APPENDIX A

DETAILED COMMENTS OF STATES AND LOCAL GOVERNMENTS ON NHTSA'S PROPOSED CORPORATE AVERAGE FUEL ECONOMY STANDARDS FOR PASSENGER CARS AND LIGHT TRUCKS FOR MODEL YEARS 2027-2032

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via *regulations.gov*

INTRODUCTION

Our States and Cities[1] hereby submit these comments in response to the National Highway Traffic Safety Administration's ("NHTSA") notice of proposed rulemaking titled *Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years 2027-2032 and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030-2035*, 88 Fed. Reg. 56,128 (Aug. 17, 2023) ("Proposal"). We strongly support increasing the stringency of NHTSA's corporate average fuel economy ("CAFE") standards, and we urge NHTSA to adopt standards more stringent than those proposed to be adopted.

The Energy Policy and Conservation Act ("EPCA") requires NHTSA to establish "maximum feasible" fuel economy standards and, in doing so, to consider "technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy." 49 U.S.C. § 32902(a), (f). As NHTSA recognizes, "EPCA's overarching purpose" is "energy conservation." 88 Fed. Reg. at 56,259. Congress intended the CAFE program to conserve fuel, thereby saving consumers money, insulating the U.S. from global oil price instability, and reducing the impact of oil consumption on the environment.

Pursuant to this statutory mandate, NHTSA has proposed four alternative sets of fuel economy standards for model years ("MY") 2027-2032: PC1LT3, PC2LT4 ("Preferred Alternative"), PC3LT5, and PC6LT8.[2] NHTSA tentatively concluded that the Preferred Alternative standards are the "maximum feasible," 88 Fed. Reg. at 56,133, and we agree that those standards are technologically feasible, economically practicable, and conserve energy compared to the No-Action Alternative. However, we urge NHTSA to consider whether more stringent standards—including the PC3LT5 Alternative and a more stringent hybrid alternative, such as PC2.5LT7[3]—are ultimately the "maximum feasible."

BACKGROUND

I. THE ENERGY POLICY AND CONSERVATION ACT REQUIRES "MAXIMUM FEASIBLE" FUEL ECONOMY STANDARDS

In 1975, in the face of an energy crisis, Congress enacted EPCA and directed the Secretary of the Department of Transportation—who delegated the responsibility to NHTSA, 49 C.F.R. §

[1] The States of California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Minnesota, Michigan, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, Washington, Wisconsin; the Commonwealths of Massachusetts and Pennsylvania; the District of Columbia; the Cities and Counties of Denver and San Francisco; and the Cities of Chicago and New York.

[2] "PC" stands for passenger cars, "LT" standards for light trucks, and the numbers represent the increase in fuel economy stringency that would be required. For example, under the PC1LT3 Alternative, fuel economy stringency for passenger cars and light trucks would respectively increase by 1% and 3% per year on average, year-over-year, between MY 2027-2032. *See* 88 Fed. Reg. at 56,133.

[3] This is an example of a hybrid alternative rather than a specific stringency level for which we are advocating.

1.94(c)—to set fuel economy standards for automobiles as part of a suite of measures to reduce energy consumption. Pub. L. No. 94-163 § 2(5), 89 Stat. 871, 874(1975). Congress strengthened and expanded this energy conservation program through the Energy Independence and Security Act of 2007. *See* Pub. L. No. 110-140, § 102, 121 Stat. 1492, 1498-1501. EPCA requires NHTSA to prescribe "average fuel economy standards" that reflect "the maximum feasible" average fuel economy level "manufacturers can achieve" in a given model year. 49 U.S.C. § 32902(a), (b)(2)(B).

To set the average fuel economy standards, NHTSA first projects the baseline fleet—what vehicle manufacturers would produce in the regulated model years if NHTSA made no change to its fuel economy standards—and then "consider[s] what, if any, additional actions the manufacturers could take to improve their fuel economy." Passenger Automobile Average Fuel Economy Standards Model Year 1986, 50 Fed. Reg. 40,528, 40,533-34. In determining what additional actions manufacturers could take to improve their fuel economy, EPCA requires NHTSA to consider technological feasibility, economic practicability, other motor vehicle standards of the government, and the need to conserve energy. 49 U.S.C. § 32902(f). In order to maintain the CAFE program's focus on improving petroleum fuel economy, EPCA prohibits NHTSA from considering the "fuel economy of dedicated automobiles" when NHTSA analyzes the four factors in subdivision (f). *Id.* at § 32902(h)(1). EPCA also requires that "dual fueled automobiles [be considered] to be operated only on gasoline or diesel fuel" and prohibits the consideration of the "trading, transferring, or availability of credits" when analyzing those same four factors. *Id*. at § 32902(h)(2), (h)(3). Consistent with the CAFE program's text, history, and purpose, NHTSA does not apply these limitations to its projection of the baseline fleet. 88 Fed. Reg. at 56,319. In fact, all three of the prohibited factors in subsections 32902(h)(1)-(3) are congressionally created compliance flexibilities that exist only within the CAFE program. Thus, it makes sense that the section 32902(h) limitations apply only to NHTSA's consideration of how manufacturers would comply with more stringent CAFE standards, and not what manufacturers would produce in response to factors outside the CAFE program.

Additionally, EPCA requires that each manufacturer meet the minimum domestic passenger car standard, which is 92% of the average fuel economy projected for the combined domestic and non-domestic passenger car fleets manufactured for sale in the U.S. by all manufacturers in a model year. 49 U.S.C. § 32902(b)(4)(B).

A. Improved Fuel Economy Provides Numerous Benefits Important to Our States and Cities

NHTSA's Proposal contains four alternatives for passenger cars and light trucks for model years 2027-2032. *See* 88 Fed. Reg. at 56,133. The different alternatives are defined in terms of percent-increases in CAFE stringency from year to year: Alternative 1 (PC1LT3) increases stringency by 1% for passenger cars and 3% for light trucks year-over-year; Alternative 2 (PC2LT4), which is the Preferred Alternative, increases stringency by 2% for passenger cars and 4% for light trucks year-over-year; Alternative 3 (PC3LT5) increases stringency by 3% for passenger cars and 5% for light trucks year-over-year; and Alternative 4 (PC6LT8) increases stringency by 6% for passenger cars and 8% for light trucks year-over-year. *Id.*; *see also id.* at

56,259, Table III-1. Adopting any of these alternatives would provide numerous crucial benefits to our States and Cities, and adopting a more stringent alternative would provide even greater benefits to our States and Cities.

1. *Improved Fuel Economy Benefits Consumers*

All four of the alternatives proposed by NHTSA would have a long-term positive effect on consumers. NHTSA projects that under the Preferred Alternative, fuel savings will exceed the technology costs necessary to comply with the standards. 88 Fed. Reg. at 56,138. Specifically, NHTSA estimates that the Preferred Alternative could reduce the lifetime fuel costs of passenger cars by $302 and a light truck by $1,389, while increasing the average costs, respectively, by $654 and $1,064. Preliminary Regulatory Impact Analysis ("PRIA") at 8-23, Table 8-3; 88 Fed. Reg. at 56,138; *see also id*. at 56,139, Table I-6. And drivers will not only experience lower costs as a result of new vehicles' decreased fuel consumption, but also will benefit from "increased mobility that results from a lower cost of driving their vehicle . . . and fewer refueling events." 88 Fed. Reg. at 56,285.[4]

Moreover, these proposed improvements in fuel economy benefit consumer welfare beyond reduced fuel expenditures for those buying new vehicles. Gasoline consumption in the United States is expected to decrease as vehicle manufacturers produce more fuel-efficient vehicles in response to the more stringent standards. 88 Fed. Reg. at 56,253. Indeed, lower total fuel consumption is expected even if total miles driven increase slightly. *See id.* at 56,288, Table IV-22. NHTSA estimates that the Preferred Alternative would "reduce fuel consumption by 88 billion gallons through [calendar year] 2050." *Id.* at 56,328. Decreasing the domestic consumption in the United States will in turn produce "a corresponding decrease in the Nation's demand for crude petroleum, a commodity that is traded actively in a worldwide market." *Id.* at 56,253. Because the United States accounts for a significant share of global oil consumption, its decreasing demand will "exert some downward pressure on worldwide prices," thus tending to lower gas prices for all consumers. *Id.*[5] This decrease in domestic demand for oil will have some important externalities that positively affect consumers directly and our States and Cities more generally.

First, decreasing domestic demand for petroleum would decrease domestic income inequality by reducing oil prices. Changes in oil prices have important distributional effects between consumers of refined petroleum products and producers of oil. Higher gasoline prices result in significant costs for families in the United States, especially lower-income families, who spend a disproportionately large percentage of their household income on gasoline.[6] And while corporate

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[4] *See also* NHTSA, Preliminary Regulatory Impact Analysis: Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years at 2027 and Beyond and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030 and Beyond at 8-40 (July 2023).

[5] *See also* U.S. Energy Info. Admin., *Oil and petroleum products explained: Use of oil* (last updated Aug. 22, 2023), https://www.eia.gov/energyexplained/oil-and-petroleum-products/use-of-oil.php.

[6] Applied Economics Clinic, An Analysis of NHTSA's Preliminary Regulatory Impact Analysis of 2021 Proposed Rulemaking for Model Years 2024-2026 Light-Duty Vehicle CAFE Standards 10-11 (Oct. 26,

profits in the U.S. petroleum industry would rise with higher prices, potentially resulting in net zero GDP impacts, this transfer of wealth would have detrimental effects on U.S. consumer well-being and would impose disproportionate economic burdens across income groups.[7] Importantly to our States and Cities,[8] "the transfer of revenue from U.S. oil producers to U.S. oil consumers could have substantial benefits for the most economically disadvantaged, reducing income inequality . . . ."[9]

Second, decreasing domestic demand for petroleum could reduce consumers' exposure to oil price shocks. 88 Fed. Reg. at 56,318. Since the 1970s, Americans have experienced five significant gas price shocks following spikes in the world oil market.[10] Oil price shocks have been a contributing factor to economic recessions.[11] And with climate change, an increased frequency of extreme weather events that disrupt foreign and domestic energy supplies can be expected, causing supply shortages and price spikes.[12] For example, Hurricane Ida caused a temporary disruption of nine-tenths of crude oil production in the Gulf of Mexico, resulting in Gulf Coast gasoline prices rising by 49% over the same time the previous year.[13]

Decreasing the dependency of the United States on global oil markets helps insulate consumers from such global price shocks and supply disruptions. Even though the United States has positive net oil exports, the United States is not self-sufficient in petroleum production, and consumers still feel the effects of price shocks as the price of oil is determined by the global markets. *See* 88 Fed. Reg. at 56,317, 56,328. For example, average gas prices in the United States reached record highs in 2022 after Russia invaded Ukraine, which threatened global oil supply and increased crude oil prices.[14] Thus, "regardless of whether exports equal or even

2021), https://downloads.regulations.gov/NHTSA-2021-0053-1531/attachment_1.pdf [hereinafter "AEC Comment"]; Shruti Vaidyanathan, *Analysis: Gasoline Costs Consume Nearly 20% of Some Household Budgets*, AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY (ACEE) (May 20, 2021), https://www.aceee.org/blog-post/2021/05/analysis-gasoline-costs-consume-nearly-20-some-household-budgets.

[7] AEC Comment, *supra* note 6 at 10-11.

[8] For example, the Governor of New Jersey recently signed Executive Order 262, establishing the Wealth Disparity Task Force, the purpose of which is to combat long-standing wealth gaps based on race and ethnicity. Governor Philip D. Murphy, New Jersey, Exec. Order No. 262 (Sept. 14, 2021).

[9] AEC Comment, *supra* note 6, at 11.

[10] JAMES D. HAMILTON, HISTORICAL OIL SHOCKS 1 (Dec. 22, 2011), http://econweb.ucsd.edu/~jhamilton/oil_history.pdf.

[11] *See id*. at 26.

[12] AEC Comment, *supra* note 6, at 8.

[13] *Id*.

[14] Derek Saul, *$5 Milestone: Gas Prices Hit an All-Time National High*, FORBES (June 9, 2022), https://www.forbes.com/sites/dereksaul/2022/06/09/5-milestone-gas-prices-hit-an-all-time-national-high/?sh=11d5c214654b; U.S. Energy Info. Admin., *Short-Term Energy Outlook* (April 2022), https://www.eia.gov/outlooks/steo/archives/apr22.pdf; U.S. Dep't of Transp., Bureau of Transp. Statistics, *Record Breaking Increases in Motor Fuel Prices in 2022* (Aug. 18, 2022), https://www.bts.gov/data-spotlight/record-breaking-increases-motor-fuel-prices-2022.

exceed imports, global supply shocks will still impose costs" on U.S. consumers, among others.[15] Stricter fuel economy standards and lower fuel consumption can help insulate the United States from these effects. Moreover, more stringent fuel economy standards could further help stabilize oil costs by helping to mitigate climate change (discussed in more depth below), which will reduce the frequency and intensity of extreme weather events that disrupt oil production.

Accordingly, our States and Cities support improving fuel economy, as it provides multiple benefits to consumers.

2. *Reduced Fuel Use Improves Our National Security*

Our States and Cities also recognize that reduction in fuel use can benefit our national security. Experts have noted numerous foreign policy costs that arise from the domestic consumption of foreign oil, including: (1) disruptions in oil supply; (2) political realignment from dependence on imported oil that limits United States alliances and partnerships; (3) increasing the power of oil-exporting countries to enact policies that are contrary to United States interests; and (4) the maintenance of United States military presence in the Middle East arising from interest in protecting oil interests.[16] Reducing dependence on imported oil could "lower U.S. military and foreign policy costs of safeguarding the U.S. oil supply and reduce revenue to regimes that are considered inimical to U.S. interests."[17]

3. *Improved Fuel Economy Reduces Pollution and Other Environmental Impacts of Drilling and Refining*

a. <u>Climate Benefits of Reducing Fossil-Fuel Consumption and Combustion</u>

Gasoline used to power light-duty vehicles accounted for around 41% of total petroleum consumption in the United States in 2022.[18] Due to fossil fuel combustion, the transportation sector generates the largest share of total greenhouse gas ("GHG") emissions in the United States.[19] Light-duty trucks and passenger cars account for 37.1% and 20.7% of transportation sector emissions in the United States, respectively, and approximately 16.5% of total GHG

[15] AEC Comment, *supra* note 6, at 7-8.

[16] 88 Fed. Reg. at 56,318 (citing COUNCIL ON FOREIGN RELATIONS, NATIONAL SECURITY CONSEQUENCES OF U.S. OIL DEPENDENCY (Oct. 2006), https://cdn.cfr.org/sites/default/files/report_pdf/0876093659.pdf)

[17] AEC Comment, *supra* note 6, at 11.

[18] U.S. Energy Info. Admin., *Gasoline explained* (last updated Aug. 22, 2023), https://www.eia.gov/energyexplained/gasoline/use-of-gasoline.php.

[19] U.S. Energy Info. Admin., *Energy and the environment explained: Where greenhouse gases come from* (last updated August 29, 2023), https://www.eia.gov/energyexplained/energy-and-the-environment/where-greenhouse-gases-come-from.php; *see also* U.S. ENV'T PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2021, 2-28 (April 2023), https://www.epa.gov/system/files/documents/2023-04/US-GHG-Inventory-2023-Main-Text.pdf.

emissions in the United States.[20] Moreover, the extraction, transport, and refining of crude oil is a significant source of GHG emissions, constituting about 5% of total global GHG emissions.[21]

Increased fuel efficiency will reduce fuel consumption and may reduce the amount of oil that is produced and refined within the United States. Both reductions will result in reduced GHG emissions. 88 Fed. Reg. at 56,317. These anticipated GHG emissions reductions are necessary to help stave off the worst effects of a climate crisis that is primarily caused by anthropogenic GHG emissions,[22] which is already afflicting our States and Cities. Multiple deadly heat waves with record-breaking high temperatures have ravaged the western United States in recent years.[23] More than 61 million people in the United States "were under active extreme heat advisories, watches, and warnings" on September 7, 2022.[24] During that heatwave, temperatures in Merced and Sacramento, California reached 116°F, which is the highest temperature recorded in those cities since record-keeping began.[25] Meanwhile hurricanes of historic force swept across the southern and eastern United States—testing energy system resilience and producing record-breaking rainfall and fatal flash floods.[26] These types of impacts have been linked to climate change caused by anthropogenic emissions of GHGs and

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[20] U.S. ENV'T PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2021, *supra* note 19 at 2-35.

[21] Christian Lowhagen, *New study reveals real size of crude oil's carbon footprint*, CHALMERS (Sept. 28, 2018), https://www.chalmers.se/en/current/news/see-new-study-reveals-real-size-of-crude-oil-s-carbon-footprint/.

[22] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS, SUMMARY FOR POLICYMAKERS 4 (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf [hereinafter "IPCC 2021 Summary for Policymakers"].

[23] Sara E. Pratt, *A Long-Lasting Western Heatwave*, NASA EARTH OBSERVATORY (Sept. 6, 2022), https://earthobservatory.nasa.gov/images/150318/a-long-lasting-western-heatwave [hereinafter "NASA Earth Observatory"]; Sergio Olmos and Shawn Hubler, *Heat-Related Deaths Increase as Temperatures Rise in the West*, N.Y. TIMES (July 9, 2021, updated July 28, 2021), https://www.nytimes.com/2021/07/09/us/heat-wave-deaths.html; Thomas Frank, *Heat Wave Death Toll Will Rise with Thorough Count*, E&E NEWS (July 23, 2021), https://www.scientificamerican.com/article/heat-wave-death-toll-will-rise-with-thorough-count/; Victoria Bekiempis, *Record-breaking US Pacific north-west heatwave killed almost 200 people*, THE GUARDIAN (July 8, 2021), https://www.theguardian.com/us-news/2021/jul/08/pacific-northwest-heatwave-deaths.

[24] NASA Earth Observatory, *supra* note 23.

[25] *Id.*

[26] *See, e.g.,* NAT'L OCEANIC AND ATMOSPHERIC ADMIN., NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT – HURRICANE IAN (Apr. 3, 2023), https://www.nhc.noaa.gov/data/tcr/AL092022_Ian.pdf; Jesse McKinley et al., *Flooding From Ida Kills Dozens of People in Four States*, N.Y. TIMES (Sept. 2, 2021, updated Sept. 15, 2021), https://www.nytimes.com/live/2021/09/02/nyregion/nyc-storm.

they are projected to worsen.[27] As average surface temperatures rise and the intensity and frequency of these types of extreme weather events increases,[28] our States and Cities face direct and compounding challenges to protect the health and welfare of our residents, our economies, and our natural resources.

(1) *Increased Temperatures and Extreme Heat*

Globally, "[t]he past nine years have been the warmest years since modern recordkeeping began in 1880;"[29] and nine of the warmest eleven years on record in the United States have occurred since 2012.[30] There is a "virtually certain" chance that 2023 will rank among the ten warmest years on record, with a 93% chance it will rank among the top five.[31] The IPCC has determined that GHG emissions from human activities are already responsible for about 1.1°C of warming since 1850-1900[32] and that "[h]uman influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years."[33]

As temperatures rise, threats to public health and the environment in our States and Cities continue to mount. For example, extreme heat events are happening more frequently, with more intensity,[34] and for longer duration.[35] In June 2021, a four-day heat wave across the Pacific Northwest set heat records all over the region, including heat so intense that roads buckled.[36] The region experienced 600 excess deaths during the heat wave.[37] In September 2022, a

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[27] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT, SUMMARY FOR POLICYMAKERS 4-7 (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf [hereinafter "IPCC 2023 Summary for Policymakers"].

[28] *Id.* at 13-14.

[29] Roxana Bardan, *NASA Says 2022 Fifth Warmest Year on Record, Warming Trend Continues*, NASA (Jan. 12, 2023), https://www.nasa.gov/press-release/nasa-says-2022-fifth-warmest-year-on-record-warming-trend-continues; *see* Henry Fountain and Mira Rojanasakul, *The Last 8 Years Were the Hottest on Record*, N.Y. TIMES (Jan. 10, 2023), https://www.nytimes.com/interactive/2023/climate/earth-hottest-years.html ("The eight warmest years on record [globally] have now occurred since 2014.").

[30] Nat'l Weather Service, *Average Annual Temperature by Year*, https://www.weather.gov/media/slc/ClimateBook/Annual%20Average%20Temperature%20By%20Year.pdf.

[31] Nat'l Oceanic and Atmospheric Admin., *April 2023 was Earth's fourth warmest on record* (May 12, 2023), https://www.noaa.gov/news/april-2023-was-earths-fourth-warmest-on-record.

[32] *See* IPCC 2021 Summary for Policymakers, *supra* note 22, at 5.

[33] *Id.* at 6.

[34] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY 1963 (2022), https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf [hereinafter "IPCC Report 2022"].

[35] *Id.* at 1937.

[36] Tom Di Liberto, Nat'l Oceanic and Atmospheric Admin, *Astounding heat obliterates all-time records across the Pacific Northwest and Western Canada in June 2021*, (Jun. 30, 2021), https://www.climate.gov/news-features/event-tracker/astounding-heat-obliterates-all-time-records-across-pacific-northwest.

[37] Nadja Popovich & Winston Choi-Schagrin, *Hidden Toll of the Northwest Heat Wave: Hundreds of*

historic heat wave punished California, breaking high-temperature records in Northern California; it was considered "extraordinary" in part because of its "mind-blowing duration."[38] Extreme heat events like these are "likely to become the new normal."[39] By 2053, the number of U.S. counties experiencing at least one day with a heat index above 125 degrees Fahrenheit is projected to increase from 50 to over 1,000.[40]

Extreme heat events threaten not only our quality of life, but our lives themselves.[41] As temperatures rise, heat-related mortality is expected to increase, particularly in urban areas.[42] One study found that by 2100, annual heat-related deaths in the United States are projected to increase from 12,000 to 36,000 in a moderate-warming scenario or 97,000 in a high-warming scenario.[43] Another study predicted that by 2080 to 2099, hospital admissions for heat-related respiratory diseases in New York state will be 2 to 6 times higher than in 1991 to 2004.[44] A third study concluded that extreme heat days were associated with higher all-cause mortality rates in the contiguous United States, and disproportionately affected some subgroups, including older adults and Black adults.[45] On a global scale, new research indicates that for

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Extra Deaths, N.Y. TIMES (Aug. 11, 2021), https://www.nytimes.com/interactive/2021/08/11/climate/deaths-pacific-northwest-heat-wave.html. Although Washington only reported 95 heat-caused deaths at the time of reporting and Oregon reported 96, these figures do not include all impacts of extreme heat.

[38] Jill Cowan, *Historic Heat Pushes California to the Brink*, N.Y. TIMES (Sep. 7, 2022), https://www.nytimes.com/2022/09/07/us/historic-heat-california-power.html.

[39] Rebecca Hersher, *Climate change makes heat waves, storms and droughts worse, climate report confirms*, NPR (Jan. 9, 2023), https://www.npr.org/2023/01/09/1147805696/climate-change-makes-heat-waves-storms-and-droughts-worse-climate-report-confirm.

[40] John Muyskens et al., *More dangerous heat waves are on the way: See the impact by Zip code*, THE WASH. POST (Aug. 15, 2022), https://www.washingtonpost.com/climate-environment/interactive/2022/extreme-heat-risk-map-us/.

[41] *See* Peter Dizikes, *Study: Extreme heat is changing habits of daily life*¸ MIT NEWS (Jan. 12, 2023), https://news.mit.edu/2023/study-extreme-heat-less-outside-activity-0112 (finding that extreme temperatures make people less likely to pursue outdoor activities); GALLUP, CLIMATE CHANGE AND WELLBEING AROUND THE WORLD 3 (2022), https://www.gallup.com/analytics/397940/climate- change-and-wellbeing.aspx (describing August 2022 study that found that high-temperature days could decrease global well-being by 17% by 2030).

[42] IPCC Report 2022, *supra* note 34, at 1968.

[43] Meredith Bailey, *A warming climate may lead to dramatic increase in US deaths due to heat exposure, study shows*, UNIV. OF WASH. SCHOOL OF PUB. HEALTH (Jul. 29, 2020), https://sph.washington.edu/news-events/news/warming-climate-may-lead-dramatic-increase-us-deaths-due-heat-exposure-study-shows.

[44] Shao Lin et al., *Excessive Heat and Respiratory Hospitalizations in New York State: Estimating Current and Future Public Health Burden Related to Climate Change*, 120 ENV'L HEALTH PERSPECTIVES 1571, 1576 (2012), https://doi.org/10.1289/ehp.1104728.

[45] Sameed Ahmed M. Khatana et al., *Association of Extreme Heat With All-Cause Mortality in the Contiguous US, 2008–2017*, JAMA NETWORK OPEN (May 19, 2022), https://doi.org/10.1001/jamanetworkopen.2022.12957; *see* Muyskens, *supra* note 40 (indicating that by 2053, 80% of Black Americans and 60% of white Americans will be affected by dangerous heat).

every 0.1 degree Celsius above present levels, about 140 million additional people will be exposed to dangerous levels of heat.[46]

(2) *Wildfires*

Global warming is likely responsible for 70% to 88% of the atmospheric conditions fueling wildfires.[47] It engenders warm and dry conditions,[48] which have contributed to more extreme wildfires.[49] Since the 1970s, the wildfire season in the western United States has extended from 5 months to over 7 months long.[50] In the coming decades, climate change is projected to further increase fire activity across North America.[51]

The annual numbers of large wildland fires and area burned in the western United States have risen in the past several decades,[52] and the last few years have seen numerous record-setting wildfires. For example, in August 2023, Maui, Hawaii experienced one of the deadliest wildfires in United States history.[53] Multiple large wildfires also burned hundreds of thousands of acres in Colorado in July and August 2020, including the second-largest fire in state history.[54] The largest wildfire in New Mexico history burned in 2022,[55] destroying hundreds of homes.[56]

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[46] Alex Morrison, *Limiting global warming to 1.5 °C would save billions from dangerously hot climate*, UNIV. OF EXETER (May 22, 2023), https://news.exeter.ac.uk/research/limiting-global-warming-to-1-5c-would-save-billions-from-dangerously-hot-climate/.

[47] Alex Wigglesworth, *Climate change is now the main driver of increasing wildfire weather, study finds*, L.A. TIMES (Nov. 1, 2021), https://www.latimes.com/california/story/2021-11-01/climate-change-is-now-main-driver-of-wildfire-weather.

[48] IPCC Report 2022, *supra* note 34, at 1948.

[49] *Id.* at 1939.

[50] U.S. Dep't of Agric., *Wildfire*, https://www.climatehubs.usda.gov/taxonomy/term/398 (last accessed May 26, 2023).

[51] IPCC Report 2022, *supra* note 34, at 1948; *see also* N.J. DEP'T OF ENV'T PROT., 2020 NEW JERSEY SCIENTIFIC REPORT ON CLIMATE CHANGE 93 (Jun. 30, 2020), https://dep.nj.gov/wp-content/uploads/climatechange/nj-scientific-report-2020.pdf

[52] IPCC Report 2022, *supra* note 34, at 1948.

[53] Stephen Culp, *Maui Wildfires: What are the deadliest wildfires in US history?*, REUTERS (Aug. 21, 2023), https://www.reuters.com/world/us/maui-inferno-what-are-deadliest-wildfires-us-history-2023-08-13/. Of the four wildfires on this list that occurred in the 21st century, and thus show the exacerbating effects of acute climate change, the Maui fires are the deadliest, with the other three all in California.

[54] Tom Di Liberto, Nat'l Oceanic and Atmospheric Admin., *A Colorado summer: Drought, wildfires, and smoke in 2020* (Aug. 20, 2020), https://www.climate.gov/news-features/event-tracker/colorado-summer-drought-wildfires-and-smoke-2020.

[55] Nat'l Oceanic and Atmospheric Admin., *Assessing the U.S. Climate in 2022* (Jan. 10, 2023), https://www.ncei.noaa.gov/news/national-climate-202212.

[56] Anna Phillips & Jason Samenow, *Forest Service finds its planned burns sparked N.M.'s largest wildfire*, THE WASH. POST (May 27, 2022), https://www.washingtonpost.com/climate-environment/2022/05/27/new-mexico-wildfire-service-controlled-burn/.

The increase in the number of wildfires is no longer limited to the western United States.[57] For example, the year 2023 has been New Jersey's busiest fire season in more than a decade.[58] New Jersey's Forest Fire Service has responded to 1,034 wildfires to-date in 2023, which have burned 17,979 total acres; fourteen of these wildfires burned in excess of 100 acres each and were considered to be major wildfires.[59]

California is uniquely vulnerable to wildfires,[60] and the projected impacts on California from an increase in wildfire risk are severe. In 2018, the Camp Fire burned 155,366 acres of land, destroying 18,804 structures—roughly 90% of the homes in the town of Paradise—and killing 85 people;[61] it was then the deadliest and most destructive wildfire in California history. In 2021, a record number of acres burned in the Sierra Nevada, breaking the previous record set in 2020.[62] The Dixie Fire, now the largest single wildfire in California history, also burned in 2021.[63] As a result of climate change, the average annual area burned across California is projected to increase by around 77% by 2099, and the worst wildfire years could see burned area increases of more than 178% by the end of this century.[64]

Wildfires pose significant public health risks due to air quality degradation.[65] Exposure to wildfire smoke may cause respiratory morbidity, especially exacerbations of asthma and chronic obstructive pulmonary disease.[66] "[W]ildfire-specific PM2.5 is up to 10 times more harmful on

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[57] *See* Kylie Mohr, *Wildfires are coming . . . for New Jersey?,* VOX (Sept. 12, 2023), https://www.vox.com/climate/23868557/wildfire-risk-states-climate-change-extreme-weather-events.
[58] N.J. Dep't of Env't Prot., *Murphy Administration Announces $3 Million Budget Boost to DEP's Forest Fire Service as State Faces Increasing Wildfire Risks from Climate Change*, (Sept. 21, 2023), https://nj.gov/dep/newsrel/2023/23_0050.htm.
[59] *Id.*
[60] Scott L. Stephens et al., *Prehistoric Fire Area and Emissions from California's Forests, Woodlands, Shrublands and Grassland*s, 251 FOREST ECOLOGY AND MGMT. 205, 205-06 (2007); Jon Keeley, *Fire in Mediterranean Climate Ecosystems—A Comparative Overview*, 58 ISR. J. OF ECOLOGY & EVOLUTION 123, 124 (2012).

[61] Cal. Dep't of Forestry & Fire Prot., *Top 20 Most Destructive California Wildfires*, https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/featured-items/top20_destruction.pdf?rev=ee6ea855632a4b56a46adea1d3c8022f&hash=5B8B3A1A35CBB52CB0ED7A010F0B52E0https://www.fire.ca.gov/our-impact/statistics; Kurtis Alexander, *Reclaiming Paradise*, S.F. CHRON. (May 3, 2019), https://projects.sfchronicle.com/2019/rebuilding-paradise/.

[62] Sierra Nevada Conservancy, *2021: Another historic Sierra Nevada fire season* (Jan. 24, 2022), https://sierranevada.ca.gov/2021-another-historic-sierra-nevada-fire-season/.

[63] *Id.*

[64] ANTHONY WESTERLING, CAL. ENERGY COMMISSION, WILDFIRE SIMULATIONS FOR CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT: PROJECTING CHANGES IN EXTREME WILDFIRE EVENTS WITH A WARMING CLIMATE 19 (2018).

[65] IPCC Report 2022, *supra* note 34, at 1949.

[66] Colleen E. Reid et al., *Critical Review of Health Impacts of Wildfire Smoke Exposure*, 124 ENV'T HEALTH PERSPECTIVES 1334, 1336-38 (2016), https://doi.org/10.1289/ehp.1409277.

human health than PM2.5 from other sources."[67,68] This public health concern grows as the frequency and intensity of wildfires increase and is not limited to States where the wildfires are burning. The rising heat from the wildfires takes particulate matter and toxic gases in the smoke into the jet stream, which can carry those hazardous substances thousands of miles and cause harmful air pollution across the country. During the 2020 wildfire season and again in July of 2021, smoke from wildfires burning on the West Coast caused New York City to experience some of the worst air quality in the world.[69] And in June 2023, New York City was once again blanketed in smoke, resulting in the highest measurements of 2.5 micron particles since recording began in 1999.[70] The combination of fierce wildfires in Canada and airflow patterns prompted the U.S. National Weather Service to issue air quality alerts for most of the Atlantic seaboard.[71]

(3) *Sea Level Rise and Coastal Flooding*

In the past three decades, rates of sea level rise have accelerated as a result of climate change,[72] which causes ice sheets and glaciers to melt and seawater to warm and expand. By 2050, sea level along the contiguous United States' coastline is conservatively estimated to rise by at least

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[67] Rosana Aguilera et al., *Wildfire smoke impacts respiratory health more than fine particles from other sources: observational evidence from Southern California*, 12 NATURE COMMUNICATIONS 1, 3 (2021), https://doi.org/10.1038/s41467-021-21708-0.

[68] Smoke from wildfires has also been found to exacerbate risks associated with the COVID-19 virus, and one study found that "[t]housands of COVID-19 cases and deaths in California, Oregon, and Washington between March and December 2020 may be attributable to increases in fine particulate air pollution (PM2.5) from wildfire smoke." Karen Feldscher, *Link between wildfires and COVID cases established*, THE HARV. GAZETTE (Aug. 13, 2021), https://news.harvard.edu/gazette/story/2021/08/wildfire-smoke-linked-to-increase-in-covid-19-cases-and-deaths/.

[69] *See, e.g.*, Oliver Milman, *New York air quality among worst in world as haze from western wildfires shrouds city*, THE GUARDIAN (Jul. 21, 2021), https://www.theguardian.com/us-news/2021/jul/21/new-york-air-quality-plunges-smoke-west-coast-wildfires.

[70] Aatish Bhatia et al., *Just How Bad Was the Pollution in New York?*, N.Y. TIMES (Jun. 9, 2023), https://www.nytimes.com/interactive/2023/06/08/upshot/new-york-city-smoke.html.

[71] Tyler Clifford, *US East Coast blanketed in veil of smoke from Canadian fires*, REUTERS (Jun. 8, 2023), https://www.reuters.com/business/environment/us-states-under-air-quality-alerts-canadian-smoke-drifts-south-2023-06-07/; *see* Julie Bosman, *Smoky Air From Canadian Wildfires Blankets Midwestern Skies*, N.Y. TIMES (Jun. 27, 2023), https://www.nytimes.com/2023/06/27/us/midwest-chicago-smoke-air-quality.html.

[72] IPCC Report 2022, *supra* note 34, at 1936–37.

one foot,[73] causing flooding, erosion, and infrastructure damage along the coastlines.[74] By the middle of the century, flooding from rising sea levels and storms is likely to make billions of dollars of coastal property unusable,[75] which is particularly devastating given that nearly 40% of Americans live in coastal counties.[76]

"California is particularly vulnerable to sea level rise because approximately 80 percent of the population lives within 30 miles of the Pacific Ocean."[77] Projections show that 31% to 67% of Southern California beaches may be completely lost by 2100, which will effectively eliminate their recreational and tourism value without large-scale intervention.[78] Damages from the inundation of residential and commercial buildings under 20 inches of sea level rise could reach nearly $17.9 billion, and these costs would double if a 100-year coastal flood occurred on top of this sea level rise.[79] In a worst case scenario, 6.6 feet of sea level rise combined with a 100-year storm would cause flooding in Southern California that could affect 250,000 people, $50 billion worth of property, and $39 billion worth of buildings.[80]

Sea level rise also exacerbates coastal flooding. For example, by 2050, sea levels along the southern coastal region of Massachusetts are expected to rise over 2 feet, which will cause over 25 miles of road and more than 1,400 buildings in the region to flood every day at high tide.[81] The region also contains 4,900 acres of salt marsh, which filter water, offer wildlife habitat, and

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[73] W.V. SWEET ET AL., GLOBAL AND REGIONAL SEA LEVEL RISE SCENARIOS FOR THE UNITED STATES: UPDATED MEAN PROJECTS AND EXTREME WATER LEVEL PROBABILITIES ALONG U.S. COASTLINES (Feb. 2022), https://aambpublicoceanservice.blob.core.windows.net/oceanserviceprod/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf; Ezra David Romero, *California Overhauls Its Sea Level Rise Plan as Climate Change Reshapes Coastal Life*, KQED (Apr. 24, 2023), https://www.kqed.org/science/1979603/california-overhauls-its-sea-level-rise-plan-as-climate-change-reshapes-coastal-life.

[74] IPCC Report 2022, *supra* note 34, at 1950.

[75] DAVID REIDMILLER ET AL., U.S. GLOBAL CLIMATE CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT: VOLUME II 330 (2018), https://nca2018.globalchange.gov/

[76] Nat'l Oceanic and Atmospheric Admin., *Economics and Demographics*, https://coast.noaa.gov/states/fast-facts/economics-and-demographics.html (last accessed Oct. 13, 2023).

[77] Nat'l Oceanic and Atmospheric Admin., *Understanding and Planning for Sea Level Rise in California*, https://coast.noaa.gov/digitalcoast/stories/ca-slr.html (last accessed Oct. 13, 2023).

[78] LEAH FISHER ET AL., CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT: STATEWIDE SUMMARY REPORT 33 (2019), https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf

[79] *Id.* at 9.

[80] *Id.* at 31.

[81] Barbara Moran, *Rising seas threaten Mass. South Coast and prosperous fishing port, report finds. Here are 5 takeaways*, WBUR (Sep. 19, 2022), https://www.wbur.org/news/2022/09/19/massachusetts-south-coast-sea-level-rise-new-bedford.

act as storm buffer; 23% of the salt marsh is expected to vanish by 2050.[82] Coastal flooding may also contaminate groundwater.[83]

(4) *Extreme Weather Events*

Extreme weather events pose innumerable threats to our States and Cities—from increased health risks and death, damage to infrastructure, and water scarcity,[84] to economic damage and impacts to the energy system that "threaten[] more frequent and longer-lasting power outages and fuel shortages."[85] And "[w]ith every additional increment of global warming, changes in extremes continue to become larger."[86] "For example, every additional 0.5°C of global warming causes clearly discernible increases in the intensity and frequency of hot extremes, including heat waves (*very likely*), and heavy precipitation (*high confidence*), as well as agricultural and ecological droughts in some regions (*high confidence*)."[87] "The proportion of intense tropical cyclones (categories 4-5) and peak wind speeds of the most intense tropical cyclones are projected to increase at the global scale with increasing global warming (*high confidence*)."[88]

Not only are the frequency and intensity of extreme weather events increasing, but so too are the costs. On average, there were 8.5 extreme weather events per year in the United States between 1980 and now that cost over $1 billion per event, with an average cost of $59.9 billion per year; however, over the past 5 years, the average number of events per year increased to 18, with an average annual cost of $ 124.6 billion.[89] And these costs "do not take into account losses to natural capital or assets, health care related losses, or values associated with loss of life,"[90] meaning these estimates "should be considered conservative."[91]

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[82] *Id*.

[83] *See, e.g.*, HAW. DEP'T OF PUBLIC HEALTH, RISKS OF SEA LEVEL RISE AND INCREASED FLOODING ON KNOWN CHEMICAL CONTAMINATION IN HAWAII (Jun. 21, 2021), https://health.hawaii.gov/heer/files/2021/06/Climate-Change-and-Chemical-Contamination-memo-updated-June-2021.pdf.

[84] *See* WORLD METEOROLOGICAL ORG., STATE OF THE GLOBAL CLIMATE 2022 24-36 (2023), https://library.wmo.int/viewer/66214/download?file=Statement_2022.pdf&type=pdf&navigator=1.

[85] DAVID REIDMILLER ET AL., U.S. GLOBAL CLIMATE CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT: VOLUME II 30 (2018).

[86] IPCC 2023 Summary for Policymakers, *supra* note 27 at 12.

[87] *See* IPCC 2021 Summary for Policymakers, *supra* note 22, at 15.

[88] *Id.* at 16.

[89] Nat'l Oceanic and Atmospheric Admin., *Billion-Dollar Weather and Climate Disasters*, *Summary Stats*, https://www.ncei.noaa.gov/access/billions/summary-stats#temporal-comparison-stats (last accessed Oct. 12, 2023).

[90] Nat'l Oceanic and Atmospheric Admin., *Billion-Dollar Disasters: Calculating the Costs*, *How do you calculate a disaster's price tag?*, https://www.ncdc.noaa.gov/monitoring-references/dyk/billions-calculations (last accessed Oct. 13, 2023).

[91] *Id.*

In 2022 alone, there were 18 separate billion-dollar weather and climate disasters across the United States.[92] Damages from these disasters totaled $178.8 billion.[93] This "extremely high activity" is "becoming the new normal."[94] In 2022, the United States experienced the third-highest number of billion dollar disasters in a calendar year.[95] The greatest number of billion dollar disasters occurred in 2020 (22 events), and the second highest occurred in 2021 (20 events).[96] The year 2022 was also "the eighth consecutive year (2015-2022) in which 10 or more separate billion-dollar disasters events have impacted the U.S."[97]

These costs, which are partially borne by our affected States and Cities, reflect the breadth of impacts and rippling effects of extreme weather events due to climate change. For example, in 2022, severe drought plagued California and many other western and central states.[98] The following year, a series of nine successive atmospheric river events caused severe flooding and mudslides in California, which resulted in at least 22 deaths and cost an estimated $4.6 billion dollars.[99]

In 2022, Hurricane Ian made landfall in southwestern Florida as a category 4 hurricane.[100] Hurricane Ian caused at least 156 deaths, and over $112 billion in damages—"making it the costliest hurricane in Florida's history and the third-costliest in United States history."[101] And only a few years earlier, in 2020, Hurricane Isaias made landfall in North Carolina, producing storm surge inundation levels of 3 to 6 feet above ground level along the southern coast of North Carolina[102] before accelerating up the East Coast. After unleashing 5-8 inches of rainfall across Virginia, Maryland, Delaware, and western New Jersey, causing flooding across those states,[103] the storm's winds cut power to approximately 3.05 million customers—affecting roughly 1.4 million customers in New Jersey, 512,000 in New York, 380,000 in Pennsylvania, 264,000 in Connecticut, 218,000 in Virginia, 134,000 in North Carolina, 76,000 in Maryland,

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[92] Nat'l Oceanic and Atmospheric Admin., *2022 U.S. billion-dollar weather and climate disasters in historical context*, (Jan. 1, 2023), https://www.climate.gov/news-features/blogs/beyond-data/2022-us-billion-dollar-weather-and-climate-disasters-historical.
[93] Nat'l Oceanic and Atmospheric Admin., *Summary Stats, 2022*, https://www.ncei.noaa.gov/access/billions/summary-stats/US/2022 (last accessed Oct. 13, 2023).
[94] Nat'l Oceanic and Atmospheric Admin., *2022 U.S. billion-dollar weather and climate disasters in historical context*, *supra* note 92.
[95] *Id.*
[96] *Id.*
[97] *Id.*
[98] Nat'l Oceanic and Atmospheric Admin., *Events, California*, https://www.ncei.noaa.gov/access/billions/events/CA/1980-2023?disasters[]=all-disasters (last accessed Oct. 13, 2023).
[99] *Id.*
[100] NAT'L OCEANIC AND ATMOSPHERIC ADMIN., NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT – HURRICANE IAN, *supra* note 26.
[101] *Id.*
[102] NAT'L OCEANIC AND ATMOSPHERIC ADMIN., NATIONAL HURRICANE TROPICAL CYCLONE REPORT - HURRICANE ISAIAS 8 (June 11, 2021), https://www.nhc.noaa.gov/data/tcr/AL092020_Isaias.pdf
[103] *Id.*

51,000 in Delaware, 12,000 in Massachusetts, 6,000 in Vermont, and 4,000 in Rhode Island.[104] Hurricane Isaias also spawned 39 confirmed tornadoes from North Carolina to New Jersey[105] and caused at least 12 deaths.[106]

In June 2021, a heat dome described as "virtually impossible without human-caused climate change"[107] descended upon the Pacific Northwest and brought record-shattering temperatures as high as 108°F in Seattle, Washington, 116°F in Portland Oregon, and 118°F in Dallesport, Washington—the highest temperature ever recorded in Washington.[108] The extreme heat not only killed billions of intertidal species along the Pacific Northwest coast,[109] but it also resulted in the confirmed deaths of at least 96 people in Oregon[110] and 112 people in Washington.[111] "Extreme heat is already a leading cause of mortality in the United States, but without adaptation, deaths could increase more than sixfold."[112] And, as with rising average temperatures, the effects of extreme heat are not evenly distributed: "Black and African American individuals are 40% more likely than non-Black and non-African American individuals to live in areas with the highest projected increases in extreme temperature related mortality with 2°C of global warming."[113] "With 4°C of global warming, this estimate increases to 59%."[114]

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[104] PowerOutage.us (@PowerOutage_us), Twitter (Aug. 4, 2020 1:19 PM), https://twitter.com/PowerOutage_us/status/1290744180956901379.
[105] NAT'L OCEANIC AND ATMOSPHERIC ADMIN, NATIONAL HURRICANE TROPICAL CYCLONE REPORT - HURRICANE ISAIAS, *supra* note 102, at 10.
[106] *Id.* at 11.
[107] *Western North American extreme heat virtually impossible without human-caused climate change*, WORLD WEATHER ATTRIBUTION (Jul. 7, 2021), https://www.worldweatherattribution.org/western-north-american-extreme-heat-virtually-impossible-without-human-caused-climate-change/.
[108] Jason Samenow and Ian Livingston, C*anada sets new all-time heat record of 121 degrees amid unprecedented heat wave*, THE WASH. POST (June 29, 2021), https://www.washingtonpost.com/weather/2021/06/27/heat-records-pacific-northwest/.
[109] Stephen Leahy, *The Billions of Victims of the Heat Dome*, THE ATLANTIC (Jul. 31, 2021), https://www.theatlantic.com/ideas/archive/2021/07/billions-victims-heat-dome/619604/.
[110] Amelia Templeton and Monica Samayoa, *Oregon medical examiner releases names of June heat wave victims*, OPB (Aug. 6, 2021), https://www.opb.org/article/2021/08/06/oregon-june-heat-wave-deaths-names-revealed-.
[111] John Ryan, *2021 heat wave is now the deadliest weather-related event in Washington history*, NPR (Jul. 19, 2021), https://www.kuow.org/stories/heat-wave-death-toll-in-washington-state-jumps-to-112-people.
[112] ATLANTIC COUNCIL, EXTREME HEAT: THE ECONOMIC AND SOCIAL CONSEQUENCES FOR THE UNITED STATES 8 (Aug. 2021).
[113] U.S. ENV'T PROT. AGENCY, *CLIMATE CHANGE AND SOCIAL VULNERABILITY IN THE UNITED STATES: A FOCUS ON SIX IMPACTS* 35 (2021), www.epa.gov/cira/social-vulnerability-report.
[114] *Id.*

b. *Environmental Justice Communities Disproportionately Bear the Burden of Climate Change Impacts*

Climate change's impacts will continue to disproportionately fall on environmental justice communities.[115] Environmental justice communities experience more severe climate impacts and are more vulnerable as the climate crisis worsens.

Severe climate harms are already a reality for many environmental justice communities. Globally, the last nine years have been the nine hottest on record, and that trend is expected to continue.[116] Members of environmental justice communities tend to work in occupations with increased exposure to extreme heat, such as the agricultural, construction, and delivery industries.[117] Farmworkers die of heat-related causes at 20 times the rate of the rest of the U.S. civilian workforce.[118] Since 2005, the first year California began tracking the number of heat-related fatalities, 36% of California's heat-related worker deaths have been of farmworkers.[119] Similarly, although construction workers comprise only 6% of the national workforce, they account for 36% of heat-related deaths.[120]

In California, environmental justice communities suffer disproportionate impacts from extreme heat because they are more likely to lack air conditioning, tree canopy, and greenspace.

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115 "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." U.S. ENV'T PROT. AGENCY, EJ 2020 ACTION AGENDA: THE U.S. EPA'S ENVIRONMENTAL JUSTICE STRATEGIC PLAN FOR 2016-2020, EPA-300-B-1-6004, at 1 (Oct. 2016). 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 because of past or current unfair treatment.

116 *NASA Says 2022 Fifth Warmest Year on Record, Warming Trend Continues*, *supra* note 29; IPCC 2021 Summary for Policymakers, *supra* note 22, at 5-8, 14.

117 *See, e.g.*, Juley Fulcher, *Boiling Point: OSHA Must Act Immediately to Protect Workers From Deadly Temperatures*, Public Citizen (Jun. 28, 2022), https://www.citizen.org/article/boiling-point/; UNION OF CONCERNED SCIENTISTS, TOO HOT TO WORK: ASSESSING THE THREATS CLIMATE CHANGE POSES TO OUTDOOR WORKERS 3 (2021), https://www.ucsusa.org/sites/default/files/2021-09/Too-Hot-to-Work_9-7.pdf; Ariel Wittenberg, *OSHA Targets Heat Threats Heightened by Climate Change*, E&E NEWS (Oct. 26, 2021), https://www.eenews.net/articles/osha-targets-heaththreats-heightened-by-climate-change/.

118 *See* UNION OF CONCERNED SCIENTISTS, FARMWORKERS AT RISK: THE GROWING DANGERS OF PESTICIDES AND HEAT 4 (2019), https://www.ucsusa.org/sites/default/files/2019-12/farmworkers-at-risk-report-2019-web.pdf (citing Centers for Disease Control and Prevention, *Heat-Related Deaths Among Crop Workers—United States, 1992–2006*, https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5724a1.htm (last updated June 19, 2008)).

119 TENIOPE ADEWUMI-GUNN & JUANITA CONSTIBLE, NATURAL RESOURCES DEFENSE COUNCIL, FEELING THE HEAT: HOW CALIFORNIA'S WORKPLACE HEAT STANDARDS CAN INFORM STRONGER PROTECTIONS NATIONWIDE (2022), https://www.nrdc.org/sites/default/files/feeling-heat-ca-workplace-heat-standards-report.pdf.

120 Xiuwen Sue Dong et al., *Heat-Related Deaths Among Construction Workers in the United States*, 62 AM. J. INDUS. MED. 1047-57 (2019).

Environmental justice communities have less access to air conditioning, and are less able to pay the utility bills required to run air conditioning units or fans.[121] In urbanized environments, pavement, cement, and other non-vegetated areas contribute to the heat island effect, in which built environments retain heat, causing daytime temperatures to be from 1°F to 7°F hotter than suburban and rural areas and nighttime temperatures to be 2°F to 5°F hotter.[122] The heat island effect is inequitably distributed—it is most extreme in lower-income communities and communities of color.[123] Contributing to this effect is the lack of tree canopy and greenspace in environmental justice communities, often due to lower historical and ongoing investment. Indeed, tree canopy and greenspace is highly correlated with historical redlining practices, in which federal housing policy directed investment away from lower-income communities, and especially communities of color, characterized as "risky" for loan servicing.[124] Moreover, an EPA report found that individuals with lower incomes and individuals of color are respectively 11% to 16% and 8% to 14% more likely to live in areas with the highest projected increases in premature mortality from extreme heat.[125]

In addition, flooding and drought from extreme weather events disproportionately affect environmental justice communities, and the inequity will grow as climate impacts worsen. Due to disinvestment, environmental justice communities often lack sufficient infrastructure to control flooding or ensure steady water supplies.[126] They also suffer from more severe impacts, such as contaminated water from pollutant flows during floods and increased concentration of

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[121] MICHELLE ROOS ET AL., CAL. ENERGY COMM'N, CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT: CLIMATE JUSTICE REPORT 39-40, 45 (2018), https://resourceslegacyfund.org/wp-content/uploads/2018/09/Climate-Justice-Report-4CCCA-v.4-00455673xA1C15.pdf [hereinafter "California Climate Justice Report"]; ALLISON CRIMMINS ET AL., U.S. GLOBAL CHANGE RESEARCH PROGRAM, THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT 252 (2016) https://health2016.globalchange.gov/low/ClimateHealth2016_FullReport_small.pdf [hereinafter "USGCRP Climate Change Impacts Assessment"].

[122] *See* U.S. Env't Prot. Agency, *Heat Island Effect*, https://www.epa.gov/heatislands (last updated Aug. 16, 2023).

[123] U.S. Env't Prot. Agency, *Heat Islands and Equity*, https://www.epa.gov/heatislands/heat-islands-and-equity (last updated Aug. 3, 2023); USGCRP Climate Change Impacts Assessment, *supra* note 121, at 252.

[124] Dexter Locke et al., *Residential Housing Segregation and Urban Tree Canopy in 37 US Cities*, 1 NPJ URBAN SUSTAINABILITY 15 (2020), at 3-4; Ian Leahy & Yaryna Serkez, *Since When Have Trees Existed Only for Rich Americans?*, N.Y. TIMES (Jul. 4, 2021), https://www.nytimes.com/interactive/2021/06/30/opinion/environmental-inequity-trees-critical-infrastructure.html.

[125] U.S. ENV'T PROT. AGENCY, CLIMATE CHANGE AND SOCIAL VULNERABILITY IN THE UNITED STATES: A FOCUS ON SIX IMPACTS, *supra* note 113, at 36.

[126] Lily Katz, *A Racist Past, a Flooded Future: Formerly Redlined Areas Have $107 Billion Worth of Homes Facing High Flood Risk—25% More Than Non-Redlined Areas*, REDFIN (2021), https://www.redfin.com/news/redlining-flood-risk/; California Climate Justice Report, *supra* note 121, at 41-42, 66-67; USGCRP Climate Change Impacts Assessment, *supra* note 121, at 253-54.

contaminants during droughts.[127] EPA has also determined that individuals with lower incomes are more likely to live in areas with the highest projected land losses from sea level rise inundation and are more likely to face substantial traffic delays due to climate-driven changes in high-tide flooding.[128] Similarly, census tracts with predominantly tribal communities, older adults, and low-income populations in California have been found to be more likely to be highly impacted by wildfires.[129]

The above impacts especially apply to tribal communities. Due to land dispossession and forced migration, tribal communities are more exposed to extreme heat and more likely to rely on local water sources that are less resilient to drought and more contaminated.[130] Beyond those impacts, tribal communities also suffer cultural harms from the decimation or harm to local ecosystems and species of particular meaning to cultural practices.[131] These cultural resources have intrinsic value, and they are also critical to tribal community identity and group cohesion, which translates into direct health benefits.[132] Moreover, degradation of these cultural resources threatens traditional ecological knowledge, such as particularized understanding of local ecosystems, agriculture, and sustainable practices, that can help limit the impacts of climate change.[133] Tribal communities with sovereign land holdings are also more vulnerable to climate impacts because they are unable to relocate.[134]

Furthermore, environmental justice communities, including tribal communities, are environmentally overburdened due to greater existing pollution exposure.[135] This disadvantage manifests in higher rates of chronic disease, premature death, and other adverse public health outcomes.[136] Compounding these disparities, residents of environmental justice communities also have less access to health care—they are less likely to have health insurance and less likely to be able to afford necessary tests and procedures, and health care facilities are poorly staffed

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[127] USGCRP Climate Change Impacts Assessment, *supra* note 121, at 158-74.

[128] U.S. ENV'T PROT. AGENCY, CLIMATE CHANGE AND SOCIAL VULNERABILITY IN THE UNITED STATES: A FOCUS ON SIX IMPACTS, *supra* note 113, at 49, 59.

[129] Masri S, Scaduto E, Jin Y, Wu J., *Disproportionate Impacts of Wildfires Among Elderly and Low-Income Communities in California from 2000-2020*, 18 INT'L J. ENV'T RSCH & PUB. HEALTH (Apr. 8, 2021).

[130] Justin Farnell et al., *Effects of land dispossession and forced migration on Indigenous peoples in North America*, SCIENCE (Oct. 2021); USGCRP Climate Change Impacts Assessment, *supra* note 121, at 254.

[131] RON GOODE ET AL., CAL. ENERGY COMM'N, CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT: SUMMARY REPORT FROM TRIBAL AND INDIGENOUS COMMUNITIES WITHIN CALIFORNIA 19 (2018) https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-010_TribalCommunitySummary_ADA.pdf.

[132] *Id.*

[133] *Id.* at 13-16;

[134] Farnell et al., *supra* note 130.

[135] California Climate Justice Report, *supra* note 121, at 40-41.

[136] *Id.*; USGCRP Climate Change Impacts Assessment, *supra* note 121, at 253.

and equipped.[137] Consequently, residents of environmental justice communities are less able to withstand climate impacts that further damage their health, such as increased local smog conditions.[138]

In addition to being more vulnerable to the impacts of climate change, environmental justice communities endure structural disadvantages that blunt their ability to adapt to a changing climate. Environmental justice communities have less access to financial resources, such as income and wealth, which are critical to climate resilience.[139] More financial resources equate to more mobility, more ability to spend (on utilities, health care, home adaptation, etc.) to reduce climate harms, and more safeguards (such as insurance) in the event of extreme climate events.[140] Environmental justice communities have higher rates of limited English proficiency, which can reduce access to climate resilience programs and increase vulnerability in extreme climate events due to an inability to understand public health information.[141] Social capital in the political process is critical to ensure environmental justice communities receive resources to increase climate resilience and to prevent further entrenching existing inequities.

c. *Improved Fuel Economy Will Improve Air Quality in Our States and Cities*

In addition, other forms of air pollution inherent in fossil fuel emissions pose a widespread and persistent problem in our States and Cities. Criteria pollutants (including fine particulate matter (PM2.5) and ozone precursors) and air toxics negatively affect the health and welfare of people living in our States and Cities, and some contribute to climate change.[142] In 2020, more than 30.7 million Americans breathed air with elevated levels of PM2.5 pollution for more than 100 days, and an additional 175.4 million Americans breathed air with elevated levels of PM2.5 for at least 31 days.[143] Millions also breathed air with elevated levels of ozone for more than 100 days.[144] Even air containing levels of PM2.5 and ozone below current federal air quality standards is harmful to public health.[145]

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[137] SAMANTHA ARTIGA ET AL., KAISER FAMILY FOUND., HEALTH COVERAGE BY RACE AND ETHNICITY, 2010-2021 (Dec. 20, 2022) https://www.kff.org/racial-equity-and-health-policy/issue-brief/health-coverage-by-race-and-ethnicity/; Benjamin Sommers et al., *Beyond Health Insurance: Remaining Disparities in US Health Care in the Post-ACA Er*a, 95 THE MILBANK QUARTERLY 1 (2017).

[138] California Climate Justice Report, *supra* note 121, at 40-43.

[139] *Id*. at 39.

[140] *Id.*

[141] *Id*. at 43; USGCRP Climate Change Impacts Assessment, *supra* note 121, at 106.

[142] BRYAN HUXLEY-REICHER ET AL., TROUBLE IN THE AIR 6–14 (Fall 2021), https://publicinterestnetwork.org/wp-content/uploads/2022/07/Trouble-in-the-Air-revised-11_23_21.pdf

[143] *Id*. at 3.

[144] *Id.*

[145] *Id.* at 4, 6–10.

(1) *Reducing Criteria Pollutant Emissions Will Benefit Public Health*

NHTSA anticipates significant reductions of carbon monoxide emissions under all action alternatives, which could be so significant that it "could lead to changes in ambient pollution concentrations." 88 Fed. Reg. at 56,323, 56,234. NHSTA also anticipates reductions in the emission of volatile organic compounds ("VOCs") in the year 2035 and reduced PM2.5 and NOx emissions in the year 2050. *Id.*[146] The health benefits associated with a reduction in PM2.5 and ozone pollution are well-documented.[147] Short- and long-term PM2.5 exposures result in increased mortality risk and adverse cardiovascular and respiratory effects.[148] In California alone, over 5,000 premature deaths and hundreds of illnesses and emergency room visits for respiratory and cardiovascular disease are linked to PM2.5 pollution annually.[149] And long-term exposure to even very low PM2.5 levels (3µg/m3) may still lead to lower life expectancy for both men and women.[150] Studies have also demonstrated that particle pollution

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[146] NHTSA anticipates that the reduction in VOC emissions in 2035 would occur in connection with all action alternatives. 88 Fed. Reg. at 56,323. The reduction in PM2.5 emissions in 2050 would occur in connection with all action alternatives. *Id.* The reduction of NOx emissions in 2050 would only occur in connection with the Preferred Alternative (PC2LT4) and PC1LT3. *Id.*

[147] OZONE TRANSP. COMM'N OTC MODELING COMMI., ANALYSIS OF THE POTENTIAL HEALTH IMPACTS OF REDUCING OZONE LEVELS IN THE OTR USING BENMAP – 2021 EDITION (July 2021); OFFICE OF MASS. ATTORNEY GENERAL MAURA HEALEY, COVID-19'S UNEQUAL EFFECTS IN MASSACHUSETTS 6 (2020) (explaining that eliminating human- generated emissions from the City of Boston would reduce PM2.5 and ozone concentrations throughout the region, leading to a decrease in morbidity and mortality and saving the region billions of dollars); Leah Burrows, *Deaths from fossil fuel emissions higher than previously thought*, HARVARD (Feb. 9, 2021), https://seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higher-previously-thought (reporting on recent study finding that more than 8 million people died in 2018 from fossil fuel pollution); Erika Garcia et al., *Association of Changes in Air Quality with Incident Asthma in Children in California*, 1993-2014, 312 JAMA 19:1906-1915 (2019) (decreases in PM2.5 emissions are significantly associated with lower asthma incidence); Yaron Ogen, *Assessing Nitrogen Dioxide (NO2) Levels As A Contributing Factor To Coronavirus (COVID-19) Fatality* 726 Sci. Total Environ. (Jul. 2020), https://pubmed.ncbi.nlm.nih.gov/32302812/ (finding that long-term exposure to NO2 may be an important contributor to the high COVID-19 fatality rates observed in five European regions).

[148] U.S. ENV'T PROT. AGENCY, POLICY ASSESSMENT FOR THE REVIEW OF THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICULATE MATTER 3-18–3-19, 3-101, 3-104 (Jan. 2020) [hereinafter "EPA Jan. 2020 Policy Assessment"] (discussing studies finding statistically significant associations between harm to health and annual exposures below 12 µg/m3, 3-113), https://www.epa.gov/system/files/documents/2021-10/final-policy-assessment-for-the-review-of-the-pm-naaqs-01-2020.pdf

[149] CAL. AIR RESOURCES BOARD, REVISED DRAFT 2020 MOBILE SOURCE STRATEGY 18 (Apr. 23, 2021), https://ww2.arb.ca.gov/sites/default/files/2021-04/Revised_Draft_2020_Mobile_Source_Strategy.pdf.

[150] U.S. ENV'T PROT. AGENCY, SUPPLEMENT TO THE 2019 INTEGRATED SCIENCE ASSESSMENT FOR PARTICULATE MATTER 3-99 (May 2022), https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=354490#tab-3; *see also* Bennett JE et al., *Particulate Matter Air Pollution And National and County Life Expectancy Loss in the USA: A*

may significantly reduce lung function growth in children and that these effects are likely permanent.[151]

Ozone pollution leads to similar negative health effects, especially for respiratory health.[152] Multiple epidemiological studies have shown that both short- and long-term exposures to ozone with median or average levels near or below the current 8-hour National Ambient Air Quality Standards (NAAQS) were associated with adverse health outcomes, including lung function decline, increases in childhood asthma onset, preterm births, increased emergency room visits, and premature mortality.[153]

Additionally, elevated pollution levels have been linked to increased vulnerability to illnesses. In California, research has demonstrated a link between chronic exposure to elevated PM2.5 levels and increases cases of premature death and illness from COVID-19.[154] At least one study determined that if all areas of California had PM2.5 below current federal air quality standards, a total of 4,250 COVID-19 deaths might have been prevented during the time period of the study.[155]

The transportation sector is a major contributor to these health impacts because it is one of the largest emitters of PM2.5 and ozone precursors in the United States.[156] Moreover, it has long been acknowledged that people living, working, and attending school near major roadways face

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Spatiotemporal Analysis, 16 PLOS MED. (Jul. 23, 2019), https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002856.

[151] Peters JM et al., *A Study of Twelve Southern California Communities with Differing Levels And Types Of Air Pollution. II. Effects on Pulmonary Function*, 159 AM. J. OF RESPIR, & CRITICAL CARE MED. (Mar. 1999); Avol EL et al., *Respiratory Effects of Relocating to Areas of Differing Air Pollution Levels*, 164 AM. J. OF RESPIR, & CRITICAL CARE MED (Dec. 2001); Gauderman WJ et al., *Association Between Air Pollution and Lung Function Growth in Southern California Children: Results From a Second Cohort*, 166 AM. J. OF RESPIR, & CRITICAL CARE MED. (Jul. 2002); Gauderman WJ et al., *The Effect of Air Pollution on Lung Development From 10 to 18 Years of Age*, New England J. of Med. (Sep. 9, 2004).

[152] U.S. ENV'T PROT. AGENCY, INTEGRATED SCIENCE ASSESSMENT FOR OZONE AND RELATED PHOTOCHEMICAL OXIDANTS, EXECUTIVE SUMMARY ES-6–ES-8, ES-17 (Apr. 2020).

[153] *Id.*

[154] English PB et al, *Association Between Long-Term Exposure to Particulate Air Pollution With SARS-Cov-2 Infections and COVID-19 Deaths in California*, U.S.A. 9 ENV'T ADVANCES (Oct. 2022), https://www.sciencedirect.com/science/article/pii/S2666765722001053; Jerrett M et al., *Air Pollution And Meteorology as Risk Factors for COVID-19 Death In A Cohort From Southern California*., 171 ENV'T INT'L 107,675 (Jan. 2023), https://www.sciencedirect.com/science/article/pii/S016041202200602X.

[155] English PB et al, *supra* note 154.

[156] Calvin A. Arter et al., *Mortality-based damages per ton due to the on-road mobile sector in the Northeastern and Mid-Atlantic U.S. by region, vehicle class and precursor*, 16 ENVIRON RES. LETT. 2–3 (2021), https://doi.org/10.1088/1748-9326/abf60b. Fossil-fueled vehicles emit primary particulate matter and particulate matter precursors that contribute to secondary formation of particulate matter in the atmosphere. EPA Jan. 2020 Policy Assessment, *supra* note 148, at 2-3; U.S. ENV'T PROT.AGENCY, POLICY ASSESSMENT FOR THE REVIEW OF THE OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS 2-5 (May 2020), https://www.epa.gov/sites/default/files/2020-05/documents/o3-final_pa-05-29-20compressed.pdf.

greater air pollution exposure.[157] *See, e.g.*, 77 Fed. Reg. 62,624, 62,907 (Oct. 15, 2012); 75 Fed. Reg. 25,324, 25,504 (May 7, 2010). In some urban areas, gasoline-powered highway vehicles, diesel-powered highway vehicles, and other fossil-fuel-engine-driven sources (e.g., ships, aircraft, construction, and agricultural equipment), account for 13% to 30% of the total primary PM2.5 emissions.[158] In California, more than half of the PM2.5 pollution is produced by these mobile sources.[159] As described above, these emissions contribute to and exacerbate asthma, impair lung function, and increase cardiovascular mortality.[160] In Philadelphia, for example, some of the most polluted areas are along major highways or zones with heavy traffic, and the most polluted zip codes also have the largest number of lung cancer patients.[161] Traffic-related air pollution is especially harmful because it not only exacerbates asthma but may also cause more people to become asthmatic.[162] Mobile sources are also the number one contributor to high ozone levels in the Ozone Transport Region.[163]

(2) *Reducing Criteria Pollutant Emissions Will Support NAAQS Attainment*

Various locations throughout our States and Cities have been unable to attain, or face difficulty maintaining, the NAAQS—designed to protect public health—for ozone.[164] 42 U.S.C. § 7409(b). For example, multiple counties in California are registering serious, severe, or extreme nonattainment with the 8-Hour Ozone NAAQS. Similarly, several counties in the Metropolitan

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[157] NHTSA, Draft Supplemental Environmental Impact Statement for Model Year 2024-2026 Corporate Average Fuel Economy Standards 4-34 (2021).
[158] EPA Jan. 2020 Policy Assessment, *supra* note 148 at 2-5.
[159] CAL. AIR RESOURCES BOARD, REVISED MOBILE DRAFT SOURCE STRATEGY, *supra* note 149, at 18.
[160] *Id.* at 24–26 (citing multiple studies); CAL. ENV'T PROT. AGENCY, OFFICE OF ENV'T HEALTH HAZARD ASSESSMENT, CALENVIROSCREEN 4.0 99 (Oct. 2021) ("[C]hildren who live or attend schools near busy roads are more likely to suffer from asthma and bronchitis than children in areas with lower traffic density.").
[161] Thomas P. McKeon et al., *Environmental exposomics and lung cancer risk assessment in the Philadelphia metropolitan area using ZIP code–level hazard indices*, ENVIRON. SCI. POLLUT. RES. 28:31758–31769, 31764 (2021); Stephanie Stahl, *Earth Week: New Research Links Lung Cancer to Air Pollution in Philadelphia*, CBS PHILLY (Apr. 20, 2021), https://philadelphia.cbslocal.com/2021/04/20/earth-new-research-links-lung-cancer-to-air-pollution-in-philadelphia/.
[162] BRYAN HUXLEY-REICHER ET AL., *supra* note 142, at 6.
[163] OZONE TRANSPORT COMM'N, MOBILE SOURCES COMM., ANNUAL REPORT 2020 2 (2020). The Ozone Transport Region includes Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia.
[164] U.S. Env't Prot. Agency, *Current Nonattainment Counties for All Criteria Pollutants*, https://www3.epa.gov/airquality/greenbook/ancl.html (last updated Sept. 30, 2023) (providing NAAQS compliance status of all counties); Cal. Air Resources Board, *Criteria Pollutant Emission Reductions from California's Zero-Emission Vehicle Standards for Model Years 2017-2025*, at 5, App. A to Comments of States and Cities in Support of EPA Reversing Its SAFE 1 Actions (Jul. 6, 2021) (Docket ID No. EPA-HQ-OAR-2021-0257), https://downloads.regulations.gov/EPA-HQ-OAR-2021-0257-0132/attachment_2.pdf.

New York-New Jersey-Connecticut area are in severe nonattainment with the 2008 8-Hour Ozone NAAQS and are in moderate nonattainment with the 2015 8-Hour Ozone NAAQS.[165]

A major precursor of ozone is VOCs.[166] The Preferred Alternative and the more stringent alternatives would result in decreases of VOC emissions as early as 2035. 88 Fed. Reg. at 56,324. While States have taken action to reduce VOC emissions from mobile and stationary sources, including power plants and refineries, in an attempt to attain the NAAQS,[167] more stringent fuel economy standards would further help all States attain and maintain the ozone NAAQS.

(3) *Reducing Air Toxics Emissions Also Benefits Public Health*

Each action alternative considered in NHTSA's proposal would result in reductions of air toxics emissions. 88 Fed. Reg. at 56,324. Reductions in air toxics emissions will benefit public health and welfare, in part because these emissions are known to cause cancer and other serious health effects.[168]

New Jersey, for example, will benefit from the reduction of air toxics emissions anticipated by NHTSA because mobile sources are the largest contributors of air toxics emissions in the state.[169] In Allegheny County in Pennsylvania, mobile sources account for over 9% of the estimated cancer risk from air toxics emissions, mostly due to gasoline-powered cars.[170] The City of Richmond in California, with five petroleum refineries nearby and residents facing disproportionately high rates of cancer and other health impacts from air pollution, serves as another example of an area that will benefit from a reduction in air toxics emissions.[171]

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[165] U.S. Env't Prot. Agency, *8-Hour Ozone (2015) Nonattainment Areas*, https://www3.epa.gov/airquality/greenbook/jnc.html (last updated Sept. 30, 2023); U.S. Env't Prot. Agency, *8-Hour Ozone (2008) Nonattainment Areas*, https://www3.epa.gov/airquality/greenbook/hnc.html, (last updated Sept. 30, 2023).

[166] Cal. Air Resources Board, *What Is Ozone?,* https://ww2.arb.ca.gov/resources/fact-sheets/what-ozone (last accessed Oct. 3, 2023).

[167] *See, e.g.*, N.J. Dep't of Env't Prot., *New Jersey SIP Revision for the Attainment and Maintenance of the Ozone NAAQS* (Dec. 2017), at x, 4-14, https://dep.nj.gov/wp-content/uploads/airplanning/8HrOzoneSIP2017-FinalSIP.pdf.

[168] U.S. Env't Prot. Agency, *Air Toxics Emissions, Report on the Environment,* https://cfpub.epa.gov/roe/indicator.cfm?i=2; Centers for Disease Control and Prevention, *Indicators and Data, Indicator: Air Toxics, National Environmental Public Health Tracking* (updated May 21, 2023), https://ephtracking.cdc.gov/indicatorPages?selectedContentAreaAbbreviation=11&selectedIndicatorId=%2081&selectedMeasureId=.

[169] NEW JERSEY DEP'T OF ENV'T PROT., 2022 NEW JERSEY AIR QUALITY REPORT 10-1 (August 2023).

[170] Cancer & Env't Network of Southwestern Pennsylvania, *National Air Toxics Assessment and Cancer Risk in Allegheny County Pennsylvania* (updated May 2021), https://cdn.catf.us/wp-content/uploads/2021/07/21092216/NATA-Factsheet-Final-May-2021.pdf.

[171] Cal. Air Resources Board, *Analysis in Support of Comments of the California Air Resources Board on Corporate Average Fuel Standards for Model Years 2024-2026 Passenger Cars and Light Trucks*, at 23-24 (Oct. 26, 2021) (Docket ID No. NHTSA-2021-0053), https://downloads.regulations.gov/NHTSA-2021-0053-1521/attachment_2.pdf.

(4) *Improving Air Quality Serves Important Environmental Justice Goals*

The projected positive impacts of NHTSA's proposed standards are likely to be magnified in communities with higher percentages of Black, Asian American, and Latinx residents because refineries and major roadways are disproportionately located in those communities.[172] 88 Fed. Reg. at 56,317. For instance, nearly 700,000 people live within three miles of the seventeen refineries that reported actual annual benzene fence-line concentrations in 2020 above the level set by EPA that requires the refinery to take action to reduce emissions.[173] Of these 700,000 people, 62% are African-American, Hispanic, Asian/Pacific Islander, or American Indian residents, and nearly 45% have incomes below the poverty level.[174] As another example, the communities of Wilmington, Carson, and West Long Beach in Los Angeles, California are affected by pollution from major freeway junctions, as well as freight, port, and rail operations, oil and gas production, and five petroleum refineries.[175] A majority of those communities are considered disadvantaged under California law, scoring higher than the state average on key indicators of vulnerability, including criteria pollutant exposure, health status, and socio-economic criteria.[176] In the Northeast and Mid-Atlantic Region, average concentrations of exposures to PM2.5 are 75%, 73%, and 61% higher for Latinx residents, Asian American residents, and Black residents, respectively, than they are for white residents.[177] PM2.5 and NO2 concentrations are also highest for Black and Latinx communities in Massachusetts, in part because of their proximity to industrial facilities and highways, and these concentrations have increased even though overall exposure to those pollutants has decreased in Massachusetts.[178] Improvements in air quality anticipated by the Proposal will serve our States and Cities'

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172 Cal. Air Resources Board, *Benefits of California's Zero-Emission Vehicle Standards on Community-Scale Emission*, App. B to Comments of States and Cities in Support of EPA Reversing Its SAFE 1 Actions (Jul. 6, 2021) (Docket ID No. EPA-HQ-OAR-2021-0257), https://downloads.regulations.gov/EPA-HQ-OAR-2021-0257-0132/attachment_3.pdf.

173 ENV'T INTEGRITY PROJECT, ENVIRONMENTAL JUSTICE AND REFINERY POLLUTION: BENZENE MONITORING AROUND OIL REFINERIES SHOWED MORE COMMUNITIES AT RISK IN 2020 7, n.6 (Apr. 28, 2021), https://environmentalintegrity.org/wp-content/uploads/2021/04/Benzene-report-4.28.21.pdf.

174 *Id.*

175 Cal. Air Resources Board, *Analysis in Support of Comments*, *supra* note 171, at 18-19.

176 *Id.* at 18-24.

177 UNION OF CONCERNED SCIENTISTS, INEQUITABLE EXPOSURE TO AIR POLLUTION FROM VEHICLES IN THE NORTHEAST AND MID-ATLANTIC (June 21, 2019), https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles.

178 *See* Rosofsky, Levy et al., *The Impact Of Air Exchange Rate On Ambient Air Pollution Exposure And Inequalities Across All Residential Parcels In Massachusetts*, J Exp Sci Environ Epidemiol 29: 520-530 (2019); Rosofsky, Anna, Jonathan I. Levy et al., *Temporal Trends In Air Pollution Exposure Inequality In Massachusetts*, Environ Res. 2018 February; 161: 76–86; *see also* OFFICE OF MASS. ATTORNEY GENERAL MAURA HEALEY, *supra* note 147, at 5.

environmental justice goals, by improving air quality in communities historically impacted by greater pollution.

DISCUSSION

I. NHTSA'S ANALYSIS SUPPORTS MORE STRINGENT STANDARDS THAN THE PREFERRED ALTERNATIVE

A. The Nation's Ongoing Need to Conserve Fuel Supports More Stringent Standards Than the Preferred Alternative Standards

One of the four factors NHTSA is required to consider in determining the "maximum feasible" average fuel economy level is "the need of the United States to conserve energy." 49 U.S.C. § 32902(f). Indeed, the purpose behind EPCA—which was enacted in response to an energy crisis—was to "establish aggressive and effective programs for energy conservation designed to encourage the maximum efficient utilization of domestic energy resources." H.R. Rep. No. 94-700, at 118 (1975); *see Ctr. for Auto Safety v. Nat'l Highway Traffic Safety Admin.*, 793 F.2d 1322, 1340 (D.C. Cir. 1986) ("It is axiomatic that Congress intended energy conservation to be a long term effort that would continue through temporary improvements in energy availability.").

Traditionally, NHTSA has evaluated "the need of the United States to conserve energy" through the examination of four factors: "the consumer cost, national balance of payments, environmental, and foreign policy implications of our need for large quantities of petroleum, especially imported petroleum." 88 Fed. Reg. 56,128, 56,316 (Aug. 17, 2023) (citing 42 Fed. Reg. 63,184, 63,188 (Dec. 15, 1977)), 77 Fed. Reg. 62,624, 62,669 (Oct. 15, 2012). The Proposal states that "energy conservation" is NHTSA's "paramount objective, for the consumer benefits, energy security benefits, and environmental benefits that it provides." 88 Fed. Reg. at 56,329.

1. *Consumer Cost*

NHTSA concludes in the Proposal that "consumers benefit from vehicles that need less fuel to perform the same amount of work." 88 Fed. Reg. at 56,316. NHTSA states that "[r]aising fuel economy standards can reduce consumer costs on fuel," and it explains that "this has long been a major focus of the CAFE program and was one of the driving considerations for Congress in establishing the CAFE program." *Id.* And, as "Americans have come to live farther and farther from their workplaces and activities, fuel costs have become even more important." *Id.*

As discussed above in the background section, *supra* at 3-5, increasing the fuel efficiency of passenger cars and light trucks as proposed not only will save consumers considerable money in fuel expenditures over time,[179] but it is also expected to decrease total oil consumption in the United States—ultimately serving EPCA's conservation goals. NHTSA estimates that the

[179] NHTSA notes that, "even though the energy-equivalent prices of electricity are higher, electric vehicles still produce fuel savings for their owners." 88 Fed. Reg. at 56,316. This is significant to the consumer cost analysis given the projected increase in electric vehicle market share and the projection that, over the next three decades, real gas prices will rise as real electricity prices will fall. *Id.*

Preferred Alternative standards would reduce gasoline consumption by 88 billion gallons. 88 Fed. Reg. at 56,132. Thus, the consideration of consumer costs supports the underlying goal of conserving fuel.

Notably, "NHTSA relied on fuel price projections from the EIA AEO for 2022," *id.* at 56,316, and we encourage NHTSA to instead employ the fuel price projections from the Annual Energy Outlook ("AEO") 2023 report. NHTSA explains that it will update its upstream emissions estimates based on the AEO 2023 projections, *id*. at 56,245, and NHTSA should do the same for fuel price projections.

2. ***National Balance of Payments***

Historically, NHTSA has considered the national balance of payments in evaluating the need to conserve energy, "because of concerns that importing large amounts of oil created a significant wealth transfer to oil-exporting countries and left the U.S. economically vulnerable." 88 Fed. Reg. at 56,316-17 (citing 42 Fed. Reg 63,184, 63,192 (Dec. 15, 1977)).

In the Proposal, NHTSA recognizes that, even as a net exporter of petroleum products,[180] the U.S. continues to rely on oil imports and that reducing vulnerability to oil price shocks remains important. *Id*. NHTSA could strengthen its analysis by acknowledging that the U.S. consumed more petroleum than it produced in 2022, and that the U.S. remained a net crude oil importer in 2022, importing about 6.28 million barrels per day of crude oil and exporting about 3.58 million barrels per day.[181] NHTSA acknowledges that, "[i]n 2021, the transportation sector accounted for 78.8 percent of total U.S. petroleum consumption," Draft Environmental Impact Statement ("DEIS") at S-8, and that "transportation demand is expected to continue to increase," 88 Fed. Reg. at 56,316. The proposal "aims to improve fleet-wide fuel efficiency and to help reduce the amount of petroleum consumed in the U.S," *id.*, which will reduce expenditures on foreign oil and protect consumers from global oil price shocks.

3. ***Environmental Implications***

In assessing the environmental implications of the U.S.'s need for large quantities of petroleum, NHTSA compares the reduced emissions associated with petroleum extraction, refining, and distribution with any increases in emissions from increased vehicle use. 88 Fed. Reg. at 56,317; DEIS at 2-27. NHTSA also considers climate change and environmental justice issues, including

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[180] In 2022, total petroleum exports were about 9.58 million barrels per day and total petroleum imports were about 8.32 million barrels per day. U.S. Energy Information Administration, *Oil and Petroleum Products Explained: Oil Imports and Exports* (Oct. 2, 2023), https://www.eia.gov/energyexplained/oil-and-petroleum-products/imports-and-exports.php. The EIA projects that the U.S. will remain a net exporter of petroleum products through 2050. U.S. Energy Information Administration, *Annual Energy Outlook AEO2023* (Mar. 2023), at 23, https://www.eia.gov/outlooks/aeo/pdf/AEO2023_Narrative.pdf; *see also* U.S. Energy Information Administration, *Annual Energy Outlook 2022 with Projections to 2050* (Mar. 2022), at 32, https://www.eia.gov/outlooks/aeo/pdf/AEO2022_Narrative.pdf.

[181] U.S. Energy Information Administration, *Oil and Petroleum Products Explained: Oil Imports and Exports* (Oct. 2, 2023), https://www.eia.gov/energyexplained/oil-and-petroleum-products/imports-and-exports.php.

the disproportionate impact of refinery pollution and climate change impacts on minority and low-income communities. *Id*.

In the Draft Environmental Impact Statement, NHTSA explains that the extraction and refining of heavier oils, which make up about 61% of total U.S. crude oil production and is projected to continue to drive future production into 2050, have greater environmental impacts than lighter oils. DEIS at 3-6. The unconventional processes required to extract and refine heavier oils are more energy-intensive than conventional methods used for lighter oils, meaning that they result in greater emissions. *Id*. Additionally, the majority of U.S. oil imports—specifically, 61.5%, DEIS at 3-16—come from Canada, which has a high estimated emission intensity for crude oil, DIES at 3-17 Figure 3.2.1-8. Further increasing fuel efficiency beyond the Preferred Alternative and decreasing fuel consumption would likely result in less oil extraction and refining from these high emission intensity sources, thereby reducing emissions.

In comparing upstream emissions with emissions from increased vehicle use, NHTSA explains that "[i]f the increases in fuel consumption and emissions associated with [vehicle miles traveled] rebound effect are larger than the decrease in fuel consumption due to increased fuel efficiency, then the net result can be an increase in total downstream emissions;" and "[i]f the decreases are smaller from the [vehicle miles traveled] rebound effect, then the net result can be a decrease in total downstream emissions." DEIS at 2-27. While "[c]ontinued growth in [vehicle miles traveled] is projected to occur under all alternatives until 2044," DEIS at 4-17 n.30, NHTSA finds that "tailpipe emissions in 2035 of CO, NOx, PM2.5, SO2, and VOC decrease under all CAFE standard action alternatives compared to the CAFE No-Action Alternative." DEIS at 4-22. NHTSA also finds that "[a]ll of the action alternatives in this NPRM reduce carbon dioxide emissions and, thus, the effects of climate change, as compared to the baseline." 88 Fed. Reg. at 56,318. Consideration of these impacts supports more stringent standards.

4. *Foreign Policy Implications*

In assessing the foreign policy implications of the U.S.'s need for large quantities of petroleum, NHTSA considers various costs on the domestic economy not reflected in the market price for crude petroleum or gasoline and foreign policy costs arising from U.S. consumption of oil. *Id*. at 56,318.

NHTSA concludes that raising CAFE standards will help alleviate these costs. *Id*. "Ensuring that the U.S. fleet is positioned to take advantage of cost-effective technology innovations will allow the U.S. to continue to base its international activities on foreign policy objectives that are not limited, at least not completely, by petroleum issues." *Id*. NHTSA also recognizes the need to reduce oil consumption and oil intensity in the U.S. economy in order to reduce exposure of U.S. consumers to global oil price shocks. *Id*. We agree with NHTSA's conclusion that "energy security in the petroleum consumption context remains extremely important." *Id*.

On balance, we agree with NHTSA that the nation's ongoing need to conserve fuel supports more stringent standards than the Preferred Alternative. *Id*. at 56,330 (concluding that "Alternative PC6LT8 likely best meets the need of the U.S. to conserve energy").

B. The Preferred Alternative Standards are Technologically Feasible, as Are More Stringent Standards

In determining what fuel economy standards are "maximum feasible," NHTSA must consider what is technologically feasible. 49 U.S.C. § 32902(f). "'Technological feasibility' refers to whether a particular method of improving fuel economy is available for deployment in commercial application in the MY for which a standard is being established." 88 Fed. Reg. at 56,314. This factor empowers "NHTSA to set standards that force the development and application of new fuel-efficient technologies," 88 Fed. Reg. at 56,314, and, indeed, Congress "intended [the standards] to be technology forcing," *Ctr. for Auto Safety v. Nat'l Highway Traffic Safety Admin.*, 793 F.2d 1322, 1339 (D.C. Cir. 1986). In the Proposal, NHTSA concludes that, "[w]hen excluding various forms of electrification, … more stringent standards may not be technologically feasible." 88 Fed. Reg. at 56,331. Yet, this conclusion is inconsistent with NHTSA's other conclusion that "all of the technology in NHTSA's analysis is already available for deployment," i.e., technologically feasible. *Id*.

NHTSA's analysis demonstrates that the proposed alternatives mainly differ in the agency's conclusion about what percent of the baseline fleet would have to apply strong hybrid and mass reduction technologies. *Id*. at 56,332 (Tables V-2 and V-3). NHTSA determined that its Preferred Alternative (PC2LT4) would require an additional 8% of the passenger car fleet to have strong hybrid technology and 19% to have advanced levels of mass reduction by MY 2032; and it would require an additional 18% of the light truck fleet to have strong hybrid technology and 28% to have advanced levels of mass reduction by MY 2032. *Id*. The slightly more stringent alternative (PC3LT5) would require an additional 12% of the passenger car fleet to have strong hybrid technology and 32% to have advanced levels of mass reduction by MY 2032; and it would require an additional 22% of the light truck fleet to have strong hybrid technology and 38% to have advanced levels of mass reduction by MY 2032. *Id*.

Mass reduction is "a relatively cost-effective means of improving fuel economy." 88 Fed. Reg. at 56,226; Draft Technical Support Document at 3-132. "An industry estimate is that a 10 percent reduction in a vehicle's mass will produce approximately six to seven percent reduction in fuel consumption for passenger cars and four to five percent reduction for light-duty trucks." Carla Bailo et al., Center for Automotive Research, *Vehicle Mass Reduction Roadmap Study 2025-2035* (Nov. 2020) [182] at 17, 25; *see* U.S. Department of Energy, Vehicle Technologies Office, *Lightweight Materials for Cars and Trucks*[183] ("A 10% reduction in vehicle weight can result in a 6%-8% fuel economy improvement."); *see* 88 Fed. Reg. at 56,227. While manufacturers have applied mass reduction technologies in previous years, the potential fuel economy improvements have not been fully realized, in large part because manufacturers add back the weight for other reasons and vehicle footprints have continued to increase. Carla Bailo

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[182] Available at https://www.cargroup.org/wp-content/uploads/2021/04/Mass-Reduction-roadmap-report-final-Nov10.pdf.
[183] Available at https://www.energy.gov/eere/vehicles/lightweight-materials-cars-and-trucks.

et al., *supra*[184] at 9 (explaining that manufacturers expected to add back 4.5-5% of vehicle mass between 2016 and 2020, and that the MY2020 fleet had a 2-6% larger footprint than the MY2016 fleet); U.S. Environmental Protection Agency, *The 2022 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975* (EPA-420-R-22-029) (Dec. 2022)[185] at 32 (stating that, since model year 2004, vehicle weight has increased by 4%, and that, since model year 2008, vehicle footprint across vehicle types has increased by 5%, a "record high[]" that is "projected to increase again in model year 2022"), at 17 (stating that these trends "offset some of the fleetwide benefits that otherwise would have been achieved from the [fuel economy] improvements within each vehicle type"). Thus, to counteract these trends of heavier and larger vehicles across vehicle classes—which consume more fuel—NHTSA should use its authority to encourage the application of mass reduction technologies, which will reduce the amount of fuel consumed by a fleet consistently growing in weight and size.

NHTSA's analysis also improperly constrains the application of high-compression-ratio ("HCR") technology to pickup trucks and vehicles that share engines with pickup trucks that are not accompanied by an electrified powertrain. 88 Fed. Reg. at 56,190. NHTSA explains that "these often-heavier vehicles have higher low speed torque needs, higher base road loads, increased payload and towing requirements, and have powertrains that are sized and tuned to perform this additional work above what passenger cars are required to conduct." *Id*. And "[a]ny time more engine torque is required the application of this technology becomes less effective and more limited." *Id*. at 56,188. To maintain a "performance-neutral analysis," NHTSA thus limits application of HCR technology to pickup trucks and vehicles that share engines with pickup trucks that are not accompanied by an electrified powertrain. *Id*. at 56,190. This constraint is inconsistent with NHTSA's statutory mandate and is unsupported. First, NHTSA is not required to maintain "performance neutrality;" the relevant inquiry is whether it is technologically feasible to put an HCR engine in pickup trucks and vehicles that share engines with pickup trucks, and it is.[186] Second, NHTSA assumes, without evidence, that *all* pickup trucks and vehicles that share engines with pickup trucks that are not accompanied by an electrified powertrain would spend the majority of their time towing or hauling. However, towing or hauling heavy cargo represent only a portion of a pickup's uses, and HCR engines can and do operate using different cycles depending on power needs without being paired with a hybrid powertrain. NHTSA's improper assumption artificially increases the projected costs of the proposed alternatives. NHTSA should unconstrain the application of HCR technology to pickup trucks and vehicles that share engines with pickup trucks that are not accompanied by an electrified powertrain to better reflect real-world usage of technologies that reduce fuel consumption.

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[184] Available at https://www.cargroup.org/wp-content/uploads/2021/04/Mass-Reduction-roadmap-report-final-Nov10.pdf.
[185] Available at https://www.epa.gov/system/files/documents/2022-12/420r22029.pdf.
[186] *See, e.g.* Hyundai Motor America, *2022 Santa Cruz Specifications*, https://www.hyundainews.com/assets/documents/original/48035-2022SantaCruzProductGuideSpecsv2081521.pdf.

NHTSA should use its authority "to set standards that force the development and application of new [and existing] fuel-efficient technologies," 88 Fed. Reg. at 56,314, including the application of currently deployable mass reduction technologies. *See id.* ("NHTSA is not limited in determining the level of new standards to technology that is already being applied commercially at the time of the rulemaking."). The technology to meet the Preferred Alternative standards as well as more stringent standards already exists and is commercially deployable, meaning those standards are technologically achievable. Thus, this factor weighs in favor of standards more stringent than the Preferred Alternative.

C. The Preferred Alternative Standards are Economically Practicable, as Are More Stringent Standards

NHTSA must also consider "economic practicability" when determining what level of fuel economy is "maximum feasible." 49 U.S.C. § 32902(f). NHTSA has long interpreted this factor to mean that the standard should be "'within the financial capability of the industry, but not so stringent as to' lead to 'adverse economic consequences, such as a significant loss of jobs or unreasonable elimination of consumer choice.'" 88 Fed. Reg. at 56,314. "There is not necessarily a bright-line test for whether a regulatory alternative is economically practicable," and NHTSA considers the application rate of technologies, other technology related considerations, the cost of meeting the standards, sales and employment responses, and uncertainty and consumer acceptance. *Id*. NHTSA seeks to avoid adverse consequences such as a significant loss of jobs or unreasonable elimination of consumer choice. *Id*. at 56,315. "It is reasonable to expect that maximum feasible standards may be harder for some automakers [to meet] than for others." *Id*.

NHTSA estimates that the average per vehicle price change for passenger cars in MY2032 is $654 for the Preferred Alternative and $1,205 for the PC3LT5 Alternative, and that the average price change for light trucks in MY2032 is $1,064 for the Preferred Alternative and $1,795 for the PC3LT5 Alternative. *Id*. at 56,334-35 (Tables V-4 and V-5). The costs associated with both the Preferred Alternative and the PC3LT5 Alternative are both reasonable and lower than past estimates of average price change. *See* 87 Fed. Reg. 25,710, 25,926 (May 2, 2022) (Tables V-40 and V-42 estimate the average per vehicle price will increase by $2,294 for passenger cars and $2,420 for light trucks in the final model year of the standards (MY2026)). The differences in the technology application rates between the Preferred Alternative and the No-Action Alternative, and the PC3LT5 Alternative and the No-Action Alternative, are minimal. 88 Fed. Reg. at 56,332 (Tables V-2 and V-3). Where differences do exist, such as in the degree of strong hybrid and mass reduction improvements applied, these differences represent a modest additional burden for manufacturers that is lower than or similar to the technology application rates for passenger cars estimated for past rulemakings. *Id.*; *compare* 87 Fed. Reg. at 26,009-10 (Tables VI-12 and VI-13) (estimating that the final standards for MY 2024-2026 would require passenger cars to apply an additional 14% strong hybrid and 25% mass reduction technologies). While the differences in degree of strong hybrid and mass reduction improvements estimated for light trucks in the current versus previous rulemaking is more moderate, *id.*, it does not make the standards economically impracticable. Finally, the Proposal promotes greater consumer choice, as consumers will have a greater array of vehicles with higher fuel economy, including plug-in and mild hybrids, some of which offer advantages over internal combustion engine vehicles, such as faster vehicle acceleration, more torque, and lower maintenance costs.

Thus, NHTSA's own analysis establishes that the proposed standards—including the PC3LT5 Alternative—are well within the financial capability of the industry, which has "seen record profits [in] the last few years,"[187]and, therefore, are "economically practicable."

D. A Balancing of the Statutory Factors Supports Adoption of Standards More Stringent Than the Preferred Alternative Standards

"Maximum feasible CAFE standards look to balance the need of the U.S. to conserve energy with the technological feasibility and economic impacts of more stringent standards, while also considering other motor vehicle standards of the Government that may affect automakers' ability to meet CAFE standards." 88 Fed. Reg. at 56,329. NHTSA states that "[e]nergy conservation" is its "paramount objective" and "EPCA's overarching purpose," and that this factor "nearly always works in NHTSA's balancing to push standards more stringent." *Id.* at 56,329-30.

NHTSA tentatively concludes that the Preferred Alternative is the maximum feasible. *Id*. at 56,329. While NHTSA finds that "Alternative PC6LT8 would likely best serve the need of the U.S. to conserve energy," it expresses concern that the PC3LT5 and PC6LT8 Alternatives may not be economically practicable or technologically feasible. *Id*. at 56,330. However, this conclusion gives too much weight to the economic practicability factor. NHTSA finds that "PC3LT5 may be . . . economically feasible," but it "does not want to inadvertently burden passenger car sales by requiring too much additional cost for new vehicles." *Id*. at 56,336. Yet, NHTSA may not allow an "uncertain" concern about hampering passenger car sales to override the "paramount" energy conservation purpose of EPCA. 88 Fed. Reg. at 56,314 (stating that "consumer acceptance of additional new vehicle cost associated with more stringent CAFE standards is uncertain"); *id*. at 56,183 n.187 ("[T]here is considerable uncertainty in the literature about how much fuel economy consumers are willing to pay for"); *id.* at 56,329 (stating "[e]nergy conservation" is a "paramount objective"). Indeed, "it would clearly be impermissible for NHTSA to rely on consumer demand to such an extent that it ignored the overarching goal of fuel conservation." *Ctr. for Auto Safety v. Nat'l Highway Traffic Safety Admin.*, 793 F.2d 1322, 1340 (D.C. Cir. 1986).

Moreover, as discussed above, the additional per-vehicle cost for new vehicles under the PC3LT5 Alternative is roughly $1,100 less for passenger cars and $600 less for light trucks compared to the estimated additional price for NHTSA's final CAFE standards for MY 2024-2026. *Supra* at 29-30; *compare* 88 Fed. Reg. at 56,334-35 *with* 87 Fed. Reg. at 25,926. Even accounting for NHTSA's statement that the year-over-year improvements for the MY 2024-2026 standards

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[187] Susan Carpenter and Julia Benbrook, Spectrum News NY1, *Automakers' 'record profits' should be shared, Biden says* (Sep. 15, 2023), https://ny1.com/nyc/all-boroughs/business/2023/09/15/auto-makers--record-profits-should-be-shared--president-says#:~:text=Profits%20at%20Ford%2C%20General%20Motors,while%20worker%20pay%20increased%206%25.

"were faster than had been typical" in order to "correct for the lack of adequate consideration of the need for energy conservation in the 2020 rule," 88 Fed. Reg. at 56,329, the estimated per-vehicle costs are still quite a bit lower than those estimated in the final MY 2024-2026 standards. And these costs are assumed to be passed entirely on to consumers, who will recoup much of the costs by way of fuel savings. *Id*. at 56,240 n.406 ("The CAFE Model currently operates as if all costs incurred by the manufacturer as a consequence of meeting regulatory requirements . . . are 'passed through' to buyers of new vehicles in the form of price increases."); Proposed Regulatory Impact Analysis at 8-23, Table 8-3 (charting retail fuel savings). While the application rate for mass reduction technologies in light trucks is higher than the rates estimated for the MY 2024-2026 standards, the increase is justified, because manufacturers have been negating mass reduction improvements in their fleets by adding the weight back in other vehicle features.[188] This trend is inconsistent with EPCA's overarching statutory purpose of energy conservation, *id.* at 56,329, and NHTSA should use its authority "to set standards that force the development and application of new [and existing] fuel-efficient technologies," 88 Fed. Reg. at 56,314.

Finally, NHTSA's concern about passenger car sales should not quash the significant net private and societal benefits, or per-vehicle net benefits, of increasingly stringent standards for light trucks. *See* 88 Fed. Reg. at 56,340-42, Tables V-6, V-7, V-8, and V-9; PRIA at 8-23, Table 8-3. While the delta between the technology costs and lifetime fuel savings for passenger cars is a net negative across all alternatives, it is a net positive for light trucks, with a peak at the most stringent alternative. 88 Fed. Reg. at 56,340-41, Tables V-6 and V-7; *see also id.* at 56,341-42, Tables V-8 and V-9. And, on a per-vehicle basis, although the difference between consumer costs and benefits is net negative for passenger cars across alternatives, it is net positive for light trucks for nearly all proposed alternatives, including the PC3LT5 Alternative. PRIA at 8-23, Table 8-3.

And the net private and societal benefits are likely understated. As NHTSA recognizes, the social cost of greenhouse gases ("SC-GHG") metric does not fully capture the harms from climate change. 88 Fed. Reg. at 56,150. In recent comment on other rulemakings, a group of states and cities (many of whom are signatories to this comment) have set out several ways in which the SC-GHG metric significantly underestimates the climate benefits of reducing GHG emissions, particularly in terms of unquantified climate damages (such as damages caused by more frequent and intense wildfires and loss of cultural and historical resources, neither of which are accounted for in the SC-GHG) and its utilization of overly high discount rates. We attach those comments here for reference.[189] Moreover, monetized health benefits for reduced criteria pollution are only a portion of the total benefits, representing only the value attributable to reducing NOx, SOx, and PM2.5. 88 Fed. Reg. at 56,252. Although NHTSA did not rely on the exact size of the proposed

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[188] Carla Bailo et al., Center for Automotive Research, *Vehicle Mass Reduction Roadmap Study 2025-2035* (Nov. 2020) at 9, https://www.cargroup.org/wp-content/uploads/2021/04/Mass-Reduction-roadmap-report-final-Nov10.pdf ("The real-world mass reduction achievements do NOT match the mass reduction potential of the material technologies already implemented in the baseline MY2020 fleet," because automakers add weight back and vehicles have continued to increase in size).

[189] Comments Of States and Cities Supporting EPA's Proposed Greenhouse Gas Emissions Standards For Heavy-Duty Vehicles—Phase 3, pp. 39-44 (Jun. 16, 2023), EPA-HQ-OAR-2022-0985-1423.

standards' projected benefits or the amount by which they exceed projected costs, the public's understanding of the Proposal will benefit from NHTSA underscoring the degree to which projected benefits are underestimated and projected costs overstated.

NHTSA is required to set "maximum feasible" fuel economy standards separately for passenger cars and light trucks, "which gives NHTSA discretion, by law, to set CAFE standards that increase at different rates for cars and trucks." *Id*. at 56,133 n.9. The record clearly demonstrates that more stringent standards than the Preferred Alternative may be "maximum feasible" for light trucks.

Thus, we urge NHTSA to consider whether more stringent standards than the Preferred Alternative—including PC3LT5 and possible hybrid alternatives such as PC2.5LT7—are ultimately the "maximum feasible" based on the full record before the agency.

II. NHTSA's Methodologies for Modeling the No-Action Baseline Fleet and Calculating the Minimum Domestic Passenger Car Standard Are Reasonable but Should Be Updated

A. NHTSA's Methodology for Projecting the Baseline Is Reasonable, Though its Estimate of BEV Sales Trends in the No-Action Scenario Appears to be Conservative

In projecting the baseline fleet—the step taken before NHTSA begins to analyze the "maximum feasible" factors in Section 32902(f)—NHTSA analyzes what manufacturers' passenger car and light truck fleets would look like absent additional regulatory action by NHTSA. 88 Fed. Reg. at 56,319; *see* 50 Fed. Reg. 40,528, 40,533-34 (Oct. 4, 1985) (stating that, when setting fuel economy standards, NHTSA has consistently projected what the fleet would likely look like if NHTSA made no change and then "considered what, if any, additional actions the manufacturers could take to improve their fuel economy"). The "baseline should be the best assessment of the way the world would look absent regulatory action." Off. of Mgmt. & Budget, Circular A-4 at 15 (2003). "[T]his ensures that [NHTSA's] analysis can appropriately capture manufacturer decision making about their vehicle fleets for reasons other than CAFE standards (*e.g.*, other regulatory programs and manufacturing decisions)." 88 Fed. Reg. at 56,156.

In the Proposal, NHTSA appropriately projects the baseline fleet as "consist[ing] of every vehicle model in MY 2022 in mostly every configuration that has a different compliance fuel economy value. . . ." 88 Fed. Reg. at 56,164; *see also* 49 U.S.C. § 32904(a)(2) (providing for a petroleum-equivalent fuel economy value for electric vehicles to be included in the calculation of a manufacturer's average fuel economy). This projection thus accounts for the growing market penetration of electric vehicles, which manufacturers are already producing in response to market demand, their own strategic decisions, and other legal obligations.

1. *NHTSA Correctly Interprets EPCA's Analytical Constraints*

NHTSA correctly interprets the CAFE statutes, and specifically 49 U.S.C. § 32902(h), not to require the exclusion of battery electric vehicles ("BEVs") from its No-Action baseline fleet. 88

Fed. Reg. at 56,319. Rather, Section 32902(h) constrains the consideration of four non-exclusive "maximum feasible" factors specified in subsection (f), and not the entirety of the standard-setting analysis.[190] Indeed, Congress expressly excluded the provisions that direct NHTSA to set the CAFE standards—subsections (a), (b), and (d)—from the scope of Section 32902(h), and NHTSA is required to give effect to that explicit exclusion. *See Nat'l Ass'n of Mfrs. v. Dep't of Defense*, 138 S. Ct. 617, 631 (2018).

The four mandatory factors in Section 32902(f) speak to the improvement in average fuel economy that automakers can achieve over their business-as-usual scenario, not to NHTSA's modeling of that No-Action case. The plain meaning of "technological feasibility," "economic practicability," and "the effect of other motor vehicle standards of the Government," 49 U.S.C. § 32902(f), requires NHTSA to evaluate the feasibility of raising average fuel economy above the baseline case, since that baseline case is by its very nature feasible as a matter of technology, economics, and other motor vehicle standards.

Indeed, that is how—since the very first CAFE standards—NHTSA has consistently "considered" the first three factors, by evaluating a set of specific fuel-economy-improving technologies and strategies under these factors. 42 Fed. Reg. 33,534, 33,535 (June 30, 1977). Thus, in 1988, when Congress constrained NHTSA's evaluation of the mandatory "maximum feasible" factors, it logically meant to constrain this second step—the fuel-economy improvement analysis—by excluding dedicated automobiles' higher fuel economies as a means of improving average fuel economy. *See* Alternative Motor Fuels Act of 1988, Pub. L. No, 100-494, § 2(2), (5), 102 Stat. 2441, 2441 (1988). And that logic applies equally to Congress's addition in 2007 of credit transferring and trading as a prohibited consideration in the evaluation of the four factors in Section 32902(f). *See* Energy Independence & Security Act, Pub. L. 110-140, § 104(b), 121 Stat. 1492, 1503 (Dec. 19, 2007). As NHTSA notes, its interpretation of Section 32902(h) promotes Congress's objectives by preserving the voluntariness of these compliance flexibilities as flexibilities and maintaining focus on improving petroleum fuel economy even as BEVs gain market share. 88 Fed. Reg. at 56,319; *see* 87 Fed. Reg. at 25,994.

NHTSA's interpretation also gives full effect to terms like "maximum feasible," 49 U.S.C. § 32902(a), ensures its promulgated standards are "for automobiles manufactured by a manufacturer," *id.*, as those terms are specifically defined, *id.* § 32901(a)(3), (4), and avoids absurd results. As NHTSA observed in its brief in the currently pending *NRDC v. NHTSA*,[191] under a contrary interpretation, the CAFE program will become non-binding once BEVs gain a certain market share, frustrating Congressional objectives both to require fuel economy improvements in petroleum-fueled vehicles *and* to promote alternative-fueled vehicles. This major divergence between CAFE standards and real-world compliance would also lead to the perpetual generation of massive, worthless credit banks, contrary to Congress's clear expectation

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[190] Section 32902(h) also constrains the discretionary decision to amend standards under subsections (c) and (g), which are not at issue in these proposed new standards.

[191] Case No. 22-1080, Doc. #2000002, at p.32 (Final Brief for Respondents NHTSA et al.).

that credits would continue to be a valuable, relatively scarce resource that helps automakers on the margin achieve and maintain compliance.[192]

a. *Principles of Reasoned Decisionmaking Would in Fact Forbid NHTSA from Ignoring the Real-World Fleet*

Not only is NHTSA's modeling of the No-Action alternative consistent with Section 32902(h); in fact, long-standing principles of reasoned decisionmaking would forbid NHTSA from ignoring the existence of BEVs in the nation's light-duty fleet and their dramatic year-over-year increases in sales. *E.g.*, *NRDC v. Herrington*, 768 F.2d 1355, 1408 (D.C. Cir. 1985) (stating "it would be patently unreasonable" for agency to refuse to recognize "dramatic[]" changes in regulated industry). Indeed, the use of a national baseline fleet with no BEVs would require "a massively counterfactual assumption" of the kind courts find "[p]articularly troubling" as a basis for agency action. *Sokol v. Kennedy*, 210 F.3d 876, 881 n.11 (8th Cir. 2000); *see also Animal Legal Def. Fund, Inc. v. Perdue*, 872 F.3d 602, 619 (D.C. Cir. 2017) ("Reliance on facts that an agency knows are false at the time it relies on them is the essence of arbitrary and capricious decisionmaking.") (cleaned up); *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1053 (D.C. Cir. 2001) ("While courts routinely defer to agency modeling of complex phenomena, model assumptions must have a rational relationship to the real world." (cleaned up)); *cf. Ctr. for Auto Safety v. Peck*, 751 F.2d 1336, 1365 (D.C. Cir. 1985) (upholding agency's rejection of "the most unlikely set of extreme assumptions" that were "virtually impossible . . . to occur in the real world"). As the D.C. Circuit stated almost forty years ago, it would be "wholly futile for [courts] to require [an agency] to conform its decisionmaking procedures to the statute, but permit it to trudge through the correct procedure based on information that is now incontestably antique." *Herrington*, 768 F.2d at 1408.

Just as NHTSA cannot ignore the growing presence of BEVs in the real world, it also cannot assume that regulated parties—here, automakers—will fail to comply with their legal obligations. Courts routinely uphold agencies' inclusion of such compliance in their baselines for regulatory analyses.[193] Moreover, agencies, like courts, should honor the longstanding "presumption that parties act lawfully." *See Schwab v. Reilly*, 560 U.S. 770, 790 (2010) (citing *United States v. Budd*, 144 U.S. 154, 163 (1892)). Doing otherwise, particularly in the face of evidence indicating compliance is the norm, would be arbitrary and capricious. *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (agency may not "offer[] an explanation for its decision that runs counter to the evidence"). Given the facts on

[192] Case No. 22-1080, Doc. # 2000081, at p.8-9 (Final Brief of State and Local Government Respondent-Intervenors).

[193] *E.g.*, *NRDC v. Thomas*, 838 F.2d 1224, 1238 (D.C. Cir. 1988) (holding, in part, that using "[State-Implementation-Plan]-required emissions 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).

the ground and principles of reasoned decisionmaking, NHTSA correctly chose to model BEV growth in its No-Action baseline both because this growth plainly exists in the real-world fleet today and because NHTSA can and should assume automakers will comply with their legal obligations regardless of any action NHTSA may take in its rulemaking.

b. *BEVs Are a Part of the Existing Nationwide Fleet, and Their Numbers are Projected to Continue to Grow in Response to Market Conditions and Regulatory Obligations*

By the end of 2022, there were already over 2.4 million BEVs on the roads in the United States.[194] Those numbers have since grown and are projected to continue to grow significantly. In 2022, for example, BEV sales grew by 55 percent compared to 2021 sales,[195] and record growth in the first two quarters of 2023 indicate the industry will sell 1 million new electric vehicles this year.[196] Multiple forecasts project that BEVs will achieve a 27% share of the light-duty market in the United States by 2027 and a 40% to 52% share by 2030.[197] Separately, many major automakers have indicated they expect 50% or more of their new light-duty vehicle sales to be BEVs or other zero-emission-vehicles by 2030 or 2035.[198]

This growth in sales—both real and projected—undoubtedly reflects multiple factors, including automakers' business plans, their compliance strategies for federal and state emissions standards, the extraordinary support for electric vehicles and infrastructure in recent Congressional legislation, and increasing consumer demand for electric vehicles.

Automakers' plans. Several major automakers, including General Motors, Ford, Stellantis, Volkswagen, and Mitsubishi, have publicly committed to electrifying their fleets by 50% or more by 2030, while BMW, Mercedes-Benz, Volvo, and others have committed to 100% electric vehicle sales by the same year.[199] While non-binding, these public announcements correspond to significant automaker investments in production, research, and development in recent years. For

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[194] U.S. Dept. of Energy, Alternative Fuels Data Center, *Electric Vehicle Registrations by State* (Aug. 2, 2023), https://afdc.energy.gov/data/10962.
[195] International Energy Agency, *Global EV Outlook 2023: Executive Summary* (April 2023), https://www.iea.org/reports/global-ev-outlook-2023/executive-summary ("Electric car sales in the United States – the third largest market – increased 55% in 2022, reaching a sales share of 8%.").
[196] Cox Automotive, "Electric Vehicle Sales in Q2 Strike Another Record, but Growth Ahead Will Be Hard Fought" (Jul. 12, 2023), https://www.coxautoinc.com/market-insights/q2-2023-ev-sales/.
[197] U.S. EPA, Proposed Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, 88 Fed. Reg. 29,184, 29,329 (May 5, 2023) (Table 81) ("Proposed Emissions Standards, MY2027-32"); Ira Boudway, *More Than Half of US Car Sales Will Be Electric by 2030*, BLOOMBERG (Sep. 20, 2022), https://www.bloomberg.com/news/articles/2022-09-20/more-than-half-of-us-car-sales-will-be-electric-by-2030.
[198] U.S. EPA, Proposed Emissions Standards, MY2027-32, 88 Fed. Reg. at 29,190-93.
[199] *Id.* at 29,192.

example, in 2023 alone, General Motors and Ford recently announced over $6 billion in investments in battery production and component materials.[200]

Federal and state emission standards. As NHTSA notes in the Proposal, EPA has proposed new federal GHG standards for model years 2027-2032 that anticipate automakers could produce plug-in electric vehicles at 67% of their fleets by 2032 under the preferred alternative. 88 Fed. Reg. at 56,147; *see also* Proposed Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty & Medium-Duty Vehicles, 88 Fed. Reg. 29,184, 29,329 (May 5, 2023). In addition, automakers have long been subject to zero-emission vehicle standards both in California and in States that have adopted California's zero-emission vehicle standards, and they will be subject to future standards in the event EPA grants a waiver for the Advanced Clean Cars II regulation. 88 Fed. Reg. at 56,176 & n.146. Thus, legal obligations other than fuel economy standards, to which automakers are subject (or may be subject), encourage or require them to sell BEVs.

Congressional and State action to promote electric vehicles. As NHTSA notes, the Inflation Reduction Act of 2022 includes a powerful tax incentive to promote production and adoption of electric vehicles across a broad range of purchasers. 88 Fed. Reg. at 56,179. Yet Congress's recent actions to incentivize electric vehicles extends far beyond these tax credits, and includes major federal investments in battery supply chains,[201] charging infrastructure,[202] and electricity

[200] Neal E. Boudette and Keither Bradsher, *Ford Will Build a U.S. Battery Factory With Technology From China*, N.Y. TIMES (Feb. 13, 2023), https://www.nytimes.com/2023/02/13/business/energy-environment/ford-catl-electric-vehicle-battery.html; David Shepardson, *GM, SDI will build $3 billion battery manufacturing plant in Indiana*, REUTERS (Jun. 13, 2023), https://www.reuters.com/business/autos-transportation/indiana-confirms-gm-sdi-will-build-3-bilion-ev-battery-manufacturing-plant-2023-06-13/; Rebekah Alvey, *GM to invest in La. manganese sulfate production for EVs*, E & E NEWS (Jun. 27, 2023), https://subscriber.politicopro.com/article/eenews/2023/06/27/gm-to-invest-in-la-manganese-sulfate-production-for-evs-00103838.

[201] *See, e.g.*, U.S. Department of Energy, Biden-Harris Administration Awards $2.8 Billion to Supercharge U.S. Manufacturing of Batteries for Electric Vehicles and Electric Grid (Oct. 19, 2022), https://www.energy.gov/articles/biden-harris-administration-awards-28-billion-supercharge-us-manufacturing-batteries (recipients of $2.8 billion in funding from the Infrastructure Investment and Jobs Act of 2021 invested a total of $9 billion to expand domestic production of critical minerals and battery manufacturing); White House, Treasury Releases Guidance to Drive Investment in Critical Minerals & Battery Supply Chains in America (Mar. 31, 2023), https://www.whitehouse.gov/cleanenergy/clean-energy-updates/2023/03/31/treasury-releases-guidance-to-drive-investment-in-critical-minerals-battery-supply-chains-in-america/#:~:text=Since%20the%20enactment%20of%20the,the%20manufacturing%20of%20battery%20packs ($45 billion in investments in battery supply chain since adoption of Inflation Reduction Act).

[202] In the Infrastructure Investment and Jobs Act of 2021, also called the Bipartisan Infrastructure Law ("BIL"), Congress directed $5 billion toward States to expand and organize a "national network of electric vehicle charging infrastructure" under the National Electric Vehicle Infrastructure ("NEVI") Formula Program. Pub. Law No. 117–58, §801 (Nov. 15, 2021), 135 Stat. 1421-22. To date, all 50 States have submitted and received approval for their NEVI plans. See Federal Highway Administration, "Fiscal

transmission and grid upgrades.[203] States have likewise adopted purchase incentives[204] and charging infrastructure initiatives[205] to prepare for and encourage a significant shift to electric vehicles.

Year 2022/2023 EV Infrastructure Deployment Plans," https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/index.cfm?format=list#map.

[203] *See, e.g.*, 42 U.S.C. § 18713 (2023) ($2.5 billion for new and upgraded high-capacity transmission lines); *id.*, § 18712 ($5 billion for state and local authorities "to demonstrate innovative approaches to transmission, storage, and distribution infrastructure to harden and enhance resilience and reliability"); Inflation Reduction Act of 2022, 42 U.S.C. §§ 18715-18715(b) (2023) ($3 billion in financing, grants, and studies toward increased transmission).

[204] *See, e.g.*, Ariz. Motor Vehicle Division, *Alternative Fuel Vehicle*, https://azdot.gov/mvd/services/vehicle-services/vehicle-registration/alternative-fuel-vehicle (allowing electric vehicle drivers to use high-occupancy vehicle freeway lanes at any time); Cal. Vehicle Rebate Probate, *Fleet Overview*, https://cleanvehiclerebate.org/en/fleet (California Clean Vehicle and Rebate Project for Fleets); *see* Colo. Dep't of Pub. Health, *Clean Fleet Vehicle & Technology Grant Program*, https://cdphe.colorado.gov/clean-fleet-vehicle-technology-grant-program; An Act Driving Clean Energy and Offshore Wind, 2022 Mass. Acts, ch. 179, § 41; Mass. Gen. Laws ch. 25A § 19 (Massachusetts Electric Vehicle Adoption Incentive Trust Fund); N.Y. State, *Drive Clean Rebate for Electric Cars*, https://www.nyserda.ny.gov/All-Programs/Drive-Clean-Rebate-For-Electric-Cars-Program (New York Drive Clean Rebate for Electric Cars program); Or. Rev. Stat. §§ 468.442-468.444 (rebates for electric vehicles, including for income-qualified residents); 2020 Vt. Acts and Resolves No. 151, § 1, https://legislature.vermont.gov/bill/status/2024/S.137 (Vermont pilot program to subsidize EV purchases by gasoline "superusers").

[205] For example, the California Energy Commission's Electric Vehicle Infrastructure Project has directed over $180 million in rebates to encourage the installation of public direct-current fast charger ("DCFC") and Level 2 chargers. *See* Cal. Electric Vehicle Infrastructure Project (CALeVIP, CALeVIP Rebate Statistics Dashboard, *Detailed Statistics*, https://calevip.org/rebate-statistics. California, Oregon, and Washington have adopted low-carbon fuel/clean fuel standards that support electric vehicle charging installation through the generation of tradeable credits. Cal. Code Regs., tit. 17, § 95486.2(b) (2023); Or. Admin. R. 340-253-0330 (2023); Wash. Admin. Code § 173-424-560(2) (2023). New Jersey's Department of Environmental Protection has awarded grants for 2,980 charging stations with 5,271 ports at 680 locations. *New Jersey Drives the Electric Vehicle Revolution* (Dec. 2022), https://dep.nj.gov/wp-content/uploads/drivegreen/pdf/nj-ev-success-flyer.pdf. Maine directed $3.15 million from the Volkswagen litigation settlement toward expanding the state's DCFC network along key corridors. Efficiency Maine, *Maine's Electric Vehicle Fast-Charging Network Expands to the North and East* (Jun. 3, 2021), https://www.efficiencymaine.com/maines-electric-vehicle-fast-charging-network-expands-to-the-north-and-east/; *see also* Me. Rev. Stat. Ann. tit. 35-A, §10125. New York's EVolve program has committed $250 million to install 400 new EV fast charging stations throughout the state by 2025, including along major highway corridors. EVolve NY, *Making New York a Leader in EV Infrastructure*, https://evolveny.nypa.gov/en/about-evolve-new-york. New York has awarded more than $13 million in grants to cover municipalities' eligible costs toward the installation of Level 2 EV charging stations, DCFC stations, and hydrogen fuel cell filling stations. N.Y. Dept. of Env't. Conserv., Office of Climate Change, Municipal Zero-emission Vehicle Program (Apr. 2021), https://www.dec.ny.gov/docs/administration_pdf/2021zevprogrep_(1).pdf (program outlays through FY 2021); N.Y. Governor's Press Office, "Governor Hochul Announces More Than $8.3 Million to Municipalities for Electric Vehicle Charging Infrastructure" (Apr. 13, 2023), https://www.governor.ny.gov/news/governor-hochul-announces-more-83-million-municipalities-electric-

Consumer demand. Apart from government action on electric vehicles, consumers have demonstrated an extraordinary enthusiasm for electric vehicles in recent years, resulting in a sharp increase in demand and indicating a new level of market maturity.[206] Indeed, with new vehicle sales far outpacing California's Advanced Clean Cars I zero-emission vehicle targets in the last few model years, it is safe to say market forces beyond those regulatory requirements are the current primary driver of electric vehicle sales in California through at least model year 2025.[207]

c. *NHTSA's Methodology for Projecting Electric Vehicles in the Baseline Is a Reasonable and Conservative Estimate of Electric Vehicle Sales Trends in the No-Action Scenario*

Given NHTSA's duty to project a No-Action baseline that accounts for sharply growing zero-emission vehicle sales, modeling compliance with California's Advanced Clean Cars I ("ACCI"), Advanced Clean Cars II ("ACCII"), and Advanced Clean Trucks ("ACT") regulations is a reasonable methodology to do so, at least in the event that California is granted its requested waiver for ACCII and ACCII thus becomes enforceable. There is no shortage of projections of electric vehicle sales in the regulated model years from industry analysts,[208] and automaker commitments imply penetration well above NHTSA's No-Action alternative.[209] However, using state zero-emission vehicle standards to model the progress of electric vehicle sales offers advantages in precision, transparency, and consistency. NHTSA's methodology is more precise and transparent than one based on industry analysis or commitments because it models progress toward definite targets codified by States in state regulations, rather than choosing between industry forecasts that offer differing estimates based on proprietary analyses. Likewise, automakers' historical compliance with state zero-emission vehicle standards is a superior basis for NHTSA's projection than automakers' non-binding and dynamic public statements. Finally,

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vehicle-charging (program outlays in FY 2022). Washington has awarded more than $10 million in Zero-Emission Vehicle Infrastructure Partnership grants and announced $30 million more for 2023-2025. Wash. Dept. of Transp., *Zero-emission Vehicle Infrastructure Partnerships grant*, https://wsdot.wa.gov/business-wsdot/grants/zero-emission-vehicle-grants/zero-emission-vehicle-infrastructure-partnerships-grant. Massachusetts has required that charging stations for public use be installed at all service plazas located on the Massachusetts Turnpike by July 1, 2024. An Act Driving Clean Energy and Offshore Wind, 2022 Mass. Acts, ch. 179, § 89, https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179.

[206] *See, e.g.*, Chris Harto, Consumer Reports, *Excess Demand – the Looming EV Shortage*, at 2 (Mar. 2023), https://advocacy.consumerreports.org/wp-content/uploads/2023/03/Excess-Demand-The-Looming-EV-Shortage.pdf (noting Consumer Reports surveys indicating a 350% increase in consumer demand for battery electric vehicles between 2020 and 2022).

[207] California Air Resources Board, *Passenger Vehicle Manufacturers Are Outperforming the ZEV Regulation*, 8-9 (Jul. 6, 2022).

[208] *See, e.g.*, n.198 & 199, *supra*.

[209] *Compare* U.S. EPA, Proposed Emission Standards, MY2027-32, 88 Fed. Reg. at 29,192 (Table 1) (tabulating a total 48.6% combined light-duty market share for BEVs and PHEVs by 2030 implied by automaker announcements) *with* 88 Fed. Reg. at 56,278-79 (Tables IV-8, IV-10) (projecting total light-duty BEV penetration rate of 27.7% and PHEV penetration rate of 0.8% by 2030 in No-Action alternative).

continuing to use state zero-emission vehicle standards to project electric vehicle sales is consistent with NHTSA's methodology in the MY2024-26 amendments, promoting a straightforward comparison between the two actions.

As the California Air Resources Board explains in the attached report, NHTSA's No-Action fleet appears to overestimate the sales of zero-emission vehicles necessary to comply with ACCI and ACCII. *See* Attachment 1, California Air Resources Board Technical Analysis of the National Highway Traffic Safety Administration's Proposed 2027-2032 Model Year Light-Duty Fuel Economy Standards. Even so, NHTSA's methodology is likely to prove a highly conservative one for estimating zero-emission vehicle adoption in the No-Action scenario. Most critically, NHTSA models ACCI/II and ACT compliance only in the States that have adopted or will likely adopt those regulations; but the data is clear that electric vehicle sales are increasing in States that have not adopted and are unlikely to adopt any of these regulations. For example, in 2022, the second and third leading States for new electric vehicle registrations were Texas and Florida (which have not adopted ACCI/II or ACT), with their combined 2022 registrations reaching almost 367,000, well over a third of California's 2022 registrations.[210] Because NHTSA's modeling does not account for significant zero-emission vehicle sales outside of the States adopting ACCI/II and ACT, its No-Action scenario likely significantly underestimates the zero-emission vehicles in the baseline fleet. Because this underestimation may result in less stringent standards than are truly the "maximum feasible" standards, 49 U.S.C. § 32902(a), NHTSA should consider modeling zero-emission vehicle adoption in States not adopting ACCI/II and ACT.[211]

B. NHTSA Should Consider Updating its Methodology to Project the Minimum Domestic Passenger Car Standard

Section 32902(b)(4) requires NHTSA to project the minimum domestic passenger car standard when it promulgates standards for that model year. 88 Fed. Reg. at 56,136. As NHTSA recognizes, "[t]he statute clearly states that any manufacturer's domestically manufactured passenger car fleet must meet the greater of either 27.5 mpg on average, or '92 percent of the average fuel economy projected by the Secretary for the combined domestic and non-domestic passenger automobile fleets manufactured for sale in the United States by all manufacturers in the [model year].'" *Id.* at 56,312 (quoting 49 U.S.C. § 32902(b)(4)(B)). Such projection "shall be published in the Federal Register when the standard for that model year is promulgated in accordance with this section." 49 U.S.C. § 32902(b)(4)(B). NHTSA implements this directive by using the central analysis value for each model year of the promulgated standards as the combined fleet's projected average fuel economy, minus a 1.9% offset. *Id.* That offset represents the historical difference between the projected fleet-average standard and the actual fleet-average standard for previous model years, due to NHTSA's projections underestimating sales of larger vehicles with lower target fuel economies on the footprint curves. *Id.*

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[210] Alternative Fuels Data Center, *Electric Vehicle Registrations by State*, *supra* note 194.

[211] One reasonable and available method for projecting these sales might be the most recent historical growth rate of electric vehicle sales in these States in the prior model year(s) for which data is available.

The States and Cities agree NHTSA's methodology for projecting average fuel economy is in substance reasonable, but it appears premised on an unreasonable and erroneous reading of the statute from 2010. In that rulemaking for MY2012-16, NHTSA stated it "interprets Congress' reference in the second clause of 32902(b)(4)(B) to the *standard promulgated [for] that model year* as indicating that Congress intended 'projected average fuel economy' in the first clause to pertain to the estimated required level, not the estimated achieved level." 75 Fed. Reg. 25,324, 25,614 (May 7, 2010) (emphasis added). However, that interpretation is unreasonable. The use of "standard" in the second clause of Section 32902(b)(4) plainly speaks only to the timing of NHTSA's publication of the domestic minimum standard—it "shall be published in the Federal Register *when* the standard for that model year is promulgated," *id.* (emphasis added)—and in no way equates the "projected average fuel economy" of the national fleet with the CAFE standard for that model year. If anything, Congress's use of distinct terms ("projected average fuel economy" and "standard") supports the opposite inference, i.e., that Congress considered these distinct concepts. Indeed, the statutory text makes clear that Congress understood manufacturers might utilize credits rather than upgrade vehicles in some years and might pay penalties rather than comply in others, and it designed the domestic minimum standard with these practices in mind. *See, e.g.*, 49 U.S.C. § 32903(f)(2), (g)(4) (prohibiting credit use in complying with the domestic minimum standard). This makes it implausible that Congress would have equated the "standard" with a "projected" level of fuel economy. The best reading is the plain text reading: "projected average fuel economy" plainly means an estimation of the average fuel economy the combined fleet will achieve in that model year.

This plain text reading also better comports with NHTSA's longstanding view of Congress's objectives behind the domestic minimum standard. Congress wanted this standard to serve "as a 'backstop,'" ensuring that domestically-manufactured passenger cars reached a given mpg level that tracked the global automotive industry's performance, even if the domestic market shifted toward less efficient vehicles. 75 Fed. Reg. at 25,609. Congress has designed similar backstops by reference to the industry's achieved performance in other statutes.[212] In short, th e domestic minimum standard expresses Congress's sense that no automaker's domestic fleet average should be more than 8 percent *worse* than the automotive industry's average as a whole.

To be clear, the States and Cities do not contend that NHTSA's use of the central analysis value (with an offset for historical projection errors) as a methodology for undertaking the projection required in Section 32902(b)(4) is inherently unreasonable. But NHTSA should clarify that it is using these values as a *proxy* for the required projected average, not as an interpretation away from the plain statutory text. NHTSA's present methodology may be reasonable to the extent that the central analysis value of the projected CAFE standard closely tracks the projected average fuel economy of the combined fleet. However, the offset that NHTSA applies (if it continues to find such an offset justified) should be the difference between previous model years' central analysis value and average fuel economies *achieved*, rather than the difference between

[212] *See e.g.*, 42 U.S.C. § 7412(d)(3)(A) (ensuring that hazardous air pollutant emission standards for a source category are at least as stringent as the "average emission limitation achieved by the best performing 12 percent of the existing sources" in that category).

the projected and actual fleet-average standard. Other methodologies closer to the plain text of the statute are also available to NHTSA, and NHTSA should consider updating its methodology.

CONCLUSION

We urge NHTSA to consider adopting standards more stringent than the Preferred Alternative standards. More stringent standards—including the PC3LT5 Alternative and possible hybrid alternatives, such as PC2.5LT7—are technologically feasible, economically practicable, and effectuate the purpose of EPCA to conserve energy, thus satisfying the "maximum feasible" mandate.

ATTACHMENT 1

California Air Resources Board Technical Analysis of the National Highway Traffic Safety Administration's Proposed 2027-2032 Model Year Light-Duty Fuel Economy Standards

Introduction

The California Air Resources Board (CARB) has reviewed the National Highway Traffic Safety Administration's (NHTSA) Notice of Proposed Rulemaking (NPRM) to set its 2027-2032 model year light-duty vehicle corporate average fuel economy (CAFE) standards.

CARB draws on its deep understanding of transportation technologies—developed over the course of more than fifty years of working with industry engineers to develop the latest emission-control technologies—to offer the following technical assessment of the elements of NHTSA's proposal that implicate areas of CARB's expertise. This technical assessment addresses aspects and adoption of our Advanced Clean Cars II program and identifies two areas where NHTSA could improve its assumptions. We are happy to answer questions about any of these details should NHTSA desire.

Application of California Zero-Emission Vehicle Program Regulatory Provisions

NHTSA assumes compliance with CARB's Advanced Clean Cars (ACC) I ZEV program through the 2025 model year and its ACC II ZEV program beginning with the 2026 model year. It uses these assumptions to predict ZEV and PHEV market share of new light-duty vehicle sales.[1]

Under the ACC I ZEV regulation, manufacturers earn varying credit amounts for ZEVs and PHEVs depending on a vehicle's all-electric range. One individual ZEV can earn up to 4 credits. This means that the volumes of ZEV sales required by the regulation cannot be derived simply by converting the credit percentage requirement directly to sales volumes through the 2025 model year. In contrast, under ACC II for the 2026 and subsequent model years, ZEVs and PHEVs that meet minimum technical requirements earn one value per vehicle, which lends itself to simple multiplication to translate the requirements to sales volumes.

Certain discussions within the NPRM and the draft Technical Support Document (TSD) could more clearly articulate how NHTSA's modeling accounts for these regulatory differences. For example, in its discussion of the application of the ACC I and ACC II provisions in the NPRM, NHTSA states,

[1] 88 Fed. Reg. 56,140 (Aug. 17, 2023).

> We calculated total credits required for ACC II…compliance by multiplying the percentages from each program's ZEV requirement schedule by the ACC II…state volumes. For the first set of ACC requirements covering 2022 (the first modeled year in our analysis) through 2025, the percentage requirements start at 14.5% and ramp up in increments to 22% by 2025. For ACC II, the percentage requirements start at 35% in 2026 model year and ramp up to 100% in 2035 model year and subsequent years.[2]

As noted above, however, the potential contribution of an individual vehicle towards these requirements changes meaningfully in the 2026 model year. While NHTSA later recognizes that under ACC I, ZEVs can earn up to 4 credits per vehicle while ZEVs sold beginning in the 2026 model year can only generate 1 value, NHTSA could clarify this distinction in the NPRM and TSD to more clearly state how it has applied the ZEV and transitional ZEV credit calculations specified in Section 1962.2, Title 13 of the California Code of Regulations, for vehicles in the 2022-2025 model years. Incorrectly specifying these requirements could lead to an overestimate of the number of ZEVs required for compliance with the ZEV standards in those years.

Additionally, NHTSA could consider certain ACC II PHEV provisions differently. As NHTSA describes it, under ACC II "from 2026 onwards, each full ZEV earns one credit value per vehicle, while partial ZEVs (PHEVs) earn credits based on their AER [all-electric range]."[3] However, under ACC II, PHEVs that meet a suite of minimum technical requirements earn one vehicle value just as a ZEV does. These minimum requirements for PHEVs to earn vehicle values include a minimum certification range value equal to or greater than 70 miles, a minimum US06 all-electric range value greater than or equal to 40 miles, and a variety of assurance measures including warranty and durability requirements. Solely for the 2026-2028 model years, the regulation provides for partial vehicle values, based on their certification range value, for PHEVs that do not meet the full suite of PHEV requirements required to earn a full vehicle value under the ZEV requirements of ACC II. To qualify for partial vehicle values, PHEVs must have at least 43 and less than 70 miles of certified range.

NHTSA's analysis appears to apply the partial PHEV equation to all PHEVs included in its analysis, including those beyond the 2028 model year, which could be inadvertently assigning a compliance value to PHEVs that would not be eligible to generate any values under ACC II or would only be eligible to do so through the 2028 model year.[4] While manufacturers may continue to produce PHEVs with lower all-electric ranges beyond the 2028 model year and sell them in California or other states, PHEVs that do not meet the minimum range and other technical requirements

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[2] 88 Fed. Reg. at 56,178.

[3] 88 Fed. Reg. at 56,177. Note, NHTSA refers to vehicles that are PHEVs as "partial ZEVs" in this excerpt.

[4] Because the partial vehicle value equation in the ACC II regulation assigns a full vehicle value of one to PHEVs that meet the full technical requirements for PHEVs in the ACC II regulation, it is unlikely that NHTSA is undervaluing PHEVs by using the partial vehicle value formula in its modeling if it has applied the formula correctly to PHEVs that do in fact meet the full suite of technical requirements for a PHEV.

will not contribute towards ACC II ZEV compliance. By potentially assigning compliance values to PHEVs that will not be able to earn them, NHTSA's modeling may slightly understate the number of ZEVs in the baseline that manufacturers will sell to comply with ZEV sales requirements.

Assumptions Regarding Adoption of the Advanced Clean Cars II ZEV Regulation in Section 177 States

Under Section 177 of the Clean Air Act, most other states can adopt California's motor vehicle emission standards. As of September 2023, 17 states have adopted provisions of California's ACC I regulations. Six of these states have adopted the ACC II ZEV regulation, and three additional states have announced that they plan to do so. The description of which states are assumed to have adopted the ACC II ZEV regulation in the No-Action Alternative could be clarified throughout the NPRM and associated materials.

For example, one section of the NPRM stated that NHTSA assumed the following 17 states would adopt the ACC II ZEV standards for the 2027-2032 model years:[5] California, Colorado, Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, Virginia, and Washington. In another section, however, NHTSA suggests that only these 10 states are assumed to have adopted the ACC II ZEV regulation in the No-Action Alternative:[6] California, Colorado, Maine, Maryland, Massachusetts, New Jersey, New York, Rhode Island, Vermont, and Washington. In its draft CAFE model documentation, NHTSA identifies still another list, stating that, "… for the purposes of computing ZEV credits and targets within the CAFE Model, the CA+S177 states are defined by the following: California, Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington."[7]

In Section 2.5.1.2.1.1 of the TSD, NHTSA describes its analysis of annual light-duty vehicle sales in each state for the 2021 model year based on Polk's National Vehicle Population Profile dataset, which NHTSA uses to capture vehicle volumes subject to ZEV sales requirements. NHTSA summarizes the percentage of national sales by manufacturer in "ACC II states" and finds that these vehicle sales accounted for 38% of total light-duty sales for the 2021 model year in the U.S., which is generally

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[5] 88 Fed. Reg. at 56,177. "We consider all ACC II states together and do not model specific states' years of joining, as states that have recently joined the program have done so within a relatively short span of model years and represent only a very small percentage of new LDV sales."
[6] 88 Fed. Reg. at 56,322. "The No-Action Alternatives assume that manufacturers will comply with ZEV mandates set by California and other Section 177 states." and Footnote 576: "… At the time of writing, Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington have adopted California's ZEV mandate…"
[7] NHTSA. Draft CAFE Model Documentation. July 2023. https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-07/CAFE-NPRM-2023-Model-Documentation.pdf. page 117.

comparable to the total market share of vehicle sales in all Section 177 states that have adopted the ACC I program, rather than the subset of these states that has adopted the ACC II ZEV regulation. Inclusion of all states that have not in fact adopted the ACC II ZEV regulation or announced that they plan to adopt could overestimate the number of ZEVs included in response to that regulation.