine emissions. Data from the census tracts surrounding the Ports of Los Angeles and Long Beach exemplify these inequalities:

Community of San Pedro[22]

Census Tract	Hispanic	Black	Diesel PM	Asthma	Poverty
6037296500	71.2%	11.5%	80th	91st	88th
6037296210	87%	6%	99th	94th	88th
6037296220	65.3%	12.8%	97th	94th	93rd
6037297110	64.3%	11.1%	99th	94th	97th
6037297120	67.9%	5.6%	97th	94th	72nd

Community of Wilmington

Census Tract	Hispanic	Black	Diesel PM	Asthma	Poverty
6037294302	86.1%	4.4%	98th	82nd	72nd
6037294900	87.6%	3.2%	100th	81st	93rd
6037294820	96.7%	0.9%	99th	83rd	97th
6037294830	93.5%	3.4%	100th	83rd	91st
6037294701	90.3%	4.9%	99th	83rd	91st
6037294620	93.2%	1.5%	45th	83rd	85th
6037294120	92.5%	3.2%	84th	83rd	78th

Community of Long Beach

Census Tract	Hispanic	Black	Diesel PM	Asthma	Poverty
6037572800	30.8%	32.9%	86th	85th	100th
6037572900[23]	68.7%	5.8%	98th	82nd	89th
6037573003**Error! Bookmark not defined.**	45.5%	5.4%	75th	89th	70th

[22] Data from CalEnviroScreen 4.0, California Office of Environmental Health Hazard Assessment, https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40. Metrics for diesel particulate matter exposure, asthma rates, and poverty are the census tract's percentile ranking as compared to all census tracts in California, demonstrating that these census tracts are among those with the greatest pollution exposure, detrimental health impacts, and lowest incomes statewide. The raw data for these percentile rankings are available on the CalEnviroScreen 4.0 website.

[23] Several of the census tracts in Long Beach also have substantial Asian populations: 6037572900 (18%), 6037573003 (20.8%), 6037575803 (7.6%), 6037575901 (7.5%), 6037575902 (6.9%), 6037576001 (20.2%).

6037575401	80.5%	9.4%	64th	97th	98th
6037575801	74.5%	10.8%	99th	94th	93rd
6037575803**Error! Bookmark not defined.**	72.4%	8.1%	99th	96th	95th
6037575901**Error! Bookmark not defined.**	50.6%	19.9%	99th	86th	86th
6037575902**Error! Bookmark not defined.**	35%	15.4%	99th	87th	71st
6037576001**Error! Bookmark not defined.**	12.7%	13.7%	98th	85th	22nd

Logistics hubs demand extensive networks of highways and warehouses to move and store cargo via millions of truck trips annually. Southern California was home to nearly 1.2 billion square feet of warehouse space as of 2014,[24] the South Coast Air Basin now contains approximately 3,000 warehouses over 100,000 square feet,[25] and the Ports of Los Angeles and Long Beach alone generate about 35,000 container truck trips every day.[26] Aggravating historical injustices, decision makers disproportionately site highways and warehouses in environmental justice communities whose residents, like those of port communities, suffer higher levels of pollution exposure from heavy-duty trucks than do whiter and higher-income communities. Data demonstrate that the census tracts in California with the highest levels of ozone, $PM_{2.5}$, and DPM exposure are communities of color bordering such logistics thoroughfares—Highway 99 in the San Joaquin Valley and Highways 10 and 60 in the Inland Empire:

[24] South Coast Air Qual. Mgmt. Dist., *Final Socioeconomic Assessment*, *supra* note 13, at 7-8.

[25] Southern California Association of Governments, *Industrial Warehousing in the SCAG Region: Task 2. Inventory of Warehousing Facilities*, at 2-11 (2018), available at https://scag.ca.gov/sites/main/files/file-attachments/task2_facilityinventory.pdf (last accessed May 16, 2022).

[26] U.S. Dept. of Transportation, Federal Highway Administration, *FHWA Operations Support – Port Peak Pricing Program Evaluation* (2020), available at https://ops.fhwa.dot.gov/publications/fhwahop09014/sect2.htm (last accessed May 16, 2022).

Census Tracts in California with Highest Levels of Ozone, $PM_{2.5}$, and Diesel PM Exposure[27]

Census Tract	Location	People of Color	Ozone	$PM_{2.5}$	Diesel PM
6065041408	Riverside	78.1%	91st	92nd	97th
6071002109	Ontario	73.2%	91st	96th	93rd
6071003301	Fontana	91.6%	97th	93rd	94th
6065040303	Jurupa Valley	79.3%	95th	94th	97th
6029003113	Bakersfield	80.4%	94th	100th	96th
6029001801	Bakersfield	57.3%	94th	100th	95th
6029002812	Bakersfield	72.5%	94th	100th	96th
6029002813	Bakersfield	76.6%	94th	100th	95th

Accordingly, achieving emissions reductions from heavy-duty trucks is a critical step to begin dismantling historical patterns of environmental injustice burdening communities near ports, highways, and warehouses.

C. Reducing Heavy-Duty Truck Emissions Is Essential For States To Attain and Maintain Federal Air Quality Standards

As stated, heavy-duty engines are a significant source of inhalable particulate matter $PM_{2.5}$ and NOx emissions in the country. The CAA requires EPA to set and regularly review and revise federal health-based ambient air quality standards for "criteria pollutants," including $PM_{2.5}$, NOx, and ground-level ozone.[28] These National Ambient Air Quality Standards (NAAQS) aim to provide States with achievable goals to protect the health of their residents from air pollution resulting from emissions of criteria air pollutants and precursors. The NAAQS for ozone, established in 2015 and retained in 2020, is an 8-hour standard with a level of 70 parts per billion, although EPA recently announced that it may reconsider the previous administration's decision to retain the ozone NAAQS.[29] EPA is also implementing the previous 8-hour ozone standard, set in 2008 at a level of 75 parts per billion. For $PM_{2.5}$, there are two NAAQS that were

[27] Data from CalEnviroScreen 4.0, *see supra* note 22. The eight census tracts shown here are examples of the 29 census tracts in California that rank above the 90th percentile statewide for exposure to ozone, fine particulate matter, and diesel particulate matter, all of which are communities in Bakersfield or the Inland Empire near major logistics thoroughfares.

[28] 42 U.S.C. §§ 7408-7409.

[29] *See* EPA, "EPA to Reconsider Previous Administration's Decision to Retain 2015 Ozone Standards," available at https://www.epa.gov/ground-level-ozone-pollution/epa-reconsider-previous-administrations-decision-retain-2015-ozone.

set in 1997, revised in 2006 and 2012, and retained in 2020[30]: an annual standard (12.0 micrograms per cubic meter) and a 24-hour standard (35 micrograms per cubic meter).

Depending on whether the air quality in an area meets the NAAQS for a particular pollutant, EPA designates the area as being in "attainment" or "nonattainment." EPA further classifies areas that are in nonattainment according to the severity of their air pollution problem, and areas with more severe pollution levels are given more time to meet the standard while being subject to more stringent control requirements under State Implementation Plans.

As of May 31, 2021, there were 34 ozone nonattainment areas for the 2008 ozone NAAQS and 50 ozone nonattainment areas for the 2015 ozone NAAQS, which amounts to 122 million people living in ozone nonattainment areas.[31] Sixteen of the 8-hour ozone nonattainment areas are located in California and the only two extreme nonattainment areas in the nation are located in the South Coast Air Basin and San Joaquin Valley of California.[32] Indeed, for the South Coast Air Basin to meet the federal ozone standards, overall NOx emissions need to be reduced by 70 percent from today's levels by 2023, and approximately 80 percent by 2031.[33] The Greater Connecticut and New York-Northern New Jersey-Long Island ozone nonattainment areas failed to meet the deadline for moderate nonattainment of the 2008 ozone NAAQS and were re-designated to serious nonattainment status for that NAAQS. These areas must now meet the attainment date of 2021 for the 2008 standard. Many areas of the country are also currently in nonattainment for the $PM_{2.5}$ NAAQS standards, and as of May 31, 2021, more than 32 million people live in $PM_{2.5}$ nonattainment areas.[34]

Given the extraordinary challenges that California and many States are facing to attain and maintain ozone and $PM_{2.5}$ NAAQS, substantial emission reductions beyond those currently being achieved by state regulatory programs are critically necessary. Reducing emissions from

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[30] On June 10, 2021, EPA announced that it will reconsider the previous administration's decision to retain the PM NAAQS. *See* Press Release, EPA, EPA to Reexamine Health Standards for Harmful Soot that Previous Administration Left Unchanged (June 10, 2021), available at https://www.epa.gov/newsreleases/epa-reexamine-health-standards-harmful-soot-previous-administration-left-unchanged.

[31] Draft RIA at § 6.1.1.

[32] 2016 State Strategy for the State Implementation Plan for Federal Ozone and PM2.5 Standards (Cal. SIP Strategy), available at https://ww2.arb.ca.gov/resources/documents/2016-state-strategy-state-implementation-plan-federal-ozone-and-pm25-standards.

[33] CARB, Staff Report, *Initial Statement of Reasons – Public Hearing to Consider the Proposed Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments*, at II-2 (June 23, 2020), EPA-HQ-OAR-2019-0055-0632 ("Omnibus ISOR").

[34] Draft RIA at § 6.1.1.

heavy-duty vehicles will help States attain and maintain NAAQS for these pollutants. According to California's EMission FACtors (EMFAC) 2017 emissions inventory model, almost a million heavy-duty vehicles operate on California roads each year and contribute 31 percent of all statewide NOx emissions.[35] In the South Coast Air Basin, heavy-duty vehicles are responsible for 32 percent of mobile source NOx emissions.[36] In New York, medium and heavy-duty vehicles are responsible for 52 percent of the NOx and 45 percent of the $PM_{2.5}$ emitted by on-road vehicles. Further, regulating only heavy-duty engines certified for use in California and other States is not sufficient because heavy-duty vehicles play an important role in the transport of goods for interstate commerce and frequently cross state borders.[37] Therefore, the Proposed Rule would assist States with attaining and maintaining the NAAQS, and ease the burden on nonattainment areas that already have stringent state and local regulations.[38]

II. LEGAL BACKGROUND

A. Statutory and Regulatory Framework

Section 202(a) of the CAA requires EPA to set emission standards for air pollutants from new motor vehicles or new motor vehicle engines that the Administrator has found "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."[39] Standards under CAA section 202(a) take effect "after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period."[40] Therefore, in establishing or revising CAA section 202(a) emission standards, EPA must also consider issues of technological feasibility, compliance cost, and lead time.[41] In previous rulemakings, EPA has also considered other factors including the impacts of potential standards on the heavy-duty vehicle industry, fuel savings, oil conservation, energy security, and safety.[42]

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[35] Omnibus ISOR at ES-1.

[36] CARB, Measures for Reducing Emissions from On-Road Heavy-Duty Vehicles (June 3, 2021) available at http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/heavy-duty-trucks-presentations-06-03-21.pdf?sfvrsn=8 (last accessed May 16, 2022).

[37] *See* Omnibus ISOR at ES-17.

[38] *See* Draft RIA at § 6.1.2

[39] 42 U.S.C. § 7521(a).

[40] *Id*.

[41] *See* 87 Fed. Reg. at 17,436.

[42] *Id*.

Section 202(a)(3) of the CAA further addresses EPA's authority to set emission standards for criteria pollutants such as NOx and particulate matter from heavy-duty engines and vehicles. Under that section, standards must "reflect the greatest degree of emission reduction achievable through the application of technology that the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology."[43] The statute also includes lead time and stability requirements, which specify that any emission standard promulgated or revised under section 202(a)(3) must apply for at least three model years beginning no earlier than four model years after such standard is promulgated.[44] CAA section 202(a)(3)(A) is a technology-forcing provision, meaning that manufacturers are not required to use a specific technology, but may be required to develop new technologies or significantly improve existing technologies in order to meet the standard.[45]

B. Existing Federal and California Emission Standards for Heavy-Duty Engines

EPA's emission standards for the heavy-duty highway engines apply to the weight classes of the vehicles in which the engines are expected to be installed.[46] In early 2001, EPA finalized the 2007 Heavy-Duty Engine and Vehicle Rule (2007 Rule) reducing NOx and particulate matter emissions from both diesel and gasoline-fueled highway heavy-duty engines.[47] Prior to 2001, emission standards were based on controlling emissions formed during the combustion process.[48] But the 2007 Rule was based for the first time on capturing, converting, and reducing harmful emissions between the engine and the truck's tailpipe utilizing exhaust aftertreatment technologies.[49]

In 2016, EPA and the National Highway Traffic Safety Administration finalized the Heavy-Duty Phase 2 GHG and fuel efficiency program (Phase 2 GHG standards), which included technology-advancing performance-based standards for highway heavy-duty vehicles

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[43] 42 U.S.C. § 7521(a)(3)(A)(i).

[44] 42 U.S.C. § 7521(a)(3)(C).

[45] *See National Petrochemical & Refiners Association v. EPA*, 287 F.3d 1130, 1136 (D.C Cir. 2002) (explaining that EPA is authorized to adopt "technology-forcing" regulations under CAA section 202(a)(3)).

[46] 87 Fed. Reg. at 17,417.

[47] 66 Fed. Reg. 5002 (Jan. 18, 2001).

[48] 87 Fed. Reg. at 17,432.

[49] *Id*.

and heavy-duty engines.[50] The initial standards for most vehicles and engines commenced in model year 2021, will increase in stringency in model year 2024, and will culminate in model year 2027.[51] The agencies based the Phase 2 GHG standards on currently available technologies as well as technologies that were still under development or not yet widely available, but specifically did not consider heavy-duty ZEV technologies as an available emission-reduction strategy for the sector.[52] The Phase 2 GHG standards provided up to 10 years lead time to allow for the development and phase-in of these control technologies.[53] The Proposed Rule would further tighten the Phase 2 GHG standards for model year 2027 for certain classes of heavy-duty vehicles.[54]

Given the significant air quality challenges faced by the State of California, CARB has adopted emission standards that go beyond EPA's requirements to further reduce NOx emissions from heavy-duty vehicles and engines in the state. Most recently in September 2021, CARB adopted the Omnibus Rule, which establishes exhaust emission standards for NOx that are 90% more stringent than EPA's 2007 Rule.[55] The Omnibus Rule also strengthens several elements of California's certification and in-use programs to ensure that NOx emissions are significantly reduced throughout the entire useful life of the vehicle or engine. These revisions include tighter emission standards, revamped in-use testing requirements, a new low-load certification test cycle, longer useful life periods, more robust durability procedures, and longer emission warranties to ensure defective parts are rapidly repaired. California's Omnibus Rule constitutes the single largest NOx control measure in its current SIP strategy to attain national ambient air quality standards, and is responsible for nearly half of the NOx emission reduction commitment in the entire plan (52 tons per day out of 111 total tons per day NOx in 2031).[56] The Omnibus Rule only applies to engines sold in California, however, and does not limit emissions from other heavy-duty vehicles operating in the state.[57]

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[50] *Id*.

[51] *Id*.

[52] *Id*. at 17,432-433.

[53] *Id*.

[54] *Id*. at 17,417.

[55] Omnibus ISOR at ES-1.

[56] *Id*. at ES-2

[57] On November 17, 2021, the Oregon Environmental Quality Commission approved adoption of the Omnibus Rule. *See* Press Release, "EQC Approves Clean Trucks Rule, A Significant Move Toward Fighting Climate Change and Protecting Human Health," available at https://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=64571. The Massachusetts Department of Environmental Protection also recently adopted the Omnibus Rule. *See* Press Release, "MassDEP Files New Regulations to Reduce Emissions, Advance Market for Clean

III. DISCUSSION

A. EPA Should Adopt Option 1 as it Achieves the Maximum Emission Reductions and is Technologically Feasible

As noted above, under Section 202(a)(3) of the CAA, EPA must adopt criteria pollutant emissions standards that "reflect the greatest degree of emission reduction achievable through the application of technology that the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology."[58] In light of this statutory mandate, the States strongly encourage EPA to adopt Option 1 because Option 1 would "result in a greater level of achievable emission reduction for the model years proposed, which is consistent with EPA's statutory authority under Clean Air Act section 202(a)(3)."[59] According to EPA's analysis, Option 1 would achieve greater emission reductions from highway heavy-duty vehicles than Option 2. Specifically, Option 1 will reduce NOx emissions by 61 percent, primary exhaust PM 2.5 emissions by 26 percent, volatile organic compounds by 21 percent, and carbon monoxide by 17 percent nationwide in 2045.[60] Thus, EPA is compelled to adopt standards that are at least as stringent as Option 1 to meet its obligations under 202(a)(3) and EPA's proposed adoption of Option 2 is both inconsistent with 202(a)(3) and would be arbitrary and capricious given EPA's findings that the Option 1 standards are technologically feasible and cost effective.

These emission reductions are essential to begin to reduce the inequitable burden on to environmental justice communities. Under Executive Order 12,898, each federal agency has been directed, "to the greatest extent practicable and permitted by law" to "make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories . . . ."[61] Additionally, EPA recently committed to "make achieving environmental justice part of [its] mission[] by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying

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Trucks in the Commonwealth," available at https://www.mass.gov/news/massdep-files-new-regulations-to-reduce-emissions-advance-market-for-clean-trucks-in-the-commonwealth.

[58] 42 U.S.C. § 7521(a)(3)(A)(i).

[59] 87 Fed. Reg. at 17,417.

[60] *Id*. at 17,579; Draft RIA at § 5.3.1.

[61] 64 Fed. Reg. 7629 (Feb. 16, 1994).

economic challenges of such impacts."[62] The adoption of proposed Option 1 is consistent with EPA's commitment to ameliorating existing environmental injustices by achieving the maximum emission reductions and thus reducing air pollution that disproportionately impacts environmental justice communities.[63]

The emission reductions achieved by Option 1 are also critical for States seeking to attain and maintain the NAAQS for ozone and $PM_{2.5}$. For example, given California's extraordinary challenges in attaining both the ozone and $PM_{2.5}$ NAAQS, its state implementation plan is designed with stringent emissions reductions across all sources. But even with the expected emission reductions from California's mobile source programs, on-road heavy-duty vehicles are projected to remain one of the largest contributors to the state's NOx emissions inventory.[64] And operators in many States, including in California, purchase used heavy-duty vehicles that have been certified to meet federal, not state, standards. Indeed, federally certified heavy-duty vehicles account for over half of the total miles traveled by heavy-duty vehicles in California.[65] For the heaviest vehicles (Class 8 vehicles over 33,000 pounds GVWR), over 60 percent of vehicle miles traveled in California are by federally certified heavy-duty vehicles.[66] Thus, the adoption of Option 1 is critical to provide the maximum emission reductions necessary for California and other States to attain and maintain the NAAQs for ozone and $PM_{2.5}$.

Option 1's emissions standards, useful life, and warranty periods also most closely align with CARB's Omnibus Rule, and as the records for both the Proposed Rule and CARB's Omnibus Rule demonstrates, Option 1 is technologically feasible and cost-effective.[67] Option 1 provides a harmonization of standards that allows manufacturers to design a single engine nationally, thereby reducing complexity and costs.

B. EPA Should Not Adopt Compliance Flexibilities That Undermine Expected Emission Reductions from Improved NOx Standards

The States share EPA's goal of achieving effective NOx reductions without unnecessary hardship to manufacturers or vehicle owners or operators. Many of the compliance flexibilities set forth in the Proposed Rule—such as NOx credits for averaging, banking, and trading—are also components, to a degree, of the Omnibus Rule, and the States support including these where they would not reduce the stringency of the final standards and are justified by the record. However, the combined effect of multiple and redundant flexibilities contemplated in the

[62] Exec. Order 14,008, § 219.

[63] *Id.*

[64] Omnibus ISOR at ES-2.

[65] Omnibus ISOR at ES-17.

[66] *Id.*

[67] *See* Comments of CARB, to be filed in Docket EPA-HQ-OAR-2019-0055 on May 16, 2022.

Proposed Rule would be to, in practical effect, adopt standards weaker than those ostensibly adopted in regulation. Such a discrepancy between the emission standards "on paper" and "in the real world" would be problematic for at least three reasons.

First, were EPA to adopt compliance flexibilities that effectively loosen the emission standards' stringency, the final regulation would not "reflect the greatest degree of emission reduction achievable through the application of [available] technology," in violation of the CAA's plain mandate. 42 U.S.C. § 7521(a)(3)(A)(i). Moreover, because the CAA obligates EPA to choose the most effective achievable standards, adopting standards that in reality will be far less effective than purported would also undermine the "rational connection between the facts found and the choice made" and disregard "an important aspect of the problem." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983). The arbitrariness of such a result is especially pronounced where multiple, cumulative flexibilities and leniencies overlap to address the same industry concern. *Cf. Amer. Lung Ass'n v. EPA*, 134 F.3d 388, 392 (D.C. Cir. 1998) (agencies must "explain their decisions with precision").

Second, the Proposed Rule is of critical importance for States' attainment or maintenance of NAAQS. As described in Section I.C, heavy-duty vehicles are nationally the largest mobile-source contributor of NOx emissions, and in nonattainment areas near Los Angeles and New York City, contribute roughly one third to one half of the on-road NOx emissions, respectively. States risk nonattainment and corresponding penalties if a final rule in fact secures far less NOx emissions reduction than EPA projects—especially where the States premise their SIPs on these ostensible federal reductions. For many of the States, every ton of NOx that heavy-duty engines emit above the ostensible emission limit is another ton the State will have to eliminate from other sources within its regulatory authority. *Nat'l Ass'n of Clean Air Agencies v. EPA*, 489 F.3d 1221, 1227 (D.C. Cir. 2007) ("[W]hen EPA allows higher NOx emissions from [federally regulated sources], state agencies have no choice but to impose greater restrictions on other sources of NOx."). Reducing NOx from many of these other state-jurisdictional sources will be far more costly than controlling heavy-duty truck emissions.[68] Thus, lost emissions reductions disrupt the cooperative federalism that is the backbone of the CAA's statutory and regulatory scheme and defeat the goals of carefully crafted SIPs.

Third, flexibilities that would, in practical effect, undermine the projected reductions from the final emission standards would violate EPA's (and States') commitment to addressing environmental injustice. As described further in Section I.B, environmental justice communities would bear the brunt of the negative health and environmental effects of NOx emissions that are

[68] For example, the Northeast States for Coordinated Air Use Management (NESCAUM) estimate the costs of additional NOx controls from industrial, commercial, and institutional boilers as ranging from $2,700 to $21,000 per ton of NOx reduced, as compared to a cost range of $1,000 to $5,000 per ton of NOx reduced from heavy-duty vehicles. Comment submitted by Paul J. Miller, Executive Director, NESCAUM, at pp. 4-5 & nn.4,5 (Feb. 23, 2022), EPA-HQ-OAR-2019-0055-0001.

left unmitigated due to outsized and redundant compliance flexibilities, due to proximity to the major transportation corridors and logistics facilities. These already overburdened communities should not continue to bear the inequitable costs of pollution for the sake of unwarranted and unnecessary industry protections. Following that path would harm these communities and further erode trust. .

Accordingly, EPA should scale back or reject altogether flexibilities whose aggregate effect will be to significantly reduce the real-world emission benefits of Option 1. In particular, EPA should (1) reject the proposed interim in-use standards;[69] (2) adopt a stricter inducement schedule that meaningfully incentivizes real-world compliance;[70] and (3) further limit the use of NOx credits, especially those generated from heavy-duty electric vehicles.[71]

1. EPA should reject the proposed interim in-use standards

EPA should not adopt interim in-use emission standards less stringent than the standards to which manufacturers certify new engines. These proposed interim in-use standards permit 1.4 to 2 times more NOx emissions than the standards to which engines are certified under Option 1,[72] effectively turning Option 1 standards into Option 2 standards immediately after certification. As EPA recognizes, this proposal departs from EPA's typical practice, which is to "set[] the same standards for certification testing and in-use testing."[73] The industry concerns that EPA cites in support of this departure—"to give manufacturers time to gain experience with the new technology needed to meet the standards and [to] reflect uncertainties about potential variabilities in performance during the early years of implementing new technology"—do not justify such a dramatic relaxation of emission standards vital to protecting the health and welfare of our residents.[74] The selective catalytic reduction (SCR) technologies at the heart of the NOx standards are not novel, but are refined technologies that have been used in the heavy-duty sector for more than a decade.[75] Moreover, because CARB's Omnibus Rule takes effect three years in advance of model year 2027, the heavy-duty sector will have the benefit of several years of

[69] 87 Fed. Reg. at 17,563-5.

[70] *Id*. at 17,536-46.

[71] *Id*. at 17,556-62.

[72] *Id.* at 17,564.

[73] *Id.* at 17,563.

[74] *Id.*

[75] *Id.* at 17,432. *See also* Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements, 66 Fed. Reg. 5002, 5053 (Jan. 18, 2001) (discussing initial development of SCR technologies for NOx control within the heavy-duty fleet).

research, development, experimentation, and troubleshooting to ensure engines perform as expected.[76]

Furthermore, manufacturers already may protect against "uncertainties about potential variabilities in performance" of this technology through other strategies EPA acknowledges or proposes as flexibilities: most importantly, through (1) compliance margins built into engines by manufacturers; (2) the generous scaling factors and measurement allowances EPA builds into the proposed off-cycle standards; and (3) the use of NOx credits.[77] Each of these measures is intended to or can be used to address unexpected performance deficiencies or similar discrepancies between certification standards and real-world performance. Thus, for example, if a manufacturer is concerned that its engines' aftertreatment components will deteriorate over time, and it cannot or chooses not to design its engines with an extra margin, the manufacturer can generate and bank credits in the lead-up to model year 2027 (for example, by introducing HD ZEV models into its fleet) to ensure it remains compliant.

But the proposed interim in-use standards as proposed create a perverse incentive to manufacturers to design their engines to those looser in-use standards, as long as they can pass the certification tests initially. EPA and the States have too much enforcement experience with defeat devices to pretend this incentive will be universally resisted.[78] Even a manufacturer not intending to defeat the standards will face cost incentives to use lower-quality components in aftertreatment systems that may degrade shortly after certification, with the same effect of noncompliance.[79] In short, this proposal is likely to increase emissions well beyond Option 1 standards in practice. Therefore, EPA should reject this portion of the proposal and design its

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[76] 87 Fed. Reg. at 14,434.

[77] *Id.* at 14,467, 14,469 (describing manufacturer-included margins for deterioration); *id.* at 17,474 (proposing off-cycle standards 1.5 to 2 times the certification standards and 10 percent allowance for measurement error); *id.* at 17,553 (discussing five-year credit life to "cover the transition to more stringent standards").

[78] *See, e.g.*, Notices of Filing of Consent Decrees Under the Clean Air Act, 63 Fed. Reg. 59,330-34 (Nov. 3, 1998) (describing consent decrees against Caterpillar, Inc., Cummins Engine Co., Detroit Diesel Corp., Mack Trucks, Inc., Renault Vehicules Industriels, Navistar International Corp., and Volvo Truck Corp. to resolve enforcement actions by USDOJ and CARB over emission-control defeat devices installed by these companies in their heavy-duty diesel engines, which resulted in poorer performance of the engines' NOx control systems in use than in certification testing).

[79] *Cf.* U.S. EPA, "EPA Announces Largest Voluntary Recall of Medium- and Heavy-Duty Trucks" (July 31, 2008) (describing 2018 recall of 500,000 model year 2010-2015 medium- and heavy-duty trucks due to SCR system components that degraded within a few years of operation), EPA-HQ-OAR-2019-0055-0146.

NOx standards to incentivize *against* engine component degradation and merely temporary compliance.

2. Inducements should not be so relaxed that emission benefits are effectively reduced

In a similar way, EPA should ensure that its inducements provisions secure in practice the emission reductions projected under Option 1. If operators are not properly incentivized to maintain an adequate supply of high-quality diesel exhaust fluid (DEF) in their aftertreatment systems, the real-world operation of these vehicles will severely undermine the emission reductions secured "on paper" by Option 1. The inducements schedule—*i.e.*, the progressive derating of engine performance when DEF supply becomes too low—thus remains an important component of effective NOx standards for heavy-duty vehicles. EPA is rightly attentive to the concerns raised by operators around inducements, especially the challenges of false inducements, and the States largely agree with the seven broad principles that EPA proposes for its inducements approach.[80] However, the proposed derate schedules[81] are too lenient to ensure that operators properly maintain their vehicles' aftertreatment systems for both low-speed and high-speed vehicles.[82]

Notably, the proposed final derate speed restrictions—50 mph for high-speed vehicles and 35 mph for low-speed vehicles—equal or come just under the speed limits for roadways on which many of these vehicles will operate. For example, a heavy-duty tractor on certain urban interstates and major state highways in California, Connecticut, Delaware, Massachusetts, New Jersey, Oregon, and Rhode Island are subject to a 55 mph speed limit.[83] EPA's statement that "final restricted speed of 50 mph prevents the vehicle from travel on most interstate highways with state laws regarding impeding traffic" is not true in most States, which, if they have minimum speeds at all, typically set those speeds at 40-45 mph.[84] Low-speed vehicles such as a refuse hauler, street sweeper, or similar utility vehicle operating in residential neighborhoods and

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[80] 87 Fed. Reg. at 17,540.

[81] *Id.* at 17,544.

[82] *See id.* at 17,541.

[83] Cal. Vehicle Code § 22406; Conn. Gen. Stat. § 14-219(a); Del. Code, tit. 21, § 4169(a)(5); Mass. Gen. Laws ch. 90, § 17; N.J. Stat. § 39:4-98(c) (50 mph limit); Or. Rev. Stat. § 811.105(2)(e); R.I. Gen. Laws § § 31-14-2(a)(2).

[84] *See, e.g.*, Conn. Gen. Stat. § 14-220(a) (40 mph); Mass. Registry of Motor Vehicles, "Rules of the Road," ch. 4 (40 mph minimum speed on Massachusetts Turnpike), available at https://www.mass.gov/doc/chapter-4-rules-of-the-road-0/download; N.C. Gen. Stat. § 20-141(c) (40-45 mph minimum speeds).

city streets will face typical speed limits of 25-35 mph.[85] There is very limited incentive (or none at all) for these vehicles to replenish DEF levels even after 60 hours of inadequate maintenance under the proposed derate schedules. The States therefore disagree with EPA's statement that "the proposed derate schedules would be no less effective than the current approach,"[86] and urge EPA to adopt a stricter schedule.

The States support efforts to prevent false inducements, which are understandably frustrating for operators and undermine public buy-in for emission controls.[87] But the false inducement problem calls for a technological fix from manufacturers; it does not justify relaxing the derate schedule. The States likewise are sympathetic to the safety concerns around a final derate speed restriction of 5 mph in certain high-speed conditions.[88] However, these concerns can be addressed with a derate schedule that is still far stricter than that proposed. For example, final derate speed restrictions of 35 mph for high-speed vehicles and 20 mph for low-speed vehicles, especially in combination with a gradual schedule of progressive derates, would still allow all vehicles to safely exit freeways, finish routes, and find repair facilities if needed, while providing sufficient incentive to proactively maintain aftertreatment systems.

3. EPA should further tailor the NOx crediting program to ensure emission standards are as effective as proposed

In the Proposed Rule, EPA rightly recognizes the imperative to "ensure that NOx emission credits . . . do not compromise the environmental benefits expected from the proposal."[89] The averaging, banking, and trading program (ABT) has an important but limited

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[85] Cal. Vehicle Code § 22352(b)(1) (setting default 25 mph limit in residential zones); Colo. Rev. Stat. § 42-4-1101(2)(c) (30 mph in residential zones); Del. Code, tit. 21, § 4169(a)(2) (25 mph in residential zones); D.C. Mun. Regs., tit. 18, § 2206.2 (20 mph in residential zones); Honolulu Traffic Code, § 15-7.2(b) (25 mph default limit); 625 Ill. Comp. Stat. 5/11-601(c) (30 mph in urban district); Md. Transp. Code § 21-801-1(b)(2)-(3) (30-35 mph in residential districts); Mass. Gen. Laws ch. 90, §§ 17, 17C (25-30 mph limits in "thickly settled" or business districts); Minn. Stat. § 169.14, subd. (2) (20-35 mph speed limits for urban and residential zones); N.J. Stat. § 39:4-98(b) (25-35 mph speed limits for business and residential zones); N.C. Gen. Stat. § 20-141(b) (35 mph inside city limits); Or. Rev. Stat. § 811.105(2)(b), (d) (20-25 mph speed limits in business and residential zones); R.I. Gen. Laws § § 31-14-2(a)(1) (25 mph in business and residential districts); Wash. Rev. Code 46.61.400(2)(a) (25 mph on city and town streets); Wis. Stat. § 346.57(4)(e)-(g) (25-35 mph speed limits in cities and outlying areas).

[86] 87 Fed. Reg. at 17,543.

[87] *See id.* at 17,538.

[88] *See id.* at 17,539.

[89] 87 Fed. Reg. at 17,555.

role in supporting the heavy-duty sector's transition to stricter standards, reducing compliance costs for manufacturers and operators, and incentivizing early adoption of advanced technologies. The States strongly support EPA's proposed measures to tailor the ABT program to this role, including (1) limiting credit life to at most five years, (2) replacing existing credit balances with transitional credits, and (3) lowering family emission limit (FEL) caps to below the 2007 heavy-duty standards.[90] The States also generally support EPA's proposed early adoption incentives and the proposal to generate NOx credits from heavy-duty hybrid, battery, and fuel-cell electric vehicles (HD ZEVs).[91] However, EPA should carefully calibrate ZEV-generated credits to ensure their environmental benefits are not offset by higher-emitting conventional engines.

The States are enthusiastic about the significant potential of HD ZEVs to reduce NOx emissions and fully support rewarding early market entry of HD ZEVs. But conventional heavy-duty diesel engines and HD ZEVs will coexist on roads for a significant transition period.[92] Thus, stringent federal emission limits must continue to control conventional engines' emissions effectively even as the market share of HD ZEVs grows. While the States support the generation of NOx credits from HD ZEVs, EPA should carefully calibrate this feature so that NOx standards for conventional diesel engines remain binding. In particular, the States urge EPA to:

- Limit the credit life to at most five years
- Sunset the generation of NOx credits from HD ZEVs in model year 2026
- Set FEL caps to match those in California's Omnibus Rule[93]

First, because credits are best used to facilitate the transition to current, more effective NOx control technologies, a limited credit life commensurate with this transition period is appropriate. A five-year credit life, or even a shorter life such as three years, ensures credits are available to ease the transition to model year 2027 and later standards and reward early adoption of the most current NOx aftertreatment systems and HD ZEVs, without reducing or delaying widespread implementation of the standards in later years. *Second*, as EPA discusses, battery-electric trucks

[90] *Id.* at 17,552-54.

[91] *Id.* at 17,554-62.

[92] The most recent projections by the National Renewable Energy Lab (NREL) for HD ZEV adoption, modeling only economic factors, show 42 percent adoption by 2030, but greater than 99 percent adoption only after 2035 (for light- to medium-duty trucks), 2046 (for medium-duty trucks), and 2042 (for heavy-duty trucks). C. Ledna et al., NREL, Decarbonizing Medium- & Heavy-Duty On-Road Vehicles: Zero-Emission Vehicles Cost Analysis, at 2, 20-22, 25 (Mar. 2022), https://doi.org/10.2172/1854583, attached as Exhibit 9 ("NREL Cost Analysis").

[93] *See* 87 Fed. Reg. at 17,552 (discussing FEL caps in Omnibus Rule); 17,561 (discussing five-year credit life and sunset of credit generation).

are expected to reach cost parity with conventional engines between 2025 and 2030.[94] Sunsetting HD ZEV credit generation in model year 2026 would therefore incentivize early adoption and simultaneously prevent excess credit generation once market factors start to make them unnecessary. *Third*, lowering FEL caps prevents a surplus of credits from undermining the stringency of the proposed standards.

The above limits on the ABT program ensure that early adoption of HD ZEVs remains attractive for manufacturers and operators, without compromising the environmental benefits expected under the proposed standards. Notably, States and the federal government alike already undertake numerous other incentives for HD ZEVs that are both more meaningful and less environmentally costly, including initiatives to deploy charging infrastructure for HD ZEVs, alternative fuel corridors, purchase rebate programs, and government fleet electrification.[95] These initiatives enhance the market conditions that are projected to make HD ZEVs more attractive purchases than conventional trucks within the next decade.[96]

C. HD Phase 2 GHG Revisions Comments

The States agree that HD ZEVs are rapidly becoming an important presence within the heavy-duty vehicles sector, especially in those vocational categories identified by EPA.[97] EPA's proposed initial response to this transition—to tighten the Phase 2 GHG standards to ensure they remain binding on the conventional diesel fleet—is sound and consistent with good rulemaking.[98] The proposed approach, in itself, does nothing to accelerate or promote HD ZEV deployment, but only preserves the environmental integrity of EPA's existing Phase 2 standards, which were premised on emission-reduction technologies other than ZEV technology.[99] Nevertheless, EPA has invited comment on "the potential for ZEV technology to significantly

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[94] *Id.* at 17,562.

[95] Meyer & Dallmann, Air quality and health impacts of diesel truck emissions, supra note 13, at pp. iii, 16-17; Or. Dept. of Transp., Climate Action Plan 2021-26, at pp. 17-18 (Jul. 2021), attached as Exhibit 10; Gov. Jay Inslee, *Policy Brief: Responding to the climate crisis and building Washington's clean energy future*, at 6-8 (Dec. 2021), attached as Exhibit 11.

[96] *Id.*; *see also* Jane Culkin & Dana Lowell, MJ Bradley & Assoc., *Medium- & Heavy-Duty Vehicles: Market structure, Environmental Impact, and EV Readiness*, at pp. 23-24 (Jul. 2021) (projecting cost parity for 76 percent of medium- and heavy-duty fleet by 2025-30), attached as Exhibit 12; D. Hall & N. Lutsey, International Council on Clean Transportation, *Estimating the Infrastructure Needs and Costs for the Launch of Zero-Emission Trucks*, at pp. 20-23, 25 (Aug. 2019) (predicting cost advantage for most HD ZEVs by 2030), EPA-HQ-OAR-2019-0055-0148.

[97] 87 Fed. Reg. at 17,598.

[98] *Id.*

[99] *Id.* at 17,594.

reduce air pollution from the heavy-duty vehicle sector" as it prepares for future GHG standards for light-duty and heavy-duty vehicles.[100]

The States welcome EPA's proactive consideration of ZEV technology for future GHG standards. The current Phase 2 GHG standards are an important element of the United States' strategy to stave off the worst effects of climate change, which are caused by anthropogenic emissions of GHGs.[101] "Elevated concentrations of GHGs have been warming the planet, leading to changes in the Earth's climate including changes in the frequency and intensity of heat waves, precipitation, and extreme weather events, rising seas, and retreating snow and ice. The changes taking place in the atmosphere as a result of the well-documented buildup of GHGs due to human activities are changing the climate at a pace and in a way that threatens human health, society, and the natural environment."[102] As EPA recognizes, the transportation sector is now the largest U.S. source of GHG emissions, with heavy-duty vehicles contributing 23 percent of the United States' transportation emissions.[103]

The States are already experiencing grievous effects from climate change, which, as described above, are expected to escalate without sharp reductions in GHG emissions.[104] Our residents have lost property, been displaced from homes, endured respiratory illness and other health impacts, and even been killed as a result of severe weather events exacerbated by climate

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[100] *Id.* at 17,593.

[101] *See, e.g.*, Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards, 86 Fed. Reg. 74,434, 74,489 (Dec. 30, 2021).

[102] *Id.*; *see also* Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022: Impacts, Adaption and Vulnerability, Summary for Policymakers*, at 11 (H.-O. Portner & D. Roberts, eds. 2022) ("*Impacts, Adaptation, and Vulnerability*") (surveying medium-to-high confidence attributions of extreme weather, wildfires, heat-related deaths, and ecosystem loss to greenhouse gas emissions from human activities), attached as Exhibit 13.

[103] 87 Fed. Reg. at 17,592.

[104] U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II: Report-in-Brief*, at 11-19 (D.R. Reidmiller et al. eds., 2018) ("NCA4 Report-in-Brief") (summarizing ongoing and projected impacts to United States from climate change), attached as Exhibit 14; *see also* IPCC, *Impacts, Adaptation, and Vulnerability*, at 11-22 (describing ongoing global climate change impacts and projecting near-, mid-, and long-term impacts, particularly from unpredictable cascading and compounded disruptions); IPCC, Climate Change 2022: Mitigation of Climate Change, Summary for Policymakers, at SPM-7, SPM-14 to 19 (2022) ("*Mitigation*") (finding reductions of GHGs is occurring too slowly to limit global warming to even 2°C and such a goal requires unprecedented accelerations in reductions), attached as Exhibit 15.

change.[105] Often these impacts are disproportionately borne by communities with high poverty rates, communities of color, and indigenous peoples.[106] Rising average temperatures, shrinking mountain snowpack, warmer storms, wildfires, and higher sea levels also harm our economies, infrastructure, and public services.[107] These impacts require long-term, resource-intensive adaptation planning and costly disaster response by all levels of government and the private sector. The U.S. Global Change Research Program's 2017-2018 Fourth National Climate Assessment projects more extreme-weather impacts for every region of the United States, including major damage to agriculture, coastal industries, utility grids, transportation networks, air quality, and human health, from coastal flooding, heat waves, drought, and wildfires, as well as from the spread of tree-killing and disease-carrying pests.[108] Action to reduce GHGs from all major-emitting sectors, including the heavy-duty vehicles sector, is imperative.

The States support the Proposed Rule's revisions to the HD Phase 2 GHG standards as an important step in ensuring the heavy-duty vehicles sector continues to reduce its GHG emissions. Our comments concentrate on the following three observations: (1) EPA's approach to updating to the Phase 2 standards is consistent with legal requirements and comparable agency practice for fleetwide average standards where ZEVs make up an increasing share of the real-world fleet; (2) EPA can improve the accuracy of its update by ensuring the estimated HD ZEV penetration rate reflects other States' adoption of the California Advance Clean Trucks (ACT) rule and favorable market conditions for HD ZEVs; and (3) EPA should take prompt action to develop "Phase 3" GHG standards for the heavy-duty sector based on the enormous emission-reducing potential of HD ZEVs.

1. Even as EPA takes initial steps to develop next-generation GHG standards based on ZEV technology, it is rational and consistent with the Clean Air Act to update Phase 2 GHG standards to ensure they remain binding on the conventional heavy-duty fleet. Indeed, it is "patently unreasonable" for agencies to ignore "dramatic[]" changes in their regulated industries. *NRDC v. Herrington*, 768 F.2d 1355, 1408 (D.C. Cir. 1985). The Clean Air Act, in particular, is designed so that EPA may respond to "changing circumstances and scientific developments" and "forestall . . . obsolescence." *Massachusetts v. EPA*, 549 U.S. 497, 532 (2007). The projections

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[105] NCA4 Report-in-Brief, at 82-83, 98-103, 115-62 (surveying national losses of coastal property and air quality deterioration and summarizing impacts to health, property, and ecosystems by U.S. region).

[106] NCA4 Report-in-Brief, at 82-83, 103-106; *see also* IPCC, *Impacts, Adaptation and Vulnerability*, at 14-15 (identifying especially vulnerable communities globally).

[107] NCA4 Report-in-Brief, at 67-68, 70-72, 82-83, 85-91, 93-96.

[108] NCA4 Report-in-Brief, at 11-19; *see also id.* at 102 (by shifting from a high-emissions scenario to a low-emissions scenario, "thousands of American lives could be saved and hundreds of billions of dollars in health-related economic benefits gained *each year*" (emphasis added)).

that HD ZEVs will reach cost parity with, and then achieve cost advantage over, conventional heavy-duty engines within the next three to eight years is surely one such change. It is therefore appropriate for EPA to forestall obsolescence here by adjusting the Phase 2 GHG standards to respond to increasing ZEV deployment in the heavy-duty sector.

EPA's general methodology in updating the Phase 2 GHG standards is also consistent with NHTSA's recent approach in developing new fleetwide fuel economy standards for light-duty vehicles—a sector that is likewise seeing dramatic increases in ZEV sales.[109] There, NHTSA projected automakers would comply with California's ZEV mandate in estimating the number of ZEVs in the baseline light-duty fleet (*i.e.*, in the absence of new fuel economy standards).[110] Doing so, NHTSA stated, "is consistent with guidance in OMB Circular A-4 directing agencies to develop analytical baselines that are as accurate as possible regarding the state of the world in the absence of the regulatory action being evaluated," in particular because baselines should "reflect other legal obligations that automakers will be meeting during this time period."[111] In a similar fashion, if EPA grants California's requested waiver for its ACT rule, then EPA's baseline fleet should include at least the vehicles the heavy-duty sector will produce to comply with ACT.

2. However, the States take issue with EPA's estimated 1.5 percent penetration rate for HD ZEVs in model year 2027, which likely underestimates HD ZEV deployment. EPA derives this estimate by extrapolating the HD ZEV requirement for model year 2027 in the ACT rule to national numbers based on California's 2020 share of the heavy-duty electric vehicle market.[112] This methodology omits two important factors.

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[109] *See* Corporate Average Fuel Economy Standards for Model Years 2024-2026 Passenger Cars and Light Trucks, 87 Fed. Reg. 25,710, 25,721 (May 2, 2022).

[110] *Id.* at 25,744.

[111] *Id.* Courts have upheld the inclusion of such obligations in regulatory baselines in a variety of contexts. *E.g.*, *NRDC v. Thomas*, 838 F.2d 1224, 1238 (D.C. Cir. 1988) (holding, in part, that using "[State-Implementation-Plan]-required emission rates as the baseline" was "a quite reasonable interpretation" of relevant provision of Clean Air Act); *Cooling Water Intake Structure Coal. v. EPA*, 905 F.3d 49, 81 (2d Cir. 2018) (quoting "environmental baseline" requirements for Endangered Species Act consultations as including "the past and present impacts of all Federal, State, or private actions" and distinguishing those from impacts resulting from agencies exercising discretion); *Am. Rivers v. FERC*, 201 F.3d 1186, 1192 (9th Cir. 1999) (upholding agency use of facility's operations pursuant to terms and conditions of existing license as no action baseline).

[112] 87 Fed. Reg. at 17,600 & n.858.

First, several other States have adopted or will likely adopt ACT under section 177 of the Clean Air Act. Currently, Massachusetts, New Jersey, New York, Oregon, and Washington, in addition to California, have finalized adoption of the ACT requirements.[113] These States as well as the District of Columbia, Connecticut, Colorado, Hawaii, Maine, Maryland, Nevada, North Carolina, Pennsylvania, Rhode Island, Vermont, and Virginia (and the Province of Quebec) have signed a memorandum of understanding (MOU) to promote the adoption of HD ZEVs.[114] A more robust and realistic estimate would determine the heavy-duty market share of at least those States that have formally adopted ACT and use this, in combination with the ACT schedule, to determine the minimum national fleet of HD ZEVs required by state law in model year 2027. This methodology would also avoid the inconsistency of modeling the heavy-duty sector to comply with one State's legal obligations, but not with other States' equally binding regulations.

Second, favorable market factors—especially fuel cost savings—are projected to make HD ZEVs increasingly attractive to buyers, with several classes achieving cost parity by 2025 or earlier.[115] Indeed, these market factors are even more significant the longer historically high and volatile diesel prices continue.[116] Thus, EPA should base the updated GHG standards on projected overcompliance with ACT in model year 2027. Indeed, the NREL's recent Cost Analysis projects 42 percent of heavy-duty sales will be HD ZEVs in 2030, suggesting a 2027 penetration rate significantly higher than 1.5 percent.[117] EPA's preference for conservative estimates is understandable, but given the importance of preserving the Phase 2 GHG standards' integrity, EPA should base its revisions on the most accurate deployment estimates available.

3. While the States support EPA's choice to focus on the integrity of Phase 2 GHG standards in this rulemaking, EPA should initiate a new rulemaking with a full record on HD

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[113] 310 Code Mass. Regs. 7:40 (2021); N.J. Admin. Code §§ 7:27-31 and 33 (2021); N.Y. Comp. Codes R. & Regs., tit. 6, §§ 218-1.1, 218-2.1, 218-4.1, 218-4.2 (2021); Or. Admin. R. 340-257-0050(3) (2021); Wash. Admin. Code § 173-423-010 *et seq*. (2021).

[114] Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Mem. of Understanding (July 13, 2020; amended March 29, 2022), available at https://www.nescaum.org/documents/mhdv-zev-mou-20220329.pdf/ and attached as Exhibit 16.

[115] 87 Fed. Reg. at 17,562.

[116] U.S. Energy Information Administration, "Gasoline and Diesel Fuel Update: May 9, 2022," available at https://www.eia.gov/petroleum/gasdiesel/; *ibid*., "EIA expects summer U.S. real gasoline and diesel prices to be the highest since 2014" (Apr. 19, 2022), available at https://www.eia.gov/todayinenergy/detail.php?id=52098 (last accessed May 16, 2022).

[117] NREL Cost Analysis, *supra* note 92, at 25, 61; *see id*. at 62 (7 percent under the most conservative ZEV technology scenario).

ZEVs' potential to reduce GHG emissions even further. As CARB's ACT rule shows,[118] and as the Proposed Rule recognizes,[119] HD ZEVs are an available and cost-effective technology with enormous GHG reduction potential. In California alone, these GHG reductions translate to $1.01 billion in avoided climate-related costs from 2020 to 2040, in addition to $5.5 billion in health benefits from NOx and $PM_{2.5}$ co-reductions.[120] High rates of HD ZEV deployment are a critical component of States' individual plans for reaching midcentury decarbonization targets set by state law, with significant co-benefits for attaining and maintaining criteria pollutant NAAQS.[121] These state decarbonization plans further support a national program for HD ZEV adoption as part of the United States' path to achieving its Paris Agreement commitments.[122] Given the imperative to prevent the worst effects of climate change, and to secure GHG reductions as fast as possible, EPA should make GHG standards based on HD ZEV technology a high regulatory priority.

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[118] CARB, Staff Report, *Initial Statement of Reasons – Public Hearing to Consider the Proposed Advanced Clean Trucks Regulation*, at 10-17 (Oct. 22, 2019), available at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/isor.pdf and attached as Exhibit 17 ("ACT ISOR"); *id.*, App'x C, Standardized Regulatory Impact Assessment, at 50-53 (Aug. 8, 2019), EPA-HQ-OAR-2019-0055-0796; *see generally id.*, App'x E, Zero Emission Truck Market Assessment, available at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/appe.pdf and attached as Exhibit 18.

[119] 87 Fed. Reg. at 17,562 (recognizing maturity of HD ZEV technologies).

[120] ACT Standardized Regulatory Impact Assessment, supra note 118, at 16-23 (using current Interagency Working Group social cost of carbon metric and 2.5 discount rate).

[121] *See, e.g., id.* at 12, 14; *Colorado Greenhouse Gas Pollution Reduction Roadmap*, at 58-62 (Jan. 2021), available at https://energyoffice.colorado.gov/climate-energy/ghg-pollution-reduction-roadmap; *Mass. 2050 Decarbonization Roadmap*, at 39-43 (Dec. 2020), available at https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download; N.J. Dept. of Envtl. Protection, *New Jersey's Global Warming Response Act 80x50 Report*, at 21-22, 28-29, 31 (Oct. 2020), available at https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf; N.Y. State Climate Action Council, *Draft Scoping Plan*, at 104-106 (Jan. 2022), available at https://climate.ny.gov/-/media/Project/Climate/Files/Draft-Scoping-Plan.pdf.

[122] *See* The United States' Nationally Determined Contribution: A 2030 Emissions Target, at 4 (Apr. 15, 2021), available at https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/United%20States%20NDC%20April%2021%202021%20Final.pdf.

IV. CONCLUSION

In sum, the States support Option 1 of EPA's Proposed Rule, and as detailed in these comments, respectfully request that certain elements of the Proposed Rule be revised and strengthened before finalization. Further, due to statutory lead time requirements, the States strongly urge EPA to finalize the Proposed Rule by the end of this year to support standards for model year 2027.

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