ORAL ARGUMENT NOT YET SCHEDULED

No. 20-1168

(consolidated with Nos. 20-1145, 20-1167, 20-1169, 20-1173, 20-1174, 20-1176, and 20-1177)

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

NATURAL RESOURCES DEFENSE COUNCIL, *et al.*,

Petitioners,

v.

ANDREW WHEELER,
Administrator, U.S. Environmental Protection Agency,

Respondent.

AMICUS BRIEF ON BEHALF OF ETHANOL PRODUCERS IN SUPPORT OF THE SEPARATE PETITIONS FILED BY PUBLIC INTEREST ORGANIZATION PETITIONERS AND STATE AND LOCAL GOVERNMENT PETITIONERS

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

All parties and intervenors appearing in this case are listed in the brief for the State and Local Government and the Public Interest Organization Petitioners ("Petitioners"). References to the rulings under review and related cases also appear in the briefs of Petitioners. The parties have consented to the filing of *amicus* briefs.

GLOSSARY

Agencies	Environmental Protection Agency and National Highway Traffic Safety Administration
BTEX	Aromatic hydrocarbon compounds (i.e., Benzene, Toluene methylbenzene, Ethylbenzene, and Xylene dimethylbenzene)
CAAA	Clean Air Act Amendments of 1990
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
EPA E15 Br.	Brief of Respondent EPA in Case No. 19-1124 (filed Aug. 10, 2020)
EPCA	Energy Policy and Conservation Act of 1975
GHG	greenhouse gas
NHTSA	National Highway Traffic Safety Administration
PM2.5	Airborne particles generally less than or equal to 2.5 micrometers in diameter (also referred to as ‘‘fine particles’’)
SOA	Secondary organic aerosals formed through chemical reactions in the atmosphere

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STATEMENT REGARDING SEPARATE BRIEFING, AUTHORSHIP, AND MONETARY CONTRIBUTIONS

Under D.C. Circuit Rule 29(d), *amici* Clean Fuels Development Coalition, The Farmers' Educational & Cooperative Union of America d/b/a National Farmers Union, Farmers Union Enterprises, Inc., Governors' Biofuels Coalition, Montana Farmers Union, North Dakota Farmers Union, Siouxland Ethanol, LLC, South Dakota Farmers Union, and Urban Air Initiative (hereinafter "*Amici*") state that they are aware of other planned *amicus* briefs in support of Joint Petitioners. Separate briefing is necessary given the unique perspectives of *amici,* as fuel ethanol producers and sellers and groups whose members are engaged in the production of corn used in fuel ethanol.

Under Federal Rule of Appellate Procedure 29(a)(4)(E), *amici* state that no party's counsel authored this brief in whole or in part, and no party or its counsel made a monetary contribution intended to fund the preparation or submission of this brief. No person other than *amici curiae* or their counsel contributed money that was intended to fund preparation or submission of the brief.

INTERESTS OF AMICI

Amici include fuel ethanol producers and sellers, groups whose members are engaged in the production of corn used in fuel ethanol, and groups that support the production of corn used in fuel ethanol in various regions of the country and advocate for environmentally sustainable biofuels. *Amici* have a significant interest

in ensuring the development of regulations that promote the use and market for high-octane, clean burning, fuel efficient biofuels, including higher ethanol blends, which the final actions of the USEPA and NHTSA at issue in this case implicate.

SUMMARY OF ARGUMENT

The SAFE Rule in its current form preserves entrenched petroleum industry interests at the expense of public health and the renewable fuel industry by rolling back average minimum fuel efficiency and emission standards for future model year vehicles. The net effect of the Rule will be to increase the overall harmful emissions from the US transportation industry and delay and disincentivize development and adoption of cleaner-burning renewable fuels and more efficient high-octane fuel vehicles in exchange for illusory short-term cost savings, based on vague and dubious cost-benefit analyses and consumer preference assumptions. Because the analyses supporting the new standards fail to consider or account for toxic pollution from VOCs/aromatics in existing fuels and completely ignore the important role that ethanol can play in achieving improved fuel efficiency and emission reductions, *Amici* support the relief sought by the State and Local Government Petitioners and Public Interest Petitioners (hereinafter "Petitioners") on the grounds that the Rule is unlawful, technically deficient, and arbitrary and capricious.

ARGUMENT

Amici support the arguments of the Petitioners that the technical and economic analyses offered in support of the Final Rule are arbitrary, capricious, not in accordance with law, and not supported by the administrative record. These deficiencies include, without limitation, EPA's consideration and treatment of (1) the harms and cost associated with existing aromatic-laden fuels and their attendant impacts on public health, climate and the natural environment; (2) the availability, effectiveness, feasibility, and beneficial emission impacts of renewable fuels, including mid-level ethanol blends; (3) the increasing percentage of MY2001 and newer light duty vehicles certified for E15 and otherwise compatible with mid-level ethanol blends; and (4) and the feasibility and effectiveness of higher-octane fuels to improve both fuel economy and tailpipe emissions.

With respect to ethanol, the Agencies do not dispute the effectiveness of mid-level ethanol blends and other higher-octane fuels to improve both fuel economy and tailpipe emissions. *See* Section II, *infra*. Despite these recognized benefits, and the significant comparable costs to using existing aromatic-laden fuels, the Agencies' fail to consider E15 or more optimal mid-level ethanol blends in the analysis supporting the SAFE Rule. This failure is arbitrary and capricious.

I. The Final Rule Fails to Address Harms Attributable to Aromatic-laden Fuels and Their Impacts on Public Health and the Environment.

Petitioners contend that, in promulgating the SAFE Rule, EPA violated Section 202 of the Clean Air Act, 42 U.S.C. §7521, by, among other things, failing to properly consider the central statutory factors and environmental-protection purpose of Section 202. Public Interest Br. 10-12; State Br. 34-38. Those central statutory factors and purposes include taking steps where ever possible and to the extent technologically feasible, to reduce toxic air emissions, including toxic emissions from mobile sources (e.g. vehicles). *Id*. Section 202(a) specifically provides that "[T]he Administrator shall by regulation prescribe (and from time to time revise) in accordance with provisions of this Section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1).

While Petitioners primary focus is on emissions of GHG, Amici submit that the Rule is equally deficient in its failure to consider or address other criteria pollutants that cause or contribute to significant harm to the public health, including, most notably, emissions from hydrocarbon aromatics (VOCs) in fuels. Aromatics are specifically called out for study and regulation by Congress in Section 202(l) dealing with mobile source related toxics. 42 U.S.C. § 7521(l)(1) and (2) ("The

Administrator shall, based on the study under paragraph (1), promulgate (and from time to time revise) regulations *under subsection (a)(1) of this section* … containing reasonable requirements to control hazardous air pollutants from motor vehicles and motor vehicle fuels." (emphasis added.)) The SAFE Rule in its current form fails to reasonably account for the long-standing and well known danger to the public from the continued use of hydrocarbon aromatics/BTEX in gasoline to meet octane requirements. As described more fully in Section I.A. *infra*, the aromatics/BTEX component of fuel is not only the primary source of the most dangerous urban air toxics (VOCs), but also the dominant source of $PM_{2.5}$ secondary organic aerosols (SOAs), which carry the toxics longer distances, and are major contributors to ground level ozone. EPA previously projected that by 2020, 85% of the $2 trillion in savings from the 1990 CAAA will come from reductions in ambient secondary organic aerosols (SOAs). JA_ [USEPA, "The Benefits and Costs of the Clean Air Act from 1990 to 2020" (2011): p. 4-2: https://www.epa.gov/sites/production/files/201507/documents/fullreport_rev_a.pdf]. The fact that the SAFE Rule completely ignores the harms associated with the continued existence of these toxic pollutants in the technical and economic analyses supporting the revised standards is contrary to EPA's statutory mandate to control pollution from mobile sources using "the greatest degree of emission reduction

achievable through the application of technology which will be available" and arbitrary and capricious. 42 U.S.C. § 7521(l)(2).

A. Aromatic Compounds (BTEX) Used in Existing Fuels Are Hazardous Air Pollutants.

It is widely understood that petroleum refiners synthesize BTEX from crude oil to increase gasoline octane levels. BTEX compounds have been long regarded as the most toxic, energy- and carbon-intensive octane enhancers. 83 Fed. Reg. at 43340, 43343; JA_ [NHTSA-2017-0069-0241]. On combustion, these compounds produce benzene, toluene, ethylbenzene, xylene, 1,3-butadiene, polycyclic aromatic hydrocarbons (PAHs). *Id*. Additionally, the combustion of aromatics in vehicle engines produces dangerous levels of fine (PM2.5) and ultra-fine (UFP)[1] particulate matter, causing a range of environmental and human health effects, including thousands of deaths every year. 72 Fed. Reg. at 20593/1; 83 Fed. Reg. at 43335-43336. Finally, the combustion of aromatics in motor vehicle engines produces emissions of black carbon, one of the most powerful agents of climate change. 72 Fed. Reg. at 20596; 83 Fed. Reg. at 43344.

Compounding the concern associated with aromatics is the fact that current EPA regulations completely overlook UFPs in vehicle emissions. 72 Fed. Reg. 20586 (no mention of ultrafine particles); 83 Fed. Reg. at 43335 ("EPA currently

[1] Ultrafine particles are generally considered as particulates with a diameter of less than or equal to 0.1 um.

has standards that regulate PM2.5 and PM10 [thoracic particles with a diameter less than or equal to 10 um].”). UFPs are particularly dangerous because they are coated with highly-toxic polycyclic aromatic hydrocarbon quinones (PAHQs) that penetrate the lungs and are carried by the bloodstream to the organs, where they cause a wide range of cancers, heart disease, asthma, and even DNA and mitochondrial cell damage. JA_ [EPA-HQ-OAR-2018-0283-7658]. PAHQs themselves are combustion byproducts and oxidative derivatives of gasoline and specifically aromatic/BTEX components. JA_ [EPA-HQ-OAR-2018-0283-7658]. Since they are emitted primarily by gasoline-powered vehicles, UFPs and PAHQs are found in their most elevated levels near congested roadways and urban areas, where tens of millions of Americans have no alternative but to breathe the poisonous air. JA_ [EPA-HQ-OAR-2018-0283-7658].[2] Unlike cigarette smoke, these toxic emissions are invisible, but their economic costs are enormous, and the human costs are unquantifiable.

[2] Health and Environmental Effects of Particulate Matter (PM), U.S. EPA (April 13, 2020); Marianne Geiser et al., Ultrafine Particles Cross Cellular Membranes by Nonphagcytic Mechanisms in Lungs and in Cultured Cells, 113 Environ. Health Perspect. 1555-1560 (2005); Air pollution linked with higher COVID-19 death rates, Harvard T.H. Chan School of Public Health (May 5, 2020); New Research Links Air Pollution to Higher Coronavirus Death Rates, New York Times (April 7, 2020); Air Pollution and Smoking May Increase Coronavirus Risks, Worsen Outcomes, University of California San Francisco (April 9, 2020); 7 million premature deaths annually linked to air pollution, World Health Organization (March 25, 2014).

Since at least 2013, EPA has known gasoline aromatics are a predominant source of highly-toxic secondary organic aerosol (SOA)-bound PAHs. JA_ [NHTSA-2017-0069-0343]; JA_ [EPA-HQ-OAR-2018-0283-0046]; *see also* 72 Fed. Reg. at 20650 ("Certain organic gases have been identified as precursors to [SOA]. Toluene, xylene and ethyl benzene are known to be important SOA precursors."). Furthermore, PAHs formed in the presence of SOAs have a synergetic effect in which PN (particle number) concentrations are amplified by a factor of 100 or greater, and the particles are insulated and preserved, enabling long-range transport. JA_ [EPA-HQ-OAR-2018-0283-7658].[3] EPA has confirmed that aromatics/BTEX is solely responsible for the organic aerosol formation potential of gasoline, and that aromatic compounds are responsible for 50–70% of the aerosols in many air sheds. 72 Fed. Reg. at 20593. A 2007 southern California study found that up to 80% of the ambient ultra-fine particulate emissions were secondary organic precursors from gasoline exhaust and vapors. JA_ [EPA-HQ-OAR-2018-0283-7658].

Additionally, unless gasoline aromatics levels are reduced, advanced engine designs such as direct injection will make UFP emissions worse, according to groups like the Health Effects Institute (HEI) and California Air Resources Board (CARB).

[3] Alla Zelenyuk et al., *The effect of gas-phase polycyclic aromatic hydrocarbons on the formation and properties of biogenic secondary organic aerosol particles*, 200 FARADAY DISCUSSIONS 143-164 (2017).

JA_ (California Air Resources Board, *Preliminary Discussion Paper - Amendments to California's Low-Emission Vehicle Regulations for Criteria Pollutants - LEV III*, p. 10 (Feb. 8, 2010).) This concern has been echoed by other subject matter experts, including automotive engineers. A 2010 Honda SAE paper identified aromatics as the primary source of PAH emissions, and warned that the necessary reductions cannot be achieved without combining fuel quality improvements with advanced engine technologies. JA_ [EPA-HQ-OAR-2018-0283-7658].[4]

Finally, using aromatics/BTEX to enhance octane in gasoline results in higher costs to consumers. The petroleum industry concedes that BTEX aromatics are more expensive than other alternatives such as ethanol. (EPA E15 Br. at 10 ("[E]thanol-blended fuel can often be sold at a lower price than conventional fuel."; quoting Petitioner American Fuel and Petroleum Manufacturers Br., at 25.)) It is widely accepted that ethanol's aromatic displacement and octane boosting contributions to the U.S. gasoline pool saves consumers money at the pump. JA_ [EPA-HQ-OAR-2015-0827-6158]; JA_ [EPA-HQ-OAR-2018-0283-5080]; JA_ [EPA-HQ-OAR-2018-0283-7658]. The Department of Energy has similarly concluded that replacing aromatics with ethanol reduces retail gasoline prices and reduces crude oil demand which makes crude oil cheaper for the entire world. JA_ [Impact of Ethanol Blending

[4] K. Aikawa et al., *Development of a Predictive Model for Gasoline Vehicle Particulate Matter Emissions*, 3 SAE INT. J. FUELS LUBR. 610-622 (2010).

on U.S. Gasoline Prices, National Renewable Energy Laboratory, NREL/SR-670-44517 (2008)].

B. EPA Mandate to Evaluate and Reduce Gasoline-Related Pollutants.

In 1990, Congress amended the CAA to include a broad set of mandates and controls designed to reduce the toxic emissions attributable to the combustion of motor fuels. At that time, Congress explained that the use of aromatics as a substitute for lead had become a particular concern. JA_ (1 Environment and Natural Resources Policy Division, Library of Congress, A Legislative History of the Clean Air Act Amendments of 1990 [i] (1998r Act Amendments of 1990 [i] (1998), ch. 1 at 851.) ("[F]uels have actually become dirtier in the last 20 years. The octane provided by lead was replaced with octane from aromatic hydrocarbons which are toxic and have other negative air pollution effects."). Congress specifically called out the serious health dangers of the gasoline aromatic compounds, benzene, ethyl-benzene, toluene, and xylene (BTEX). *Id*.

Congress directed EPA to regulate aromatics under the CAAA as a "hazardous air pollutants" under Section 202(l). 42 U.S.C. § 202(l)(2); *see also* 42 U.S.C. § 112(b). The CAAA mandate constitutes a legislative "finding of harm"—that EPA must reduce mobile source air toxins (MSATs) caused by gasoline aromatics to the greatest achievable degree as technologies present themselves.

Congress included within the 1990 CAAA a limit of 25% on the aromatics content of reformulated gasoline (a fuel blend used in non-attainment areas to improve air quality). 45 U.S.C. § 211(k)(3)(A)(ii). At the time, Congress expected that the content of aromatics in fuels, and the resulting toxic air emissions, would thereafter decline below this 25% threshold using technically feasible approaches. Congress clarified:

> Looking at the question of technical feasibility … the aromatic content of gasoline *can be reduced substantially below the 25 percent level with technically feasible measures*. The Administrator is to adjust aromatics levels, first, and to the extent technically feasible …. The aromatics level specified in the bill is a cap not a floor with *the level of technically feasible aromatics reductions well below the cap*.

JA_ (1 Environment and Natural Resources Policy Division, Library of Congress, A Legislative History of the Clean Air Act Amendments of 1990 [i] (1998r Act Amendments of 1990 [i] (1998), ch. 1 at 852.) (emphasis added). Congress reiterated that "controls on benzene and aromatics more stringent than those in the [reformulated] gasoline standards are certainly feasible, in fact, gasoline sold in the 1970s had lower aromatics and benzene levels." *Id*. at 855.

Congress directed EPA to study the toxic emissions from vehicles and promulgate regulations addressing aromatics, which it ultimately did in 2007. 72 Fed. Reg. 8428 (Feb. 26, 2007). In support of its determination that benzene control was the most effective way to control aromatic emissions from fuels, EPA assumed that refiners would increase the use of ethanol as a source of octane to replace

benzene, which would in turn lower the aromatics content of fuel. 72 Fed. Reg. at 8478. EPA noted that "regardless of specific regulatory action to control aromatics, the increased use of ethanol in response to current market forces and state and federal policies (including the [Renewable Fuel Standards]) will contribute to lower aromatics levels" and that "[w]ith ethanol use expected to more than double, we expect a significant reduction in aromatics levels." 72 Fed. Reg. at 8479.

Unfortunately, that's not what happened. Despite clear mandates to reduce the amount of harmful aromatic chemicals in the nation's fuel supply over the last ten years, refiners have continued adding aromatics to fuels, thus circumventing the reductions that Congress assumed would occur through the increased use of ethanol. As a result, today aromatic hydrocarbons/BTEX make up approximately 20%-30% of light-duty motor vehicle fuel in the United States. JA_ [EPA-HQ-OAR-2018-0283-7658]; JA_ (David S. Hirshfeld and Jeffrey A. Kolb, *Refining Economics of U.S. Gasoline: Octane Ratings and Ethanol Content*, 48 ENVTL. SCI. & TECH. 11064-11071 (2014).) Continuing the use of aromatics at these levels over the next seven years, as the SAFE Rule contemplates, means continued harm to public health and the environment and increased fuel costs to consumers.

C. EPA's Failure to Account for Impacts from Harmful Aromatics Is Arbitrary and Capricious.

If EPA is going to rely on the CAAA to reduce mobile CO2, it cannot ignore the same statute's requirements to reduce mobile source air toxics, especially if that

reduction also reduces C02. EPA officials have affirmed their understanding that EPA has an ongoing obligation to enforce the MSAT provisions of Section 202(l) and that light-duty gasoline are important sources of potent SOA and PAH emissions. JA_ [EPA-HQ-OAR-2018-0283-7658_p14]. Section 176 of the CAA likewise requires EPA to analyze whether the SAFE Rule conforms to EPA-approved State Implementation Plans demonstrating how States will reduce levels of criteria pollutant levels, including VOCs and particulate matter. (State Br. at 39.)

Despite these understandings and mandates, in the Final Rule, EPA fails to address the costs of continued use of aromatics in retail gasoline. As a result, the reduced emission standards adopted in the SAFE Rule encourage the continued use of these dangerous aromatic compounds in gasoline at their current level far into the future. In so doing, EPA failed to consider and respond to significant public comments regarding the Final Rule's standards' consistency with Title II of the Clean Air Act, including Section 202(l). JA_ [EPA-HQ-OAR-2018-0283-7658]. The burden of this choice falls on the public who suffer adverse health effects from the burning of aromatic-laden fuels.

The failure of EPA's actions in this regard is not a matter of debate. The SAFE Rule's refusal to address in any manner the impacts and costs from aromatics in fuel is evident in the Tables depicting "Benefits and Costs of Final CAFE Standards and Alternatives Over the Lifetimes of Vehicles Produced Through MY 2029," which

consistently report a value of "0.0" for "VOC Damage Reduction Benefit" across all of the alternatives considered. 85 Fed. Reg. 24174, at 24202. The Agencies did purport to measure the volume of VOC emissions under each alternative. Notably, this aspect of the analysis confirmed that VOCs had the most significant increase across all alternatives when compared with the emissions under the 2012 CAFE standards. JA_ [NHTSA-2018-0067-12459_S-8, S-9] ("the largest increase [across all pollutants] is 12 percent and occurs for VOCs under Alternative 1.") Based on the graphic representation of the data, Alternative 3, the Preferred Alternative/Proposed Action that was the alternative ultimately adopted, provided only slightly lower VOC emissions as compared with Alternative 1. *Id*. at 4-32 - 4-35. VOC emissions also had the most significant decline as stringencies increase, but all of the alternatives considered are worse than the 2012 CAFE standards. *Id*. Critically, the FEIS *did not evaluate* the health impacts associated with VOC emissions, but noted that they "could be substantial." *Id.*, at 4-25, 4-27 ("This analysis does not include any increases in health impacts resulting from greater population exposure to other criteria air pollutants and air toxics because there are not enough data available to quantify these impacts.") This omission includes pollutants formed in the atmosphere from chemical reactions involving VOCs. EPA's complete failure to measure or address the known harms from aromatics/VOCs was not a reasonable exercise of discretion, and cannot be squared with the Agency's duty to limit hazardous air

pollutants to the greatest extent achievable and replace them with a cleaner source of octane such as ethanol.

II. The Final Rule Disregards or Misrepresents the Feasibility, Availability and Impacts of Renewable Fuels, Including Mid-Level Ethanol Blends.

Petitioners provide numerous examples of ways in which the Agencies cost of compliance modeling and cost-benefit analyses in the SAFE Rule suffer from fundamental errors, including disallowing certain technologies that the Agencies themselves state should be allowed; disallowing certain technologies that are already installed and proven on vehicles in the market place; and failing to update their analysis with their own state-of-the art data regarding technological effectiveness and feasibility. Public Interest Br. at 50-96. While not explicitly addressed in their challenges, these criticisms apply equally to the Agencies' failure to properly consider and account for fuels blended with E10, E15, or greater concentrations of ethanol.

Congress has long recognized and promoted an expanding role for ethanol in our national fuel supply. (*See* Section I.B. *supra*.) Blending ethanol with gasoline results in benefits to: (a) the environment (e.g., lower tailpipe emissions); (b) the agricultural economy; and (c) foreign policy energy security. JA__ (S. Rep. No. 101-228 at 110 (1989)). Despite these expressions of Congressional support for ethanol, however, the SAFE Rule fails to account for ethanol as a viable and effective fuel

technology with a significant role to play in the reduction of vehicle emissions, now and in the future. This failure is arbitrary and capricious.

A. The Use and Nature of Ethanol.

Ethanol is an alcohol produced extensively in the United States from corn and other feedstocks. Ethanol was introduced as a component of motor vehicle fuel in the 1970s, in part to address concerns about energy security and in part to support domestic agriculture. 84 Fed. Reg. 26,984/3. Ethanol is a type of biofuel, which, when added to gasoline, reduces emissions of greenhouse gases compared to fossil fuels. *Am. for Clean Energy v. EPA*, 864 F.3d 691, 696-98 (D.C. Cir. 2017). When added to gasoline, ethanol also increases the fuel's octane rating as compared to pure gasoline. 84 Fed. Reg. at 27,010/2.

Ethanol blended fuels enjoy broad Congressional, scientific and marketplace acceptance for their important role in affordable, cleaner burning, high octane fuels. Ethanol has been used as a gasoline additive in the United States since 1978, when a waiver was granted for E10 by operation of law under the then-applicable 42 U.S.C. §7545(f)(4). 44 Fed. Reg. 20,777 (Apr. 6, 1979). In the early 2000s, sales of E10 increased as manufacturers used ethanol to replace the octane additive methyl tertiary butyl ether (MTBE), which was found to pollute groundwater. *See* 84 Fed. Reg. at 26,986. As ethanol's use increased, special gasoline blendstocks were produced by refiners which could be shipped by pipeline, and into which 10%

ethanol could be blended downstream at a pipeline terminal. EPA E15 Br. at 11. By 2013, nearly all gasoline sold in the United States was E10, as it is today. *Id*. (citing 84 Fed. Reg. at 26,984/3-26,985/1).

Automakers today use E10 and E15 test fuels to certify most gasoline-fueled motor vehicles, and test fuels with up to 83% ethanol to certify "flex-fuel vehicles" designed to operate on any mixture of gasoline and ethanol. E15 has been sold at US gas stations since 2010-11 without any identified materials compatibility issues (EPA E15 Br. at 67) and is recognized by EPA as "substantially similar" to E10. 84 Fed. Reg. 26,980 (June 10, 2019). In 2018, the President issued a directive to the EPA to consider methods for helping E15 to achieve its full potential use. JA __ (https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-expanding-waivers-e15-increasing-transparency-rin-market/)

Mid-level ethanol blends containing as high as 30% ethanol (E30) have been shown to improve vehicle performance and emissions in model year 2001 and newer light-duty vehicles without any negative impacts (and without impairing the performance of any emission control device). JA_ [EPA-HQ-OAR-2018-0283-7658]; JA_ [EPA-HQ-OAR-2018-0283-5080]; JA_ [EPA-HQ-OAR-2018-0283-5488]. A number of studies related to E30 and other mid-level ethanol blends show that pairing midlevel ethanol blends with higher compression ratio engines "yields tailpipe CO2 emissions reductions of at least 5%, which, in most instances, are also

coupled with efficiency gains that offset the lower energy content of the high octane fuel." JA_ [EPA-HQ-OAR-2018-0283-5080_p3]. Auto manufacturers including GM, Ford, Fiat, and Chrysler have acknowledged the importance of higher octane fuels such as E20 and E25.

The corn ethanol market is mature, able to meet increased demand without support. JA_ [EPA-HQ-OAR-2018-0283-7658_Table 1]; JA_ [EPA-HQ-OAR-2018-0283-5080]; JA_ [EPA-HQ-OAR-2018-0283-5488]. Oak Ridge National Laboratories' "Summary of High-Octane, Mid-level Ethanol Blends Study" released in July 2016 modeled the adoption of vehicles using E25 to E40, and concluded that "neither technical nor materials obstacles are likely to prohibit [High Octane Fuels]" and "blendstock costs are not a significant barrier to [High Octane Fuel] introduction." JA_ [NHTSA-2017-0069-0463_p12.] The only thing preventing ethanol from meeting these numbers today are regulations that allow refiners and retailers to say 10-15% ethanol is the maximum they are willing to sell (commonly referred to as the "blend wall"). This blend wall is a limitation entirely of the government's own making, and is fully within EPA's authority and ability to correct. *See* JA_ [EPA-HQ-OAR-2018-0283-7658_Appendix A (Regulatory Reform Roadmap)]; JA_ [EPA-HQ-OAR-2018-0283-4033_p10-11].

Perhaps most important, ethanol's contribution to GHG emissions is superior relative to aromatics and other fuels and fuel additives. In the Final Environmental

Impact Statement supporting the Final Rule, NHTSA cites Wang et al. (2007), which found that "depending on the energy source used during production, corn ethanol can reduce well-to-wheels GHG emissions by up to 52 percent compared to gasoline." JA_ [NHTSA-2017-0069-0738_6-33]. They also cite Rosenfeld et al. (2018), which estimated that "By 2022, the carbon intensity of corn grain ethanol is projected to decline from 2014 levels by nearly 10 percent under a business as usual scenario and by nearly 55 percent under a scenario with increased agricultural conservation and efficiency gains throughout the life cycle, making ethanol between 44 and 72 percent less GHG-intensive than gasoline." *Id*.

Ethanol is also superior in terms of cost. The American Coalition for Ethanol (ACE), in comments to the SAFE Rule, noted that "high-octane blends comprised of 25 to 30 percent ethanol would help bring down the cost for consumers compared to the premium-priced octane level advocated by oil refiners." JA_ [EPA-HQ-OAR-2018-0283-4033_p2]. In many wholesale markets today, ethanol costs at least 60 cents per gallon less than gasoline. *Id*. These cost benefits "allow automakers … to develop high-compression engine technologies and other product offerings that achieve efficiency improvements and reduced emissions." *Id*. at 3.

B. EPA's Failure to Consider Mid-Level Ethanol Blends (E15-E30) Is Contrary to Statutory Mandates, Not Reasonably Explained or Justified, and Arbitrary and Capricious.

In the SAFE Rule, EPA purports to significantly expand its consideration of available technologies and fuel options. However, a review of the Final Rule makes clear that the Agencies largely ignore the availability of new fuel technologies, and prefer instead to extend the role of fossil fuels far into the future. *See, e.g.* 85 Fed. Reg. at 25170 (noting any increase in fuel costs to consumers "is an increase in revenue to the U.S. oil industry."). This flaw is no more evident, than in the Agencies' consideration and treatment of the impact and benefits of mid-level ethanol blends (E15-E30) as a technology available to improve fuel efficiency and reduce GHG emissions. Contrary to its Congressional mandate and recent Presidential Directives to pursue and promote expanded use of ethanol, in the SAFE Rule, EPA relies on outdated models and obsolete data that misrepresent or fail to account for the costs and benefits of expanded use of ethanol blends. This failure is arbitrary and capricious.

The failure to consider the impact of mid-level ethanol blends, including E15, in the calculation of benefits supporting the SAFE Rule is evident in the emissions data referenced in the Rule, which is limited to gasoline, diesel and E85.[5] This

[5] 85 Fed. Reg. at 24377-24378 (referencing Tailpipe Emission (TE) worksheets separately for "gasoline and diesel," with no reference to ethanol blends; *see also,* other parameters (e.g. Fuel Properties worksheet, Upstream Emissions (UE)

limited consideration of fuel types leads EPA to discount the impact of fuel types on CO2 emissions:

> [T]he more fuel efficient a vehicle is, the less fuel it burns to travel a given distance. The less fuel it burns, the less CO2 it emits in traveling that distance. While there are emission control technologies that reduce the pollutants (e.g., carbon monoxide) produced by imperfect combustion of fuel by capturing or converting them to other compounds, there is no such technology for CO2. Further, while some of those pollutants can also be reduced by achieving a more complete combustion of fuel, doing so only increases the tailpipe emissions of CO2.

85 Fed. Reg. at 24182 n. 23. Based on this flawed reasoning, EPA erroneously concludes that "there is a single pool of technologies for addressing these twin problems, *i.e.*, those that reduce fuel consumption and thereby reduce CO2 emissions as well." *Id*. This reasoning ignores the benefits of ethanol blends, which achieve a more complete combustion than gasoline (E0) because of their higher octane, and also produce less CO2.

Moreover, unlike the consumer preference considerations EPA attributes to other fuel efficiency technologies, consumer acceptance is not an issue in achieving lower emissions through expanded use of mid-level ethanol blends. The transition from 87 octane 100% gasoline (E0) to E10 over the last decade has gone largely unnoticed by the consumer. U.S. motorists have driven over 10 trillion miles on E10

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worksheets) confirming only fuel types considered/modeled were "gasoline and E85," with no mention of E10, E15 or E30.)

gasoline without any documented issues and saved over $20 billion using E10 compared to E0. There is no reason to assume consumers will not similarly embrace the benefits of E15 or E30. If anything, the cost savings from higher octane mid-level ethanol blends will encourage consumers' transition to such fuels.

The Agencies' reasoning for not accounting for the expand use of high-octane ethanol fuels is superficial and not credible. They reject such considerations as "a complex undertaking that would require consideration of a wide array of difficult issues." 85 Fed. Reg. at 24389. It is certainly true that ethanol implicates a wide range of societal benefits, including but not limited to consumer savings, reduced emissions and health costs, better fuel efficiency and vehicle performance, reduced oil imports, improved trade balance, rural economic stimulus, and more competitive gasoline markets. But, just because something is complex doesn't mean that it's not necessary or something the Agencies can ignore. The breadth and range of impacts from ethanol does not justify ignoring the benefits of ethanol.

Congress clearly intended to promote ethanol, as evidenced by the extensive legislative history of the CAAA. *See* Section II.B. *supra*. Use of E30 high octane fuel as an octane replacement for aromatics substantially reduces emissions of the most dangerous pollutants, including mobile source air toxics targeted by Congress in Section 202(l) and the National Ambient Air Quality Standards. This effect is conceded by EPA in other proposed rulemaking, where it notes that during the

expansion of E10 blending between 2007 and 2012, that "aromatics levels were observed to decline by a few volume percent while pump octane levels stayed constant." 84 Fed. Reg. at 10,604. When coupled with Congressional targets for renewable fuels established under RFS2, EPA's failure to consider the ability to achieve more stringent emissions through expanded use of ethanol is contrary to Congressional intent.

III. EPA Failed to Adequately Consider and Address the Feasibility and Benefits of Higher Octane, Low Carbon Fuels and Vehicles.

Numerous commenters to the SAFE Rule urged the adoption of rules that would raise the octane level of available fuels, with the ultimate goal of making the current high octane option the baseline rated fuel. *See, e.g.* JA_ [EPA-HQ-OAR-2018-0283-7658]; JA_ [EPA-HQ-OAR-2015-0827-9161]; JA_ [EPA-HQ-OAR-2018-0283-4196]; JA_ [EPA-HQ-OAR-2018-0283-5080]. It is increasingly accepted among all stakeholders that implementing a higher octane fuel standard would support increased engine efficiency and reduced greenhouse gas emissions. It is equally clear that mid-level ethanol blends (E15-E40) present the best pathway for achieving the opportunity presented by high-octane fuels.

EPA and other federal agencies are well aware of the opportunity represented in higher octane, low-carbon gasoline made from ethanol. In its 2015 Quadrennial Technology Review, the Department of Energy singled out E25 – E40 blends as top priorities for the Department

> Currently, the only renewable high-octane fuel available at large scale is ethanol, which makes up 10% of gasoline sold by volume. Increasing this percentage of ethanol can dramatically increase the octane rating of the finished gasoline/ethanol fuel blend, with most of the benefit being around 25 – 40% ethanol by volume."[6]

A year later, in May 2016, DOE Secretary Moniz confirmed that his Department's research showed that E30 blends were "optimal" for improving fuel efficiency and reducing carbon emissions.[7] These statements were reinforced by 2016 EIA projections that by 2025, 83.3 percent of U.S. vehicles will be turbo-charged, and the observation that "As automakers produce more vehicles with turbocharged engines, it is likely they will recommend or require more [light duty vehicles] to use higher-octane gasoline."[8]

Many of the technologies identified in the Draft Technical Assessment Report (TAR) supporting the original 2016 Midterm Evaluation, including those with the highest expected penetration rates, would produce *greater* GHG and fuel economy benefits if paired with fuels offering higher octane ratings and an inherently higher charge cooling characteristic. JA_ [EPA-HQ-OAR-2015-0827-0926_Ch. 5]. Direct

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[6] US DOE Quadrennial Technology Review - Chapter 8: Advancing Clean Transportation and Vehicle Systems and Technologies, at p. 285 (September 2015) Available at: https://www.energy.gov/quadrennial-technology-review-2015

[7] https://www.desmoinesregister.com/story/money/2016/05/06/energy-secretary-us-must-energy-independent/84022038/

[8] US Energy Information Administration, *Engine Design Trends Lead to Increased Demand for Higher-Octane Gasoline* (April 6, 2016) (https://www.eia.gov/todayinenergy/detail.php?id=25692).

injection engines, turbocharging, downsizing, and higher compression ratio engines were all identified as pathways to meeting the more stringent MY2022-2025 GHG and fuel economy standards. *Id*. These are all technologies which would benefit further from high octane mid-level ethanol blends. On this record alone, high octane ethanol blends should be recognized as a technology that improves the performance of other key technologies already relied upon for reducing GHG emissions.

Moreover, the benefits from high octane ethanol blends can be achieved with minimal or no incremental cost increase to consumers. It is widely accepted that ethanol's displacement and octane boosting contributions to the U.S. gasoline pool already saves consumers money at the pump. This benefit will only increase with the adoption of higher-octane, low carbon ethanol blends. *See* JA_ [NHTSA-2017-0069-0463_at 12] ("In general, more [high-octane fuel] vehicles were adopted if the [high-octane fuel] was E40, because they offer greater fuel cost savings and offer vehicle manufacturers a greater GHG emissions benefit than if the HOF was E25."). As the costs to manufacturers for increasing compression ratio are minimal for a new engine design, it is clear that implementing a high octane mid-level ethanol fuel standard would be the lowest cost technology and have even greater benefits in real world driving.

Finally, by increasing the percentage of ethanol in the fuel supply, the amount of gasoline consumed decreases, thereby further reducing the nation's dependency

on crude oil imports and enhancing U.S. energy security. Adopting a rule that does not restrict cleaner burning, performance-enhancing, cost-competitive mid-level ethanol blends like E30 would also complement the transition to hybrid electric vehicles and help meet EPA's efficiency and GHG objectives.

Section 211(c) of the Clean Air Act provides the EPA with authority to set new national fuel standards, including octane. Stake holders have been calling for it for some time. In addition to experts from industry and academia, the auto industry has embraced the engine efficiency benefits of higher octane fuels as a low cost way to get more out of engines already existing and currently in development.

In its 2016 study, Oak Ridge National Laboratory observed that the primary limiting factor for transitioning to high-octane fuels and vehicles is "the potential for the failure to adopt regulations taking high octane fuels into account." JA_ [NHTSA-2017-0069-0463_at 12.] The steps identified as necessary to enable wide-scale adoption to high-octane vehicles included (1) registering and listing high-octane fuel as a certification fuel, and (2) establishing future fuel economy and GHG regulations so their accounting systems adequately reward the production of high octane fuel vehicles. *Id*.

In the Final Rule, the Agencies acknowledge the comments and studies supporting high-octane, low carbon fuels, and recognizing that "splash blending ethanol is a highly effective means of raising the octane rating of gasoline and

enabling low-cost efficiencies and reduced emissions." 85 Fed. Reg. at 24387. However, after recognizing the benefits of higher octane ethanol fuels, the Agencies summarily conclude:

> The Agencies' expectation is that high-octane gasoline will not significantly enter commerce before 2026, and subsequently will only gradually gain market share through 2040. There is no realistic prospect of completing this process before 2025 or 2026, the timeframe of this rulemaking. The appropriate context for this discussion within vehicle rules is the next round of fuel economy and emission standards.

85 Fed. Reg. at 24389. This conclusion does not have rational support in the record and is nothing more than an evasion by the Agencies. It ignores the fact that there are a substantial number of vehicles already on the road that can run on (and in some cases require) higher-octane fuels, that the trend towards high-octane optimized engines is accelerating, and that the performance of such engines is limited by today's conventional fuels. The Rule is thus illustrative of the catch-22 in EPA's approach to regulating ethanol fuels, which perpetually identifies areas requiring further testing and study while at the same time limiting the ability or incentive for manufacturers to perform such testing and development. While vacatur of the SAFE Rule won't directly overcome these regulatory hurdles, a return to the more stringent, pre-existing standards will lead EPA to revisit the barriers to adoption of higher octane fuels.

CONCLUSION

Internal combustion engines as a predominant percentage of the US fleet are not going away anytime soon. Mid-level ethanol blends (E15-E30) are the ideal way to bridge the transition from today's legacy fleet to newer vehicles with advanced engine technologies designed to run optimally on a high-octane fuel. Adopting rules that promote the use of mid-level ethanol blends is an obvious path to improved emissions. Rejecting the SAFE Rule and maintaining the more stringent emissions standards would provide EPA and stakeholders the incentive and opportunity to take these steps.

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Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I hereby certify that this motion complies with the requirements of Federal Rule of Appellate Procedure 27(d)(2)(A) because it contains 6,258 words, as counted by Microsoft Word and excluding the material exempted by Federal Rule of Appellate Procedure 32(f).

I also certify that the motion complies with the requirements of Federal Rules of Appellate Procedure 32(a)(5)-(6) because it has been prepared in a proportionately spaced typeface using Microsoft Word Times New Roman 14-point font.

By */s/ Victoria Sims*
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Victoria Sims

CERTIFICATE OF SERVICE

I hereby certify that, on January 21, 2021, I electronically filed the foregoing with the Clerk of Court for the United States Court of Appeals for the District of Columbia Circuit using the appellate CM/ECF system, which served a copy of the document on all counsel of record in the case.

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