



September 27, 2021

The Honorable Michael Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Attn: Docket No. EPA-HQ-OAR-2021-0208

RE: Comments in Response to Proposed Rule: Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards (Docket No. EPA-HQ-OAR-2021-0208)

Dear Administrator Regan,

The Renewable Fuels Association (RFA) appreciates the opportunity to share these comments on EPA's "Proposed Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026" (86 Fed. Reg. 43726; August 10, 2021).

RFA is the leading voice for America's ethanol industry and our mission is to advance the development, production, and use of low-carbon renewable fuels like ethanol. RFA is also a founding member of the High Octane Low Carbon Alliance, and we endorse the comments submitted by that organization in response to the proposed rule.

As an initial matter, RFA believes well-designed fuel economy and greenhouse gas standards can work in tandem with programs like the Renewable Fuel Standard (RFS) to significantly reduce fossil fuel consumption, improve public health, and combat climate change. If our nation is to reach its goal of net-zero GHG emissions by mid-century, we'll need both cleaner, more efficient cars *and* cleaner, more efficient fuels.

Unfortunately, EPA's proposal fails to recognize that the fuels we put into our engines can have as much—or more—impact on fuel economy and GHG emissions as the engine technologies themselves. We believe the proposal missed a critical opportunity to expressly solicit public comment on potential regulatory pathways for adopting high-octane, low-carbon liquid fuels as a means of improving fuel economy and reducing emissions from the light-duty vehicle fleet.

Recent studies and analyses, including the Department of Energy's comprehensive Co-Optima research program, clearly show that ethanol-based high-octane, low-carbon fuels

can increase fuel efficiency by 5-10 percent and reduce lifecycle GHG emissions per mile by 9 percent or more when paired with the high-compression ratio engine technologies.

RFA also notes that EPA's technical assessment of the proposed CO2 standards suggests that "broader availability" of high-compression ratio technologies will be necessary to achieve the 2023-2026 fuel economy requirements.¹ EPA's proposal notes that an engine with high-compression, natural-aspiration, and direct injection is "a very cost-effective internal combustion engine technology that is in use today and ready for broader application."²

However, the proposal fails to mention that engines utilizing high-compression ratio technology will require higher-octane fuels to prevent premature fuel ignition. In other words, the proposed rule counts on broad deployment of high-compression ratio engines that will require high-octane fuel, but does nothing to ensure those high-octane fuels will actually be produced and available in the marketplace.

Because EPA is relying on these engine technologies to deliver the fuel efficiency gains and emissions reductions necessary to meet future standards, we believe discussion of the high-octane fuels that enable these technologies is well within the scope of this rulemaking process. Thus, we urge EPA to treat any written comments received regarding the role of high-octane, low carbon fuels as germane to this rulemaking, including these comments and those submitted by the High Octane Low Carbon Alliance.

With the actions described below, EPA's final rule for 2023-2026 tailpipe GHG emissions standards could provide a powerful incentive to automakers and fuel suppliers to rapidly adopt the internal combustion engine and high-octane fuel technologies that would deliver significant efficiency gains and emissions reductions.

- **Require a transition to a higher minimum-octane gasoline (98-100 RON) for all new internal combustion vehicles.** EPA has acknowledged it has the authority under the Clean Air Act to regulate minimum octane levels as a means of increasing fuel efficiency and reducing emissions. In response to previous proposed rulemakings establishing light-duty vehicle tailpipe GHG emissions standards, RFA has filed extensive written comments and technical reports with EPA regarding the ability of high-octane fuels to boost fuel economy and reduce both GHG emissions and criteria air pollutants. RFA hereby incorporates those comments by reference.³

At minimum, EPA should express its intent to consider adoption of a high-octane fuel standard as part of a future rulemaking to establish longer-term standards.

¹ 86 Fed. Reg. 43770

² *Id.*

³ See <https://ethanolrfa.org/wp-content/uploads/2018/10/Final-SAFE-ProposedRule-Comment-Letter.pdf>; also, https://ethanolrfa.org/wp-content/uploads/2017/10/RFA-Comments_re-Reconsideration-of-2022_25-Final-Determination-w-attachments.pdf; also, https://ethanolrfa.org/wp-content/uploads/2017/09/RFA_MTE-PD-Comments_2016-12-30.pdf; also, <https://ethanolrfa.org/wp-content/uploads/2015/10/RFA-Comments-to-EPA-and-NHTSA-Regarding-Proposed-CAFE-GHG-Standards-for-Model-Year-2017-2025-Light-Duty-Vehicles-.pdf>.

According to the proposed rule, “EPA expects that a future longer-term rulemaking will take critical steps to continue the trajectory of transportation emission reductions needed to protect public health and welfare.”⁴ If EPA fails to use the current rulemaking to establish a higher minimum octane standard, RFA encourages EPA to undertake a longer-term rulemaking (presumably establishing standards for 2027 and beyond) as soon as possible. At a minimum, the final rule for the 2023-2026 standards should include a statement expressing the agency’s intent to consider adoption of a high octane (98-100 RON) fuel standard as part of a future longer-term rulemaking to establish standards for 2027 and beyond.

- **Establish parity and consistency in the regulation of fuel volatility for ethanol and gasoline blends.** There is no longer any justification for certain ethanol-gasoline blends to have differing regulatory allowances for volatility, as measured by Reid vapor pressure (RVP). Nearly 30 years ago, EPA developed a 1-pound per square inch (psi) waiver of the RVP volatility requirements for certain gasoline blends. It did so in recognition of the fact that lower volatility blendstocks were not readily available in the marketplace and to encourage the increased use of renewable fuels.

Partially as a result of EPA’s establishment of the 1-psi RVP waiver, renewable fuels are blended into nearly every gallon of gasoline sold in the country today. The waiver has indeed served its purpose, and today EPA should take action to effectively eliminate the relevance of the 1-psi RVP waiver. The Agency should use its authority to mandate that refiners market lower-RVP blendstocks for conventional gasoline in the summertime (i.e., 8.0 psi in attainment areas) thereby allowing retailers to market a full spectrum of renewable fuel blends appropriate for use in a range of vehicle technologies.

The 1-psi RVP waiver—originally provided to expand the production and use of fuel ethanol—is now having the perverse effect of discouraging greater ethanol use in today’s gasoline market, and it is obstructing the successful implementation of important fuel and carbon reduction policies enacted since then, including the Renewable Fuel Standard.

Under the Clean Air Act, EPA has general authority to regulate the composition of fuels, see 42 U.S.C. § 7545(c), and it also has specific authority to mitigate any adverse effects on air quality based on the “renewable volumes” required by the Act, id. § 7545(v). These sections provide the Agency with ample authority to effectively eliminate the waiver by requiring lower-RVP gasoline blendstocks, thereby reducing volatility across the board and removing the refining industry’s last excuse for achieving the renewable volume requirements mandated by Congress, while at the same time assuring even greater reductions in urban ozone formation. Compelling refiners to produce lower-RVP blendstock would also complement public-private

⁴ 86 Fed. Reg. 43730

efforts—such as the U.S. Department of Agriculture’s Higher Blends Infrastructure Investment Program—to expand renewable fuel distribution infrastructure.

- **Approve a Mid-Level Ethanol Blend Certification Fuel:** EPA should expeditiously approve the use of a mid-level ethanol certification fuel (e.g., E25-E30) to provide automakers with the added justification to design optimized, high compression vehicles that can make use of 98–100 RON gasoline. The certification of E25-E30 fuel will help automakers cost effectively meet Corporate Average Fuel Economy (CAFE) and GHG requirements by improving engine efficiency, reducing CO₂, and reducing MSATs.
- **Reject the results of the EPA/V2/E-89 Fuel Effects Study and suspend further use or development of the MOVES2014 model until a new emissions study based on appropriate test fuels is conducted.** According to a number of independent third-party reviews, EPA’s current vehicle emissions modeling system (MOVES2014) is inadequate and unreliable as a tool for estimating the exhaust emissions of gasoline blends containing more than 10% ethanol. This is important because state air agencies use the MOVES modeling system to demonstrate compliance with Clean Air Act requirements. In its current condition, the model discourages states from pursuing the use of higher ethanol blends as a strategy for reducing mobile source emissions. The flaws in MOVES2014 with regard to ethanol blends stem from the model’s use of data from the EPA/V2/E-89 Fuel Effects Study. RFA strongly recommends suspending further use or development of the MOVES2014 model until a new emissions study is conducted using test fuels that more accurately represent real-world fuel blends. A detailed analysis of the MOVES2014 model conducted by scientists from Wyle Laboratories and the Volpe National Transportation Systems Center concluded that, “Overall, it was found that the predictive emissions results generated by MOVES2014 for mid-level ethanol blends were sometimes inconsistent with other emissions results from the scientific literature for both exhaust emissions and evaporative emissions...results and trends from MOVES2014 for certain pollutants are often contrary to the findings of other studies and reports in the literature.”⁵

Of particular concern is that the MOVES2014 model predicts increased exhaust emissions of nitrogen components and particulate matter as the ethanol content in gasoline increases, even though real-world emissions testing based on mid-level ethanol blends has shown distinctly opposite trends. “The results from other researchers often show ethanol-related emissions trends that are different than the MOVES2014 results obtained for this study...” the Volpe study found. “In some cases not only were magnitudes different but different [directional] trends were presented.” The model’s questionable predictions for certain emissions results from

⁵ Wayson, R., Kim, B., and Noel, G. January 2016. “Evaluation of Ethanol Fuel Blends in EPA MOVES2014 Model.” Conducted for the Renewable Fuels Association. Available at: <http://ethanolrfa.org/wpcontent/uploads/2016/01/RFA-MOVES-Report.pdf>

its use of data that misrepresents the actual parameters and composition of mid-level ethanol blends. Specifically, the default ethanol blend data in the MOVES2014 model is based on arcane “match blending” methods intended to “match” specific fuel parameters, rather than “splash blending” methods that are used in the real world. This data comes from the EPA/V2/E-89 Fuel Effects Study. According to Wyle and Volpe experts, “...real-world splash blends may not have the same attributes as the modeled default match blends used in MOVES, and actual emissions may be different than the emissions predictions from MOVES.”

- **Update EPA’s Lifecycle Analysis of Corn Ethanol Greenhouse Gas (GHG) Emissions:** In the 2010 pre-ambule for the RFS2 final rule, EPA acknowledged that lifecycle GHG analysis is an evolving science, and that updates to the Agency’s analysis would be undertaken as better data and methodologies became available. EPA wrote that it “...recognizes that as the state of scientific knowledge continues to evolve in this area, the lifecycle GHG assessments for a variety of fuel pathways will continue to change.”⁶ The Agency further stated that it “...plans to continue to improve upon its [lifecycle] analyses, and will update it in the future as appropriate...” and “...the Agency is also committing to further reassess these determinations and lifecycle estimates.”⁷

Yet, nearly 12 years after EPA promised to update its lifecycle analysis as newer data and better methods became available, the Agency has failed to honor its commitment. A recent analysis conducted by the U.S. Department of Energy found that average 2019-era corn ethanol reduced lifecycle GHG emissions by 44-52% compared to EPA’s 2005 petroleum baseline.⁸ In contrast, EPA’s analysis suggests 2022-era average corn ethanol will reduce lifecycle GHG emissions by only 21% relative to the 2005 baseline. RFA again calls upon EPA to update its outdated analysis of corn ethanol lifecycle GHG emissions. An updated analysis by EPA is necessary to help inform regulatory decision-making and public policy debates about the climate benefits of the RFS and renewable fuels in general.

- **Level the playing field for GHG emissions credit generation for all alternative fuel vehicles, including flexible fuel vehicles (FFVs).** Ethanol flex fuels like E85 used in FFVs have been proven to significantly reduce both tailpipe and full lifecycle GHG emissions. EPA should restore the approach to GHG standard compliance credit generation that was available to FFV manufacturers during the 2012-2016 CAFE/GHG standards regime.

Action by the EPA will be necessary to catalyze the development and introduction of cleaner, more efficient fuels into the marketplace, just as EPA action was required to

⁶ 75 Fed. Reg. 14765

⁷ 75 Fed. Reg. 14677

⁸ Lee, U., Kwon, H., Wu, M. and Wang, M. (2021), Retrospective analysis of the U.S. corn ethanol industry for 2005–2019: implications for greenhouse gas emission reductions. *Biofuels, Bioprod. Bioref.*, 15: 1318-1331. <https://doi.org/10.1002/bbb.2225>

eliminate lead, limit benzene, and reduce the sulfur content of our gasoline and diesel fuel. We respectfully ask that EPA use the current rulemaking process and future rulemakings to take the actions requested above and to establish the roadmap for increasing the required minimum octane rating of our nation's light-duty vehicle fuel.

Thank you for considering our comments and we look forward to working with EPA to pursue the regulatory actions necessary to promote more efficient, lower-carbon liquid fuels for high efficiency internal combustion engines.

Sincerely,

A handwritten signature in black ink that reads "Geoff Cooper". The signature is written in a cursive, flowing style.

Geoff Cooper
President & CEO