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Via electronic submission and U.S. Mail

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Attn: Docket No. NHTSA-2017-0069  
Docket No. NHTSA-2018-0067  
Docket No. EPA-HQ-OAR-2018-0283

Re: Supplemental Comments of Public Health, Consumer, and Environmental Organizations on National Highway Traffic Safety Administration's and Environmental Protection Agency's Proposed Rule: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, 83 Fed. Reg. 42,986 (Aug. 24, 2018)

The undersigned organizations hereby submit this supplemental comment to the federal dockets on the proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks (Proposal). Two recently published studies—the United Nations Environment Programme's (UNEP) Emissions Gap Report (2019)<sup>1</sup> and Lenton et al.'s

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<sup>1</sup> UNEP, *Emissions Gap Report 2019* (Nov. 26, 2019), <https://www.unenvironment.org/resources/emissions-gap-report-2019>.

assessment of climate tipping points (2019)<sup>2</sup>—contain new analysis on greenhouse gas (GHG) emissions increases and associated climate impacts. In addition, new studies detail the latest findings on 2019 atmospheric and ocean temperatures as well as other alarming evidence of significant, present-day climate change impacts.<sup>3</sup> The studies were released after the closing of the formal public comment period for the above-referenced Proposal. Because they contain material “of central relevance to the rulemaking,”<sup>4</sup> we are submitting this letter and the documents to EPA’s rulemaking docket and also to NHTSA’s dockets for the Proposal and the Draft Environmental Impact Statement.

### UNEP Emissions Gap 2019

The UNEP Emissions Gap 2019 report was prepared by an international team of 57 leading scientists from 33 expert institutions across 25 countries.<sup>5</sup> The report “provides the latest assessment of scientific studies on current and estimated future GHG emissions and compares these with the emission levels permissible for the world to progress on a least-cost pathway to achieve” the Paris Agreement goals of limiting average global warming to 1.5°C and (failing that) to well below 2°C—thresholds above which the frequency and intensity of climate impacts and risks of catastrophic climate change are expected to increase significantly. The difference between where GHG emissions are projected to be and where they need to be consistent with a specific probability of limiting the mean global temperature rise to below a specific temperature increment in 2100 is described as the “emissions gap.”<sup>6</sup>

The report notes that the findings of a recent summary of the prior ten years of emissions gap reports were “bleak” as “[c]ountries failed to stop the growth in global GHG emissions, meaning that deeper and faster cuts are now required.”<sup>7</sup> The report notes that globally “the emissions gap is now larger than ever.”<sup>8</sup> Global GHG emissions have risen at a rate of 1.5% per year over the past decade, stabilizing briefly between 2014 and 2016, and “[t]here is no sign of GHG emissions peaking in the next few years.”<sup>9</sup> The authors warn that, “[u]nless mitigation action

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<sup>2</sup> Lenton, T., Rockström, J., Gaffney, O., et al., *Climate tipping points – too risky to bet against*, Nature (Nov. 27, 2019), <https://www.nature.com/articles/d41586-019-03595-0>.

<sup>3</sup> National Aeronautics and Space Administration, Goddard Institute for Space Studies, *NASA, NOAA Analyses Reveal 2019 Second Warmest Year on Record* (NASA News & Feature Releases), Jan. 15, 2020, <https://www.giss.nasa.gov/research/news/20200115/> (the “NASA Release”); National Oceanic and Atmospheric Administration, National Centers for Environmental Information, *State of the Climate: Global Climate Report for Annual 2019* (2020), <https://www.ncdc.noaa.gov/sotc/global/201913> (the “NCEI Report”); Cheng, L., Abraham, J., Zhu, J., et al., *Record-Setting Ocean Warmth Continued in 2019*, 37 Adv. Atmos. Sci. 137–142 (2020), <https://doi.org/10.1007/s00376-020-9283-7>; Copernicus, Climate Change Service, *Surface Air Temperature for December 2019* (2020), <https://climate.copernicus.eu/surface-air-temperature-december-2019> (the “Copernicus Report”); Richter-Menge, J., Druckenmiller, M. L., and Jeffries, M., Eds., *NOAA Arctic Report Card 2019* (2019), [https://arctic.noaa.gov/Portals/7/ArcticReportCard/Documents/ArcticReportCard\\_full\\_report2019.pdf](https://arctic.noaa.gov/Portals/7/ArcticReportCard/Documents/ArcticReportCard_full_report2019.pdf) (the “NOAA Arctic Report Card”).

<sup>4</sup> 42 U.S.C. § 7607(d)(4)(B)(i). See also *id.* § 7607(d)(7)(A) (providing that such material forms part of the administrative record for judicial review).

<sup>5</sup> UNEP, *Emissions Gap Report 2019* at 1.

<sup>6</sup> *Id.* at X.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* at 1.

<sup>9</sup> *Id.* at XIV - XV.

and ambition are increased immediately and profoundly,”<sup>10</sup> achieving the Paris Agreement’s 1.5°C goal will be impossible, and it will be increasingly difficult to limit warming to well below 2°C.<sup>11</sup>

The findings indicate that even if nations meet their initial unconditional emission reduction pledges under the Paris Agreement,<sup>12</sup> known as nationally determined contributions (NDCs), “there is [only] a 66 per cent chance that warming will be limited to 3.2°C by the end of the century.”<sup>13</sup> The report finds that by 2030, the emissions gap between achievement of the unconditional NDCs and the 2°C pathway would be 15 gigatons of CO<sub>2</sub> equivalent (GtCO<sub>2</sub>e), and 32 GtCO<sub>2</sub>e compared to the 1.5°C pathway, absent additional mitigation action.<sup>14</sup>

Thus, the authors find that “[d]ramatic strengthening of the NDCs is needed in 2020,”<sup>15</sup> including “[e]nhanced action by G20 members.”<sup>16</sup> Specifically, to achieve the 1.5°C warming goal and close the 2030 emissions gap, countries must increase their emission reduction pledges in 2020 more than fivefold.<sup>17</sup> Without such increases in commitments and action in the near term, future emission reductions and removal of CO<sub>2</sub> from the atmosphere will be required “at such a magnitude that it would result in a serious deviation from current available pathways.”<sup>18</sup> The report concludes that delaying effective emission reduction action at the scale required to close the emissions gap, “together with necessary adaptation actions, risks seriously damaging the global economy and undermining food security and biodiversity.”<sup>19</sup>

Concrete steps toward economy-wide decarbonization are increasingly urgent, and with the United States representing 25 percent of global light duty vehicle GHG emissions,<sup>20</sup> the Agencies’ proposal to weaken the current standards and increase GHG emissions now will only exacerbate the unfolding crisis. The Agencies must take this critical context fully into account in taking final action on the proposed rollback, as it demonstrates a compelling need to strengthen the standards, as is eminently feasible given existing technologies, not weaken them.

### Climate Tipping Points

The Lenton et al. article assesses the grave threat of exceeding warming “tipping points” in the climate system that would trigger self-reinforcing or cascading feedback mechanisms that could have large-scale, irreversible impacts on human and ecological systems. They note that “evidence is mounting that these events could be more likely than was thought.”<sup>21</sup> The authors

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<sup>10</sup> *Id.* at 1.

<sup>11</sup> *Id.*

<sup>12</sup> The unconditional pledges are those mitigation actions specified in their NDCs that have no conditions attached.

<sup>13</sup> *Id.* at XIX.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* at XX.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> *Id.* at XX.

<sup>20</sup> *Id.* at 60.

<sup>21</sup> Lenton et al., *Climate tipping points – too risky to bet against*.

caution that “the evidence from tipping points alone suggests that we are in a state of planetary emergency” and that “both the risk and urgency of the situation are acute.”<sup>22</sup>

Specifically, the article examines the latest data on ice sheet collapse, biosphere boundaries, and the grim effects of a potential global cascade of tipping points—which would present “an existential threat to civilization.”

With respect to ice sheet collapse, the authors observe that several cryosphere tipping points are “dangerously close” but that “mitigating greenhouse gas emissions could still slow down the inevitable accumulation of impacts and help us to adapt.”<sup>23</sup> For example, available evidence indicates that “the Amundsen Sea embayment of West Antarctica might have passed a tipping point” and that the “‘grounding line’ where ice, ocean and bedrock meet is retreating irreversibly.”<sup>24</sup> Modeling shows that this collapse “could destabilize the rest of the West Antarctic ice sheet like toppling dominoes,”<sup>25</sup> leading to 3 meters of sea-level rise. Moreover, the researchers noted that part of the East Antarctic ice sheet might be “similarly unstable,” which “could add another 3-4 m to sea level on timescales beyond a century”<sup>26</sup> and that models suggest that the Greenland ice sheet “could be doomed at 1.5°C of warming.”<sup>27</sup> Thus, “we might already have committed future generations to living with sea-level rises of around 10 m [occurring] over thousands of years.”<sup>28</sup> But, the authors observe, “that timescale is still under our control” and the “rate of melting depends on the magnitude of warming above the tipping point.”<sup>29</sup>

The authors further note that “[c]limate change and other human activities risk triggering biosphere tipping points across a range of ecosystems and scales. They describe how “[o]cean heatwaves have led to mass coral bleaching and to the loss of half of the shallow-water corals on Australia’s Great Barrier Reef,” and a “staggering 99% of tropical corals are projected to be lost if global average temperature rises by 2°C, owing to interactions between warming, ocean acidification and pollution.” The article finds that “[a]s well as undermining our life-support system, biosphere tipping points can trigger abrupt carbon release back to the atmosphere,” which can “amplify climate change and reduce remaining emission budgets.”<sup>30</sup> The authors observe that warming has already triggered “large-scale insect disturbances and an increase in fires that have led to dieback of North American boreal forests, potentially turning some regions from a carbon sink to a carbon source” and that “[p]ermafrost across the Arctic is beginning to irreversibly thaw and release carbon dioxide and methane—a greenhouse gas that is around 30 times more potent than CO<sub>2</sub> over a 100-year period.”<sup>31</sup> These findings demonstrate that near-term, dramatic reductions in anthropogenic carbon emissions are imperative.

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<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

The authors argue that limiting warming to 1.5°C is critical to avoiding potential tipping points, and they note that the IPCC's latest models forecast a "cluster of abrupt shifts between 1.5°C and 2°C [of warming], several of which involve sea ice." Which of these futures awaits will be determined *right now*, as the timescale for limiting warming to 1.5°C is vanishingly small: the report finds that under a business-as-usual emissions trajectory, total global GHG emissions will exceed the world's remaining emissions budget necessary to maintain a 50:50 chance of staying within 1.5°C of warming (500 Gt CO<sub>2</sub>) in less than 13 years.<sup>32</sup>

The authors state that "the clearest emergency would be if we were approaching a global cascade of tipping points that led to a new, less habitable, 'hothouse' climate state."<sup>33</sup> Such interactions could happen "through ocean and atmospheric circulation or through feedbacks that increase greenhouse-gas levels and global temperature," or possibly through "strong cloud feedbacks."<sup>34</sup> The authors cite examples of such interactions that are starting to be observed. For example, sea-ice loss in the Arctic is "amplifying regional warming, and Arctic warming and Greenland melting are driving an influx of fresh water into the North Atlantic," which "could have contributed to a 15% slowdown since the mid-twentieth century of the Atlantic Meridional Overturning Circulation (AMOC), a key part of global heat and salt transport by the ocean."<sup>35</sup> Further rapid melting of the Greenland ice sheet and further slowdown of the AMOC, "could destabilize the West African monsoon, triggering drought in Africa's Sahel region." A slowdown of the AMOC could also "dry the Amazon, disrupt the East Asian monsoon and cause heat to build up in the Southern Ocean, which could accelerate Antarctic ice loss."<sup>36</sup>

The authors conclude that, given the "huge impact and irreversible nature" of a possible global cascade of tipping points, "any serious risk assessment must consider the evidence, however limited our understanding might still be. To err on the side of danger is not a responsible option." The authors observe that if such a global cascade of tipping points "cannot be ruled out, then this is an existential threat to civilization."<sup>37</sup>

In light of all these findings, the authors stress the urgency to act now. They argue that "the rate at which damage accumulates from tipping—and hence the risk posed—could still be under our control to some extent" but that the time to intervene to prevent tipping "could already have shrunk towards zero."<sup>38</sup>

### NASA and NOAA 2019 Surface Temperature Analyses

Recent temperature data analyses released by the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA) underscore that rapid, significant warming is occurring in the present day, with both agencies finding that 2019 was the second-hottest year on record, below only 2016.<sup>39</sup> Moreover, the

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<sup>32</sup> This is at the current global total emissions rate cited by the article of 40 Gt of CO<sub>2</sub> per year. *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> NASA Release; NCEI Report.

analyses show that the last five years each rank among the five hottest years since recordkeeping began in 1880.<sup>40</sup>

NASA's Goddard Institute for Space Studies (GISS) found that the 2019 global surface temperature was 0.98 degrees Celsius (1.8 degrees Fahrenheit) warmer in the last year than the 1951 to 1980 mean.<sup>41</sup> "The decade that just ended is clearly the warmest decade on record," stated GISS Director Gavin Schmidt.<sup>42</sup> "Every decade since the 1960s clearly has been warmer than the one before."<sup>43</sup> Schmidt further noted: "This shows that what's happening is persistent, not a fluke due to some weather phenomenon: we know that the long-term trends are being driven by the increasing levels of greenhouse gases in the atmosphere."<sup>44</sup>

NOAA's National Centers for Environmental Information (NCEI) reported that "nine of the 10 warmest years have occurred since 2005," and that "2019 marks the 43<sup>rd</sup> consecutive year (since 1977) with global land and ocean temperatures, at least nominally, above the 20<sup>th</sup> century average."<sup>45</sup> NCEI also described that "[t]he global annual temperature has increased at an average rate of 0.07°C (0.13°F) per decade since 1880 and over twice that rate (+0.18°C / +0.32°F) since 1981."<sup>46</sup>

NCEI found that the ocean has grown warmer as well: ocean heat content (OHC) for the upper 2000 meters for 2019 was the highest in the 70-year record.<sup>47</sup> The previous highest OHC on record occurred just a year before in 2018; in fact, the five highest OHCs on record have all occurred in the last five years, while the ten highest OHCs on record have occurred in the last ten years.<sup>48</sup> NCEI states that the heating of the oceans is "irrefutable" and serves as a key indicator of the Earth's energy imbalance: more than 90% of the heat trapped inside the climate system by greenhouse gases accumulates in the ocean because of its large heat capacity.<sup>49</sup>

A recent study referenced by NCEI, "Record Setting Ocean Warmth Continued in 2019," separately found that, comparing the last three decades to the three decades that preceded them, the rate of ocean warming had increased by about 450%, "reflecting a major increase in the rate of global climate change."<sup>50</sup> The study explains that increasing OHC leads to sea-level rise, reduces dissolved oxygen in the ocean, and significantly affects sea life.<sup>51</sup> Further, the increasing heat increases evaporation, leading to heavy rains, flooding, and more extreme weather, and it "is one of the key reasons why the Earth has experienced increasing catastrophic fires in the Amazon, California, and Australia in 2019 (extending into 2020 for Australia)."<sup>52</sup> The article states that the rate of increase in ocean warming "can be reduced by appropriate

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<sup>40</sup> NASA Release; NCEI Report.

<sup>41</sup> NASA Release.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.* (quoting Schmidt).

<sup>44</sup> *Id.*

<sup>45</sup> NCEI Report.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> Cheng et al., *Record-Setting Ocean Warmth Continued in 2019* at 139.

<sup>51</sup> *Id.* at 140.

<sup>52</sup> *Id.* at 140-41.

human actions that lead to rapid reductions in GHG emissions, thereby reducing the risks to humans and other life on Earth.”<sup>53</sup>

### Copernicus Surface Air Temperature Analysis

Copernicus, the European Union’s Earth observation program, also released recent new findings through its Climate Change Service (CCS) showing rapid present-day warming. CCS found that 2019 was the warmest calendar year on record for Europe as a whole, and also, like the NASA and NOAA reports described above, that, globally, 2019 was the second warmest calendar year on record (behind only 2016).<sup>54</sup> CCS further found that in Europe, December 2019 was 3.2 degrees Celsius warmer than the 1981 to 2010 average, making it the warmest December on record for Europe.<sup>55</sup> Worldwide, December 2019 was more than 0.7 degrees Celsius warmer than the global December average for 1981 to 2010, tying for the warmest December in the data record.<sup>56</sup>

More broadly, the CCS’s analysis noted that while there is some divergence in global averages from various temperature datasets, there is consensus on several temperature trends:

- The notable warmth of the five years spanning 2015-2019;
- The overall average warming rate of approximately 0.18 degrees Celsius per decade that has occurred since the late 1970’s; and
- The sustained period of above average temperatures recorded since 2001.<sup>57</sup>

### NOAA Arctic Report Card 2019

The recently released NOAA Arctic Report Card 2019 features essays that “provide comprehensive summaries of key land, ice, ocean, and atmosphere observations made throughout the Arctic in the context of historical records.”<sup>58</sup> The Report Card details the dramatic present-day impact of climate change in the Arctic, concluding that “Arctic ecosystems and communities are increasingly at risk due to continued warming and declining sea ice.”<sup>59</sup> As just one example, scientists found that a shift in fish distribution has been occurring over the past two years in the eastern Bering Sea, which supports “more than 40% of the annual U.S. catch of fish and shellfish (valued at > \$1 billion annually).”<sup>60</sup> Specifically, “[l]oss of sea ice and increasing ocean temperatures have impacted the Bering Sea ecosystem, including northward migration of fish species” in this valuable fishery.<sup>61</sup>

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<sup>53</sup> *Id.* at 141 (citations omitted).

<sup>54</sup> Copernicus Report.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Id.*

<sup>58</sup> NOAA Arctic Report Card at 2; *see also* NOAA, Arctic Program, Arctic Report Card, *About the Arctic Report Card*, <https://arctic.noaa.gov/Report-Card> (“Issued annually since 2006, the Arctic Report Card is a timely and peer-reviewed source for clear, reliable and concise environmental information on the current state of different components of the Arctic environmental system relative to historical records.”).

<sup>59</sup> NOAA Arctic Report Card at cover page.

<sup>60</sup> Staben, P. J., Thoman, R. L., and Wood, K., *Recent Warming in the Bering Sea and Its Impact on the Ecosystem*, NOAA Arctic Report Card at 81.

<sup>61</sup> *Id.*

Other observations of the 2019 Report Card include that the Greenland Ice Sheet is losing close to 267 billion metric tons of ice per year and currently contributing to global average sea-level rise at a rate of about 0.7 millimeters per year.<sup>62</sup> Arctic sea ice extent at the conclusion of the 2019 summer season tied with 2007 and 2016 as the second lowest since satellite observations began in 1979.<sup>63</sup> Winter sea ice extent in the Bering Sea almost fell below the record low set in 2018, contributing to record high temperatures in the ocean on the southern shelf.<sup>64</sup> In addition, new regional and winter season measurements indicate that thawing permafrost in the Arctic is now a source of net carbon emissions, potentially releasing an estimated 300-600 million tons of net carbon per year to the atmosphere.<sup>65</sup>

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These studies and reports highlight the extreme costs that the climate crisis will continue to impose on human society—costs that could be exponentially more extreme without near-term, dramatic decreases in anthropogenic GHG emissions. Yet the Proposal will result in notable and unnecessary *increases* in GHG emissions and will push the planet closer to climate-related tipping points—and will do so at a time when temperatures are already rising rapidly and the global “emissions gap,” as described in the UNEP report, is growing. The Agencies’ attempts to dismiss as insignificant the increases in GHG emissions that will result from their actions are a clear dereliction of the Agencies’ respective statutory obligations and would be arbitrary and capricious if used as the basis for final action. In fact, the record overwhelmingly demonstrates that climate change is now occurring and wreaking immense damage, and that a failure to decrease GHG emissions dramatically could result in an existential threat to civilization.

Please contact Martha Roberts, [mroberts@edf.org](mailto:mroberts@edf.org), (202) 572-3243, if you have any questions regarding this comment.

Respectfully submitted,

Chesapeake Bay Foundation  
Center for Biological Diversity  
Environment America  
Environmental Defense Fund  
Environmental Law & Policy Center  
Public Citizen  
Sierra Club

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<sup>62</sup> NOAA Arctic Report Card at cover page; Tedesco, M., Moon, T., Andersen, J. K., et al., *Greenland Ice Sheet*, NOAA Arctic Report Card at 17.

<sup>63</sup> NOAA Arctic Report Card at cover page; Perovich, D., Meier, W., Tschudi, M., et al., *Sea Ice*, NOAA Arctic Report Card at 26.

<sup>64</sup> NOAA Arctic Report Card at cover page; Stabeno et al., *Recent Warming in the Bering Sea and Its Impact on the Ecosystem*, NOAA Arctic Report Card at 81.

<sup>65</sup> NOAA Arctic Report Card at cover page; Schuur, T., *Permafrost and the Global Carbon Cycle*, NOAA Arctic Report Card at 58.