COMMENTS ON NHTSA's PROPOSED EMISSIONS STANDARDS FOR MY 2024-2026 LIGHT DUTY VEHICLES

Submitted by Robert Yuhnke on behalf of Elders Climate Action

The following comments asking NHTSA to strengthen the emission standards proposed for MY 2026 light-duty vehicles under EPCA and NNHTSA are submitted on behalf of Elders Climate Action (ECA), and the ECA Chapters in States including but not limited to Northern California and Southern California, Massachusetts, Arizona, District of Columbia, Maryland and Virginia, and ECA members.

ECA, its chapters and members have a stake in this decision because we are the elders of families whose health and well-being are personally affected, and we are the parents and grandparents of children whose well-being and quality of life will be compromised by being compelled to live their lives in the extreme conditions that are now occurring and will worsen as a result of the climate heating caused by the GHG pollutants emitted from combustion of carbon fuels in motor vehicles.

I. Executive Summary.

The science is clear: stabilizing the climate before it becomes too hot to support human civilization and attaining the ozone NAAQS in all of America's 230 nonattainment counties requires that GHG emissions from on-road vehicles be reduced to zero as soon as possible. In his Climate Executive Order President Biden declared that the policy of the United States is to "**put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050."**[1]

[1] Executive Order to Tackle Climate Change (January 27, 2021).
Sec. 201. Policy. Even as our Nation emerges from profound public health and economic crises borne of a pandemic, we face a climate crisis that threatens our people and communities, public health and economy, and, starkly, our ability to live on planet Earth. Despite the peril that is already evident, there is promise in the solutions — opportunities to create well-paying union jobs to build a modern and sustainable infrastructure, deliver an equitable, clean energy future, and **put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050.**
We must listen to science — and act. We must strengthen our clean air and water protections. We must hold polluters accountable for their actions. We must deliver environmental justice in communities all across America. The Federal Government must drive assessment, disclosure, and mitigation of climate pollution and climate-related risks in every sector of our economy, marshaling the creativity, courage, and capital necessary to make our Nation resilient in the face of this threat. Together, we must combat the climate crisis with bold, progressive action that combines the full capacity of the Federal Government with efforts from every corner of our Nation, **every level of government**, and every sector of our economy.
It is the policy of my Administration to organize and deploy the full capacity of its agencies to combat the climate crisis to implement a Government-wide approach that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure. Successfully meeting these challenges will require **the Federal Government to pursue such a coordinated**

The President's declared policy responds to and is supported by the science which makes clear that the climate will continue to heat up so long as humanity continues to increase GHG levels in the atmosphere. The global mean temperature reached 1.2 ^{o} C above the pre-industrial baseline in 2020[2] which has produced massive damage and destruction to property and natural systems, and caused hundreds of deaths, displacement, homelessness and loss of livelihoods for tens of thousands of Americans from extreme floods, drought, wildfires, hurricanes and tornadoes.

The latest report (AR6) from the Intergovernmental Panel on Climate Change (IPCC) now makes clear that exceeding 1.5^{o} C above the pre-industrial baseline before 2050 is "more likely than not" even with implementation of the most aggressive GHG reduction scenario, but that the excursion above 1.5^{o} C can be limited to a few decades if we reduce GHG emissions by half before 2030, and achieve net zero emissions by 2050. But if we fail to meet either of those targets, it is "more likely than not" that global temperatures will reach and exceed 2.0 ^{o} C with dire consequences for humanity.

To achieve the President's objective of net-zero emissions economy wide by 2050, zero emission technologies currently available must be deployed as soon as possible to put GHG emissions from our largest source of emissions – transportation – on the path toward zero. NHTSA's proposed rule minimally reduces carbon fuel combustion per mile driven. Zero emissions cannot be achieved if vehicles continue to burn carbon fuels. Internal combustion engines (ICEs) must be replaced as quickly as possible by zero emission vehicles (ZEVs).

NHTSA's proposed rule does not chart a course toward implementing either the national policy declared by President Biden or reflect the urgent need to cut GHG emissions in half by 2030 to avoid much worse future climate catastrophes. The Draft Supplemental EIS acknowledges that over the next 80 years the rule will only reduce aggregate emissions from light duty vehicles 5 to 10%, depending on the option chosen. The rule does not achieve, or describe how it will contribute to achieving, zero emissions from light duty vehicles by 2050.

We ask NHTSA to supplement the current proposed rule for the 2026 MY to 1) set a zero emission standard for new motor vehicles, and 2) establish a phase-in schedule for the standard that includes a 30% ZEV sales target for MY 2026 to begin charting a regulatory path that will transition the auto industry toward achieving 100% production and sale of ZEVs in the U.S. by 2030.

ZEV sales targets are needed now for MY 2026 –

approach from planning to implementation, coupled with substantive engagement by stakeholders, including State, local, and Tribal governments.

[2] World Meteorological Organization, State of the Global Climate, 6 (April 2021); available at doc_num.php (wmo.int). WMO uses the "1850–1900 baseline as an approximation of pre-industrial levels." *Id.*

- to establish benchmarks for all automakers to meet to create a level playing field that promotes competitive market conditions for zero emission vehicles based on performance, reliability and cost;
- to ensure a market for ZEVs that will justify early investment by third parties in the development of supply chains needed for production of batteries and fuel cells;
- to ensure the capacity of the industry to ramp up to 100% of sales to ensure that ZEVs will be available in time to replace 253 million light duty on-road vehicles by 2050
- to give the industry enough lead time to develop supply chains, plan the conversion of production facilities and develop marketing campaigns designed to assure public acceptance of their products.

II. To Stabilize the Climate as Quickly as Possible, and Protect the Public Health, NHTSA Must Set a Zero Emissions Standard for GHG Emissions from New Motor Vehicles, and Begin Phasing in the Standard With the 2026 Model Year.

The Energy Policy Act authorizes NHTSA to set emission standards for motor vehicles as needed to protect the energy security of the United States. The proposed rule acknowledges that the auto industry has developed zero emission vehicle technologies, that at least five automakers have committed in an agreement with California to expand production of zero emission vehicles, and that California has adopted regulatory requirements mandating the sale of zero emission vehicles.[3] We ask the Administration to make the determination that emissions of both GHGs and precursors to the criteria pollutants PM and ozone emitted from light duty vehicles must be reduced to zero no later than 2050 to -- 1) protect the national security of the United States, and 2) prevent the devastating damage to the public health and welfare from the many adverse effects of climate warming.

We ask the Administration to begin phasing in a zero emission standard by establishing a sales mandate that requires each manufacturer to achieve 30% ZEV sales during the 2026 MY with the goal of achieving 100% ZEV sales by 2030 in order to achieve zero emissions from on-road light duty vehicles by 2045-50. [4]

Commenters understand that additional rulemaking will be required to establish a zero emission standard and phase-in schedule. We ask that the Administration not delay completion of the current proposed rule so that it can apply to 2024-25 MY vehicles. We ask that the Administration re-open the rulemaking for the 2026 MY to promulgate a zero emission standard and a phase-in schedule that begins with the 2026 MY.

A. Urgent Need for Zero GHG Emission Standard to Achieve GHG Reductions.

Harm to public health and the environmental, property and economic resources of our communities incorporated into the CAA definition of "public welfare" was anticipated and

[3] 86 Fed. Reg. 49602, 49604, 49611, 49622.
[4] 42 U.S.C. §7601.

comprehensively described in the U.S. EPA's *Endangerment Finding* that established the basis for regulating six GHGs under the CAA.[5] All of the anticipated harms have now been demonstrated to vary degrees, and are accelerating rapidly as the planet continues to heat up.

1. The IPCC Findings.

Since the *Endangerment Finding,* the catalogue of climate-related risks have been augmented by much more comprehensive modeling of warming trends, the warming expected from a range of global emission scenarios, and a description of the emission limitations that must be implemented to avoid more catastrophic climate outcomes.

The IPCC's 2018 report reviews and analyzes the then-available scientific literature to provide the best information available to answer two critical questions posed by world leaders at the Paris Climate conference:

1) What are the differences between the consequences of allowing the planetary climate system to rise 1.5^{o} C compared to 2^{o} C above the pre-industrial background?

2) What limitations on CO2 and other GHG emissions must be achieved to avoid overshooting a 1.5^{o} C or a 2^{o} C rise in global temperature?

(a) Consequences of 1.5^{o} C and 2^{o} C rise in global temperatures are both unacceptable, but 2^{o} C is significantly worse.

The IPCC's 2018 report catalogues numerous expected adverse consequences of both a 1.5^{o} C and a 2^{o} C rise and in global mean temperature.[6] Some of the effects of greatest concern are –

1) increases in mean summer temperatures and the frequency of hot days above the 99th%ile of the baseline temperature range, and the increased duration of the summer dry season that, together, will more quickly desiccate the coastal and Cascade forests each year, increase the ignitability of forest fuels, increase the frequency and intensity of wildfires, increase the production of hazardous concentrations of fine particle pollution (smoke), and increase the adverse health consequences of public exposure to multi-day extreme hazard pollution episodes;

2) diminished summer stream flows that force curtailment of water for agricultural operations dependent on irrigation water, and contribute to warmer surface water temperatures that interfere with the survival of cold water fish species (e.g., salmonids) and contribute to algal blooms that produce toxic contamination of municipal and agricultural water supplies and fishery habitats;

[5] 74 Fed. Reg. 66,496 (December 15, 2009).
[6] **Global Warming of 1.5^{o} C, Chapter 3: "Impacts of 1.5^{o} C of global warming on natural and human systems."**

3) increasing ocean acidification and ocean temperatures that together prevent reproduction and survival of some marine species, cause some native local species to abandon Oregon waters in search of cooler waters, and diminish productivity of species remaining in the local water column which in turn will reduce the catch, make commercial fishing unprofitable, and further reduce the food supply for human populations dependent on marine sources of protein and resident coastal orca populations that are now starving because of diminished food supply;

4) the frequency and duration of extreme precipitation events that cause flooding, erosion, displacement of human populations in flood-prone areas, the destruction of freshwater and anadromous fish spawning habitat and contamination of municipal water supplies;

5) warmer winter temperatures that convert winter snow precipitation events to rainfall thereby reducing the high altitude storage of water which diminishes water resources available for agriculture and municipal uses during the spring and summer, and increases the severity of drought by reducing stream flows, causing crop loss, loss of fishery habitat, and inadequate water supplies for residential and industrial users and fire fighting.

6) longer wildfire seasons and expanded burn zones that increase human exposure to hazardous levels of air pollution, including multi-week exposure to levels of fine particles (smoke) known to cause pre-mature death and other adverse health outcomes among vulnerable populations, and elevated concentrations of ground level ozone harmful to public health exacerbated by warmer summer temperature regimes that govern the chemistry of ozone formation in the atmosphere.[7]

All of these effects are occurring now, and are expected to increase in severity as the climate warming accelerates.

(b) Expanding Wildfire Destruction and Smoke Mortality Correlates with Warming Climate.

The IPCC found that global mean temperature was about 1.0° C above the pre-industrial baseline in 2010. By 2010, the climate regime had not yet triggered large increases in wildfire conditions compared to historical fire patterns in the American West. But as the global mean advanced from 1.1 ° C to 1.2 ° C, new records were being set. The World Meteorological Organization (WMO) concluded that "[i]n 2020 – one of the three warmest years on record – the global average temperature was 1.2 °C above the pre-industrial baseline."[8]

As the global temperature approached 1.2 °C, the frequency, intensity, areal extent and duration of wildfires have increased significantly in the last five years. In 2020 burns set records across the American West. California's burn area grew to nearly 5 million acres, and the total area

[7] "More Days With Haze: How Oregon is Adapting to the Public Health Risks of Increasing Wildfires," p. 5 (Oregon Health Authority, 2019) available at OHA 2688 More Days with Haze (oregon.gov).
[8] World Meteorological Organization, State of the Global Climate, 6 (April 2021); available at doc_num.php (wmo.int). WMO uses the "1850–1900 baseline as an approximation of pre-industrial levels." *Id.*

burned in the 11 Western states exceeded 10 million acres: 2020 Western United States wildfire season - Wikipedia. The increasing area burned by wildfire in the American West tracks the Australian experience where annual fire zones expanded rapidly in response to drought leading to a massive wildfire season burning 46 million acres (an area equal to the State of Washington) during their 2019-20 austral summer.[9]

During the 2017 fire season, wildfire in Oregon destroyed one-half million acres for the first time in the State's history. In 2018 wildfire consumed 660,000 acres of forest. In 2020 Oregon wildfires consumed 1.2 million acres,[10] forced 500,000 Oregonians to evacuate their homes ahead of the flames, incinerated 4,000 homes displacing 10,000 Oregonians, leaving many families homeless, and killed 11. The 2020 burn area doubles the 2017 burn area, and is an order of magnitude greater than the statewide average of 120,000 acres burned during the 1990-2010 period.

The 2018 IPCC report states that the global mean temperature is rising about 0.2° C per decade,[11] twice the warming rate during the 20th Century. This accelerated warming rate suggested in 2018 that 1.5° C rise would be reached about 2035 unless large reductions in GHG emissions were achieved before 2030. New modeling performed for the 2021 IPCC report, AR6, indicates that 1.5° C above the pre-industrial baseline will be reached by 2030 if GHG emissions are held to current rates, and 2° C rise reached by 2050.[12,13] WMO has since announced its estimate that the first annual 1.5° C rise in global temperature will likely occur by 2026.[14]

Given that the frequency and ferocity of wildfire in the American West began to increase significantly after 2015 under the climate conditions associated with 1.1° C to 1.2° C rise above the 1850–1900 baseline, the march higher toward a 1.5° C rise between 2025 and 2030 can be expected to accelerate the frequency, severity and areal extent of damage caused by wildfire.

The *Oregon Climate Assessment* (OCAR5.pdf | Powered by Box, January 5, 2021) anticipates that the destruction of property, disruption of daily life, large costs to the economy, pollution of the atmosphere and water supplies, impairment of human health, and damage to wildlife, the environment and habitats will worsen in coming years as the climate continues to warm more rapidly. The *Assessment* cites studies predicting the effects of warming on seasonal heat causing a six-fold increase in hot days (>90° F) in Oregon counties west of the Cascades during future Oregon summers (pp. 12-13), and reductions in summer precipitation (Table 2).

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[9] List of major bushfires in Australia - Wikipedia, *see* Sept. 2019-March 2020.
[10] https://en.wikipedia.org/wiki/2020_Oregon_wildfires (1,221,324 acres burned in 2020).
[11] **Global Warming of 1.5° C, Chapter. 1** (Section 1.2.1.3)**.**
[12] "Analysis: When might the world exceed 1.5C and 2C of global warming? | Carbon Brief (Dec. 4, 2020).
[13] Climate Change 2021: The Physical Basis (IPCC, 2021), Summary for Policy Makers, B.1.2. available at 2108-09 IPCC_AR6_WGI_SPM.pdf.
[14] World Meteorological Organization, press release (May 27, 2021) available at https://public.wmo.int/en/media/press-release/new-climate-predictions-increase-likelihood-of-temporarily-reaching-15-%C2%B0c-next-5.

Summers will be hotter and drier, and summer heat will start earlier and persist longer.[15] The *Assessment* concludes that these conditions are conducive to "high-severity" wildfires:

> High-severity fires dominate wet, cool forests, including remnant old growth forests, in Oregon's Coast Range and western Cascade Range. High-severity wildfires in wet, cool forests typically are … facilitated by extremely dry and warm springs and summers or high winds.

As these conditions become more extreme, the area incinerated by wild fires is expected to increase (pp. 48-54). A 2017 forest modeling analysis "projected a 200% increase in median annual area burned in Oregon" during the 2010-2039 period compared to 1961-2004.[16] Another 2017 study looking at fires across the American West estimates a 200-400% increase in the "annual probability of very large fires."[17] Going forward, the Assessment makes clear that all "empirical models … consistently project that the area burned in Oregon will increase."[18]

The fire zone doubled between 2017 and 2020. As predicted by forest science modeling, another doubling of the acres burned annually by 2025-30 is highly plausible as global temperature approaches 1.5° C above the pre-industrial baseline.

If fire zones expand to predicted levels in the Pacific NW, 25% to 40% of Oregon (15 to 25 million acres) and Washington (11 to 20 million acres) will be incinerated during this decade, economic activity will collapse and hazardous air quality will make the Northwest inhospitable to human habitation for most residents during the fire season.

The data and modeling estimates presented in the Oregon Climate Assessment and other sources predict a future in which the destruction of Oregon's forest resources by wildfire will continue until either 1) the cool and wet conditions that sustained Cascadia's forests during the 8,000 years before 1980 are restored, or 2) most of the standing forests are reduced to shrub or grasslands.

2. Impacts of Climate Warming on Public Health are Significant and Widespread.

Fire smoke and unprecedented hot temperatures are having a significant impact on human health as an example of the regional impact of heat waves, drought and wildfires.

The heat dome that raised temperatures above 110 F for three days in the Pacific NW in June 2021 caused over 200 heat-related deaths in Oregon and Washington.

Recent research demonstrates that emissions from wildfire are the largest source of fine particle pollution in large regions of the U.S., and contributed to thousands of pre-mature deaths. Wildfire in the western U.S. now accounts for half of all fine particle pollution in some

[15] *Id.*, 3.
[16] Climate Assessment, 53.
[17] *Id.*, 54.
[18] *Id.*, 53.

areas of the West, doubling the exposure to PM2.5[19] from non-fire sources including motor vehicles, power plants and industrial operations.[20]

> A warming climate is responsible for roughly half of the increase in burned area in the United States (4), and future climate change could lead to up to an additional doubling of wildfire-related particulate emissions in fireprone areas (36) or a many-fold increase in burned area (37, 38). Costs from these increases include both the downstream economic and health costs of smoke exposure, as well as the cost of suppression activities, direct loss of life and property, and other adaptive measure (e.g., power shutoffs) that have widespread economic consequences.[21]

Using satellite measurements of smoke plumes integrated with ground level monitored PM2.5 (fine particle) concentration data, Burke et al. estimate that between 7,000 and 14,500 deaths per year (depending on the dose/response curve used to estimate mortality from observed exposures) are attributable to fire smoke in the contiguous U.S.

Mortality and other health impacts such as asthma attacks and exacerbating COPD will be experienced most severely by communities already burdened by the adverse health effects of daily exposure to fine particle pollution emitted from tailpipes, power plants and industrial sources. Exposure to fire smoke in the American West during the 2020 fire season was universal. No communities were spared. But fire smoke at least doubled the annual exposure routinely suffered by BIPOC and low income communities living near major highways and industrial sources.

In Oregon, mortality attributed to fire includes many hundreds more deaths than the lives lost directly to fires. Statewide smoke pollution during the 2020 fires threatened lives and well-being with extreme hazard concentrations of particles known to cause pre-mature death and cancer, exacerbate asthma, COPD and other respiratory conditions, and cardio-vascular diseases.

The Oregon Health Authority (OHA) reports that "[t]he most severe recent air quality events in Oregon are due to wildfire smoke…"[22] OHA cited a study finding that fire smoke in 2012 "caused hundreds of premature deaths, nearly 2,000 emergency room visits and more than $2 billion in health costs."[23] OHA points to the longer fire season as increasing the harm from exposure to smoke. "Fire seasons in Oregon are roughly 100 days longer than they were in the 1970s. Longer seasons mean more smoke in Oregon communities."[24] The greater density of

[19] PM2.5 are particles smaller than 2.5 micrometers in diameter.
[20] Burke, M. et al., The changing risk and burden of wildfire in the United States | PNAS (Jan 11, 2021).
[21] *Id.*
[22] Oregon Climate and Health Report, 40 (Oregon Health Authority, 2020).
[23] *Id.*, 33.
[24] *Id.*,

smoke and longer duration of smoke exposure in 2020 likely at least doubled the mortality caused by smoke exposure compared to 2012.

In addition, low income families without air conditioning are much less able to escape smoke pollution by closing doors and windows during the summer heat to keep themselves safe. Workers cannot avoid exposure to smoke pollution if required to work outdoors.

Beyond the economic and environmental damage, social disruption, and harm to health that will result from a longer fire season and expanded fire zones, more deadly air quality will likely make parts of the American West uninhabitable during the fire season for the most vulnerable populations such as the elderly, children and those with existing respiratory and cardiovascular conditions.

These recent data and other sources published since 2009, including the data discussed at length in the Administrator's 2009 Endangerment Finding, 74 Fed. Reg. 66,496 (December 15, 2009), confirm the finding that U.S. EPA made 12 years ago: "The Administrator finds that the elevated atmospheric concentrations of the well-mixed greenhouse gases may reasonably be anticipated to endanger the public health and welfare of current and future generations." *Id.*, at 66,523.

3. Net-Zero Emissions Must be Achieved as Soon as Possible to Protect the National Security from the Extreme Threats to Public Safety, Economic Security, Public Health and the Public Welfare.

The climate will need to be stabilized as soon as possible to –

- protect public health from the deadly effects of heat waves and wildfire smoke particles;
- preserve the health, safety and quality of life in the American West from the devastation caused by massive uncontrollable wildfires;
- preserve the health, safety and quality of life for millions of Americans living along the Gulf Coast from the devastation caused by super hurricanes,
- preserve the health, safety and quality of life for hundreds of millions of Americans living in the Mid-West and Northeast from the deaths and devastation caused by massive flooding,
- to protect the health, safety and quality of life for millions living in Tornado Alley from the Great Plains to the upper South;
- to protect forests so that they may serve as a sink for CO2 rather than as an emission source;
- preserve habitat for wildlife and a resource for forest products and other industries dependent on them, and
- protect the vitality of the marine web of life from collapse as a result of acidification.

The IPCC provided clear guidance in its 2018 report that to stop the warming and stabilize the climate, the economy must transition to a zero carbon (CO2 and methane) emission energy

system, and forests must be expanded to extract CO2 from the atmosphere. Climate stability can be achieved only by reducing GHG emissions to net-zero.

> To stabilize global temperature at any level, 'net' CO2 emissions would need to be reduced to zero. This means the amount of CO2 entering the atmosphere must equal the amount that is removed. Achieving a balance between CO2 'sources' and 'sinks' is often referred to as 'net zero' emissions or 'carbon neutrality'.[25]

> Limiting warming to 1.5°C implies reaching net zero CO2 emissions globally around 2050 and concurrent deep reductions in emissions of non-CO2 forcers, particularly methane[26] (high confidence). Such mitigation pathways are characterized by energy-demand reductions, decarbonization of electricity and other fuels, electrification of energy end use, deep reductions in agricultural emissions, and some form of CDR [carbon dioxide reduction] with carbon storage on land or sequestration in geological reservoirs.[27]

Zero GHG emissions to stabilize the climate must be achieved sooner than later to minimize the losses and deaths associated with devastating warmer climate effects. Zero emissions cannot be achieved without transforming transportation which is the largest source of GHG emissions. For most transportation sources such as on-road vehicles, zero emissions can be cost-effectively achieved by electrification with batteries or fuel cells.

The latest IPCC report (2021) concludes based on the latest climate data and updated modeling that –

> Under the five illustrative [GHG emissions] scenarios, in the near term (2021-2040), the 1.5°C global warming level is *very likely* to be exceeded under the very high GHG emissions scenario (SSP5-8.5), *likely* to be exceeded under the intermediate and high GHG emissions scenarios (SSP2-4.5 and SSP3-7.0), *more likely than not* to be exceeded under the low GHG emissions scenario (SSP1-2.6) and *more likely than not* to be reached under the very low GHG emissions scenario (SSP1-1.9).[28]

The opportunity to stay below 1.5°C and to prevent the additional devastation that such level of warming will cause, has been frittered away by inaction and delay. At the current global mean temperature, the climate has warmed enough to endanger public health, cause devastating destruction of homes and businesses, loss of life and the disruption of natural systems by extreme floods, drought, wildfires, hurricanes and tornadoes. The harm we will experience above 1.5°C will be orders of magnitude greater.

But the IPCC offers the hope that "for the very low GHG emissions scenario (SSP1-1.9), it is more likely than not that global surface temperature would decline back to below 1.5°C toward

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[25] **Global Warming of 1.5° C, Chapter 2,** FAQs.
[26] Methane (CH4, i.e, unburned natural gas) is 20 times more powerful than CO2 as a climate forcer.
[27] *Id.*, Exec, Summary.
[28] Climate Change 2021, Summary for Policymakers, B.1.3. (available at IPCC_AR6_WGI_SPM.pdf.)

the end of the 21st century, with a temporary overshoot of no more than 0.1°C above 1.5°C global warming."[29]

That hope turns on cutting global CO2 emissions in half by 2030, and to net-zero by 2050 along with large reductions in non-CO2 climate forcers such as methane. NHTSA has not set out a regulatory path for achieving those reductions. NHTSA's current proposed rule will not achieve anywhere near those reductions, and fails to identify any future strategy for achieving those reductions. To fulfill the Agency's statutory mission to protect public health and welfare it must issue regulations that achieve these targets.

B. Needed GHG Reductions Cannot Be Achieved Without Zero Emission Standard.

The emissions reductions likely to be achieved by an approximation of the regulatory policy proposed by NHTSA in this rulemaking was investigated in a modeling analysis performed by the Rhodium Group: "Pathways to Build Back Better: Investing in Transportation Decarbonization" (May 13, 2021).[30] Assuming that NHTSA would restore the Obama GHG emission standards with a one-year delay, the analysis estimated that the regulation would reduce GHG emissions from the transportation sector 22% by 2031. Public investments such as the tax credits proposed for enactment as part of the current Build Back Better reconciliation bill was estimated to increase the share of ZEVs sold by 2031 to achieve a 24-26% reduction in GHG emissions from the sector. Adding a 90gr/mi standard for CO2 emitted from future vehicles is estimated to increase ZEV sales as a share of total LDV sales in the range of 53% to 61% (Fig. 9) contributing to a 27-28% reduction in transport emissions by 2031 (Fig. 10).

A ZEV sales mandate for the years 2026-2030 is not investigated with respect to GHG emissions reductions, but the report includes an estimate that ZEV sales would need to reach 99% of total LDV sales by 2030 to achieve a zero emission fleet by 2045 (Fig. 2). Assuming the electric power sector achieves zero emissions by 2035 as President Biden has proposed, the LDV portion of the transport sector could achieve zero emissions by 2045 if a zero emission standard applies to all new LDVs by 2031.

NHTSA acknowledges that the national security impacts of continued reliance on fossil fuels to power the transport sector are relevant factors governing the development of fuel economy standards. In addition, the analysis acknowledges that the effects of standards will be observed over long time horizons and includes consideration of the GHG emission reductions that will be achieved by 2050.

But NHTSA does not disclose what must be achieved to with respect to emission reductions to protect the national security, what its "long-term GHG reduction goals" are, how it intends to achieve them, or whether and how the current rulemaking contributes to achieving those goals.

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[29] *Id.*

[30] Available at Pathways to Build Back Better: Investing in Transportation Decarbonization | Rhodium Group (rhg.com).

The reasonableness of the current proposal turns on whether NHTSA 1) is committed to achieving the GHG reductions identified by the IPCC as necessary to avoid the dire public health and environmental consequences of warming greater than 1.5°C, 2) believes that zero emissions from on-road vehicles are a necessary component of the President's national policy of transforming the U.S. into a zero emission economy by 2050, and 3) can establish how the current proposal contributes to a strategy designed to achieve those objectives.

In the absence of any consideration of these factors and an explanation by the Agency of how it has addressed those factors in developing its proposed decision in this rulemaking, the current proposal fails to consider relevant factors, fails to provide a rational basis for the proposal, and is arbitrary and capricious.

C. Petition for Finding --

Based on these data and other available evidence, we petition the Administration to find that – 1) climate warming already caused by GHG emissions harms the national security and is causing unacceptable adverse impacts on public welfare and the human environment, and 2) the expected increase in the severity and frequency of harms to national security, health and the public welfare that will be caused by more extreme events that will occur as the global mean temperature advances toward and above the 1.5°C level resulting from growing GHG concentrations in the atmosphere, establish the need for a zero GHG emissions standard for light duty vehicles.

We petition the Administrator to make this finding as the predicate for re-opening this rulemaking for the purpose of promulgating a zero emission standard for LDVs, and a phase-in schedule that prescribes for each automaker a share of total LDV sales that must be ZEVs beginning with the 2026 MY.

III. NAAQS Attainment for Ozone and Particulate Matter Requires a Zero Emission Standard.

In addition to the public health and welfare effects of a warming climate caused by GHG emissions, the persistent ozone nonattainment status of most American cities since the initial enactment of the CAA in 1970, the addition of new counties to the list of nonattainment areas, the worsening of ozone concentrations and the frequency of ozone exceedance days, and the demonstrated adverse health impacts of fine particles emitted by ICEs also demand that NHTSA issue a zero emission standard for LDVs.

A. Emissions from ICEs are a Primary Cause of Urban Smog and the Public Health Burden Imposed on Urban Dwellers by Air Pollution.

The combustion of carbon fuels in ICEs produces, in addition to CO2, a complex array of hazardous pollutants that U.S. NHTSA has found cause deadly and debilitating effects on human health, including premature death, cardiovascular disease, chronic obstructive pulmonary disease, lung cancer, impaired fetal development, low birthweight babies, autism, childhood

asthma, impaired lung development, and impaired cognitive function among children and adults.

The actions needed to stabilize the climate and prevent the accelerated worsening of the adverse effects on human health from a hotter climate will also provide other substantial public health benefits. The most important health benefits will flow from eliminating the exposures of over one hundred and thirty million Americans to life-shortening air pollutants by not burning carbon fuels. Other health benefits will be achieved by not poisoning the air with toxic pollutants emitted from oil and gas well fields, oil refineries and fuel transport terminals, by not poisoning water supplies now being contaminated by fracking fluids and ruptured oil pipelines, and by not risking the contamination of the oceans and the marine web of life with crude oil released from off-shore drilling and tanker wrecks.

LDVs vehicles are a primary source of nitrogen oxides (NOx) and organic compounds that contribute to the formation of ozone in more than 230 urban counties designated by U.S. NHTSA as nonattainment for the national ambient air quality standards (NAAQS) for ozone (also known as smog), or particulate matter smaller than 2.5 µm in diameter ("fine particles" regulated as PM2.5), or both.[31]

Health effects research estimates that air pollution from burning carbon was expected to take an estimated 242,000 lives in 2020 assuming normal economic activity not slowed by the COVID pandemic.[32] Earlier work by EPA staff scientists using mortality risk factors derived from health effects research available in 2016 estimated 110,000 deaths annually.[33]

As a proximate cause of death, air pollution from fossil fuel combustion would rank as the third-leading cause of death in the U.S. contributing to eight of the top ten causes—heart disease; cancer; chronic lower respiratory diseases; stroke (cerebrovascular diseases); Alzheimer's disease; diabetes; influenza and pneumonia; and nephritis, nephrotic syndrome, and nephrosis.[34] Shindell estimates that ending the combustion of carbon fuels will save 1.4 million American lives between now and 2040.

EPA staff researchers estimated that roughly 20% of the mortality attributed to carbon combustion is caused by emissions from on-road vehicle emissions. Depending on the total mortality estimate used, eliminating carbon fuels to power motor vehicles could save 20,000 to 40,000 lives annually in the U.S.

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[31] NHTSA Green Book, available at *https://www3.NHTSA.gov/airquality/greenbook/jncty.html.*

[32] *See* testimony "Health and Economic Benefits of a 2ºC Climate Policy," Appendix: Methods, *Premature Mortality*, p. 10; presented by Dr. Drew Shindell, Nicholas School of the Environment, Duke University, to the House of Representatives, Oversight Committee (August 5, 2020): https://nicholas.duke.edu/sites/default/files/documents/Shindell_Testimony_July2020_final.pdf. Shindell uses the most recent risk factors for modeling the mortality caused by exposure to fine particles (soot) and ozone (smog) updating the earlier work of NHTSA staff.

[33] Kenneth Davidson, et al., 2020 *Environ. Res. Lett.* **15** 075009.

[34] National Center for Health Statistics, Centers for Disease Control and Prevention, Leading Causes of Death, https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm.

In the last three decades the average incidence of asthma among children has increased from 1 in 15 to 1 in 10 children, with higher rates among children of color and in polluted neighborhoods near refineries, power plants or major highways. As of 2018, the U.S. Census estimates that 22.4% of the U.S. population are under 18 years of age: https://www.census.gov/quickfacts/fact/table/US/PST045218. The CDC reports that "About 1 in 10 of all children have asthma, and about 1 in 6 (17%) of non-Hispanic black children had asthma in 2009." Given the greater presence of BIPOC populations in most urban counties compared to the nation as a whole, urban smog is likely a major contributor to the elevated incidence of childhood asthma among Black children and children in other communities of color.

B. Ozone-Caused Asthma Attacks Linked to Daily Exposures.

For both ozone and PM2.5 NHTSA has established national ambient air quality standards (NAAQS) for short-term exposures (8 hours for ozone, and 24 hours for PM2.5) because the health effects research demonstrates that adverse health effects are associated with short-term exposure to these pollutants.

NHTSA's Clean Air Science Advisory Committee found that every day when ozone concentrations reach the level of the national ambient air quality standard (70 ppb), 8 to 20% of all children will experience a reduction in lung function deemed adverse to the health of an asthmatic child. [35] When ozone concentrations reach 75 ppb, only 5 ppb above the standard, from 11% to 22% of all school aged children will experience at least one such an event, and 1 to 6% of children will experience such adverse health events on 6 or more days.[36] Both the percentage of children experiencing harmful effects and the number of days when exposures produce harmful effects continue to increase as ozone concentrations are elevated further above the level of the NAAQS. In most nonattainment cities, peak ozone levels routinely exceed 80 ppb. In Denver peak concentrations are at 90 ppb, and in the South Coast and San Joaquin air districts in California, peak 8 hour concentrations reach 110 ppb.

In its review of the health effects research, NHTSA found compelling evidence that populations exposed to elevated ozone will experience other adverse health effects in addition to the incidence of asthma attacks discussed in the CASAC letter, including both respiratory and cardiovascular disease outcomes. When the high frequency of asthma attacks is added to the expected frequency of other adverse health outcomes, the best estimates are that ozone pollution days exceeding the NAAQS will cause from 1% to 3% of the entire exposed population to experience an adverse health outcome that interferes with personal health to the degree

[35] "CASAC Review of the NHTSA's *Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*," letter to NHTSA Administrator Gina McCarthy (June 26, 2014), 14.

[36] *Id.*

that normal daily activity is disrupted and some medical intervention is required. As a pollutant formed in the atmosphere miles away from the primary sources of emissions, elevated ozone levels exceeding the NAAQS affect most of the residents of a metropolitan population.

For children, the proportion of the population adversely affected by ozone exposure is likely greater than for the entire population since children have been found to be more sensitive to pollution because of higher ventilation rates, greater air volume to body mass ratios, and higher activity levels when outdoors.

Both asthma attacks and these other adverse health outcomes often require resort to medications, and many require urgent or emergency medical care. Adults who require care suffer pain and impaired capacity to perform daily tasks, often miss work, lose income and incur medical costs. Children miss school. If they miss many days, their education is disrupted and students fall behind which contributes to high school dropout rates. Childhood asthma, autism and impaired cognitive development linked to pollutant exposures all contribute to failed educational achievement, which in turn is strongly correlated with lower lifetime income, poor health histories and shorter lifespans.

Daily NAAQS exceedances in these nonattainment counties create an air quality regime that is harmful to children born into it. Children raised in polluted air sheds develop lungs, bodies and nervous systems in an environment where the air is not safe to breathe. In some cities air is not safe to breathe for weeks out of the summer. In these nonattainment areas children who have no choice in where to live are exposed for the first two decades of their lives to an environment where venturing outdoors during the summer is often a high risk activity. The odds are high that children raised in this environment will develop childhood asthma, suffer impaired lung development, spend many days each year in urgent or emergency care, and experience lost school time that interferes with their education in ways that can result in poor achievement, delayed advancement, and ultimately in limited employment opportunities and diminished lifetime income.

C. Motor Vehicle Emission Control programs is Not Adequate to Protect Health.

In most nonattainment counties, ozone emission inventories and a significant fraction of PM2.5 inventories are dominated by tailpipe emissions. Obviously the national emission control program for motor vehicles has not been, and is not now adequate to reduce mobile source emissions to the levels needed to attain the NAAQS in these regions. Only the conversion of vehicle fleets to zero emission technologies offers the possibility of attaining the NAAQS to resolve the public health crisis suffered by residents in these counties.

If NHTSA sets a zero emission standard for new motor vehicles, fossil fueled vehicles will be replaced with zero emission technologies. For ozone, reducing emissions of ozone precursors a few percent can make an observable difference in both ozone peak concentrations and the frequency of exceedance days. Precursor emissions increases in most metro nonattainment areas that exacerbate ozone violations are at the rate of VMT growth which typically is 2- 3%

annually. So small changes in emissions, along with increasing heat that drives the atmospheric chemistry, can have a big impact on ozone formation.

As soon as a ZEV sales mandate takes effect, fleet-wide emissions will begin dropping at the rate of ICE replacement. Assuming a 20-year time horizon for full fleet replacement, each year 5% of the ICE fleet will be replaced. Under a zero emission standard for new vehicles, the portion of the replacement vehicles that will be zero emissions will be determined by the ZEV sales requirement for that MY.

That means total emissions of all reactive hydrocarbons emitted from tailpipes, aromatics included, will drop 5% after one year if 100% ZEV sales are required, or 1.5% if 30% ZEV sales. Under a 100% sales regime, ozone precursor emissions will drop quickly: 10% after two years. 15% after three years, etc. These reductions are HUGE compared to what can be accomplished with fuel additives, or NHTSA's proposed rule which aims to reduce emissions by 5% each year only from the new vehicles added to the fleet (i.e. in year one 5% of 5%, or 0.25% of total emissions); instead of reducing 5% from the entire fleet emission inventory. A ZEV sales mandate promises to completely resolve ozone nonattainment in nonattainment areas where a 20% reduction is enough in as few as four years. And clean air for our kids will be permanent because fleet replacement will continue to accelerate in future years to reduce emissions at a rate significantly faster than VMT growth.

When tailpipes no longer exist and coal is no longer burned to generate electricity, urban ozone exceedances and its devastating impacts on human health will become a footnote in history. Cities will have air quality safe for raising children.

Conclusion.

To achieve the zero emission economy needed to stop heating the climate, and to attain urban air quality safe for children to grow up healthy and adults to remain healthy as elders, we ask NHTSA to determine that a zero emission standard for motor vehicles is necessary to protect the national security, public health and the environment. To put the nation on the path to zero emissions as soon as possible, and to minimize the atmospheric loading of GHGs as we make the transition to zero emissions, we ask NHTSA to re-open the current rulemaking for 2026 MY vehicles to 1) promulgate a zero emission standard for LDVs, and 2) establish a schedule for phasing in that standard beginning with the 2026 MY.

Respectfully submitted,

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