

May 31, 2019

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U.S. Environmental Protection Agency  
EPA Docket Center (EPA/DC)  
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James Tamm  
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Attention: NHTSA Docket ID No. NHTSA-2017-0069  
NHTSA Docket ID No. NHTSA-2018-0067  
U.S. EPA Docket ID No. EPA-HQ-OAR-2018-0283

RE: Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026  
Passenger Cars and Light Trucks

Dear Mr. Lieske and Mr. Tamm:

The California Air Resources Board (CARB) submits this supplemental comment concerning additional studies 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). Specifically, CARB is submitting Northcott et al. (2019),<sup>1</sup> which contains new information on the uptake and emission of carbon dioxide (CO<sub>2</sub>) by coastal waters, and Gleason et al. (2019),<sup>2</sup> which contains new information on the feedback between wildfires and snowpack melt. These studies were released after the closing of the period for public comment on the

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<sup>1</sup> Northcott D., Sevadjian J., Sancho-Gallegos D.A., Wahl C., Friederich J., Chavez F.P. (2019) Impacts of urban carbon dioxide emissions on sea-air flux and ocean acidification in nearshore waters. PLoS ONE 14(3): e0214403. <https://doi.org/10.1371/journal.pone.0214403>.

<sup>2</sup> Kelly E. Gleason, Joseph R. McConnell, Monica M. Arienzo, Nathan Chellman, Wendy M. Calvin. Four-fold increase in solar forcing on snow in western U.S. burned forests since 1999. Nature Communications, 2019; 10 (1) DOI: 10.1038/s41467-019-09935-y.

Proposal. Because these studies contain material “of central relevance to the rulemaking,”<sup>3</sup> CARB is submitting this letter and both studies to all three Proposal dockets.<sup>4</sup>

CARB noted in its initial comments on the Proposal that the United States Environmental Protection Agency (U.S. EPA) and the National Highway Traffic and Safety Administration (NHTSA) (collectively, the Agencies) have failed to analyze properly the climate impacts of the Proposal.<sup>5</sup> Instead, the Agencies have claimed that the impacts of climate change will be so severe that the Proposal’s increase in greenhouse gas emissions (and, by extension, the long-term effects of stalling emissions progress in the auto industry) are insignificant. The Agencies’ position represents an abdication of their statutory duties and responsibilities and is contrary to law.<sup>6</sup> The Agencies were required to analyze and consider the expected results.<sup>7</sup>

The attached studies further demonstrate the need for thorough, careful analysis of the Proposal’s climate impacts, as well as the compelling and extraordinary conditions California faces from climate change and increased greenhouse gas emissions. In Northcott et al. (2019), the authors collected data on CO<sub>2</sub> concentrations over Monterey Bay (which is home to a national marine sanctuary, significant fisheries, and globally important ecosystems) using moorings and surface robots. The data document, for the first time, that CO<sub>2</sub> concentrations over ocean waters ebb and flow throughout the day, often peaking in the early morning – showing that a previously common scientific assumption that CO<sub>2</sub> concentrations over ocean waters do not vary much over time and space does not always hold true. For Monterey Bay particularly, high morning CO<sub>2</sub> concentrations are likely an issue because of the nearby dense, urban Santa Clara Valley and the agricultural Salinas Valley. Given the unique topography surrounding Monterey Bay, the area’s winds and other atmospheric conditions in the early morning appear to concentrate CO<sub>2</sub> from both Valleys over the Bay. The study concludes that this previously undocumented process could increase the amount of CO<sub>2</sub> that coastal waters are absorbing by about 20 percent.

The higher amount of CO<sub>2</sub> being absorbed by Monterey Bay and likely other coastal waters than was previously understood has important ramifications for climate impacts. The more

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<sup>3</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); SAFE Vehicles Rule, 83 Fed. Reg. 42,986, 43,471 (Aug. 24, 2018) (citing 49 C.F.R. § 553.23 (committing that “[l]ate filed comments will be considered to the extent practicable”).

<sup>4</sup> EPA-HQ-OAR-2018-0283; NHTSA-2018-0067; NHTSA-2017-0069.

<sup>5</sup> E.g., CARB, Comment Letter on Proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Oct. 26, 2018) at 82, 85, EPA-HQ-OAR-2018-0283-5054, NHTSA-2018-0067-11873 [hereinafter “CARB Comments”]; see also State of California, et al., Comment Letter on the Draft Environmental Impact Statement for the SAFE Vehicles Rule, NHTSA-2017-0069-0625.

<sup>6</sup> E.g., *Massachusetts v. EPA* (2007) 549 U.S. 497, 523-26.

<sup>7</sup> See, e.g., 5 U.S.C. § 553; 42 U.S.C. § 4332; 42 U.S.C. §§ 7521(a), 7607(d); 49 U.S.C. 32902; 40 C.F.R. § 1508.27; *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1216 (9th Cir. 2008) (“The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.”); see also CARB Comments, 72-85, 409-13.

CO<sub>2</sub> dissolved in the oceans, the more acidic the ocean becomes.<sup>8</sup> The harmful impacts of ocean acidification have already been extensively studied and are already being seen.<sup>9</sup> Northcott et al. (2019) indicates these impacts are likely to accrue faster than and not be as evenly distributed as previously anticipated. Coastal waters, particularly off urban or agricultural areas like Monterey Bay, may be harmed by ocean acidification to greater degrees.

Gleason et al. (2019) documents a unique feedback loop in western forests that exacerbates climate-driven water impacts and wildfire risk. Increased wildfires in the western U.S. in recent decades has contributed to widespread forest mortality, carbon emissions, periods of severely degraded air quality, and substantial fire suppression expenditures; climate change will continue to chronically enhance the potential for western U.S. wildfire activity. And as colleagues and I have previously reported, the deposition and accumulation of black carbon in Sierra Nevada snowpack accelerates snowmelt and has negative impacts on California's water supply.<sup>10</sup> Gleason et al. (2019) provides new insight into the magnitude and persistence of wildfire disturbance on snowpack and water resources via black carbon and other impurities – and the melting snowpack's feedback on wildfires. In studying the albedo of snow in several areas between 1 and 15 years after a wildfire, the authors found that, over the last 20 years, there has been more than a four-fold increase in the amount of energy absorbed by snowpack because of fires across the western U.S. As a result, more than 11 percent of western forests are already experiencing earlier snowmelt because of increased wildfires. For western states that rely on snowpack and its runoff into local streams and reservoirs, earlier snowmelt is a major concern, as the volume of snowpack and the timing of snowmelt are the dominant drivers of how much water there is and when that water is available downstream – and, thus, the presence and magnitude of summer drought. The presence and magnitude of drought itself influences the frequency and degree of wildfires.

This feedback loop – wildfires expediting snowmelt, which then amplifies the frequency and magnitude of wildfires – will only be magnified as the climate continues to change. An increasingly warmer and drier climate in the western U.S. has already been documented to

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<sup>8</sup> E.g., Doney SC, Fabry VJ, Feely RA, Kleypas JA (2009) Ocean acidification: The other CO<sub>2</sub> problem. *Annu Rev Mar Sci* 1:169–192.

[https://imedeia.uib-csic.es/master/cambioglobal/Modulo\\_III\\_cod101608/Tema\\_8-acidificaci%C3%B3n/pH/annurev.marine.010908.163834.pdf](https://imedeia.uib-csic.es/master/cambioglobal/Modulo_III_cod101608/Tema_8-acidificaci%C3%B3n/pH/annurev.marine.010908.163834.pdf).

<sup>9</sup> E.g., Brewer, P. G.: A short history of ocean acidification science in the 20th century: a chemist's view, *Biogeosciences*, 10, 7411-7422, <https://doi.org/10.5194/bg-10-7411-2013>, 2013; see also Sulpis et al., (2018) Current CaCO<sub>3</sub> dissolution at the seafloor caused by anthropogenic CO<sub>2</sub>. *Proceedings of the National Academy of Sciences* Nov 2018, 115 (46) 11700-11705; DOI: 10.1073/pnas.1804250115.

<https://www.pnas.org/content/pnas/115/46/11700.full.pdf> (showing that so much CO<sub>2</sub> is being absorbed into the oceans that useful calcium carbonate is dissolving too fast to keep up, and parts of the seafloor are disintegrating because of it, with a layer of seafloor that does not contain calcium carbonate having risen more than 980 feet in some areas).


<sup>10</sup> Hadley, O. L., Corrigan, C. E., Kirchstetter, T. W., Cliff, S. S., and Ramanathan, V.: Measured black carbon deposition on the Sierra Nevada snow pack and implication for snow pack retreat, *Atmos. Chem. Phys.*, 10, 7505-7513, <https://doi.org/10.5194/acp-10-7505-2010>, 2010.

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yield increased frequency, duration, and severity of both wildfires and droughts. In California, the forest mortality rate has been rising over the past two decades, posing an increasingly higher risk of wildfire in the Sierra Nevada. Climate change is already melting snowpack and increasing wildfires on its own; now, as shown in Gleason et al. (2019), the wildfire-snowpack feedback loop further amplifies the climate impacts. As the Agencies acknowledge, the Proposal will result in a notable increase in CO<sub>2</sub> emissions, and yet, in the face of ample evidence of an already changing climate from unprecedented greenhouse gas emissions, the Agencies are pursuing the Proposal and did not analyze how the Proposal will affect the already changing climate. The attached studies, Northcott et al. (2019) and Gleason et al. (2019), further illustrate the climate impacts already underway and that finalizing the Proposal would be arbitrary and capricious.

If you have any questions about this letter or its attached studies, please contact Attorney Wesley Dyer at (916) 445-4299 or [Wesley.Dyer@arb.ca.gov](mailto:Wesley.Dyer@arb.ca.gov).

Sincerely,



Steven S. Cliff, Ph.D.  
Deputy Executive Officer  
California Air Resources Board

Attachments:

1. Northcott et al. (2019)
2. Gleason et al. (2019)