COMMENTS OF STATES AND CITIES SUPPORTING EPA'S PROPOSAL TO STRENGTHEN MULTI-POLLUTANT EMISSIONS STANDARDS FOR MODEL YEARS 2027 AND LATER LIGHT-DUTY AND MEDIUM-DUTY VEHICLES

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via regulations.gov

INTRODUCTION

Our States and Cities[1] hereby submit these comments in response to the United States Environmental Protection Agency's ("EPA") notice of proposed rulemaking titled "Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles." 88 Fed. Reg. 29,184 (May 5, 2023) ("Proposal"). We strongly support increasing the stringency of EPA's greenhouse gas ("GHG") and criteria pollutant emissions standards, and we urge EPA to adopt standards more stringent than the proposed standards.

Strong emissions standards are necessary now to stave off the worst impacts of human-induced climate change and to confront inequitably distributed threats to public health and the environment from climate change as well as other forms of pollution. From extreme heat to wildfires to drought, our States and Cities are already experiencing the devastating impacts of climate change, which will continue to mount and compound with rising concentrations of GHGs in the atmosphere. Moreover, vehicle emissions of oxides of nitrogen (NO_x), particulate matter (PM), and other criteria pollutants continue to endanger the health and welfare of our residents.

EPA has long recognized that GHG and criteria pollutant emissions from new motor vehicles and new motor vehicle engines endanger public health and welfare, and, under Section 202(a) of the Clean Air Act, this recognition triggers a mandatory duty to reduce such emissions. The technologies necessary to reduce GHGs and criteria pollutants from new motor vehicles already exist and are widely in use in the market today. The costs of these technologies are reasonable and declining, and the application of these technologies generally results in consumers saving money over the life of a new vehicle. Moreover, the societal benefits of more stringent standards significantly exceed the costs of those standards. EPA thus has every reason to adopt stronger emissions standards to satisfy its statutory mandate to reduce emissions of harmful air pollution.

In the Proposal, EPA set forth four alternative sets of GHG standards: the proposed standards, a more stringent alternative (Alternative 1), a less stringent alternative (Alternative 2), and an alternative similar in stringency to the proposed standards on a different timeline (Alternative 3).

[1] The States of California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Maryland, Minnesota, New Jersey, New Mexico, New York, North Carolina, Oregon, Rhode Island, Vermont, Washington, and Wisconsin; the Commonwealths of Massachusetts and Pennsylvania; the District of Columbia; the City and County of Denver; and the Cities of Chicago, Los Angeles, New York, and Oakland.

We believe that the record before the agency supports the adoption of standards more stringent than the proposed standards and accordingly set forth potential improvements to EPA's models and compliance program below. As EPA recognizes in the Proposal, the necessary emission control technologies have already been developed and brought to market, and automakers have been planning for substantially more stringent standards in large portions of the global market. In addition, the crediting flexibilities already built into the program (which EPA has not reopened)—including the ability to trade, carry-forward, and carry-back credits—place automakers in even better positions to craft strategies to comply with more stringent standards.

As discussed below, the need for more stringent standards is critical, and the industry's ability to meet stronger standards and to cost-effectively reduce dangerous pollution is clear. We urge EPA to adopt standards more stringent than the proposed standards.

BACKGROUND

A. Our States and Cities Confront a Growing Climate Crisis

Our States and Cities are currently experiencing the devastating effects of climate change. Increased temperatures, extreme heat events, wildfires, sea level rise, and coastal flooding—to highlight just a few of the effects—are currently causing and projected to continue to cause significant damage to our States and Cities. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change ("IPCC") reconfirms these types of impacts are caused by anthropogenic climate change, and it projects that they will worsen.[2] As average surface temperatures rise and the intensity and frequency of these types of extreme weather events increases, 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;"[3] and nine of the warmest eleven years on record in the United States have occurred since 2012.[4] There is a "virtually certain" chance that 2023 will rank among the ten warmest

[2] H.O. Pörtner et al., Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability, Summary for Policymakers* (2022) ("IPCC Report 2022"), at 9, 20.

[3] National Aeronautics and Space Administration ("NASA"), *NASA Says 2022 Fifth Warmest Year on Record, Warming Trend Continues* (Jan. 12, 2023), available at 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*, The New York Times (Jan. 10, 2023), available at https://www.nytimes.com/interactive/2023/climate/earth-hottest-years.html ("The eight warmest years on record [globally] have now occurred since 2014.").

[4] National Weather Service, *Average Annual Temperature by Year*, available at https://www.weather.gov/media/slc/ClimateBook/Annual%20Average%20Temperature%20By%20Year.pdf.

years on record, with a 93% chance it will rank among the top five.[5] The IPCC has determined that GHG emissions from human activities are already responsible for about 1.1 °C of warming since 1850-1900[6] and that "[h]uman influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years."[7]

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,[8] and for longer duration.[9] 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.[10] The region experienced 600 excess deaths during the heat wave.[11] In September 2022, a historic heat wave punished California, breaking high-temperature records in Northern California; it was considered "extraordinary" in part because of its "mind-blowing duration."[12] Extreme heat events like these are "likely to become the new normal."[13] By 2053, the number of counties experiencing at least one day with a heat index above 125 degrees Fahrenheit is projected to increase from 50 to over 1,000.[14]

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[5] National Oceanic and Atmospheric Administration ("NOAA"), *April 2023 was Earth's fourth warmest on record* (May 12, 2023), available at https://www.noaa.gov/news/april-2023-was-earths-fourth-warmest-on-record.

[6] *See* V. Masson-Delmote et al., IPCC, *Climate Change 2021: The Physical Science Basis, Summary for Policymakers* (2021), at 5.

[7] *Id.* at 6.

[8] H.O. Pörtner et al., IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability, Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (2022) ("IPCC Report 2022"), at 1963.

[9] *Id.* at 1937.

[10] Tom Di Liberto, *Astounding heat obliterates all-time records across the Pacific Northwest and Western Canada in June 2021*, NOAA (Jun. 30, 2021), available at https://www.climate.gov/news-features/event-tracker/astounding-heat-obliterates-all-time-records-across-pacific-northwest.

[11] Nadja Popovich & Winston Choi-Schagrin, *Hidden Toll of the Northwest Heat Wave: Hundreds of Extra Deaths*, The New York Times (Aug. 11, 2021), available at 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.

[12] Jill Cowan, *Historic Heat Pushes California to the Brink*, The New York Times (Sep. 7, 2022), available at https://www.nytimes.com/2022/09/07/us/historic-heat-california-power.html.

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

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

Extreme heat events threaten not only our quality of life, but our lives themselves.[15] As temperatures rise, heat-related mortality is expected to increase, particularly in urban areas.[16] 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.[17] 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.[18] 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.[19] On a global scale, new research indicates that for every 0.1 degree Celsius above present levels, about 140 million additional people will be exposed to dangerous levels of heat.[20]

2. Wildfires

Global warming is likely responsible for 66% to 88% of the atmospheric conditions fueling wildfires.[21] It engenders warm and dry conditions,[22] which have contributed to more extreme wildfires.[23] Since the 1970s, the wildfire season in the western United States has extended from

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[15] *See* Peter Dizikes, *Study: Extreme heat is changing habits of daily life*¸ MIT News (Jan. 12, 2023), available at 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* (2022), available at 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).

[16] IPCC Report 2022, *supra* n. 8, at 1968.

[17] Meredith Bailey, *A warming climate may lead to dramatic increase in US deaths due to heat exposure, study shows*, University of Washington School of Public Health (Jul. 29, 2020), available at https://sph.washington.edu/news-events/news/warming-climate-may-lead-dramatic-increase-us-deaths-due-heat-exposure-study-shows.

[18] 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 ENVIRONMENTAL HEALTH PERSPECTIVES 1571, 1527 (2012), available at https://doi.org/10.1289/ehp.1104728.

[19] 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), available at https://doi.org/10.1001/jamanetworkopen.2022.12957; *see* Muyskens, *supra* note 14 (indicating that by 2053, 80% of Black Americans and 60% of white Americans will be affected by dangerous heat).

[20] Alex Morrison, *Limiting global warming to 1.5 °C would save billions from dangerously hot climate*, University of Exeter (May 22, 2023), available at https://news.exeter.ac.uk/research/limiting-global-warming-to-1-5c-would-save-billions-from-dangerously-hot-climate/.

[21] Alex Wigglesworth, *Climate change is now the main driver of increasing wildfire weather, study finds*, Los Angeles Times (Nov. 1, 2021), available at https://www.latimes.com/california/story/2021-11-01/climate-change-is-now-main-driver-of-wildfire-weather.

[22] IPCC Report 2022, *supra* n. 8, at 1948.

[23] *Id.* at 1939.

5 months to over 7 months long.[24,25] In the coming decades, climate change is projected to further increase fire activity across North America.[26]

The annual numbers of large wildland fires and area burned in the western United States have risen in the past several decades,[27] and the last few years have seen numerous record-setting wildfires. For example, multiple large wildfires burned hundreds of thousands of acres in Colorado in July and August 2020, including the second-largest fire in state history.[28] The largest wildfire in New Mexico history burned in 2022,[29] destroying hundreds of homes.[30]

California is uniquely vulnerable to wildfires,[31] 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;[32] 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.[33] The Dixie Fire, now the largest single wildfire in California history, also burned in 2021.[34] As a result of climate change, the average annual area burned across California is projected to

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[24] U.S. Department of Agriculture, *Wildfire*, available at https://www.climatehubs.usda.gov/taxonomy/term/398 (last accessed May 26, 2023).

[25] IPCC Report 2022, *supra* n. 8, at 1948.

[26] *Id.*

[27] *Id.*

[28] Tom Di Liberto, *A Colorado summer: Drought, wildfires, and smoke in 2020*, NOAA (Aug. 20, 2020), available at https://www.climate.gov/news-features/event-tracker/colorado-summer-drought-wildfires-and-smoke-2020.

[29] NOAA, *Assessing the U.S. Climate in 2022* (Jan. 10, 2023), available at https://www.ncei.noaa.gov/news/national-climate-202212.

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

[31] Scott Stephens et al., *Prehistoric Fire Area and Emissions from California's Forests, Woodlands, Shrublands and Grasslands*, 251 FOREST ECOLOGY AND MGMT. 205, 205 (2007); Jon Keeley, *Fire in Mediterranean Climate Ecosystems—A Comparative Overview*, 58 ISR. J. OF ECOLOGY & EVOLUTION 123, 124 (2012).

[32] California Department of Forestry & Fire Protection, *Top 20 Most Destructive California Wildfires* (last accessed June 30, 2023), available at https://www.fire.ca.gov/our-impact/statistics; Kurtis Alexander, *Reclaiming Paradise*, The San Francisco Chronicle (May 3, 2019), available at https://projects.sfchronicle.com/2019/rebuilding-paradise/.

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

[34] *Id.*

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.[35]

Moreover, wildfires pose significant public health risks due to air quality degradation.[36] Exposure to wildfire smoke may cause respiratory morbidity, especially exacerbations of asthma and chronic obstructive pulmonary disease.[37] "[W]ildfire-specific $PM_{2.5}$ is up to 10 times more harmful on human health than $PM_{2.5}$from other sources."[38,39] 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.[40] 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.[41] 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.[42]

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[35] Anthony Westerling, California Energy Commission, *Wildfire Simulations for California's Fourth Climate Change Assessment: Projecting Changes in Extreme Wildfire Events with a Warming Climate* (2018), at 19.

[36] IPCC Report 2022, *supra* n. 8, at 1949.

[37] Colleen E. Reid et al., *Critical Review of Health Impacts of Wildfire Smoke Exposure*, 124 ENVIRONMENTAL HEALTH PERSPECTIVES 1334, 1336-37 (2016), available at https://doi.org/10.1289/ehp.1409277.

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

[39] 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 ($PM_{2.5}$) from wildfire smoke." Karen Feldscher, *Link Between Wildfires and COVID cases established*, The Harvard Gazette (Aug. 13, 2021), available at https://news.harvard.edu/gazette/story/2021/08/wildfire-smoke-linked-to-increase-in-covid-19-cases-and-deaths/.

[40] *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), available at https://www.theguardian.com/us-news/2021/jul/21/new-york-air-quality-plunges-smoke-west-coast-wildfires.

[41] Aatish Bhatia, Josh Katz, & Margot Sanger-Katz, *Just How Bad was the Pollution in New York?*, The New York Times (Jun. 9, 2023), available at https://www.nytimes.com/interactive/2023/06/08/upshot/new-york-city-smoke.html.

[42] Tyler Clifford, *US East Coast blanketed in veil of smoke from Canadian fires*, Reuters (Jun. 8, 2023), available at 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*, The New York Times (Jun. 27, 2023), available at https://www.nytimes.com/2023/06/27/us/midwest-chicago-smoke-air-quality.html.

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,[43] which causes ice sheets and glaciers to melt and seawater to warm and expand. By 2050, sea level along the contiguous United States's coastline is conservatively estimated to rise by at least 1 foot,[44] causing flooding, erosion, and infrastructure damage along the coastlines.[45] By the middle of the century, flooding from rising sea levels and storms is likely to make billions of dollars of coastal property unusable,[46] which is particularly problematic given that nearly 40% of Americans live in coastal counties.[47]

"California is particularly vulnerable to sea level rise because approximately 80% of the population lives within 30 miles of the Pacific Ocean."[48] 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.[49] 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.[50] 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.[51]

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.[52]

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[43] IPCC Report 2022, *supra* n. 8, at 1936–37.

[44] 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*¸ NOAA (Feb. 2022), available at 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), available at https://www.kqed.org/science/1979603/california-overhauls-its-sea-level-rise-plan-as-climate-change-reshapes-coastal-life.

[45] IPCC Report 2022, *supra* n. 8, at 1950.

[46] David Reidmiller et al., U.S. Global Climate Change Research Program, *Fourth National Climate Assessment: Volume II* (2018), at 330.

[47] NOAA, *Economics and Demographics* (last visited Jun. 13, 2023), available at https://coast.noaa.gov/states/fast-facts/economics-and-demographics.html.

[48] NOAA, *Understanding and Planning for Sea Level Rise In California* (last visited Jun. 13, 2023), available at https://coast.noaa.gov/digitalcoast/stories/ca-slr.html.

[49] Leah Fisher and Sonya Ziaja, *California's Fourth Climate Change Assessment: Statewide Summary Report*, California Energy Commission (2019), at 22.

[50] *Id*.

[51] *Id*.

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

The region also contains 4,900 acres of salt marsh, which filter water, offer wildlife habitat, and act as storm buffer; 23% of the salt marsh is expected to vanish by 2050.[53] Coastal flooding may also contaminate groundwater.[54]

4. <u>Environmental Justice Communities Disproportionately Bear the Burden of Climate Change Impacts</u>

Climate change's impacts will continue to disproportionately fall on environmental justice communities.[55] 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.[56] Members of environmental justice communities tend to work in occupations with increased exposure to extreme heat, such as the agricultural, construction, and delivery industries.[57] Farmworkers die of heat-related causes at 20 times the rate of the rest of the U.S. civilian workforce.[58] Since 2005, the first year California began tracking the number of heat-

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[53] *Id*.

[54] *See, e.g.*, Diana Felton et al.¸ *Risks of Sea Level Rise and Increased Flooding on Known Chemical Contamination in Hawaii*, State of Hawaii, Department of Public Health (Jun. 21, 2021), available at https://health.hawaii.gov/heer/files/2021/06/Climate-Change-and-Chemical-Contamination-memo-updated-June-2021.pdf.

[55] "Environmental justice" is defined by EPA as the "fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to development, implementation, and enforcement of environmental laws, regulations and policies." EPA, *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.

[56] NASA, *NASA Says 2022 Fifth Warmest Year on Record, Warming Trend Continues*, *supra* n. 3; Masson-Delmotte et al., *supra* n. 6, at 10.

[57] *See*, e.g., Juley Fulcher, *Boiling Point: OSHA Must Act Immediately to Protect Workers From Deadly Temperatures*, Public Citizen (Jun. 28, 2022), available at https://www.citizen.org/article/boiling-point/; Union of Concerned Scientists, *Too Hot to Work: Assessing the Threats Climate Change Poses to Outdoor Workers* (2021), at 3, available at 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), available at https://www.eenews.net/articles/osha-targets-heaththreats-heightened-by-climate-change/.

[58] *See* Union of Concerned Scientists, *Farmworkers at Risk: The Growing Dangers of Pesticides and Heat* (2019) at 4, available at 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*, available at https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5724a1.htm (last updated June 19, 2008)).

related fatalities, 36% of California's heat-related worker deaths have been of farmworkers.[59] Similarly, although construction workers comprise only 6% of the national workforce, they account for 36% of heat-related deaths.[60]

At home, environmental justice communities suffer disproportionate impacts from extreme heat because they are more likely to lack air conditioning, tree canopy, and greenspace. Environmental justice communities have less access to air conditioning to cool down, and are less able to pay the utility bills required to run air conditioning units or fans.[61] 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 6 °F hotter than suburban and rural areas and nighttime temperatures to be as much as 22 °F hotter.[62] The heat island effect is inequitably distributed—it is most extreme in lower-income communities and communities of color.[63] 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.[64] 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.[65]

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[59] Teniope Adewumi-Gunn & Juanita Constible, Natural Resources Defense Council, *Feeling the Heat: How California's Workplace Heat Standards Can Inform Stronger Protections Nationwide* (2022), available at https://www.nrdc.org/sites/default/files/feeling-heat-ca-workplace-heat-standards-report.pdf.

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

[61] Michelle Roos et al., California Energy Commission, *California's Fourth Climate Change Assessment: Climate Justice Report*, (2018), at 39-40, 45, available at https://resourceslegacyfund.org/wp-content/uploads/2018/09/Climate-Justice-Report-4CCCA-v.4-00455673xA1C15.pdf ("California Climate Justice Report"); Allison Crimmins, et al., *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*, U.S. Global Change Research Program (2016), at 252, available at https://health2016.globalchange.gov/low/ClimateHealth2016_FullReport_small.pdf ("USGCRP Study").

[62] *See* EPA, *Heat Island Effect*, available at https://www.epa.gov/heatislands (last updated May 1, 2023); California Environmental Protection Agency, *Understanding the Urban Heat Island Index*, available at https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/ (last visited May 24, 2023).

[63] EPA, *Heat Islands and Equity*, available at https://www.epa.gov/heatislands/heat-islands-and-equity (last updated Dec. 12, 2022); USGCRP Study, *supra* n. 61, at 252.

[64] 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?*, The New York Times (Jul. 4, 2021), available at https://www.nytimes.com/interactive/2021/06/30/opinion/environmental-inequity-trees-critical-infrastructure.html.

[65] EPA, *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts* (2021), at 36, available at https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf.

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.[66] They also suffer from more severe impacts, such as contaminated water from pollutant flows during floods and increased concentration of contaminants during droughts.[67] 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.[68]

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.[69] 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.[70] These cultural resources have intrinsic value, and they are also critical to tribal community identity and group cohesion, which translates into direct health benefits.[71] 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.[72] Tribal communities with sovereign land holdings are also more vulnerable to climate impacts because they are unable to relocate.[73]

Furthermore, environmental justice communities, including tribal communities, are environmentally overburdened due to greater existing pollution exposure.[74] This disadvantage manifests in higher rates of chronic disease, premature death, and other adverse public health outcomes.[75] 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

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[66] 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), available at https://www.redfin.com/news/redlining-flood-risk/; California Climate Justice Report, *supra* n. 61, at 41-42; USGCRP Study, *supra* n. 61, at 253-54.

[67] USGCRP Study, *supra* n. 61, at 158-74.

[68] EPA, *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*, *supra* n. 65, at 49, 59.

[69] Justin Farnell, et al., *Effects of land dispossession and forced migration on Indigenous peoples in North America*, Science (2021), at 374; USGCRP Study, *supra* n. 61, at 254.

[70] Ron Goode et al., California Energy Commission, *California's Fourth Climate Change Assessment: Summary Report from Tribal and Indigenous Communities within California* (2018), at 19, available at https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-010_TribalCommunitySummary_ADA.pdf.

[71] *Id.*

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

[73] Farnell et al., *supra* n. 69.

[74] California Climate Justice Report, *supra* n.61, at 40-41.

[75] *Id.*; USGCRP Study, *supra* n. 61, at 253.

able to afford necessary tests and procedures, and health care facilities are poorly staffed and equipped.[76] Consequently, residents of environmental justice communities are less able to withstand climate impacts that further damage their health, such as increased local smog conditions.[77]

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, that are critical to climate resilience.[78] 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.[79] 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.[80] 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.

B. Public Health Challenges and Poor Air Quality

Our States and Cities also face public health challenges caused by emissions of criteria pollutants and air toxics, such as fine particulate matter ("$PM_{2.5}$"), nitrogen oxides ("NO_x"), and non-methane organic gases ("NMOG").[81] While our States and Cities are committed to reducing

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[76] Samantha Artiga et al., Kaiser Family Foundation, *Health Coverage by Race and Ethnicity, 2010-2021* (2022), available at 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 Era*, 95 THE MILBANK QUARTERLY 1 (2017).

[77] California Climate Justice Report, *supra* n.61, at 40-43.

[78] *Id.* at 39.

[79] *Id.*

[80] *Id.* at 43; USGCRP Study, *supra* n.61, at 106.

[81] *See, e.g.*, Lake Michigan Air Directors Consortium, *Attainment Demonstration Modeling for the 2015 Ozone National Ambient Air Quality Standard: Technical Support Document* (Sep. 21, 2022), available at https://www.ladco.org/wp-content/uploads/Projects/Ozone/ModerateTSD/LADCO_2015O3_ModerateNAASIP_TSD_21Sep2022.pdf ("Onroad mobile non-diesel sources are the largest contributor to ozone in all of Wisconsin's remaining 2015 ozone NAAQS nonattainment areas."); EPA, *Current Nonattainment Counties for All Criteria Pollutants* (May 31, 2023), available at https://www3.epa.gov/airquality/greenbook/ancl.html (listing 19 of the 67 counties in Pennsylvania as nonattainment areas); EPA, *8-Hour Ozone (2008) Nonattainment Areas* (May 31, 2023), available at https://www3.epa.gov/airquality/greenbook/hnc.html (listing New York, northern New Jersey, and Long Island area as Severe 15 for 8-hour ozone nonattainment); NYC.gov, *Environment and Health Data Portal*, available at https://a816-dohbesp.nyc.gov/IndicatorPublic/beta/data-explorer/health-impacts-of-air-pollution/?id=2122#display=summary (last accessed Jul. 3, 2023) (tracking asthma emergency department visits due to ozone).

emissions of these harmful air pollutants,[82] among other actions, federal involvement is necessary to help States attain the National Ambient Air Quality Standards ("NAAQS")[83] and to reduce emissions that are outside of our control. EPA's proposed PM and NMOG+NO_x emissions standards will significantly reduce emissions of harmful air pollutants from new motor vehicles sold nationwide, 88 Fed. Reg. at 29,257-58, and these reductions are critical to our States and Cities' ability to meet our public health and environmental justice goals as well as to protect our residents.

1. Particulate Matter, Nitrogen Oxides, and Ozone Pollution Negatively Impact Human Health

The transportation sector is one of the largest sources of emissions of $PM_{2.5}$, NO_x, and other harmful air pollutants in the United States.[84] 88 Fed. Reg. at 29,186 ("Light- and medium-duty vehicles will account for approximately 20 percent, 19 percent, and 41 percent of 2023 mobile source NO_x, $PM_{2.5}$, and VOC emissions, respectively.").[85] In some states and urban areas, mobile sources are the primary contributors of emissions of these harmful air pollutants.[86] EPA projects that its standards will significantly reduce emissions of PM in addition to NO_x and NMOGs, both of which contribute to ozone formation. *Id*. at 29,198, 29,344, 29,351. These reductions are crucial to avoid the serious adverse health consequences associated with these pollutants.

Specifically, exposure to $PM_{2.5}$ is causally related to premature mortality[87] and cardiovascular impacts; consistently associated with asthma and chronic obstructive pulmonary disease

[82] *E.g.*, Washington Department of Ecology, *Clean Fuel Standard*, available at https://ecology.wa.gov/Air-Climate/Reducing-Greenhouse-Gas-Emissions/Clean-Fuel-Standard (last accessed Jun. 30, 2023).

[83] *E.g.*, California Air Resources Board, *Revised Draft 2020 Mobile Source Strategy* (Apr. 23, 2021), at 14, 68, available at https://ww2.arb.ca.gov/sites/default/files/2021-04/Revised_Draft_2020_Mobile_Source_Strategy.pdf.

[84] 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 ENVIRONMENTAL RESEARCH LETTERS 1-2, 5 (June 2021), available at https://doi.org/10.1088/1748-9326/abf60b ("The mobile source sector remains one of the largest contributors to $PM_{2.5}$ and O_3 [ozone] globally and in the U.S."); 88 Fed. Reg. at 29,214 ("The primary source of NO_2 is motor vehicle emissions . . . .").

[85] Volatile organic compounds (VOCs) are certain carbon compounds "which participate[] in atmospheric photochemical reactions," 40 CFR § 51.100(s), and include several NMOGs.

[86] *See*, e.g., Vermont Department of Environmental Conservation, Agency of Natural Resources, *Mobile Sources*, available at https://dec.vermont.gov/air-quality/mobile-sources (onroad mobile sources contribute 49% of the NO_x emissions in Vermont); California Air Resources Board, *2020 Mobile Source Strategy* (Oct. 28, 2021), at 19-20, available at https://ww2.arb.ca.gov/sites/default/files/2021-12/2020_Mobile_Source_Strategy.pdf ("Every year, over 5,000 premature deaths and hundreds of illnesses and emergency room visits for respiratory and cardiovascular disease in California are linked to $PM_{2.5}$ pollution, of which more than half is produced by mobile sources.").

[87] Harvard T.H. Chan School of Public Health, *Fossil fuel air pollution responsible for 1 in 5 deaths worldwide* (Feb. 9, 2021), available at https://www.hsph.harvard.edu/c-change/news/fossil-fuel-air-pollution-responsible-for-1-in-5-deaths-worldwide/ ("[R]esearchers [were able] to directly attribute premature deaths from fine particulate pollution ($PM_{2.5}$) to fossil fuel combustion") (citing Karn Vohra, et

exacerbation; and associated with birth outcomes, such as low birth weight and fetal growth outcomes.[88] Exposure to NO_x is causally related to asthma exacerbation; likely causally related to respiratory effects; and possibly causally related to cardiovascular effects, mortality, diabetes, cancer, and birth defects. 88 Fed. Reg. at 29,214. Exposure to ozone is causally related to respiratory effects, including lung function decrements, pulmonary inflammation, exacerbation of asthma, respiratory-related hospital admissions, and mortality; likely causally related to metabolic effects and complications due to diabetes; and possibly causally related to cardiovascular effects and central nervous system effects. *Id*. at 29,213-14.

2. Air Toxics Threaten Public Health

EPA projects that its standards would result in the reduction of emissions of air toxics. 88 Fed. Reg. at 29,199, 29,359. These reductions will also benefit public health and welfare, given the link between toxic air pollutants and cancer and other serious health effects. *Id*. at 29,216 ("Light- and medium-duty engine emissions contribute to ambient levels of air toxics that are known or suspected human or animal carcinogens, or that have noncancer health effects."); 72 Fed. Reg. 8,428, 8,430 (Feb. 26, 2007). Of all the outdoor air toxics, benzene contributes the most to nationwide cancer risk, and most of the nation's benzene emissions come from mobile sources. *Id*. at 8,432. In New Jersey, for example, mobile sources are the largest contributors of air toxics emissions and responsible for over 50% of the state's ambient benzene.[89] In Allegheny County in Pennsylvania, mobile sources account for over 9% of the estimated cancer risk from hazardous air pollutants, largely due to gasoline-powered vehicles.[90]

3. Criteria Pollutant and Air Toxics Emissions from Light- and Medium-Duty Vehicles Disproportionately Impact Environmental Justice Communities

Criteria pollutant emissions from light- and medium-duty vehicles disproportionately endanger residents of environmental justice communities by exposing them to harmful air pollution that causes significant health impacts. Light- and medium-duty vehicles' emissions are concentrated along transportation corridors. 88 Fed. Reg. at 29,396. Aggravating historical injustices, decision-makers disproportionately site highways and other transportation infrastructure in lower-income communities and communities of color. The burden of vehicle emissions therefore

al., *Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem*, 195 ENVIRONMENTAL RESEARCH (Apr. 2021)); Arter, *supra* n. 84, at 5 ("The largest source of both $PM_{2.5}$ and O_3[ozone]-attributable premature mortalities are LDT [light-duty trucks] at 1234 and 1229 mortalities, respectively. LDT PPM emissions are responsible for 46% of $PM_{2.5}$ mortalities, and LDT NOx emissions are responsible for 80% of O_3 [ozone] mortalities.")

[88] *See* Comment of California Air Resources Board on "Proposed Rule for National Ambient Air Quality Standards (NAAQS) for Particulate Matter" (Jun. 29, 2020), EPA-HQ-OAR-2015-0072-0975.

[89] New Jersey Department of Environmental Protection, *2021 New Jersey Air Quality Report* (Sep. 2022), at 10-1, 10-10, available at https://www.nj.gov/dep/airmon/pdf/2021-nj-aq-report.pdf.

[90] Cancer & Environment Network of Southwestern Pennsylvania and Clean Air Task Force, *National Air Toxics Assessment and Cancer Risk in Allegheny County Pennsylvania* (updated May 2021), https://www.catf.us/wp-content/uploads/2021/07/NATAFactsheet- Final-May-2021.pdf.

falls inequitably on environmental justice communities, which also face industrial pollution cumulatively with vehicle emissions.[91]

For example, EPA modeling has shown that race and income are significantly associated with living near major roadways nationally, even when controlling for other factors.[92] EPA research has also indicated that people of color are more likely to live within 300 feet of major transportation facilities and go to school within 200 meters of the largest roadways.[93] Environmental justice communities bear the effects of these land use patterns. In the Northeast and Mid-Atlantic Region, average concentrations of exposures to $PM_{2.5}$ are 75%, 73%, and 61% higher for Latinx residents, Asian-American residents, and African American residents, respectively, than they are for white residents.[94] $PM_{2.5}$ and NO_2 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 over time even though overall exposure to those pollutants has decreased in the Commonwealth.[95]

More granular data from California fully illustrate this phenomenon. The census tracts in California with the highest levels of exposure to ozone, $PM_{2.5}$, and air toxics like diesel particulate matter are communities of color bordering major transportation corridors—Highway 99 in the San Joaquin Valley and Highways 10 and 60 in the Inland Empire:

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[91] *See*, e.g., EPA, *Estimation of Population Size and Demographic Characteristics among People Living Near Truck Routes in the Coterminous United States* (Feb. 16, 2022), EPA-HQ-OAR-2019-0055-0982, at 11-12, Fig. 3, 17-19, Fig. 9 (finding that individuals living near major truck routes are more likely to be people of color and lower-income); *see* also Michelle Meyer and Tim Dallmann, *The Real Urban Emissions Initiative, Air quality and health impacts of diesel truck emissions in New York City and policy implications* (2022), at 7 Fig. 5 (concluding that Black and Latino individuals in New York City are disproportionately exposed to $PM_{2.5}$ along freight corridors); Gaige Hunter Kerr, et al., *COVID-19 Pandemic Reveals Persistent Disparities in Nitrogen Dioxide Pollution*, 118 PROC. NAT'L ACAD. SCIENCES 30 (2021); Mary Angelique G. Demetillo, et al. *Space-Based Observational Constraints on NO_2 Air Pollution Inequality from Diesel Traffic in Major US Cities*, GEOPHYSICAL RESEARCH LETTERS 48 (2021); Paul Allen, et al., *Newark Community Impacts of Mobile Source Emissions: A Community-Based Participatory Research Analysis* (2020); Maria Cecilia Pinto de Moura, et al., Union of Concerned Scientists, *Inequitable Exposure to Air Pollution from Vehicles in Massachusetts* (2019); Iyad Kheirbek, et al., *The Contribution of Motor Vehicle Emissions to Ambient Fine Particulate Matter Public Health Impacts in New York City: a Health Burden Assessment*, 15 ENV'T HEALTH 89 (2016).

[92] EPA, *Estimation of Population Size and Demographic Characteristics among People Living Near Truck Routes in the Coterminous United States*, *supra* n. 91, at 20-24.

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

[94] Union of Concerned Scientists, *Inequitable Exposure to Air Pollution from Vehicles in the Northeast and Mid-Atlantic* (2019), available at https://www.ucsusa.org/sites/default/files/attach/2019/06/Inequitable-Exposure-to-Vehicle-Pollution-Northeast-Mid-Atlantic-Region.pdf.

[95] Office of Massachusetts Attorney General Maura Healey, *COVID-19's Unequal Effects in Massachusetts* (2020), at 5, available at https://www.mass.gov/doc/covid-19s-unequal-effects-in-massachusetts/download.

Census Tracts in California with Highest Levels of Ozone, $PM_{2.5}$, and Diesel PM Exposure[96]

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

Refineries, drilling sites, and other upstream sources of emissions are also disproportionately located in or near environmental justice communities.[97] These facilities routinely emit dozens of toxic air contaminants, such as formaldehyde and benzene, and can cause accidental releases of air toxics that require emergency response. [98] Many of these upstream emissions sources also release other pollution, such as water contaminants.[99] Residents of communities near these sites tend to have higher rates of health problems, such as cancers, chronic disease, and adverse birth outcomes, even after accounting for other demographic factors.[100] As with transportation

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[96] Data from CalEnviroScreen 4.0, California Office of Environmental Health Hazard Assessment, available at https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40. Metrics for ozone, $PM_{2.5}$, and diesel particulate matter exposure are the census tract's percentile ranking as compared to all census tracts in California, demonstrating that these census tracts are among those with the greatest pollution exposure statewide. The raw data for these percentile rankings are available on the CalEnviroScreen 4.0 website. The eight census tracts shown here are examples of the 29 census tracts in California that rank above the 90th percentile statewide for exposure to ozone, fine particulate matter, and diesel particulate matter, all of which are communities in Bakersfield or the Inland Empire near major transportation thoroughfares.

[97] James Boyce & Manuel Pastor, *Clearing the air: incorporating air quality and environmental justice into climate policy*, 120 CLIMATIC CHANGE 801 (2013).

[98] Karen Riveles & Alyssa Nagai, *Analysis of Refinery Chemical Emissions and Health Effects*, California Office of Environmental Health Hazard Assessment (2019), available at https://oehha.ca.gov/media/downloads/faqs/refinerychemicalsreport032019.pdf.

[99] Louisa Markow, et al., *Oil's Unchecked Outfalls: Water Pollution from Refineries and EPA's Failure to Enforce the Clean Water Act*, Environmental Integrity Project (2023), available at https://environmentalintegrity.org/wp-content/uploads/2023/01/Oils-Unchecked-Outfalls-03.06.2023.pdf.

[100] Jill Johnston & Lara Cushing, *Chemical exposures, health and environmental justice in communities living on the fenceline of industry*, 7 CURRENT ENVIRONMENTAL HEALTH REPORTS 48 (2020); Stephen Williams, et al., *Proximity to Oil Refineries and Risk of Cancer: A Population-Based Analysis*, 4 JNCI CANCER SPECTRUM 6 (2020).

corridors, census tract-level data from California demonstrate these concerns. For example, the census tracts near the California refinery with the largest output (the Marathon Refinery in Carson)[101] are overwhelmingly communities of color with high cumulative pollution burdens and adverse health outcomes:

Census Tracts near the Marathon Refinery in Carson, California[102]

Census Tract	People of Color	Pollution	Toxic Releases	Asthma	Heart Disease
6037294120	98.0%	93rd	99th	83rd	93rd
6037543306	92.4%	96th	99th	57th	52nd
6037543905	97.2%	84th	99th	72nd	77th
6037294110	90.5%	88th	99th	75th	83rd

Accordingly, achieving emissions reductions from light- and medium-duty vehicles is a critical step to begin dismantling historical patterns of environmental injustice burdening communities near transportation infrastructure and upstream emissions sources. *See* CARB's Comment at 84-96.

C. History of Regulation of Multi-Pollutant Emissions

More than half a century ago, Congress established a statutory regime to reduce motor vehicle emissions in light of evidence that "[t]he automobile has had a devastating impact on the American environment" and "automotive pollution constitutes in excess of 60% of our national air pollution problem."[103] Under this regime, Congress has directed EPA to promulgate "standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1).[104] Congress has required that these standards apply "whether such vehicles and

[101] California Energy Commission, *California's Oil Refineries*, available at https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries (data as of Feb. 7, 2023).

[102] Data from CalEnviroScreen 4.0, supra n.96. Metrics for overall pollution burden, toxic releases, asthma, and heart disease are the census tract's percentile ranking as compared to all census tracts in California, demonstrating that these census tracts are among those with the greatest pollution exposure and detrimental health impacts statewide.

[103] *Int'l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 623 (D.C. Cir. 1973); Pub. L. 89-272 § 201, 79 Stat. 992, 992-93 (1965).

[104] *Compare with* Pub. L. 89-272 § 202(a), 79 Stat. 992, 992-93 (1965) ("The Secretary shall by regulation, giving appropriate consideration to technological feasibility and economic costs, prescribe as soon as practicable standards, applicable to the emission of any kind of substance, from any class or

engines are designed as complete systems or incorporate devices to prevent or control such pollution." *Id*.[105] EPA's standards "shall take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance." 42 U.S.C. § 7521(a)(2).

From 1966 through 1970, pursuant to its statutory mandate, EPA's predecessor[106] promulgated three sets of emissions standards to control crankcase emissions, exhaust emissions of hydrocarbons and carbon monoxide, and evaporative fuel emissions. 31 Fed. Reg. 5,170 (Mar. 30, 1966); 33 Fed. Reg. 8,304 (June 4, 1968); 35 Fed. Reg. 17,288 (Nov. 10, 1970). Since it was formed in 1970, EPA has finalized upwards of fifty rules setting or amending emissions standards for various classes of vehicles and myriad air pollutants that EPA determined may endanger public health or welfare. *See e.g.*, 36 Fed. Reg. 12,652 (Jul. 2, 1971) (EPA's first emission standards for NO_x), 45 Fed. Reg. 14,496 (Mar. 5, 1980) (EPA's first emission standards for PM).

In 2009, EPA concluded that "greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare." 74 Fed. Reg. 66,496, 66,497 (Dec. 5, 2009); *see Massachusetts v. EPA*, 549 U.S. 497 (2011) (holding that GHGs are within the scope of air pollution covered by Section 202(a) of the Clean Air Act). And, in 2010, EPA promulgated its first set of GHG emission standards applicable to light-duty vehicles model years 2012 through 2016. 75 Fed. Reg. 25,324 (May 7, 2010). Since then, EPA has promulgated and amended GHG emission standards for light-duty vehicles multiple times, most recently tightening the standards for model years 2023 through 2026. 77 Fed. Reg. 62,624 (Oct. 15, 2012); 85 Fed. Reg. 24,174 (Apr. 30, 2020); 86 Fed. Reg. 74,434 (Dec. 30, 2021).

Throughout the more than fifty years that it has been translating technological progress into increasingly stringent standards for various pollutants, EPA's standards have generally anticipated a wider use of existing emission control technologies and application of new or emerging emission control technologies across vehicle classes. *See, e.g.*, 44 Fed. Reg. 6,650, 6,552 (Feb. 1, 1979) (trap-oxidizers), 66 Fed. Reg. 5,002, 5,049-54 (Jan. 18, 2011) (NO_x adsorbers), 75 Fed. Reg. at 25,454-55 (hybrid technologies); *see* 88 Fed. Reg. at 29,187-88. This long-standing practice is consistent with Congress's "expect[ation that EPA] press for the development and application of improved technology rather than be limited by that which exists today." *NRDC v. EPA*, 655 F.2d 318, 328 (D.C. Cir. 1981); *see* 42 U.S.C. § 7521(a)(2). Accordingly, EPA has routinely analyzed a wide array of technologies—from aerodynamic and

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classes of new motor vehicles or new motor vehicle engines, which in his judgment cause or contribute to, or are likely to cause or contribute to, air pollution which endangers the health or welfare of any persons . . . .").

[105] *Compare with* Pub. L. 89-272 § 202(a), 79 Stat. 992, 992-93 (1965) ("[S]uch standards shall apply to such vehicles or engines whether they are designed as complete systems or incorporate other devices to prevent or control such pollution.").

[106] At the time, the federal body responsible for carrying out the statutory mandate was the U.S. Department of Health, Education, and Welfare.

air conditioning technologies to hybrid and zero-emission-vehicle technologies—in its rulemakings to simulate manufacturers' compliance with alternative stringency levels.

D. Sales of Zero-Emission Vehicles Are Projected to Continue Growing at a Dramatic Rate

Zero-emission-vehicle technologies[107] are the most effective tailpipe emission control technologies available to date, and demand for zero-emission vehicles specifically has exploded in recent years. In response to this demand, significant public and private investments across the country continue to be made to build sufficient charging infrastructure and develop the domestic battery supply chain, and these investments are projected to keep pace with the dramatic growth of the zero-emission vehicle market. There is every reason to expect this growth to continue.

1. There Are Significant Public and Private Investments in and Demand for Zero-Emission Vehicles

Zero-emission-vehicle technologies are widely used in vehicles today to control emissions and their deployment is increasing at a rapid pace. For example, in 2020, the U.S. market penetration of electric vehicles[108] was just 2.2%; in 2021, it was 4.4%; and, in 2022, electric vehicles were estimated to reach 8.4% market share. 88 Fed. Reg. at 29,189. This dramatic growth is expected to continue, and forecasts estimate that electric vehicle market share will climb to 40-50% in 2030[109] given government policies, manufacturer plans, and growing consumer demand.

Recent congressional actions demonstrate the federal commitment to substantial electrification of the transportation sector. In 2021, Congress passed the Bipartisan Infrastructure Law, which allocates $7.5 billion to building out a national network of electric vehicle chargers, $7 billion to ensure domestic manufacturers have the critical minerals and other components necessary to make electric vehicle batteries, and $10 billion for clean transit and school buses.[110] In 2022, Congress passed the CHIPS and Science Act, which invests $52.7 billion in America's

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[107] The term "zero-emission-vehicle technologies" includes batteries with on-board chargers and hydrogen stored in a fuel cell stack that transforms chemical energy into electrical energy to propel a vehicle.

[108] "Electric vehicles" refers to plug-in electric vehicles, which includes battery electric vehicles and plug-in hybrid electric vehicles.

[109] Javier Colato and Lindsey Ice, U.S. Bureau of Labor Statistics, *Charging into the future: the transition to electric vehicles* (Feb. 2023), available at https://www.bls.gov/opub/btn/volume-12/charging-into-the-future-the-transition-to-electric-vehicles.htm#:~:text=S%26P%20Global%20Mobility%20forecasts%20electric,surpassing%2050%20percent%20by%202030; Sean Tucker, Kelley Blue Book, *More Than Half of Car Sales Could Be Electric by 2030* (Oct. 4, 2022), accessible at https://www.kbb.com/car-news/study-more-than-half-of-car-sales-could-be-electric-by-2030/.

[110] White House, *Building a Better America: A Guidebook to the Bipartisan Infrastructure Law for State, Local, Tribal, and Territorial Governments, and Other Parties* (May 2022), at 136, available at https://www.whitehouse.gov/wp-content/uploads/2022/05/BUILDING-A-BETTER-AMERICA-V2.pdf.; White House, *Building a Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action* (Jan. 2023) at 46, available at, https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf.

manufacturing capacity for the semiconductors used in electric vehicles and chargers.[111] Later in 2022, Congress passed the Inflation Reduction Act, which provides $7,500 to buyers of new electric vehicles and $4,000 to purchasers of pre-owned electric vehicles.[112] Additionally, the Inflation Reduction Act provides billions of dollars to support vehicle manufacturers' expansion of their domestic production of clean vehicles,[113] and billions to support battery production in the United States and mining and processing of critical minerals needed for battery cells and electric motors.[114] The Inflation Reduction Act also allocates billions to upgrade the nation's power grid in order to help address the new surge in grid demand from electric vehicles.[115]

Across the country, states have also adopted laws, regulations, and policies that mandate or encourage zero-emission vehicle adoption. These state actions range from state fleet acquisition requirements to zero-emission vehicle purchase incentives and price relief to grants and financial assistance for public and private fleets. For example:

Examples of State Fleet Acquisition Requirements

- In **Maine**, 50% of all light-duty vehicles acquired by the state shall to the extent practicable be plug-in hybrid electric or zero-emission by 2025, and that requirement increases to 100% by 2030. Maine Revised Statutes, title 5, § 1830(12).
- In **Hawai'i** and **Maryland**, 100% of passenger vehicles in the state's fleet must be zero-emission vehicles by 2031, and other light-duty vehicles must be zero-emission by 2036. Hawai'i Revised Statutes § 196-9(c)(11); Maryland Statutes, State Finance & Proc. Code 14-418.
- In **Texas**, as of 2010, state agency fleets with more than 15 vehicles may purchase only alternative fuel motor vehicles (including electric vehicles), and these fleets must consist of at least 50% alternative fuel vehicles and use those fuels at least 80% of the time they are driven. Texas Statutes, Gov. Code 2158.004-2158.009.
- In **Utah**, at least 50% of new or replacement light-duty state vehicles must be propelled to a significant extent by alternative fuels, including electricity and hydrogen. Utah Code §§ 63A-9-401, 63A-9-403.
- In **Missouri**, 50% of new vehicles purchased by state agency fleets in a two-year period must be alternative fuel vehicles. Missouri Revised Statutes §§ 414.410.
- In **Connecticut**, 100% of all cars and light duty trucks purchased or leased by the state must be battery electric vehicles by 2030. Connecticut Public Act No. 22-25.
- In **Rhode Island**, 25% of light-duty vehicles purchased and leased by the state must be zero-emission vehicles by 2025. Rhode Island Executive Order 15-17.

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[111] White House, *Guidebook to the Inflation Reduction Act*, *supra* n. 110, at 46.

[112] *Id.*

[113] *Id.* at 47.

[114] *Id.* at 10, 26, 47.

[115] *Id.* at 34.

- In **Pennsylvania**, state agencies under the Governor's jurisdiction must replace 25% of the passenger cars in the state fleet with battery electric and plug-in electric hybrid cars by 2025. Pennsylvania Executive Order 2019-01.
- In **Washington**, state agencies are ordered to electrify their fleets and establish a State Fleets Zero Emission Vehicle Implementation Strategy. Washington Executive Order 21-04.

Examples of Purchase Incentives

- In **Oregon**, rebates are available for electric vehicles and plug-in hybrid electric vehicles, including for income-qualified state residents.[116] Oregon Revised Statutes §§ 468.422-468.444.
- In **California**, the Clean Vehicle and Rebate Project for Fleets offers rebates for the purchase of light-duty zero-emission and plug-in hybrid electric fleet vehicles.[117]
- In **Colorado**, the Clean Fleet Vehicle and Technology Grant Program offers grants to business and government fleets for the purchase of new electric or fuel cell vehicles, or conversions of vehicles into battery or fuel-cell electric vehicles.[118]
- **Vermont** recently approved a pilot program to subsidize EV purchases by gasoline "superusers"—i.e., drivers who consume over 1,000 gallons of gasoline per year—maximizing GHG reductions from the switch to EVs and saving these drivers significant fuel costs. 2020 Vt. Acts and Resolves No. 151, § 1.[119]
- In **New York**, the Drive Clean Rebate for Electric Cars offers rebates for the purchase or lease of eligible plug-in hybrid or battery electric vehicles.[120]
- In **Massachusetts**, the recently enacted Electric Vehicle Adoption Incentive Trust Fund requires creation of a rebate and incentive program to provide individual consumer rebates of not less than $3,500 and not more than $5,000 for purchase of zero-emission car and light duty trucks, with additional rebates for low-income individuals.[121]

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[116] Oregon.gov, *Requirements for Charge Ahead Applicants*, available at https://www.oregon.gov/deq/aq/programs/Pages/Charge-Ahead-Rebate.aspx.

[117] *See* California Fleet Rebate Project, *Fleet Overview*, available at https://cleanvehiclerebate.org/en/fleet.

[118] *See* Colorado Department of Public Health and Environment, *Clean Fleet Vehicle & Technology Grant Program*, available at https://cdphe.colorado.gov/clean-fleet-vehicle-technology-grant-program.

[119] S. 137, Act Relating to Energy Efficiency Modernization, available at https://legislature.vermont.gov/bill/status/2024/S.137

[120] *See* New York State Energy Research and Development Authority, *Drive Clean Rebate for Electric Cars*, available at https://www.nyserda.ny.gov/All-Programs/Drive-Clean-Rebate-For-Electric-Cars-Program.

[121] An Act Driving Clean Energy and Offshore Wind, 2022 Mass. Acts, ch. 179, § 41; Mass. Gen. Laws ch. 25A § 19(b), (c), available at https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179; https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25A/Section19.

- In **Arizona**, drivers of alternative fuel vehicles, including electric vehicles, may obtain a special license plate allowing them to use high-occupancy vehicle freeway lanes at any time.[122]

In addition to federal- and state-level laws and policies, "[m]any automakers have detailed plans to electrify large portions of their fleets over the next decade, with some announcing goals for fully electrified lineups within five years."[123] These announcements cover the range of zero-emission vehicle technologies, including hydrogen fuel cell electric vehicles. The number of electric vehicle models available for sale in the United States has more than doubled from about 24 in model year 2015 to about 60 in model year 2021, and is expected to increase to more than 180 models by 2025. 88 Fed. Reg. at 29,312.

Finally, consumer demand for electric vehicles has significantly risen, in large part due to environmental concerns, greater vehicle choice, improved battery capacity, and cost savings.[124]

2. States and the Power Sector Are Rapidly Expanding Electric Vehicle Charging Infrastructure

State and local governments are proactively engaged in ensuring a robust electric vehicle supply equipment ("EVSE") charging infrastructure to support wider electric vehicle adoption, including, but certainly not limited to, our States and Cities. 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,[125] supporting a current statewide network of 1,737 public DCFC stations (comprising 8,814 DCFC ports) and 13,015 public Level 2 stations (30,099 Level 2 ports).[126] California, Oregon, and Washington have adopted low-carbon fuel/clean fuel standards that support EVSE installation through the generation of tradeable credits.[127] New Jersey's Department of Environmental Protection has awarded grants for 2,980 charging stations with 5,271 ports at 680 locations. Maine directed $3.15 million from the Volkswagen litigation settlement and $10 million from the New England Clean Energy Connect settlement toward expanding the state's

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[122] *See* Arizona Department of Transportation, *Alternative Fuel Vehicle*, available at https://azdot.gov/mvd/services/vehicle-services/vehicle-registration/alternative-fuel-vehicle.

[123] Jeff S. Bartlett, *Automakers Are Adding Electric Vehicles to Their Lineups. Here's What's Coming*, Consumer Reports (Mar. 10, 2023), available at https://www.consumerreports.org/cars/hybrids-evs/why-electric-cars-may-soon-flood-the-us-market-a9006292675/.

[124] Javier Colato and Lindsey Ice, *Charging into the future: the transition to electric vehicles*, U.S. Bureau of Labor Statistics (Feb. 2023), available at https://www.bls.gov/opub/btn/volume-12/charging-into-the-future-the-transition-to-electric-vehicles.htm#ednref4.

[125] CALeVIP, *About CALeVIP* (last accessed on June 8, 2023), available at https://calevip.org/about-calevip; CALeVIP, *CALeVIP Rebate Statistics Dashboard* (last accessed on June 8, 2023), available at https://calevip.org/rebate-statistics.

[126] U.S. Department of Energy, Alternative Fuels Data Center, *Alternative Fuels Station Locator*, available at https://afdc.energy.gov/stations (last accessed June 8, 2023).

[127] Cal. Code Reg., tit. 17, § 95486.2(b) (2020); Or. Admin. R. 340-253-0330 (2023); Wash. Admin. Code § 173-424-560(2) (2022).

DCFC network along key corridors,[128] and has allocated a further $8 million to electric vehicle charging from American Rescue Plan funds.[129] New York's EVolve program has committed $250 million to install 800 new EV fast charging stations throughout the state by 2025, including along major highway corridors.[130] 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.[131] Washington has awarded more than $10 million in Zero-Emission Vehicle Infrastructure Partnership grants and announced $30 million more for 2023-25.[132] Massachusetts has required that charging stations for public use be installed at all service plazas located on the Massachusetts Turnpike by July 1, 2024.[133]

In the Bipartisan Infrastructure Law, Congress directed $5 billion toward States to expand charging infrastructure under the National Electric Vehicle Infrastructure ("NEVI") Formula Program.[134] To date, all 50 States have submitted and received approval for their NEVI plans.[135] These plans detail the considerable resources and local expertise that state transportation, energy, and environmental agencies bring in support of Congress's vision of a "national network of electric vehicle charging infrastructure."[136] Those resources include the mobilization of

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[128] Efficiency Maine, *Maine's Electric Vehicle Fast-Charging Network Expands to the North and East* (Jun. 3, 2021), available at 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; Me. Pub. Utilities Commission, *Order Granting Certificate of Public Convenience and Necessity and Approving Stipulation*, Docket No. 2017-00232 (May 3, 2019), at 77, 96.

[129] Office of the Governor of Maine, *The Maine Jobs & Recovery Plan* (May 4, 2021), at 12, available at https://www.maine.gov/covid19/sites/maine.gov.covid19/files/inline-files/MaineJobs%26RecoveryPlan.pdf.

[130] EVolve NY, *Making New York a Leader in EV Infrastructure*, available at https://evolveny.nypa.gov/en/about-evolve-new-york (last visited Jun. 27, 2023).

[131] New York Department of Environmental Conservancy, Office of Climate Change, *Municipal Zero-emission Vehicle Program* (2021), available at https://www.dec.ny.gov/docs/administration_pdf/2021zevprogrep_(1).pdf (program outlays through FY 2021); New York Governor's Press Office, *Governor Hochul Announces More Than $8.3 Million to Municipalities for Electric Vehicle Charging Infrastructure* (Apr. 13, 2023), available at https://www.governor.ny.gov/news/governor-hochul-announces-more-83-million-municipalities-electric-vehicle-charging (program outlays in FY 2022).

[132] Washington Department of Transportation, *Zero-emission Vehicle Infrastructure Partnerships grant*, available at https://wsdot.wa.gov/business-wsdot/grants/zero-emission-vehicle-grants/zero-emission-vehicle-infrastructure-partnerships-grant

[133] An Act Driving Clean Energy and Offshore Wind, 2022 Mass. Acts, ch. 179, § 89. https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179.

[134] Pub. L. No. 117–58, § 801 (Nov. 15, 2021), 135 Stat. 1421.

[135] Federal Highway Administration, *Fiscal Year 2022/2023 EV Infrastructure Deployment Plans*, available at https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/index.cfm?format=list#map.

[136] Pub. L. No. 117-58, §801, 135 Stat. 1422.

significant public and private nonfederal monies,[137] the strategic siting of EVSE infrastructure in high-demand areas and major transportation corridors,[138] designing resilience strategies to pair chargers with distributed generation and storage resources,[139] and providing model ordinances for municipal governments to support EVSE expansion.[140] These plans also illustrate the importance of greater EV adoption to States' climate targets.[141]

Utilities and private EVSE companies have committed significant resources to expanding charging infrastructure.[142] New Jersey utilities have committed $215 million for make-ready infrastructure for public, multi-unit dwelling and workplace charging stations, and residential chargers. New York utilities' EV Make-Ready Program has a budget of $701 million allocated to support the development of electric vehicle infrastructure.[143] As EPA notes, an alliance of over 60 investor-owned and municipal electric companies and electric cooperatives in 48 States and D.C. have formed the National Electric Highway Coalition to deploy fast-charging

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[137] *See, e.g.*, Colorado NEVI State Plan, at 31, available at https://www.codot.gov/programs/innovativemobility/assets/co_neviplan_2022_final-1.pdf (describing state funds available for cost sharing); New Jersey NEVI State Plan, at 23 (describing establishment of a New Jersey Green Fund with monies from the Regional Greenhouse Gas Initiative to provide low-cost financing for EVSE projects).

[138] *See, e.g.*, California NEVI State Plan, at 34-40, available at https://www.codot.gov/programs/innovativemobility/assets/co_neviplan_2022_final-1.pdf (describing phases of EVSE build-out along transport corridors).

[139] *See, e.g.*, Oklahoma NEVI State Plan, at 54, available at https://www.codot.gov/programs/innovativemobility/assets/co_neviplan_2022_final-1.pdf (proposing, e.g., preferences for EVSE paired with distributed energy resources like solar or battery storage).

[140] *See, e.g.*, Pennsylvania NEVI State Plan, at 7, available at https://www.penndot.pa.gov/ProjectAndPrograms/Planning/EVs/Documents/Final%20PA%20NEVI%20State%20Plan%20(ver%207-21-2022).pdf; Pennsylvania Department of Transportation, *EV Model Ordinance Toolkit*, available at https://www.penndot.pa.gov/ProjectAndPrograms/Planning/EVs/Pages/EV-Model-Ordinance-Toolkit.aspx

[141] *See, e.g.*, North Carolina NEVI State Plan, at 5, 16, 28, available at https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/nc_nevi_plan.pdf (discussing state climate and transportation policy and NEVI program); New York NEVI State Plan, at 19-26, available at https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/ny_nevi_plan.pdf (same).

[142] Yvonne Bertucci zum Tobel, *Will Florida's improved electric vehicle infrastructure convince people to buy an EV?*, WLRN (Jul. 20, 2022), available at https://www.wlrn.org/news/2022-07-20/will-floridas-improved-electric-vehicle-infrastructure-convince-people-to-buy-an-ev (detailing Florida Power & Light's work installing 1,000 charging ports—most of them free, public Level 2 chargers—at over 200 Florida locations); Tampa Electric Co., *Pet. of Tampa Elec. Co. for Approval of Elec. Vehicle Charging Pilot Program* (Sep. 25, 2020), available at https://www.floridapsc.com/pscfiles/library/filings/2020/09448-2020/09448-2020.pdf (*see*king approval for pilot program to install 200 charging ports at businesses, retail, and apartment complexes).

[143] Joint Utilities of New York, *EV Make-Ready Program*, available at https://jointutilitiesofny.org/ev/make-ready (last visited Jun. 27,2023).

infrastructure seamlessly across major transportation corridors "by the end of 2023."[144] State legislatures and public utility commissions (PUCs) are actively engaged in supplementing utilities' existing efforts with additional resources and authority.[145]

EPA correctly recognizes that increased EV adoption and the build-out of EVSE infrastructure implies an increase in electricity demand, which EPA estimates at less than 0.4% in 2030 to approximately 4% in 2050. 88 Fed. Reg. at 29,311. The Regional Transmission Organizations ("RTOs") and Independent System Operators ("ISOs"), which are responsible for procuring sufficient generation and transmission capacity within their footprints, are already taking into account projected EV adoption to plan over a 10-20 year horizon. ISO New England and Texas's ERCOT, for example, both incorporate electrification forecasts into their capacity planning and conclude that grid capacity will continue to meet demand with substantial reserve margins.[146, 147] These detailed planning processes apply the RTOs' and ISOs' considerable expertise, data, and analytical resources to ensure a reliable and adequate grid.[148] States are likewise active in this area. For example, in 2016, Assembly Bill 2868 in California required utilities to procure 500 MW of distributed energy storage resources, above and beyond a 1,325 MW utility storage target set under Assembly Bill 2514 (2010). Hawai'i is a national leader in customer-sited distributed energy resources (such as rooftop and community solar power), with 88,000 systems in use across Hawaiian Electric's five-island service territory.[149] And, in 2018, the Massachusetts legislature adopted an Energy Storage Initiative Target, which calls for 1,000MWh of energy storage by the end of 2025.[150]

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[144] Edison Electric Institute, *National Electric Highway Coalition*, available at https://www.eei.org/issues-and-policy/national-electric-highway-coalition; *see* 88 Fed. Reg. at 29,308.

[145] Last year, for example, Indiana's legislature approved a law to empower its PUC to conduct pilot programs to expand public EVSE and study their impact on distribution grids. Indiana H.B. 1221 (signed Mar. 11, 2022), https://iga.in.gov/legislative/2022/bills/house/1221#document-7bf5903c.

[146] ISO New England, *2023–2032 Forecast Report of Capacity, Energy, Loads, and Transmission*, sheets 1.1, 1.2, 1.7 (May 1, 2023), available at https://www.iso-ne.com/system-planning/system-plans-studies/celt (finding grid capacity will exceed peak summer and winter loads through 2032, taking into account transportation and heating electrification).

[147] Texas NEVI State Plan, at 23-25, available at https://www.fhwa.dot.gov/environment/nevi/ev_deployment_plans/tx_nevi_plan.pdf (discussing reserve margins for grid capacity far outstripping the "theoretical maximum energy consumption" from proposed EVSE build-out).

[148] *See*, *e.g.*, California ISO, *2022-2023 Transmission Plan* (Apr. 3, 2023), available at https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/2022-2023-Transmission-planning-process

[149] Hawaiian Electric, *Customer Energy Resources for Hawai'i* (May 2021), https://www.hawaiianelectric.com/documents/products_and_services/customer_renewable_programs/20210503_customer_energy_resources_for_hawaii.pdf.

[150] An Act to Advance Clean Energy, 2018 Mass. Acts., ch. 227, § 20.

These state and local actors are also at the forefront of innovative and emerging solutions to managing grid load, including through EVs, such as "vehicle-to-grid" ("V2G") technology,[151] demand response and distributed energy resource programs,[152] and vehicle-integrated microgrids.[153] For example, the California PUC is actively investing in V2G technologies, which allow electric vehicles to supply power back to the grid and thereby promote reliability.[154] One 2019 study estimated potential benefits to ratepayers from these ancillary services at $670 million to $1.02 billion *per year* from V2G services.[155]

3. Significant Investments Are Being Made to Build Out and Reinforce the Domestic Battery Supply Chain

The federal and state governments, manufacturers, and others in the private sector are investing billions to develop the domestic battery supply chain in order to meet the increased demand for zero-emission vehicles.

Congress and the Biden Administration have taken significant steps to accelerate the growth of the domestic battery supply chain, which consists of (1) the production of raw minerals from mining and recycling operations and (2) battery component and battery manufacturing. Specifically, the Bipartisan Infrastructure Law provides $7.9 billion for battery manufacturing, battery recycling, and critical minerals production.[156] The Inflation Reduction Act's Advanced Manufacturing Production Credit may provide manufacturers $136 billion or more, and the

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[151] *See*, *e.g.*, Pacific Gas & Electric Corp., *PG&E to Offer Nation's First Vehicle-To-Grid Export Rate for Commercial Electric Vehicles* (Oct. 26, 2022), available at https://investor.pgecorp.com/news-events/press-releases/press-release-details/2022/PGE-to-Offer-Nations-First-Vehicle-To-Grid-Export-Rate-for-Commercial-Electric-Vehicles/default.aspx (announcing PUC approval to establish a utility rate to compensate fleet owners for V2G services during peak energy demand).

[152] *See*, *e.g.*, Green Mountain Power, *Bring Your Own Device*, available at https://greenmountainpower.com/rebates-programs/home-energy-storage/bring-your-own-device/ (detailing Vermont demand response/distributed energy resource incentive program providing up to $10,500 toward home battery storage).

[153] *See*, *e.g.*, Edison Electric Institute, *Duke Energy Announces Microgrid-Integrated Fleet Electrification Depot* (Apr. 13, 2023), available at https://theelectricgeneration.org/2023/04/13/duke-energy-announces-microgrid-integrated-fleet-electrification-depot (announcing North Carolina electric fleet depot integrated with microgrid and solar); Daniel Kirschen and Chanaka Keerthisinghe, *Techno-Economic Analysis of the Arlington Microgrid: A Report prepared by the University of Washington for Snohomish Public Utility District* (Feb. 28, 2022), available at https://www.snopud.com/wp-content/uploads/2022/06/UW_TechnoEcon_AMG_022822.pdf (detailing Washington pilot microgrid consisting of solar, storage, and V2G systems to support grid resiliency and reliability).

[154] California PUC, *VGI Policy, Pilots, and Technology Enablement*, available at https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/transportation-electrification/vehicle-grid-integration-activities (detailing CPUC's Vehicle-grid integration (VGI) initiatives).

[155] S. Chhaya et al., *Open Standards-Based Vehicle-to-Grid: Value Assessment*, Electric Power Research Institute (Jun. 28, 2019), available at https://www.epri.com/research/products/000000003002014771.

[156] Congressional Research Service, *Energy and Minerals Provision in the Infrastructure Investment and Jobs Act (P.L. 117-58)* (Mar. 31, 2023), available at https://crsreports.congress.gov/product/pdf/R/R47034.

Advanced Energy Project Credit may provide manufacturers at least another $6.2 billion. 88 Fed. Reg. at 29,318.

These federal funds are successfully encouraging large-scale investments in domestic production of critical minerals and battery manufacturing. For example, recipients of $2.8 billion of the Bipartisan Infrastructure Law funding matched the federal investment, leveraging this portion of the funding to a total of $9 billion to expand domestic production of critical minerals and manufacturing of batteries for electric vehicles.[157] This investment supports 21 new or upgraded facilities that produce battery materials, recycle batteries, or manufacture batteries.[158] Additionally, by the end of March 2023, the Inflation Reduction Act had already spurred over $45 billion in announced investments across the domestic battery supply chain,[159] including LG Energy Solution's $5.5 billion investment to build a new battery factory in Arizona[160] and Ford's $3.5 billion investment to build a battery factory in Michigan.[161] And more investments in battery plants continue to be announced.[162]

These federal funds are complemented by state and local government investments in the domestic battery supply chain. For example, California offers $25 million in grant funds for

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[157] 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), available at https://www.energy.gov/articles/biden-harris-administration-awards-28-billion-supercharge-us-manufacturing-batteries.

[158] U.S. Department of Energy, *Bipartisan Infrastructure Law: Battery Materials Processing and Battery Manufacturing* (Nov. 1, 2022), available at https://www.energy.gov/sites/default/files/2022-11/DOE%20BIL%20Battery%20FOA-2678%20Selectee%20Fact%20Sheets.pdf.

[159] The White House, *Treasury Releases Guidance to Drive Investment in Critical Minerals & Battery Supply Chains in America* (Mar. 31, 2023), available at 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.

[160] Niraj Chokshi, The New York Times, *LG Will Spend $5.5 Billion on a Battery Factory in Arizona* (Mar. 24, 2023), available at https://www.nytimes.com/2023/03/24/business/energy-environment/lg-battery-factory-arizona.html.

[161] Neal E. Boudette and Keither Bradsher, The New York Times, *Ford Will Build a U.S. Battery Factory With Technology From China* (Feb. 13, 2023), available at https://www.nytimes.com/2023/02/13/business/energy-environment/ford-catl-electric-vehicle-battery.html.

[162] David Shepardson, Reuters, *GM, SDI will build $3 billion battery manufacturing plant in Indiana* (Jun. 13, 2023), available at https://www.reuters.com/business/autos-transportation/indiana-confirms-gm-sdi-will-build-3-bilion-ev-battery-manufacturing-plant-2023-06-13/; Rebekah Alvey, E&E, *GM to invest in La. Manganese sulfate production for EVs* (Jun. 27, 2023), available at https://subscriber.politicopro.com/article/eenews/2023/06/27/gm-to-invest-in-la-manganese-sulfate-production-for-evs-00103838.

projects that will promote in-state battery manufacturing for zero-emission vehicles.[163] And New York has invested more than $50 million to support the creation of Battery-NY, a technology development, manufacturing, and commercialization center in upstate New York.[164]

By the end of May 2023, over $100 billion of investments had been announced to build or expand over 160 domestic facilities to extract and refine critical minerals and manufacture batteries.[165] "In total, domestic [electric vehicle] battery manufacturing capacity will increase by almost 20-fold between 2021 and 2030."[166] Especially given the growing trend toward domestic battery production,[167] there is every reason to believe that these investments will build a resilient domestic battery supply chain. *See* 88 Fed. Reg. at 29,313 ("EPA has confidence that these efforts are effectively addressing supply chain concerns.").

DISCUSSION

EPA's proposed standards carry out the purpose and requirements of Section 202(a) of the Clean Air Act. *See* 42 U.S.C. § 7521(a). The proposed standards would reduce current and impending threats to public health and welfare and provide manufacturers sufficient lead time to apply the requisite emission control technologies, all at reasonable costs of compliance. However, given that emissions reductions beyond the proposed standards are feasible and cost-effective, our States and Cities urge EPA to adopt standards more stringent than the proposed standards.

A. Section 202(A) Requires EPA to Reduce Threats to Public Health and Welfare from Harmful Air Pollution

Under Section 202(a)(1) of the Clean Air Act, EPA "shall by regulation prescribe . . . standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles

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163 California Energy Commission, *GFO-21-606 - Zero-Emission Vehicle Battery Manufacturing Block Grant*, available at https://www.energy.ca.gov/solicitations/2022-08/gfo-21-606-zero-emission-vehicle-battery-manufacturing-block-grant.

164 Governor Kathy Hochul, New York State, *Governor Hochul Announces Nearly $114 Million in Federal and State Funding to Create First-In-Class Battery-NY Center at Binghamton University* (Sep. 2, 2022), available at https://www.governor.ny.gov/news/governor-hochul-announces-nearly-114-million-federal-and-state-funding-create-first-class.

165 U.S. Department of Energy, *Investments in American-Made Energy* (May 23, 2023), available at https://www.energy.gov/investments-american-made-energy; *see e.g.*, Ivan Penn, The New York Times, *Hyundai and LG Plan $4.3 Billion Battery Plant in Georgia* (May 26, 2023), available at https://www.nytimes.com/2023/05/26/business/hyundai-lg-georgia-battery-plant.html.

166 Jared Sagoff, Argonne National Laboratory, *A new look at the electric vehicle supply chain as battery-powered cars hit the roads en masse* (May 4, 2023), available at https://www.anl.gov/article/a-new-look-at-the-electric-vehicle-supply-chain-as-batterypowered-cars-hit-the-roads-en-masse.

167 Yan Zhou et al., Argonne National Laboratory, *Lithium-Ion Battery Supply Chain for E-Drive Vehicles in the United States: 2010-2020* (Mar. 2021), at xv, available at https://publications.anl.gov/anlpubs/2021/04/167369.pdf; *see id.* at xv ("The batteries used in [electric vehicles] sold in the U.S. have been largely domestically sourced. . . . This trend toward domestic production has grown over time, with 70% of battery cells and 87% of battery packs produced in the U.S. in 2020.").

. . . , which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1). "By employing the verb 'shall,' Congress vested a non-discretionary duty in EPA," *Coalition for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102, 126 (D.C. Cir. 2012), *rev'd in part on other grounds*, *Utility Air Regulatory Grp. v. EPA*, 573 U.S. 302 (2014), the purpose of which is clear: reduce or eliminate the threats to public health and welfare of deleterious air pollutants. 42 U.S.C. § 7521(a)(1); *see also id.* § 7401(b)(1) (declaring a goal of the Clean Air Act "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population"); *Massachusetts*, 549 U.S. at 532 (explaining that "EPA has been charged with protecting the public's 'health' and 'welfare'" in Section 202(a)).

Standards more stringent than EPA's proposed standards would comport with its statutory mandate in Section 202(a) and further the statutory objective by reducing the threats from vehicle pollution to public health and welfare. EPA projects that the proposed standards will reduce GHG emissions by more than 7.3 billion metric tons of carbon dioxide (CO_2), 120,000 metric tons of methane (CH_4), and 130,000 metric tons of nitrous oxide (N_2O) through 2055, in addition to criteria pollutant reductions of 44,000 tons per year of nitrogen oxides (NO_x), 9,800 tons per year of fine particulate matter ($PM_{2.5}$), 200,000 tons per year of non-methane organic gases (NMOG), 2,800 tons per year of sulfur oxides (SO_x), and 1.8 million tons per year of carbon monoxide (CO) by 2055. 88 Fed. Reg. at 29,348 (Table 135); *id.* at 29,351 (Table 139). More emission reductions are feasible. *See* CARB Comment at 17-22. Given EPA's description of these emissions reductions as an "essential factor" in its determination of the appropriate level of the proposed standards, *id.* at 29,344, and the primacy Congress placed on addressing pollution's danger to public health and welfare in Section 202(a), 42 U.S.C. § 7521(a)(1), our States and Cities urge EPA to increase the stringency of its standards beyond those proposed.

1. Greenhouse Gas Emissions from Light-Duty and Medium-Duty Vehicles Require Urgent and Ambitious Action Now

It is critically important to reduce GHGs from light- and medium-duty vehicles and to do so as soon as is feasible. Transportation is the leading source of GHG emissions in the country, accounting for approximately 27.2% of total GHG emissions. 88 Fed. Reg. at 29,350 (citing U.S. GHG Emissions Inventory). Light-duty vehicles alone account for 57% of those transportation sector emissions, or approximately 15.5% of total U.S. GHG emissions. *Id.* Reductions of these emissions are thus crucial for the United States to achieve its climate targets and do its part to keep the rise in global mean temperatures below 1.5 °C to 2 °C.[168]

Urgent emissions reductions are necessary, because GHGs can remain in the atmosphere for long time periods. For example, 40% of carbon dioxide emitted as a result of human activities will

[168] United States, *The United States of America Nationally Determined Contribution, Reducing Greenhouse Gases in the United States: A 2030 Emissions Target* (2021), available at https://unfccc.int/sites/default/files/NDC/2022-06/United%20States%20NDC%20April%2021%202021%20Final.pdf.

remain in the atmosphere after 100 years, and 20% will remain after 1000 years; only after about 10,000 years will all the carbon dioxide emitted now break down.[169] As explained in the Fourth National Climate Assessment, "[w]aiting to begin reducing emissions is likely to increase the damages from climate-related extreme events (such as heat waves, droughts, wildfires, flash floods, and stronger storm surges due to higher sea levels and more powerful hurricanes)."[170]

Moreover, there may be "tipping points" in the climate system such that even a small incremental change in temperature could push Earth's climate into catastrophic runaway global warming.[171] Indeed, a 2022 study published in the journal *Science* warned that six out of nine major climate tipping points (including the accelerating ice loss from the West Antarctic ice sheet) move from "possible" to "likely" to be triggered at 1.5 °C of warming.[172] Therefore, serious efforts to reduce GHG emissions are urgently needed to avoid scenarios where steeper (and vastly more expensive) emission reductions are needed later. Delaying efforts to mitigate carbon dioxide emissions will have negative—and potentially irreversible—consequences for global warming and its impacts, including more extreme wildfires, rising sea levels, greater ocean acidification, and increased risks to food security and public health. Moreover, the uneven distribution of these impacts demands urgent action to protect our most vulnerable populations from additional climate harms and to prevent the exacerbation of existing climate injustices.[173]

Our States and Cities agree with EPA's recent conclusion that, in light of the "increased urgency of the climate crisis," the United States needs "to achieve far deeper GHG reductions from the light-duty sector in future years beyond the compliance timeframe for the [2023-26] standards." 86 Fed. Reg. 74,434, 74,498 (Dec. 30, 2021). EPA's proposed standards are an important step toward those deeper reductions, but it can go further. Standards that effectively require the production and deployment of lower-emitting and zero-emission vehicles will promote longer-term, deeper emissions reductions critical to avoiding catastrophic impacts of climate change.

2. Reductions in Criteria and Air Toxic Pollution Are Urgently Needed to Protect Public Health and Welfare

EPA's Proposal will advance another important, urgent objective of our States and Cities and of Congress: reductions in criteria and toxic air pollution. GHG reductions mitigate the public health harms from other pollutants, because "[i]n a warmer future world, stagnant air, coupled with higher temperatures and absolute humidity, will lead to worse air quality even if air

[169] *Ask the Experts: The IPCC Fifth Assessment Report*, 5 CARBON MANAGEMENT 17, 24 (2014), available at https://www.tandfonline.com/doi/pdf/10.4155/cmt.13.80.

[170] *Fourth National Climate Assessment: Volume II*, *supra* note 46, at 1488.

[171] IPCC, *Climate Change 2021: The Physical Science Basis*, *supra* n. 6 at SPM-28.

[172] David Armstrong McKay et al., *Exceeding 1.5 °C global warming could trigger multiple climate tipping points*, Science, Vol. 377, No. 6611 (Sep. 9, 2022), available at https://doi.org/10.1126/science.abn7950.

[173] *See* USGCRP Study, *supra* n. 61, at 247-86; *see e.g.*, EPA, *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*, *supra* n. 65, at 35.

pollution emissions remain the same."[174] Additionally, the Proposal's tightened standards for criteria and toxics pollution will directly aid our States and Cities in attaining and maintaining NAAQS for criteria pollutants, securing better health and welfare outcomes for their residents, and promoting environmental justice in their communities.

a. *More stringent standards will help protect public health and 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 and $PM_{2.5}$.[175] 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. As EPA notes, the two major precursors of ozone are NO_x and volatile organic compounds ("VOCs"). 88 Fed. Reg. at 29,210. The proposed standards would cut NOx emissions from light- and medium-duty vehicles by 41% and VOC emissions by 50% by 2055, while the Alternative 1 standards would cut these emissions by 44% and 55%, respectively. *Id.* at 29,198, 29,204. These major reductions are crucial to helping States attain and maintain the ozone NAAQS.

While California has adopted stringent emission standards for ozone precursors for vehicles sold in-state, federal standards will further reduce ozone impacts from vehicles sold out of state that travel into California. Reductions in ozone due to the proposed standards would thus provide critical clean air benefits to these locations. Nonattainment areas outside of California will experience similar benefits. For example, more stringent standards may result in a reduction of ozone precursors in Colorado's Denver Metro/North Front Range, which includes a major transportation corridor and a refinery. In 2022, EPA reclassified this area from serious to severe nonattainment for the 2008 8-Hour Ozone NAAQS, and, thus, any and all reductions in ozone precursors are needed. Likewise, counties in Connecticut, New Jersey's and New York are in serious to severe nonattainment with the 2008 8-Hour Ozone NAAQS and are in moderate nonattainment with the 2015 8-Hour Ozone NAAQS. These challenges in attaining the NAAQS are due in part to ozone-forming pollution from out-of-state upwind sources, which EPA's standards will help reduce.[176] 84 Fed. Reg. 44,223, 44,245, 44,248, 44,251–44,252 (Aug. 23, 2019) ("EPA acknowledges the role interstate transport of precursors to ozone pollution plays in the efforts of downwind areas to attain and maintain the NAAQS."). New Jersey has taken action to reduce NO_x and VOC emissions from mobile sources and from stationary sources, including power plants and refineries, in an attempt to attain the NAAQS.[177] But New Jersey

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[174] Nat'l Research Council, *Advancing the Science of Climate Change* (2010) at 326, available at http://nap.edu/12782.

[175] EPA, *Current Nonattainment Counties for All Criteria Pollutants*, *supra* n. 81 (providing NAAQS compliance status of all counties); CARB, *Criteria Pollutant Emission Reductions from California's Zero-Emission Vehicle Standards for Model Years 2017-2025* (Jul. 6, 2021), at 5, App. A to Comments of States and Cities in Support of EPA Reversing Its SAFE 1 Actions.

[176] EPA, *Current Nonattainment Counties for All Criteria Pollutants, supra* note 81.

[177] State of New Jersey Department of Environmental Protection, *New Jersey SIP Revision for the Attainment and Maintenance of the Ozone NAAQS* (Dec. 2017), at x, 4-14.

and other States cannot attain or maintain the NAAQS alone,[178] and EPA's standards will provide important emissions reductions in upwind states and across the country.[179]

Several counties in our States are in moderate to serious nonattainment for the 1997, 2006, and 2012 $PM_{2.5}$ NAAQS,[180] and the projected 35% reductions in $PM_{2.5}$ that the proposed standards will yield by 2055 will help States attain and maintain NAAQS for $PM_{2.5}$. *See* 88 Fed. Reg. at 29,198, 29,204 (describing expected emissions reductions). Moreover, $PM_{2.5}$ exposure *at any level* is associated with adverse health impacts, so reductions in $PM_{2.5}$ emissions will bring public health benefits to our States and Cities regardless of whether our regions have attained the NAAQS.[181] Indeed, because $PM_{2.5}$ exposure below the current NAAQS is clearly harmful, a multi-state coalition, which includes many of the signatories to this comment, petitioned EPA to reconsider its 2020 decision not to strengthen the current NAAQS for Particulate Matter. *See* CARB Comment at 76-77. On January 27, 2023, EPA proposed to find the current NAAQS are inadequate to protect public health with an adequate margin of safety and to tighten the primary NAAQS for $PM_{2.5}$. 88 Fed. Reg. 5,558, 5,561 (Jan. 27, 2023).

b. *More stringent standards will reduce the air pollution dangers faced by communities near refineries and roadways*

Our States and Cities agree with EPA that reducing air toxics—including known carcinogens like formaldehyde and benzene—and criteria pollutants from vehicle exhaust and refining will significantly benefit our residents, especially those in communities proximate to major roadways and refineries. 88 Fed. Reg. at 29,395-97.

$PM_{2.5}$ and air toxics pollution from refineries significantly impact neighboring communities due to localized concentrations of these pollutants. Nearly 700,000 people live within three miles of the 17 refineries that reported actual annual benzene fenceline concentrations in 2020 above the level set by EPA that requires the refinery to take action to clean up emissions. 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.[182]

Communities near major roadways will also benefit greatly from any improvements in air quality. EPA has long acknowledged that people living, working, and attending school near

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[178] *Id.* at xii.

[179] EPA, *Current Nonattainment Counties for All Criteria Pollutants, supra* note 81.

[180] EPA, *Current Nonattainment Counties for All Criteria Pollutants, supra* note 81.

[181] EPA, *Policy Assessment for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter* (May 2022), at 3-178, available at https://www.epa.gov/system/files/documents/2022-05/Final%20Policy%20Assessment%20for%20the%20Reconsideration%20of%20the%20PM%20NAAQS_May2022_0.pdf ("Studies that examine the shapes of concentration-response functions over the full distribution of ambient $PM_{2.5}$ concentrations have not identified a threshold concentration[] below which associations no longer exist").

[182] Environmental Integrity Project, *Environmental Justice and Refinery Pollution: Benzene Monitoring Around Oil Refineries Showed More Communities at Risk in 2020* (Apr. 28, 2021), at 7, n. 6, available at https://environmentalintegrity.org/wp-content/uploads/2021/04/Benzene-report-4.28.21.pdf.

major roadways face greater air pollution exposure. 88 Fed. Reg. at 29,221; 77 Fed. Reg. 62,624, 62,907 (Oct. 15, 2012); 75 Fed. Reg. 25,324, 25,504 (May 7, 2010). The pollution and public health impacts from on-road vehicle emissions are especially significant and greater in disadvantaged communities.[183] For example, the community of Wilmington, Carson, and West Long Beach in Los Angeles, California is affected by six major freeway junctions, as well as freight, port, and rail operations, oil and gas production, and five petroleum refineries. A majority of this community is 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. *See* CARB Comment at 88-90. Measures that reduce pollution in these communities are urgently needed, and addressing that need (and others described above) is mandatory under Section 202(a). Our States and Cities strongly agree with EPA's assessment that the proposed standards will significantly benefit public health and welfare, especially in areas next to major roadways. 88 Fed. Reg. at 29,395-97.

While the proposed standards are expected to moderately increase criteria pollutant and air toxics emissions from power plants due to some increase in electricity demand from more electric vehicles, *id.* at 29,353, 29,397, EPA's other regulatory actions to control power plant emissions, and emissions from related infrastructure, and our States and Cities' efforts to promote renewable generation should reduce these impacts to the communities adjacent to these plants. Nevertheless, EPA should further develop its understanding of the distributive impacts for communities proximate to power plants and refineries.

B. The Proposed Standards Allow Adequate Lead Time to Apply the Requisite Technologies, and the Costs of Compliance Are Reasonable

Section 202(a) requires EPA to afford manufacturers the lead time necessary for the "development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period." 42 U.S.C. § 7521(a)(2). Given that the requisite technologies needed to satisfy the proposed standards (as well as the more stringent alternative) have already been developed and are widely used today, EPA need only provide the lead time necessary for manufacturers to continue deploying these technologies across their vehicle fleets. Indeed, the ALPHA and OMEGA models that EPA used to model manufacturer compliance with the proposed standards utilized a menu of only existing technologies. 88 Fed. Reg. at 29,294. In addition to Section 202(a)'s general lead time requirement, for criteria pollutant standards applicable to medium-duty vehicles with gross vehicle weight over 6,000 pounds, the Clean Air Act further requires EPA to provide a minimum of four years' lead time and three years' stability, because it defines these vehicles as "heavy-duty" for purposes of Section 202(a)(3)(C). 42 U.S.C. § 7521(b)(3)(C).

Our States and Cities believe that EPA's proposed standards, as well as standards more stringent than EPA's proposed standards, satisfy these statutory requirements. EPA estimates the

[183] CARB, *Benefits of California's Zero-Emission Vehicle Standards on Community-Scale Emission Impacts* (Jul. 6, 2021), App. B to Comments of States and Cities in Support of EPA Reversing Its SAFE 1 Actions.

proposed standards per-vehicle cost to industry as ranging from $401 (for model-year 2029) to $1,164 (for model-year 2032) relative to the no-action scenario. 88 Fed. Reg. at 29,328 (Tables 77 & 78). These are in line with or lower than the per-vehicle costs of previous GHG standards EPA has adopted. 75 Fed. Reg. 25,324, 25,463 (May 7, 2010) (Table III.D.6-4) ($948 for model year 2016); 77 Fed. Reg. 62,624, 62,865 (Oct. 15, 2012) (Table III-34) ($1,836 for model year 2025); 86 Fed. Reg. 74,434, 74,483 (Table 30) (Dec. 30, 2021) ($1,000 for model year 2026).[184] Likewise, these projected costs are in line with historical exercises of EPA's Section 202(a) authority.[185]

Our States and Cities add three observations to EPA's analysis of costs and lead time. First, EPA's projected costs likely *over*state the actual costs attributable to reaching the standards in the allotted lead time, due to conservative assumptions in EPA's no-action case that omit the myriad state and local actions to promote electric vehicle adoption. *See supra* 18-21; CARB Comment at 16. Second, state and local agencies are implementing ambitious programs to ready power grids and charging infrastructure for the increased adoption of electric vehicles and the associated increase in electricity demand, which further supports EPA's feasibility analysis. Third, although internal-combustion-engine vehicles will make up a smaller portion of the national fleet, it is imperative that EPA's standards continue to encourage the application of feasible, cost-effective emission-reduction technologies to these vehicles, as they still represent a significant source of GHG, criteria, and toxic pollutant emissions.

1. <u>The Lead Time and Costs of Applying Zero-Emission Technologies Are Adequate and Reasonable</u>

As EPA observes, its modeling anticipates auto manufacturers will meet the proposed standards primarily through increased application of zero-emission technologies and secondarily through application of certain advanced combustion technologies. 88 Fed. Reg. at 29,329-30. Thus, the majority of the proposed standards' costs are likely attributable to EPA's projected increase of electric vehicle penetration rates in model-year 2032 from 39% in the no-action case to 67% under the Proposal. EPA's analysis properly accounts for the key challenges in applying zero-emission technologies on this scale—especially the need to build out critical mineral, battery, and chip supply chains—by simulating likely constraints on auto manufacturers' electric vehicle production in its modeling. *Id.* at 29,295; Draft RIA, at 3-22 to 3-26. EPA's approach to mineral supply constraints appropriately incorporates the effect the battery component supply chain has on its standards without asserting authority over sectors outside its regulatory purview.

However, EPA's conservative methodology for constructing the no-action scenario likely ends up overstating the proposed standards' costs significantly, for two key reasons.

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[184] The per-vehicle costs for Alternative 1's standards are similarly comparable to the per-vehicle costs of the 2012 rulemaking. Draft RIA, at 13-29 ($1,775 for model year 2032).

[185] *See, e.g.*, J.R. Mondt, *Cleaner Cars: The History & Technology of Emission Control Since the 1960s* (2000), at 214 ("[W]hen three-way catalytic converters were implemented in 1980-83, the additional cost increment [per vehicle, in 1996 dollars] amounted to approximately $1200").

First, EPA assumes that auto manufacturers will produce electric vehicles to comply with standards in a "purely cost-minimizing" way. 88 Fed. Reg. at 29,296. As EPA acknowledges, however, auto manufacturers have planned for far higher rates of electric vehicle sales in response to both policies that recognize the significant role of the internal combustion engine in the climate crisis and the surging demand for electric vehicles. *Id*. A model of industry behavior that minimizes costs without accounting for these other drivers of electric vehicle adoption likely understates electric vehicle penetration in a no-action scenario.[186] And, given that respected organizations like Bloomberg New Energy Finance are estimating battery electric vehicle penetrations rates near 52% by 2030 even without considering EPA's proposed standards,[187] EPA's no-action scenario projection of 40% penetration is likely an underestimation. *See* 88 Fed. Reg. at 29,329 (Table 81).

Second, EPA's no-action scenario likely underestimates the baseline battery electric vehicle penetration rate, because it does not account for numerous state and local actions that promote electric vehicle adoption. 88 Fed. Reg. at 29,296. As discussed in the Proposal, EPA did not model compliance with California's Advanced Clean Cars II program ("ACCII"), which requires 100% of in-state new vehicle sales to be zero-emission or plug-in hybrid electric vehicles by 2035; as EPA notes, 11 other States have adopted or plan to adopt ACCII by model-year 2027 under Section 177 of the Clean Air Act. *Id.*; *id.* at 29,334. EPA's decision not to include ACCII in the no-action scenario is appropriate at this stage, because EPA has not yet granted California's pending waiver application for ACCII under Section 209(b). However, EPA's sensitivity study with ACCII in the no-action scenario demonstrates that ACCII would reduce the costs of EPA's standards if EPA were to grant the waiver. *See id.* at 29,335. Further, beyond ACCII or other state-law sales mandates, states and their political subdivisions have enacted a host of incentives to promote electric vehicle adoption, which the no-action scenario does not account for either. *See supra* at 18-21. These omitted state-law incentives mean that, even apart from ACCII, EPA's no-action scenario likely understates electric vehicle adoption without the proposed standards, and thus the proposed standards' costs are likely less than EPA's projected estimates.

EPA's conservative estimates provide the industry and other stakeholders important information on the upper bounds of the proposed standards' costs, and our States and Cities acknowledge the technical challenges of rigorously modeling the above state laws and market dynamics. Nevertheless, EPA should be candid that the real-world costs fairly traceable to the final standards will likely be significantly lower than those disclosed, even apart from ACCII's potential effects, and EPA should consider adopting standards more stringent than the proposed standards.

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[186] *See* Consumer Reports Amicus Brief, Doc. No. 1988445 in *Texas v. EPA*, Case No. 22-1031 (D.C. Cir. Mar. 3, 2023), at 4-15.

[187] Ira Boudway, *More Than Half of US Car Sales Will Be Electric by 2030*, Bloomberg (Sep. 20, 2022), available at https://www.bloomberg.com/news/articles/2022-09-20/more-than-half-of-us-car-sales-will-be-electric-by-2030.

2. State and Local Actions Are Facilitating the Necessary Generation, Transmission, and Charging Infrastructure to Support the Projected Compliance Pathway

While EPA only needs to consider the costs of regulatory compliance incurred within the allotted lead time, *Coalition for Responsible Regulation*, 684 F.3d at 128, EPA also considers the demands on the power sector from projected compliance with the proposed and alternative standards. 88 Fed. Reg. 29,309-312. We agree with EPA's assessment that the projected modest increase in electricity demand (0.04 to 2% over the course of the regulated model years) is more than manageable. This is especially true when compared to other historical and current examples of rapid demand increases that the power sector successfully met, *see* 88 Fed. Reg. at 29,311 (noting widespread adoption of air conditioning in 1960s and 1970s and 21st-century growth of data centers and server farms),[188] and given Congress's significant investments in transmission, generation, and charging infrastructure in the Bipartisan Infrastructure Law's NEVI Formula Program and the Inflation Reduction Act. Draft RIA, at 5-14 (Tables 5-2 & 5-3); 88 Fed. Reg. at 29,307-08. Part D.2 of the Background section, *supra* at 21-25, provides examples of some of the actions our States and Cities are taking, including under the NEVI Formula Program, to ensure there is sufficient charging infrastructure to support the projected electric vehicle penetration rate.

In addition to the federal agencies that ensure the safety and reliability of U.S. power grids, EPA properly recognizes that many of the decisions that affect the power sector's response to widespread electric vehicle adoption will be made by non-federal entities. States, RTOs/ISOs, public utility commissions, and public and private utilities have the responsibility to ensure adequate supply, transmission capacity, and grid resiliency. 88 Fed. Reg. at 29,311; *see* 16 U.S.C. §§ 824(a), (b)(1), and are at the forefront of developing vehicle-to-grid applications and other grid management solutions. Part D.2 of the Background section, *supra* at 21-25, details many of the initiatives that states and other non-federal actors are taking to meet the transition.

3. EPA Should Ensure that Internal Combustion Engine Vehicles Continue to Apply Emission-Reduction Technologies

EPA projects that, aside from electric vehicle adoption, auto manufacturers are likely to apply advanced technologies to reduce the GHG and criteria emissions of their internal-combustion-engine vehicles, albeit in lower numbers than is otherwise feasible. 88 Fed. Reg. at 29,330. This highlights an important aspect of the proposed standards: that even as the industry transitions to zero-emission vehicles, internal-combustion-engine vehicles will continue to make up a sizeable portion of new vehicle sales. These new internal-combustion-engine vehicles will continue to drive on the roads and emit GHGs, criteria pollutants, and air toxics for potentially decades, so it

[188] *See also* White House Office of Science and Technology Policy, *Climate and Energy Implications of Crypto-Assets in the United States* (Sep. 2022), at 14-15, available at https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-Crypto-Assets-and-Climate-Report.pdf (estimating U.S.-based cryptocurrency mining operations for Bitcoin alone to consume "33 to 55 billion kWh per year, or 0.9% to 1.4% of total U.S. electricity usage in 2021").

is crucial that EPA's standards continue to require improvements from these vehicles' emissions performances. Because of the standards' fleet average structure, a manufacturer's production of zero-emission vehicles may enable it to forego improving or even backslide on internal-combustion-engine vehicles' emissions performance. Indeed, as the California Air Resources Board's comment discusses, the compliance pathway EPA projects for its proposed standards show automakers *removing* emission-reduction technologies from internal-combustion-engine vehicles while still complying with the proposed standards. CARB Comment at 18-22. Therefore, even if EPA were to forego encouraging the application of zero-emission technologies, it would still be obligated to tighten these emission standards beyond the proposed standards simply to *keep pace with* that trend and ensure the continued integrity of its emissions program as to new internal-combustion-engine vehicles.

This dynamic underscores the need for EPA to adopt standards more stringent than those proposed, and to eliminate outdated or redundant compliance flexibilities as proposed and as discussed below. We urge EPA to continue to monitor the industry's ongoing transition to zero-emission vehicles and ensure all of its standards continue to spur necessary and feasible reductions in vehicle pollution of all kinds.

C. The Benefits of the Proposed Standards Significantly Outweigh their Costs

Our States and Cities agree with EPA's practice to "set standards to achieve improved air quality consistent with [S]ection 202, and not to rely on cost-benefit calculations, with their uncertainties and limitations, as identifying the appropriate standards." 88 Fed. Reg. at 29,198. Likewise, we agree that EPA's cost-benefit analysis "reinforces [EPA's] view that the proposed standards are appropriate," *id*., and we believe it also supports adoption of standards more stringent than the proposed standards. To promote transparency and clarity around the proposed standards, we add a few comments pertinent to EPA's cost-benefit analysis below.

First, while we agree with EPA's decision to project the proposed standards' technology costs out to 2055, to promote a robust comparison with the benefits also projected for the same period, *id.* at 29,364-5, EPA should enhance the public's understanding of this rule's costs by providing more context for these numbers. Because the automotive industry's light- and medium-duty fleets are so large, the technology costs projected through 2055 are relatively modest when distributed over the number of vehicles they cover: more than 400 million vehicles sold over almost three decades. EPA should consider disclosing the aggregate technology costs in Table 160 as per-vehicle costs, as it has done in other parts of the Proposal. *See id.* Per-vehicle cost figures are particularly informative, because auto manufacturers are likely to pass at least a portion of these costs down to consumers, who will more than recoup any such price increases through reduced operating and ownership costs. *Id.* at 29,328. And, in the same spirit that EPA explored sensitivities to ACCII coming into effect, *id*. at 29,335, EPA should disclose to what extent the proposed standards' projected costs through 2055 would be reduced if ACCII were included in the no-action scenario.

Second, the auto industry has already invested hundreds of billions of dollars in transitioning to electric vehicles.[189] These investments cover many of the technology costs that EPA anticipates the industry will expend to comply with the proposed standards. While it may be difficult to parse to what extent this investment responds to consumer demand, business strategy, or state policies and to what extent this investment anticipates federal regulation, EPA should note that the auto industry has committed at least some of the technology costs projected in Table 160 long before these standards were proposed.

Third, although the projected benefits through 2055 already outweigh the costs by an impressive degree, even these benefits are understated. As EPA recognizes, the social cost of greenhouse gases ("SC-GHG") metric does not fully capture the harms from climate change. 88 Fed. Reg. at 29,372. In recent comments on EPA's proposed GHG standards for heavy-duty vehicles, a group of states and cities (many of whom are signatories to this comment) 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 wildfires and loss of cultural and historical resources) and its utilization of overly high discount rates. We attach those comments here for reference.[190] Moreover, as EPA states, monetized benefits for reduced criteria and air toxics pollution are only a fraction of the total benefits, representing only the value attributable to reducing $PM_{2.5}$. 88 Fed. Reg. at 29,372, 29,379-83. Although the Administrator did not rely on the exact size of the proposed standards' projected benefits or the amount by which they exceed projected costs, *id.* at 29,198, the public's understanding of the Proposal will benefit from EPA underscoring the degree to which projected benefits are underestimated, and projected costs overestimated. *See* CARB Comment at 69-74.

D. EPA's Proposal to Retire or Limit Credits Is Consistent with Section 202(a)'s Focus on Real-World Emission Reductions

Finally, the States and Cities support EPA's Proposal to retire certain compliance flexibilities associated with the light- and medium-duty vehicle emissions program. In particular, EPA's rationales for limiting air-conditioning efficiency credits, 88 Fed. Reg. at 29,246-48, and for phasing out off-cycle credits and the MDV multipliers, *id.* at 29,243-45, 29,249-52, are consistent with the agency's responsibility to ensure the emissions program's environmental integrity by tying credits and other flexibilities to real-world emission reductions as closely as possible.

However, we urge EPA to consider retaining a smaller-value air conditioning credit for refrigerant leakage, *id.* at 29,247-48, or other, similar measures to continue preventing leakage of

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[189] Noah Gabriel, *$210 Billion of Announced Investments in Electric Vehicle Manufacturing Headed for the U.S.*, Atlas EV Hub (Jan. 12, 2023), available at https://www.atlasevhub.com/data_story/210-billion-of-announced-investments-in-electric-vehicle-manufacturing-headed-for-the-u-s/ ("Vehicle manufacturers and battery makers plan to invest $860 billion globally by 2030 in the transition to EVs. Nearly a quarter, $210 billion, is expected to be invested in the United States, more than in any other country.").

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

air conditioning refrigerants. Although the use of refrigerants with low global warming potential ("GWP") indicates refrigerant leaks will contribute less to climate change, even low-GWP refrigerant leaks continue to be harmful in the aggregate. *Id.* at 29,246 (low-GWP refrigerant HFO-1234yf has a GWP of 4, compared to HFC134(a)'s GWP of 1430). Continuing to incentivize the prevention of refrigerant leaks still appears beneficial, even if the credit itself should be reduced to reflect the lower GWP of the predominant refrigerant. *See* CARB Comment at 35-37.

Finally, EPA should evaluate the risk of excess credit generation in the NMOG+NO_x program for medium-duty vehicles. Because Section 202(a)(3)(C) requires three years' "stability" for NO_x standards for "heavy-duty" vehicles (defined by statute to include some of the vehicles EPA now classifies as medium-duty), but not for GHG standards, the proposed medium-duty GHG standards require year-over-year reductions in model years that the medium-duty NMOG+NO_x standards hold constant. *Id.* at 29,243 (Table 32), 29,261 (Table 41). EPA expects the industry to achieve compliance with the medium-duty GHG standards to a significant extent through electrification, which likewise reduces NMOG+NO_x emissions. *Id.* at 29,244, 29,331. Therefore, the medium-duty fleet will likely achieve NMOG+NO_x reductions even in those "stability" years. EPA should clarify whether this discrepancy poses any risk of excessive credit generation and necessitates some action to prevent dilution of the MDV NMOG+NO_x standards, such as restricting credit generation under the NMOG+NO_x program,[191] or calibrating the model-year 2030 standards' stringency to account for such changes in the fleet, *see id.* at 29,261 (Table 41).

CONCLUSION

For the foregoing reasons, our States and Cities urge EPA to adopt standards more stringent than the proposed standards; to update its cost-benefit analysis and further disclose how this analysis understates likely net benefits; and to consider refining its program's compliance flexibilities per the above discussion.

[191] For example, EPA could make credit generation dependent on manufacturers' participation in the optional early compliance pathway. *Id.* at 29,260.

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