American Lung Association • American Lung Association in California
American Public Health Association • California Public Health Association-North
American Thoracic Society • California Thoracic Society
Alliance of Nurses for a Healthy Environment • Healthcare Without Harm
Asthma and Allergy Foundation of America • Asthma and Allergy Network
Center for Climate Change and Health • Public Health Institute
California Academy of Family Physicians • National Environmental Health Association
Physicians for Social Responsibility
San Francisco Bay Area Chapter, Physicians for Social Responsibility
Regional Asthma Management and Prevention

September 26, 2016

U. S. Environmental Protection Agency
National Highway Traffic Safety Administration, U.S. Department of Transportation
California Air Resources Board

RE: Comments on the Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for MY 2022-2025 Docket ID: EPA-420-D-16-900. Submitted via: www.regulations.gov and www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=drafttar2016-ws

As representatives of the medical and public health community, our organizations wish to share our joint comments on the draft Technical Assessment Report on the effectiveness of the federal standards for greenhouse gas (GHG) emissions for light duty vehicles prepared by U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration in cooperation with the California Air Resources Board. Our comments primarily focus on the impacts on human health and climate change covered by these standards. Our review of this initial phase of the Midterm Evaluation for these standards finds evidence that the standards can easily be achieved and should be stronger after 2025.

Climate change poses grave threats to public health. To protect our communities and the public, the United States must significantly reduce greenhouse gases from all sources. Our organizations support the strongest possible vehicle GHG standards, and urge EPA to ensure standards deliver expected reductions in 2025 and additional benefits through stronger standards post 2025 to provide greater protection to public health. We believe that the evidence reviewed in this assessment report show that the standards can be stronger. The changing climate threatens the health of Americans alive now and in future generations. Growing evidence over the past few years has demonstrated the multiple, profound risks that imperil the lives and health of millions. Consequently, the nation has a short window to act to reduce those threats.

Released earlier this year, the *Impacts of Climate Change on Human Health in the United States: A Scientific Assessment* provided the most recent summary of the research outlining these risks to the United States. This grim summary of risks to human health launches the report:

> Climate change is a significant threat to the health of the American people. The impacts of human-induced climate change are increasing nationwide. Rising greenhouse gas concentrations result in increases in temperature, changes in precipitation, increases in the frequency and intensity of some extreme weather events, and rising sea levels. These climate

> change impacts endanger our health by affecting our food and water sources, the air we breathe, the weather we experience, and our interactions with the built and natural environments. As the climate continues to change, the risks to human health continue to grow. [1]

This review echoed reports previously produced by several of our organizations: the Asthma and Allergy Foundation of America's *Extreme Allergies and Global Warming*, issued with the National Wildlife Foundation in 2010[2]; the American Public Health Association's *Climate Change: Mastering the Public Health Role*, in April 2011[3]; and the American Thoracic Society's workshop on Climate Change and Human Health published in 2012[4].

Millions of Americans suffer greater vulnerability to these threats. Many people face greater risk or exposure, as documented in the large air pollution science assessments EPA has repeatedly completed. Children court special risks because their bodies are growing and because they are so active.[5] Older adults are more likely to die during high heat events.[6] People with chronic respiratory diseases like asthma and chronic obstructive pulmonary disease, people with cardiovascular diseases and people with diabetes also risk greater harm from increased pollution.[7]

Low income people and some racial and ethnic groups are among those who often confront higher exposure to pollutants and who may experience greater responses to such pollution. Many studies have explored the differences in harm from air pollution to racial or ethnic groups and people who are in a low socioeconomic position, have less education, or live nearer to major sources.[8] Even healthy adults can be affected by increased air pollution especially if their work requires them to be outdoors, as the study of lifeguards in Galveston, Texas demonstrated. [9]

Many different vulnerable groups and disadvantaged communities, including seniors, children and those with disabilities, will have a harder time responding to the threats, especially if electricity is lost or relocation or evacuation is required. [10] Hurricane Katrina demonstrated that many people in these groups had difficulty evacuating and relocating after a major weather event.[11] Native American and other tribal communities may face threats to food supplies and difficulty relocating due to tribal land locations.[12]

Reducing GHG emissions from vehicles is critical in the fight against climate change. Transportation sources produced more than one quarter of the nation's GHG emissions (26 percent) in 2014. The transportation sector increased those emissions more since 1990 than any other sector, according to EPA.[13] In 2012, the Administration launched a second phase of fleet-wide standards to reduce GHG emissions from cars, light-duty trucks, SUVs and family vans, following up on the first round in 2009. EPA estimated that these reductions would reduce GHG emissions by 2 billion metric tons in 2025 as manufacturers phased them in beginning in 2017.

EPA also committed to evaluating the later phase of the standards (2022-2025) to ensure appropriate stringency and implementation of the full standards remains on track to 2025. The assessments in this report compare these predictions and estimates with updated information that support continuing the required changes to the fleet through 2025. The evidence to date shows that the steps still meet the tests for reaching the goals in the 2017 fleet and beyond. As the report concludes, manufacturers can build a nationwide fleet of vehicles that reduce GHG emissions and meet the fuel efficiency standards for consumers. As EPA continues to roll out the GHG standards to meet this goal, and automakers utilize

new engine technologies, EPA must also ensure that vehicles achieve expected reductions in Tier 3 particulate levels.

The evidence supports EPA strengthening the required reductions in GHG emissions going forward to adequately respond to the full nature of climate and air pollution health threats. In the draft technical assessment report, EPA provided some preliminary evaluation measures that provide conservative estimates of the benefits of lower GHG emissions on human health directly and on the social benefits of cutting carbon dioxide (CO_2) emissions. EPA recognized that some of their modeling considered only a narrow range of benefits. However, the direct human health benefits and social benefits from CO_2 reductions are both larger than EPA describes.

Adding the direct human health benefits from the reduced ozone will more accurately reflect the impact on our patients and our communities, and increase the economic value of these reductions. EPA explains in detail that the assessment provides a cursory estimate for the economic benefits, and we agree. EPA pulled the estimated benefits per ton of reduced fine particulate matter (PM2.5) from some recent analyses using well-established modeling. Those rough estimates document the substantial economic benefits from lives saved as well as from asthma attacks, heart attacks, hospital admissions and emergency room visits avoided. But all of these come solely from the reduced primary and secondary PM2.5. None come from the recognized benefits from reduced ozone pollution that would also occur.

EPA should include the ozone benefits in the final assessment. We appreciate EPA's explanation that calculating the ozone benefits seemed quite complex for this preliminary assessment. However, nitrogen oxides (NOx) and volatile organic compound (VOC) emissions from gasoline-powered engines contribute significantly to ozone formation across the nation. We agree with EPA's expectation in the footnote that "the ozone-related benefits associated with reducing emissions of NOx and VOC could be substantial."[14] EPA has established models that calculate these benefits. Leaving out these benefits misses a major component showing the broad outcomes of this rule that go beyond the impact on climate. EPA successfully navigated even more complex projections in the recent Clean Power Plan and in other regulatory assessments.

Furthermore, some direct benefits from lower pollution levels cannot yet be quantified. The BenMAP model uses many peer-reviewed studies to examine key health outcomes, but some significant benefits cannot now be modeled. One is the impact of reduced $PM_{2.5}$ on lung cancer deaths. In 2013, the International Agency for Research on Cancer determined that particulate matter caused lung cancer. However, no studies are included in the BenMAP model to assess the benefits of reducing $PM_{2.5}$ on lung cancer outcomes. BenMAP cannot currently estimate benefits from reduced NOx emissions as a direct pollutant, rather than in its role as a precursor to $PM_{2.5}$ or ozone.

Missing, too, are the benefits from reduced air toxics, as EPA acknowledged as well. BenMAP cannot calculate these benefits with the present tools. For example, several VOCs from gasoline emissions are recognized carcinogens, including benzene, 1, 3- butadiene and formaldehyde.[15] Reducing VOC emissions will help reduce the burden of these carcinogens on many communities, especially those living or working near these roadways.

EPA is also examining the impact of near-roadway exposures to these complex emissions. The Health Effects Institute review identified many specific impacts associated with near-road pollutants that are not necessarily captured in the BenMAP model, including likely onset of childhood asthma.[16]

These examples provide further evidence that the draft Technical Assessment Report greatly underestimates the health benefits and their economic impact in the reduced GHG emissions. They also demonstrate that additional reductions of GHG would likely create even larger health and economic benefits.

The calculated social benefits of reduced CO_2 models may not include human health impacts sufficiently. EPA followed the established methodology under the 2015 Technical Support Document which is based on three integrated models for assessing the social cost of carbon.[17] The information included in the three models used to generate these estimates is not clear. For example, it is not clear if recognized respiratory impacts of climate are well represented in these estimates. In EPA's more detailed summary of the DICE model from 2010, the health issues vaguely cited only "effects of pollution and a broad group of climate-related tropical diseases including malaria and dengue fever."[18] Other inclusions of health risks in these models remain unclear. Since protecting human health has emerged as one of the crucial goals of reducing climate change impacts, it would be reasonable to show the types of impacts and magnitudes of these impacts that constitute the climate benefits.

In summary, it is clear that the analysis shows evidence that the standards can be achieved. Further, the initial technical analysis shows that the health benefits of the reduced greenhouse gas emissions from light duty vehicles remains realistic, but significantly understated in the analysis. Our organizations urge a more complete assessment of these benefits as they provide strong arguments for more stringent standards on post-2025 vehicles.

These comments were submitted by these organizations:

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Healthcare Without Harm

National Environmental Health Association

Physicians for Social Responsibility

San Francisco Bay Area Chapter, Physicians for Social Responsibility

Public Health Institute

Regional Asthma Management and Prevention

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[10] US GCRP, 2016; APHA, 2011.

[11] US GCRP, 2016.

[12] US GCRP, 2016

[13] U.S. EPA. 2016. Greenhouse Gas Inventory Report, 1990-2014. EPA 430-R-16-002. Accessed at https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014.

[14] U.S. EPA. 2016. Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standard for Model Years 2022-2025. July 2016. EPA 420-D-16-900. P. 10-37, footnote Q.

[15] Health Effects Institute Panel on the Health Effects of Traffic-Related Air Pollution, *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects.* Health Effects Institute: Boston, 2010. Available at www.healtheffects.org.

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