National Farmers Union
UNITED TO GROW FAMILY AGRICULTURE

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VIA ELECTRONIC FILING (www.regulations.gov)

Michael Regan, Administrator
U.S. Environmental Protection Agency
EPA Docket Center, Office of Air and Radiation
Mail Code 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460.

ATTN: EPA–HQ–OAR–2021–0208

Re: Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards; Proposed rule, 86 Fed. Reg. 43,726 (Aug. 10, 2021)

Dear Administrator Regan:

The National Farmers Union (NFU) appreciates the opportunity to comment on the proposed Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards ("Proposed Rule"), published at 86 Fed. Reg. 43,726. Supporting family agriculture and rural communities since 1902, NFU has nearly 200,000 family farmer, rancher, and fishermen members nationwide and organized divisions in 33 states. The family farm system of agricultural production is truly sustainable, protecting the environment, improving the farmer's quality of life, and enhancing the surrounding communities. As a family farm organization, NFU is particularly concerned with the challenges that climate change poses to agricultural production and family farmers' ability to pursue improvements in global food security.[1] Farmers, ranchers and rural communities can contribute to climate resilience and help circumvent serious harms to the economy and human health. These efforts are supported by the biofuels industry that eases the burdens on farmers and provides additional markets to facilitate a move toward sustainable practices and climate mitigation actions. Toward those ends, NFU supports the use of ethanol as a fuel additive for gasoline formulations to enhance octane levels, especially moving toward use of mid-level blends of ethanol. Use of higher ethanol blends will provide significant benefits to

[1] NFU, *Family Farming and Climate Change: 2021 Special Order of Business,* https://1yd7z7koz052nb8r33cfxyw5-wpengine.netdna-ssl.com/wp-content/uploads/2021/03/NFU-Special-Order-of-Business-Family-Farming-and-Climate-Change_03022021.pdf (last visited Aug. 23, 2021); *see also* M.E. Brown, *et al.*, *Climate Change, Global Food Security, and the U.S. Food System*, U.S. Global Change Research Program, at 111-112 (2015), *available at* http://www.usda.gov/oce/climate_change/FoodSecurity2015Assessment/FullAssessment.pdf (Throughout the food system, "effective adaptation can reduce food-system vulnerability to climate change and reduce detrimental climate change effects on food security…").

the rural community and beyond. Disincentives to move toward higher ethanol blends by favoring other technologies limits these investments and benefits to farmers.

NFU has called upon EPA to take immediate and concrete steps aimed at curbing greenhouse gas (GHG) emissions. Ethanol has superior octane-boosting properties and is an environmentally safer substitute for oil-derived, benzene-based octane enhancers. Mid-level ethanol blends (*e.g.,* E20-E40) are the most economical high-octane fuels available today. In response to numerous comments suggesting various actions EPA should take to support and promote use of high octane fuels, such as mid-level ethanol blends,[2] EPA stated that it "has given careful consideration to these comments and agrees that these commenters have identified both current and promising technologies that may be able to deliver significant improvements in reducing GHG emissions once fully deployed."[3] Recently, NFU, as part of the High Octane Low Carbon Alliance (HOLCA) led by former Senator Tom Daschle, joined with numerous organizations, calling for this Administration to address octane in the revised Light-Duty Vehicle GHG Emissions Standards.[4]

Despite the widespread agreement regarding the need to move this country toward high octane fuels, including by auto manufacturers, and the numerous studies that have been presented to EPA on the benefits of mid-level ethanol blends, EPA's proposal for revising the GHG standards for light-duty vehicles fails to take these fuels into account. This ignores a key consideration. NFU also understands EPA is planning to take additional actions to address emissions from vehicles. NFU submits these comments to urge the Administration to promote high octane fuels through supporting mid-level ethanol blends in the final rule and in future rulemakings.

I. EPA MUST CONSIDER THE AVAILABILITY OF HIGH-OCTANE FUELS TO REDUCE GHG EMISSIONS FROM LIGHT-DUTY VEHICLES.

Automakers have been working on developing higher compression engines to improve thermal efficiency and thereby fuel economy. Studies have been presented to EPA that show the benefits of using high octane fuels on vehicle efficiency.[5] Increased volume of ethanol increases

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[2] *See, e.g.,* 83 Fed. Reg. 16,077, 16,082 (Apr. 13, 2018) ("The Alliance and Global Automakers commented that higher octane gasoline enables opportunities for use of more energy-efficient technologies (e.g., higher compression ratio engines, improved turbocharging, optimized engine combustion) and that manufacturers would support a transition to higher octane gasoline, but do not advocate any sole pathway for producing increased octane."); Comments of NFU, Oct. 26, 2018 (EPA-HQ-OAR-2018-0283-5062); Comments of NFU, Oct. 5, 2017 (EPA-HQ-OAR-2015-0827-9014).

[3] 83 Fed. Reg. at 16,082.

[4] *See, e.g.,* July 11, 2021 Letter to President Biden, *available at* https://cleanfuelsdc.org/wp-content/uploads/2021/07/PresidentBidenLetterSAFE.pdf; *see also* June 8, 2021 Letter to Acting Assistant Administrator Goffman, *available at* https://cleanfuelsdc.org/wp-content/uploads/2021/06/HOLCLetterAssistAdminGoffman-060821.pdf.

[5] *See, e.g.,* AIR, Inc., Evaluation of Costs of EPA's 2022-2025 GHG Standards with High Octane Fuels and Optimized High Efficiency Engines, Sept. 22, 2016, Attach. 1 to Comments of Minnesota Corn Growers Association, et al., Sept. 26, 2016 (EPA-HQ-OAR-2015-0827-4167); Comments of Growth Energy, Dec. 30, 2016, at 3-6 (EPA-HQ-OAR-2018-0283-5080); Comments of Urban Air Initiative et al., Oct. 26, 2018, at 2-11 (EPA-HQ-

the octane level of gasoline across grades. In addition to its higher octane level, ethanol also features high sensitivity and high heat of vaporization, which increase engine efficiency.[6] In short, ethanol offers engine knock resistance at a lower cost than any other octane booster in gasoline. Higher ethanol blends can increase fuel octane without expensive refinery upgrades. A report issued by Oak Ridge National Laboratory, Argonne National Laboratory and the National Renewable Energy Laboratory cites increased vehicle efficiency, increased acceleration and significant reductions in GHG emissions among the demonstrated benefits of mid-level ethanol blend fuels.[7] The study found that vehicle manufacturers could benefit from high octane, low carbon fuels as a means to meet future fuel economy and GHG requirements, and serve as a way to increase torque in performance applications. That study also found that feedstock availability *and costs* are not expected to be obstacles to the substantial development of a high-octane fuel market, with E40 providing the greater fuel cost savings.

EPA's proposal recognizes high compression engines as advancements in internal combustion engines (ICE), noting the availability of the "very cost-effective ICE technology that is in-use today and ready for broader application."[8] For years, auto manufacturers have supported "bringing high octane fuels to market" that are aligned with these improved engine technologies and vehicles,[9] recognizing "[h]igher-octane fuels are the cheapest CO_2 [carbon dioxide] reduction."[10] Recently, the Alliance for Automotive Innovation (Alliance), which represents automakers that produce nearly 99% of the new light-duty vehicles sold in the United States, acknowledged that vehicle improvements, along with high octane fuels, "should be encouraged as additional solutions *as soon as possible* to maximize environmental benefits across the fleet."[11] The Alliance stated the use of high octane low carbon liquid fuels "would simultaneously support vehicle performance, including fuel economy, and further reduce greenhouse gas emissions"; these benefits "would be realized by new *and existing* internal combustion engines."[12] These engines and high octane fuels, specifically mid-level ethanol blends, are not "crystal ball" technologies, but are technologically feasible and economically reasonable means to achieve better fuel economy and reduced GHG emissions available today.

OAR-2018-0283-5488); Comments of American Coalition for Ethanol, Oct. 26, 2018, at 3-6 (EPA-HQ-OAR-2018-0283-4033); Comments of the High Octane-Low Carbon Fuel Alliance, Oct. 26, 2018, at 7 (EPA-HQ-OAR-2018-0283-4196); Comments of Minnesota Corn Growers Association, Oct. 26, 2018, at 2-6 (EPA-HQ-OAR-2018-0283-5475).

[6] Ricardo, Inc., *The Draft Technical Assessment Report: Implications for High Octane, Mid-Level Ethanol Blends, Final Report*, at 24 (2016), *available at* https://ethanolrfa.org/wp-content/uploads/2016/09/ATTACHMENT-A_Ricardo-TAR-Report-for-RFA-Sept_20_2016.pdf.

[7] Tim Theiss, *et al.*, *Summary of High-Octane Mid-Level Ethanol Blends Study*, ORNL/TM-2016/42 (July 2016), Attach. to Comments of Renewable Fuel Association, Sept. 26, 2016 (EPA-HQ-OAR-2015-0827-4174).

[8] 86 Fed. Reg. at 43,770.

[9] Comments of the Alliance of Automobile Manufacturers on Draft Technical Assessment Report at 71, Sept. 26, 2016 (EPA-HQ-OAR-2015-0827-4089).

[10] Eric Brandt, *100-Octane, Super Premium Fuel is Coming to a Pump Near You*, The Drive, May 1, 2017, http://www.thedrive.com/news/9836/100-octane-super-premium-fuel-is-coming-to-a-pump-near-you.

[11] Alliance for Automotive Innovation June 11, 2021 Letter to Senator Daschle, *available at* https://cleanfuelsdc.org/wp-content/uploads/2021/06/AutoAllianceLetter-061121.pdf (emphasis added).

[12] *Id*. (emphasis added).

Yet, it appears that EPA's proposal ignores the availability of high octane fuels to utilize high-compression ratio technology and advanced ICE technologies. These engine technologies can deliver the emissions reductions necessary to meet these and future GHG standards, but high octane fuels best optimize these technologies, and thereby optimize GHG reductions. Recent reports on climate change impacts indicate the very real need to reduce GHG emissions today. It is not just a missed opportunity to incorporate use of mid-level ethanol blends as high octane fuel for reducing GHG emissions from light-duty vehicles, it is error to refuse to even consider it.

II. MID-LEVEL ETHANOL BLENDS ARE COST-EFFECTIVE, HIGH OCTANE LOW CARBON FUELS THAT PROVIIDE NUMEROUS BENEFITS.

The alternatives to ethanol as an octane booster are petroleum-based. Ethanol, however, is substantially cleaner than petroleum-based octane additives, and "using ethanol as the source of octane in future high octane fuels has the potential to significantly decrease petroleum refinery GHG emissions by reducing the energy intensity of the refining process."[13] It reduces emissions of particulate matter (PM) and air toxics such as benzene, toluene, and xylene. $PM_{2.5}$ has been shown to contribute to a significant portion of premature deaths due to air pollution, and such emissions from gasoline are likely significantly underreported.[14]

Importantly, increased ethanol use provides additional GHG emissions reductions, which is increasingly important as the carbon intensity of gasoline *is increasing* with greater use of unconventional fossil fuels. "Emissions from fossil fuel combustion comprise the vast majority of energy-related emissions," with an increase in emissions from the transportation sector largely attributed to increased vehicle miles travelled and motor gasoline consumption by light-duty vehicles.[15] At the same time, energy use in ethanol production and lifecycle GHG emissions have decreased with changes in farming practices and increased intensification (*e.g.*, higher yields). EPA has found, the land use, land-use change, and forestry sector resulted in a net increase in carbon stocks (*i.e.*, net CO_2 removals).[16] The National Highway Traffic Safety Administration's (NHTSA) Draft Supplemental Environmental Impact Statement on its recent proposal to revise

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[13] Comments of Renewable Fuels Association, Oct. 5, 2017, at 5 (EPA-HQ-OAR-2015-0827-9735).
[14] June 8, 2021 Letter to Acting Assistant Administrator Goffman, *available at* https://cleanfuelsdc.org/wp-content/uploads/2021/06/HOLCLetterAssistAdminGoffman-060821.pdf; *see also* Urban Air Initiative June 5, 2019 Press Release, *New Study: Ethanol Reduces Emissions Connected To Heart Disease And Asthma*, https://fixourfuel.com/2019/06/05/new-study-ethanol-reduces-emissions-connected-to-heart-disease-and-asthma/; Steffen Mueller, et al., *An Assessment on Ethanol-Blended Gasoline/Diesel Fuels on Cancer Risk and Mortality*, Int. J. Environ. Res. Public Health 2021, 18(13), 6930, https://www.mdpi.com/1660-4601/18/13/6930/htm.
[15] EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2019, at 3-1, 3-9, 3-23 to 3-25 (2021), https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019.
[16] EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019, at 6-2. This has occurred despite the loss of cropland and the struggle to retain existing agricultural lands against the ongoing pressures from urban and industrial expansion.

fuel economy standards recognizes increased GHG benefits with higher blends of ethanol, as well as the ongoing reduced carbon intensity of corn ethanol.[17]

Previously, EPA has referenced purported challenges to transitioning to high octane fuels stemming from costs to consumers who drive vehicles designed for current regular octane grade fuel, contending the "net positive benefits could take many years."[18] But, this has been disputed by automakers. In testimony before Congress, a representative of General Motors stated: "We believe increasing the minimum octane level in U.S. gasoline for new vehicles will be a win for all industries and, most importantly, consumers."[19] "We have an opportunity to play a large role in offering consumers the most affordable option for fuel economy improvement and greenhouse gas reduction. We believe a higher efficiency gasoline solution with a higher Research Octane Number (RON) is very important to achieving this."[20] Although that testimony referenced a lower RON than NFU believes should be utilized, consumers would benefit from projected fuel cost savings, reduced price volatility, increased torque in performance applications, and the energy security and environmental attributes of mid-level ethanol blends. Based on information previously provided, EPA should be fully aware of the reduced costs of producing mid-level ethanol blends, where ethanol is less expensive than gasoline, decreasing costs at the pump.[21] As noted, the National Renewable Energy Laboratory found costs to not be a limiting factor to increase biofuel use through requiring higher octane fuels.[22] More recent information confirm the benefits to consumers as a result of increased biofuel use.[23]

As noted above, the Alliance has recognized that high octane fuels can benefit *existing* vehicles. More recent analysis further supports that mid-level ethanol blends can be used in existing vehicles, which should reduce concerns about any "transition" to use of higher octane fuels. A study conducted by North Carolina State University found that vehicles on the road

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[17] NHTSA, Corporate Average Fuel Economy Standards Model Years 2024-2026, Draft Supplemental Environmental Impact Statement at 6-35 to 6-37 (Aug. 2021), *available at* https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy.
[18] 83 Fed. Reg. 42,986, 43,041 (Aug. 24, 2018).
[19] Written Testimony of Dan Nicholson, General Motors Vice President of Global Propulsion, Before the House Committee on Energy and Commerce Subcommittee on Environment, Hearing on High Octane Fuels and High Efficiency Vehicles: Challenges and Opportunities, at 1, Apr. 13, 2018, *available at* https://docs.house.gov/meetings/IF/IF18/20180413/108122/HHRG-115-IF18-Wstate-NicholsonD-20180413.pdf.
[20] *Id.* at 2. As described further below, NFU urges EPA to make various changes to expand use of mid-level ethanol blends. These actions would provide a transition to these improved technologies and achieve the benefits of using higher octane fuels today.
[21] *See, e.g.,* Comments of Growth Energy, Sept. 26, 2016, at 5-6 (EPA-HQ-OAR-2015-0827-9724); Comments of NFU, Oct. 26, 2018, at 6 (EPA-HQ-OAR-2018-0283-5062) (citing Presentation, The Changing Economics of Ethanol Blend Fuels, Scientific Update on Biofuels Sponsored by the Environmental and Energy Study Institute, Sept. 18, 2014, *available at* https://www.eesi.org/files/Dean-Drake-091814.pdf); Comments of American Coalition for Ethanol, Oct. 26, 2018, at 2-3 (EPA-HQ-OAR-2018-0283-4033); Comments of Renewable Fuels Association, Oct. 26, 2018, at 4-6 (EPA-HQ-OAR-2018-0283-4409).
[22] Presentation, High Octane Fuels: Benefits and Challenges, Robert L. McCormick, NREL, at 30, Mar. 17, 2016, *available at* https://cleancities.energy.gov/files/u/news_events/document/document_url/158/CC_HOF_Webinar_Combined.pdf.
[23] Philip K. Verleger, Jr., *The Renewable Fuel Standard Program: Measuring the Impact on Crude Oil and Gasoline Prices* (2019), https://ethanolrfa.org/wp-content/uploads/2019/09/Verleger-RFS-Impact-on-Oil-and-Gasoline.pdf.

today can adapt to mid-level ethanol blends.[24] Researchers compared E10 (regular and premium) with E27 in one flexible fuel vehicle (FFV) and four non-FFVs and found all five vehicles adapted to each fuel. The study also found E27 can increase engine efficiency and reduce carbon monoxide (CO) and PM emissions. A study by the University of Nebraska Lincoln on use of E30 in non-FFVs used by the State of Nebraska also found the non-FFVs were able to adjust the air-to-fuel ratio to adapt to the higher oxygen content of E30, and E30 had no observable negative effect on overall vehicle performance.[25] Comparing E15 to E30, the Nebraska report found a 40% reduction in CO_2 emissions and that E30 is cost-effective due to the increased use of ethanol. Thus, these are benefits that can be achieved today, even in existing vehicles.

III. EPA CAN, AND SHOULD, UNDERTAKE REGULATORY REVISIONS TO PROMOTE MID-LEVEL BLENDS OF ETHANOL.

Mid-level ethanol blends are available today, as they are authorized for use in FFVs and provide cost savings to consumers. But regulatory barriers are preventing their wider use. While EPA should have considered the availability of high octane fuels in its revised proposal, additional regulatory actions by EPA also should be taken to promote use of mid-level ethanol blends, as previously explained by NFU, among others.

Octane Fuel Requirements: First, as again stated by many at EPA's public hearing on EPA's proposal for revised light-duty vehicle GHG standards, EPA can use its authority under the Clean Air Act to approve and require specific octane levels, like 100 RON. Several comments have been submitted to EPA previously, outlining this authority.[26] While NFU expects other comments on this proposal also will further address EPA's authority to approve and require higher octane in fuels under its Clean Air Act authority in Sections 202 and 211, which NFU supports, EPA has acknowledged that 42 U.S.C. §7545(c) gives it authority to "control" gasoline octane levels.[27]

Certification Fuel Requirements: Second, EPA should ease the ability to use mid-level ethanol blends as certification fuel. EPA has acknowledged that mid-level ethanol blends can be approved as certification fuel under 40 C.F.R. §1065.701.[28] NFU, among others, previously explained how EPA can streamline the approval process for mid-level ethanol blends, as high

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[24] Urban Air Initiative Apr. 5, 2019 Press Release, New Study: Non Flex Fuel Vehicles Benefit From Ethanol Blends, https://fixourfuel.com/2019/04/05/new-study-non-flex-fuel-vehicles-benefit-from-ethanol-blends/; Weichang Yuan et al., *Comparison of real-world vehicle fuel use and tailpipe emissions for gasoline-ethanol fuel blends*, 249 Fuel 352-364 (2019).

[25] Rajib Saha *et al*., *Redefining Renewable Fuels: A demonstration of the long-term adaptability and economic feasibility of E30 consumption in non-flex fuel vehicles* (2021), *available at* https://cleanfuelsdc.org/wp-content/uploads/2021/03/NEB-E30-Demonstration-Project-Summary.pdf; *see also* Adil Alsiyabi et al., *Investigating the effect of E30 fuel on long term vehicle performance, adaptability and economic feasibility,* 306 Fuel 121629 (2021).

[26] *See, e.g.,* Comments of Renewable Fuels Association, Oct. 5, 2017, at 8-12 (EPA-HQ-OAR-2015-0827-9735); Comments of Renewable Fuels Association, Oct. 26, 2018, at 6-9 (EPA-HQ-OAR-2018-0283-4409).

[27] EPA's Regulatory Authority to Address Octane, MSTRS Meeting, May 5, 2015, https://www.epa.gov/sites/production/files/2015-05/documents/050515mstrs_machiele.pdf.

[28] 79 Fed. Reg. 23,414, 23,528 (Apr. 28, 2014) ("Tier 3 Rule").

octane fuels, to be certification fuels.[29] As explained, EPA can make findings to facilitate use of mid-level ethanol blends as certification fuel but may need to make regulatory changes to ensure flexibility to use mid-level ethanol blends more generally. Because mid-level ethanol blends are "accessible, obtainable"[30] in commerce today, EPA should make clear that mid-level ethanol blends meet the criteria in Section 1065.701(c) that the fuel be "commercially available."[31] EPA should also clarify that E30 is representative of mid-level ethanol blends to give retailers and automakers more flexibility in sales and engine design without imposing undue certification requirements for each blend level. Once EPA approves the certification fuel, the manufacturer should be able to make a determination that the approved fuel can be appropriately used in other model year vehicles without going through the waiver process under 42 U.S.C. §7545(f). Such flexibility may require updates to EPA's fuel registration process under 40 C.F.R. Part 79.

Fuel Economy Formula (R-Factor): Third, with approval of alternative certification fuels, EPA should also adjust the formula in 40 C.F.R. §600.113-12 used for determining fuel economy to ensure an appropriate R-factor and a multiplier in recognition of the lower carbon content of the proposed certification fuel. The current fuel economy equation includes adjustments meant to control for changes in the test fuel from testing in 1975 that affect fuel economy.[32] One adjustment is known as the R-factor, which is intended to represent the response of a typical vehicle's fuel economy to small changes in the fuel's energy content.[33] The current equation in the regulations uses an R-factor of 0.6 based on data from the 1980s. This factor fails to adequately adjust for changes in the test fuel with increased ethanol volume, as required by law.[34] There has been support for making this change for years, and EPA has acknowledged that changes to the R-factor may be warranted.[35] While EPA did propose a change in 2020 for E10,[36] that proposed R-Factor (Ra=0.81) may still be too low, as there is ample information to show that the R-Factor should be "1" or closer to 1, which several commenters supported, including automakers.[37] "With [a] correct R Factor, high-octane mid-level blends can offer real CAFE as

[29] Comments of NFU, Oct. 26, 2018, at 7-9 (EPA-HQ-OAR-2018-0283-5062). The automobile industry has also supported streamlining this process. *See* Comments of Alliance of Automobile Manufacturers on Regulatory Reform, Issue 2.2, May 15, 2017 (EPA-HQ-OA-2017-0190-37160).
[30] *available*, https://www.merriam-webster.com/dictionary/available. For example, E25 and E30 are "common blends" offered at blender pumps. U.S. Department of Energy (DOE), *Alternative Fuels Data Center: Ethanol Blends*, https://www.afdc.energy.gov/fuels/ethanol_blends.html (last visited Aug. 27, 2021). The Renewable Fuels Association has estimated over 5000 retail stations as offering flexible fuel. RFA, *Essential Energy: 2021 Pocket Guide to Ethanol*, at 15 (2021), https://ethanolrfa.org/wp-content/uploads/2021/02/2021-Pocket-Guide.pdf. ASTM International has also established a standard for mid-level ethanol blends (D8076).
[31] 40 C.F.R. §1065.701(c)(1)(ii).
[32] EPA-HQ-OAR-2011-0135-0604.
[33] *Id.* at 3.
[34] 77 Fed. Reg. 62,624, 62,777-62,778 (Oct. 15, 2012).
[35] EPA, Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards Summary and Analysis of Comments, at 4-353 (Mar. 2014).
[36] 85 Fed. Reg. 28,564, 28,574-28,577 (May 13, 2020).
[37] *See, e.g.,* Comments of Alliance for Automotive Innovation, Aug. 14, 2020, at 5-6, 25-29 (EPA-HQ-OAR-2016-0604-0087); Comments of Renewable Fuels Association, Aug. 14, 2020 (EPA-HQ-OAR-2016-0604-0088).

well as GHG benefits."[38] Making this adjustment would allow automakers to use the new test fuel for purposes of compliance with the fuel economy requirements without being unfairly penalized for using a test fuel with a lower energy content.

Reid Vapor Pressure: Fourth, EPA should work with the ethanol industry to resolve Reid Vapor Pressure (RVP) restrictions on using ethanol blends above E10 year-round. Ethanol itself has a low RVP rating, and, at higher blends, such as E30, the RVP should not be an issue, as the higher volume of ethanol counteracts potential increases based on the petroleum gasoline. NFU appreciates EPA's recent efforts to address the RVP waiver for E15. While those efforts remain pending in litigation on appeal, those efforts did not adequately address mid-level ethanol blends. The ethanol and automotive manufacturing industries have also suggested an alternative approach to issuing a broader waiver; that is, imposing lower RVP limits on the petroleum gasoline blendstock to ensure available blendstock for higher blends of ethanol. While EPA referenced potential adverse impacts on fungibility of fuel, there is precedent showing the gasoline blendstock can be set at a lower RVP to protect against exceeding 9 psi to address air quality concerns.[39] In either case, NFU urges EPA to continue to work with the ethanol industry to find a solution to allow year-round sales, as the potential restrictions during the summer months will create practical restrictions to expanding the use of ethanol.[40]

Substantially Similar Finding: Finally, EPA can also use its authority to approve mid-level ethanol blends for use under Clean Air Act section 211(f), 42 U.S.C. § 7545(f). Starting in 2017, gasoline emissions certification fuel now contains 10 percent ethanol. As such, section 211(f)(1) no longer limits ethanol blending in market fuel, as any ethanol blend, including mid-level ethanol blends, are "substantially similar" to a certification fuel. Moreover, given that the effects of gasoline/ethanol blends like E20, E25, and E30 are already well-known, it makes little to no sense for EPA to interpret the requirements of section 211 as rigidly and burdensome as it has done in the past for new fuels. EPA should issue an updated interpretation of "substantially similar" to confirm the ability to use these fuels.

IV. EPA SHOULD INSTITUTE CREDITS TO SUPPORT VEHICLES THAT PROMOTE INCREASED USE OF RENEWABLE FUELS.

Congress established policies, which were intended to work together, to promote production of U.S. biofuels and, thereby, energy independence. These policies include the Renewable Fuel Standard (RFS) program, which has worked to support growth in the use of

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[38] *See* Brian West, Oak Ridge National Laboratories, DOE, *High Octane Fuels Can Make Better Use of Renewable Transportation Fuels*, Presentation at Biomass 2014, Washington, DC, July 29-30, 2014, slide 11, *available at* https://www.energy.gov/sites/prod/files/2014/11/f19/west_biomass_2014.pdf.

[39] 81 Fed. Reg. 80,828, 80,851 (Nov. 16, 2016).

[40] Renewable Fuels Association, *Potential Economic Impacts to the U.S. Ethanol Industry from the D.C. Circuit Court Decision on E15*, Aug. 4, 2021, https://ethanolrfa.org/wp-content/uploads/2021/08/Potential-Economic-Impacts-from-the-DC-Circuit-E15-Decision.pdf.

renewable fuels, including ethanol, since 2005.[41] Although EPA has pointed to the RFS to explain why it need not support renewable fuels under its GHG requirements,[42] EPA's GHG emission regulations should work hand-in-hand with the RFS program, supporting biofuels. And this ignores how increased use of ethanol can support compliance with the proposed and future GHG standards. The agencies should restore or include incentives that can be provided to automakers to ensure vehicles being produced consider the increased use of renewable fuels.

One way to promote mid-level ethanol blends, and thereby higher-octane fuels, is to restore meaningful credits for FFVs and to establish a new incentive for engines optimized for efficiency on mid-level ethanol blends. FFV production has been impacted by EPA's unfair treatment compared to other alternative fuel vehicles. Incentives to stimulate the production of vehicles that produce the benefits sought, and reduce costs to consumers, are appropriate. NFU appreciates EPA's guidance that it will retain an "F Factor" of 0.14 for E85 (rather than default to zero) until EPA revises its guidance. Information has been provided to EPA to support an increase in the F Factor to account for greater penetration of E85 in the marketplace.[43] EPA should issue any guidance necessary to give automakers sufficient certainty for automakers to make appropriate investments and work to update this factor for later model years to continue to support FFVs.[44] Based on EPA's current restrictions on mid-level ethanol blends, FFVs remain an important incentive to sell mid-level ethanol blends, supporting continued investment in retail and infrastructure to expand use as part of any transition to high octane fuels.

In addition, EPA has acknowledged that raising octane levels could enable "LDGHG standards that go beyond the 2025 standards."[45] Thus, automakers that take action to move ahead of the curve should be able to obtain credits toward meeting the GHG requirements. Such incentives could be tied to use of higher ethanol blends as a certification fuel, thereby supporting those efforts to provide mid-level ethanol blends at the pump but also better ensure the benefits of these higher performing engines. Although EPA is proposing to restrict the credits under the program, it provides little incentives for these other clear solutions to address GHG emissions. EPA should not unduly restrict such incentives as it did with FFVs. Providing such incentives will create better benefits and move the country toward more efficient vehicles and higher octane, lower carbon fuels. It is also consistent with EPA's interpretation of its authority under

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[41] EPA has fallen behind in enforcing the RFS volume mandates, negatively impacting biofuel producers. NFU appreciates EPA's efforts to get the program "back on track," and urges EPA to enforce the full "implied" conventional biofuel requirement of 15 billion gallons and *increase* the advanced biofuel volumes.
[42] 77 Fed. Reg. at 62,823.
[43] E85 Flexible Fuel Vehicle Weighting Factor (F-Factor) for Model Years 2021 and Later Vehicles; Notice, 85 Fed. Reg. 52,590 (Aug. 26, 2020) (noting EPA "has extended the use of the existing F-factor of 0.14 to model year 2020," which "will remain in place beyond MY2020 until such time as EPA adopts a revised F-factor based on new data and updated methodology"); *see also* EPA Aug. 20, 2020 Memo, *E85 Flexible Fuel Vehicle Weighting Factor for Model Years 2020 and Later Vehicles*, https://iaspub.epa.gov/otaqpub/display_file.jsp?docid=50843&flag=1.
[44] *See, e.g.,* Comments of Renewable Fuels Association, Oct. 26, 2020 (EPA-HQ-OAR-2020-0104-0020); Comments of POET, Oct. 26, 2020 (EPA-HQ-OAR-2020-0104-0022); Comments of Growth Energy, Oct. 26, 2020 (EPA-HQ-OAR-2020-0104-0027); Comments of American Coalition for Ethanol, Oct. 26, 2020 (EPA-HQ-OAR-2020-0104-0029).
[45] EPA Presentation, *EPA's Regulatory Authority to Address Octane*, MSTRS Meeting, May 5, 2015, at 6, *available at* https://www.epa.gov/sites/production/files/2015-05/documents/050515mstrs_machiele.pdf.

section 202 to provide incentives to push new technologies. Introduction of these better performing fuels and engines are needed, and we believe consumers will reap the benefits and continue their use.

V. EPA'S EMISSIONS MODELING SHOULD BE ADJUSTED TO BETTER ACCOUNT FOR THE BENEFITS OF ETHANOL FOR AIR QUALITY.

A. Ethanol Provides Air Quality Benefits, Which May Not Be Accurately Reflected in EPA's Current Models.

Ethanol, a renewable fuel, changes the emissions profile of gasoline, creating a cleaner, safer motor vehicle fuel. Real-world evidence shows use of ethanol blends reduces emissions of CO, PM, air toxics, and GHGs compared to burning petroleum gasoline. With higher octane fuels, and related engines discussed above, the motor fuel can burn even more efficiently. This results in better overall air quality than when vehicles burn conventional gasoline, significantly improving public health.

Concerns have been raised regarding the models used by EPA to determine emissions from fuels. Third-party reviews have shown that MOVES2014 may be inadequate as a tool for estimating the exhaust emissions of gasoline blends containing more than 10 percent ethanol. The model's results for mid-level ethanol blends have been shown to be inconsistent with other results from the scientific literature for both exhaust emissions and evaporative emissions, including results from real-world emissions testing.[46] The problems with MOVES2014 have been tied to the model's use of data that misrepresents the actual parameters and composition of mid-level ethanol blends. While EPA recently released MOVES3, it is unclear if EPA made the appropriate adjustments to adequately reflect the benefits of blends above E10,[47] and EPA should ensure its models are properly updated to do so.

B. Recent Assessments Show Continued Improvements in GHG Lifecycle Analysis, Finding Greater Emissions Reductions for Ethanol Compared to Petroleum Gasoline Than EPA Has Estimated.

The Energy Independence and Security Act of 2007 required EPA to conduct lifecycle GHG emissions analysis to identify the renewable fuels eligible to meet the various categories under the RFS program. EPA conducted this analysis for corn-based ethanol as part of the 2010 RFS rulemaking. Since that time, published studies and more recent data have improved the understanding of corn ethanol's lifecycle GHG impacts, showing much higher reductions in

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[46] *See, e.g.,* Roger Wayson, *et al.*, *Evaluation of Ethanol Fuel Blends in EPA MOVES2014 Model* (Jan. 2016), *available at* http://www.ethanolrfa.org/wp-content/uploads/2016/01/RFA-MOVES-Report.pdf; Steve VanderGriend, Urban Air Initiative, Ethanol's Emissions Effects in MOVES2014, Presentation for MOVES Model Review Work Group Mar. 7th, 2018 meeting, *available at* https://www.epa.gov/sites/production/files/2018-04/documents/02-ethanol-emissions-effects-moves2014-2018-03-07.pdf.

[47] EPA's Overview of EPA's MOtor Vehicle Emission Simulator (MOVES3), dated March 2021, only references fuels up to E15 (for onroad) and E85 (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1011KV2.pdf).

GHG emissions for corn ethanol compared to petroleum gasoline.[48] As noted above, corn ethanol plants have become more efficient. In addition, U.S. farmers have responded to demand and concerns by moving toward sustainable practices *and intensification*, not land expansion. The land use aspect of EPA's analysis has not been experienced in the real world.[49]

Despite these advancements in lifecycle analysis, EPA has chosen not to acknowledge the significant overall benefits of increased ethanol use with respect to GHG reductions compared to petroleum-based gasoline. While requests to update the RFS lifecycle analysis have been rejected by EPA to date, the RFS statute includes specific parameters of how that analysis must be conducted, and this should not limit EPA's analysis of GHG benefits of ethanol blends. These newer studies and data show greater emissions reductions associated with corn ethanol, which is even more pronounced where more unconventional sources and heavier crudes are being used for gasoline today than in 2005 – the baseline used under the RFS. EPA, however, has declined to consider the significant GHG impacts of burning petroleum gasoline and the benefits of increasing use of renewable fuels beyond tailpipe emissions.

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The family farm forms the backbone of this country. As discussed above, biofuels have played an important role in supporting family farms, which have faced significant pressure to stay in production from many sides and a struggling economy. NFU supports continued efforts to address GHG emissions and, thereby, climate change and the climate resilience it brings to the food system. NFU strongly encourages EPA to make appropriate regulatory changes to support

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[48] *See, e.g.,* ICF, *A Life-Cycle Analysis of the Greenhouse Gas Emissions of Corn-Based Ethanol*, Report prepared for U.S. Department of Agriculture (Sept. 2018), *available at* https://www.usda.gov/sites/default/files/documents/LCA_of_Corn_Ethanol_2018_Report.pdf; Uisung Lee, et al., *Retrospective analysis of the U.S. corn ethanol industry for 2005–2019: implications for greenhouse gas emission reductions*, Biofuels Bioproducts and Biorefining, May 4, 2021, https://onlinelibrary.wiley.com/doi/10.1002/bbb.2225?af=R; Life Cycle Associates, *GHG Emissions Reductions due to the RFS2- A 2020 update*, Feb. 11, 2021, *available at* https://ethanolrfa.org/wp-content/uploads/2021/02/LCA_-_RFS2-GHG-Update_2020.pdf; Melissa J Scully, et al., *Carbon intensity of corn ethanol in the United States: state of the science* 2021 Environ. Res. Lett. 16 043001.

[49] *See, e.g.,* Bruce A. Babcock and Zabid Iqbal, *Using Recent Land Use Changes to Validate Land Use Change Models*, Iowa State University Center for Agricultural and Rural Development, Executive Summary (2014), *available at* http://www.card.iastate.edu/products/publications/pdf/14sr109.pdf ("The contribution of this study is to confirm that the primary land use change response of the world's farmers from 2004 to 2012 has been to use available land resources more efficiently rather than to expand the amount of land brought into production. … Our conclusion that intensification of agricultural production has dominated supply response in most of the world does not rely on higher yields in terms of production per hectare harvested. Any increase in yields in response to higher prices would be an additional intensive response."); *see also* Renewable Fuels Association, *USDA Data Show Cropland Reductions in Counties with Ethanol Plants from 1997-2012*, April 3, 2017, *available at* http://www.ethanolrfa.org/wp-content/uploads/2017/04/USDA-Data-Show-Cropland-Reductions-in-Counties-with-Ethanol-Plants-from-1997-2012-1.pdf; D.S. Shrestha, et al., Biofuel impact on food prices index and land use change, 124 Biomass and Bioenergy 43-55 (2019); Joshua Pritsolas and Randall Pearson, *A Cautionary Tale: A Recent Paper's Use of Research Based on the USDA Cropland Data Layer to Assess the Environmental Impacts of Claimed Cropland Expansion*, GeoSpatial Mapping, Applications, and Research Center (GeoMARC) Southern Illinois University Edwardsville (2021), *available at* https://ethanolrfa.org/wp-content/uploads/2021/06/SIUE-Rebuttal-on-USDA-CDL-Use.pdf.

increased use of mid-level ethanol blends, which are high octane, low carbon fuels. As has been shown by numerous studies, ethanol provides significant air quality benefits, in addition to providing much needed jobs and creating stability in markets providing benefits and promoting investments in the rural economy. Virtually all parties, including EPA, acknowledge the GHG and fuel economy benefits of high octane fuels in more efficient engines, and the cost-effectiveness of using higher ethanol blends to meet the goals of these requirements.

We stand ready to offer any support and assistance EPA may find helpful regarding these matters. Thank you for your consideration of these comments.

Sincerely,

Rob Larew
President