Comments of

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On the U.S. Environmental Protection Agency's Proposed

Modifications to Fuel Regulations To Provide Flexibility for E15; Modifications to RFS RIN Market Regulations

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EXECUTIVE SUMMARY

EPA's proposed rule is inconsistent with the text of the sub-sim law, because ethanol is now a fuel additive used in vehicle certification. The proposed rule would codify a "no more than 15%" ethanol limit for the 1 psi RVP waiver. EPA's 15% limit is based on EPA's misinterpretation of another provision, the Clean Air Act's sub-sim law. EPA interprets the sub-sim law to limit the concentration of ethanol in gasoline to no more than 15% ethanol, the concentration permitted by EPA's 2011 E15 waiver.

EPA's interpretation of the sub-sim law is incorrect. As a result of changes to the gasoline certification fuel that EPA adopted in the 2014 Tier 3 Rule, ethanol is now a "fuel additive utilized in the certification of" motor vehicles. Under the plain meaning of the sub-sim law, the statute no longer prohibits manufacturers from "increas[ing] the concentration in use of" ethanol in gasoline for use in motor vehicles. In the final rule, EPA should interpret the statute according to its plain meaning and recognize that the 2011 E15 sub-sim waiver no longer controls the concentration of ethanol in gasoline or the RVP of E15. EPA should also withdraw proposed regulatory language limiting the 1 psi RVP waiver to blends containing no more than 15% ethanol.

In the alternative, E20 is "substantially similar" to the E10 certification fuel. The correct interpretation of the sub-sim law is that it no longer controls the concentration of ethanol in gasoline. But even if the sub-sim law could be interpreted to limit ethanol content (and for the reasons discussed above, it cannot), EPA's definition of "substantially similar" is still under-inclusive. EPA asserts it only has "sufficient data and information to support" a definition of "substantially similar" limited to "gasoline that contains only ethanol content up to 15 percent." Not so. At a minimum, the available data support a conclusion that E20 is "substantially similar" to E10 certification fuel. E20 meets all of EPA's "substantially similar" criteria: E20 and E10 certification fuel have similar physical and chemical characteristics; similar effects on vehicle exhaust and evaporative emissions; similar effects on the durability of vehicle emission controls; and similar effects on vehicle driveability. In the final rule, EPA should define "substantially similar" to include E20 or at least seek additional comment on this question.

EPA may not require refiners and importers to comply with the 2011 E15 sub-sim waiver conditions. EPA's "preferred approach" would be to continue requiring refiners and importers to comply with the 2011 sub-sim waiver conditions, including the E15 waiver's 9 psi RVP limit. EPA may not enforce those conditions. Even under EPA's misinterpretation of the sub-sim law, E15 is "substantially similar" to the Tier 3 gasoline certification fuel. As a result, refiners and importers are no longer bound by the 2011 E15 waiver conditions, and EPA cannot enforce those conditions.

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I. INTRODUCTION

Commenters agree with EPA's proposed interpretation of Clean Air Act (CAA) § 211(h)(4): The best interpretation of § 211(h)(4) is that the 1 pound per square inch (psi) Reid Vapor Pressure (RVP) waiver applies to all "ethanol blends containing at least 10 percent ethanol," including but not limited to E15.[1]

In spite of that correct interpretation of the RVP waiver provision, the proposed rule would codify a "no more than 15%" ethanol limit for the 1 psi RVP waiver.[2] This 15% limit in the RVP rule would be inconsistent with EPA's recognition that the RVP statute itself grants the 1 psi RVP waiver to "*all* fuels which contain at least 10 percent ethanol."[3] It is also counter-productive: The rule should effectuate Congress's longstanding interest in "encourag[ing] the use of ethanol as a means of reducing dependence on foreign oil and making use of excess agricultural production."[4] But the proposed 15% limit on the 1 psi waiver sets up a new barrier that would have to be revised again to allow the year-round sale of any gasoline blend with more than 15% ethanol.

EPA's proposed 15% ceiling is based on a misinterpretation of the sub-sim law, CAA § 211(f). As a result of changes to the gasoline certification fuel that EPA adopted in the Tier 3 Rule, ethanol is now a "fuel additive utilized in the certification of" motor vehicles.[5] Under the plain meaning of the sub-sim law, the statute no longer prohibits manufacturers from "increas[ing] the concentration in use of" ethanol in gasoline for use in motor vehicles.[6] Because ethanol blending is no longer constrained by the sub-sim law, manufacturers no longer need a sub-sim waiver to sell higher ethanol blends, and they are

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[1] *Modifications to Fuel Regulations To Provide Flexibility for E15; Modifications to RFS RIN Market Regulations*, 84 Fed. Reg. 84 Fed. Reg. 10,584, 10,591 (March 21, 2019) (Proposed Rule).

[2] *Id.* at 10,625–26.

[3] *Id.* at 10,591 (emphasis added).

[4] *Id.* at 10,588.

[5] 42 U.S.C. § 7545(f)(1)(B).

[6] *Id.* However, gasoline containing more than 10% can only be sold for use in model-year 2001 and later light-duty vehicles. 40 C.F.R. § 80.1504(a)(1).

no longer bound by the 2011 E15 waiver conditions, including its 9 psi RVP limit for E15.[7] Recognizing the legal effects of the new E10 certification fuel would obviate any need for a 15% ethanol cap on the 1 psi waiver.

Instead of recognizing that the E15 sub-sim waiver conditions no longer control ethanol, EPA proposes two alternative "potential mechanisms" for dealing with the 9 psi RVP waiver condition in the 2011 sub-sim waiver.[8] Both mechanisms start from the same erroneous premise that the sub-sim law still controls the concentration of ethanol in market fuel.

EPA's "preferred approach" would retain "the waiver conditions put in place for E15," which "set the maximum RVP level at 9.0 psi."[9] In other words, EPA's preferred approach assumes that E15 is currently prohibited by the sub-sim law and that the 2011 E15 sub-sim waiver conditions still limit the amount of ethanol that fuel and fuel additive manufacturers may blend into gasoline. Instead of changing its rules in recognition of the new sub-sim status of ethanol, EPA would merely clarify in the rule's preamble that "oxygenate blenders" that add denatured fuel ethanol to gasoline are not bound by the 2011 E15 waiver conditions.[10]

EPA's alternative approach would find that, under § 211(f), E15 is "substantially similar" "to fuel used to certify Tier 3 light-duty vehicles."[11] Under this approach, E15 would no longer require a sub-sim waiver, so the 2011 E15 waiver conditions would no longer apply to E15. But EPA's proposed interpretation of "substantially similar" is limited to gasoline that contains up to a maximum of 15 percent ethanol.[12]

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[7] *See American Methyl Corp. v. EPA*, 749 F.2d 826, 836 (1984) ("Waivers of this prohibition under section 211(f)(4) are required only" for fuels and fuel additives that are unlawful under the sub-sim law).

[8] Proposed Rule, 84 Fed. Reg. at 10,587.

[9] *Id.*

[10] *Id.* at 10,594.

[11] *Id.* at 10,596.

[12] *Id.* at 10,601.

Neither of these alternative approaches to the sub-sim waiver condition does justice to EPA's new interpretation of § 211(h) or to the plain meaning of § 211(f). Instead of adopting either approach, EPA should recognize that ethanol is a fuel additive utilized in certification so that the 2011 sub-sim waiver and its 9 psi RVP condition no longer applies. EPA should not finalize the proposed regulatory language that would unlawfully limit the 1 psi RVP waiver to fuel blends containing up to 15% ethanol. Instead, EPA should revise its interpretive rule defining "substantially similar" for gasoline to make clear that the sub-sim law does not limit ethanol blending in gasoline.[13]

Because ethanol is not a fuel additive utilized in certification, EPA should also recognize that blender-pump operators, including retailers, that blend up to 49% ethanol into gasoline are blending an "allowable amount" of ethanol additive into gasoline fuel, and that they are therefore exempt from the gasoline compliance regulations applicable to "fuel manufacturers" and "refiners."[14]

Even under EPA's erroneous view that the sub-sim law continues to control ethanol concentration in the market despite the presence of ethanol in the certification fuel, the Agency's proposal to cap ethanol at 15% is unjustified. At a minimum, EPA should define "substantially similar" to include gasoline containing up to at least 20% ethanol. The data support a conclusion that the physical and chemical characteristics of E20 are "substantially similar" to the characteristics of E10 certification fuel. The available data also support the conclusion that E20 has similar effects "on [light-duty vehicle] emissions (exhaust and evaporative), materials compatibility, and driveability."[15] Thus, under EPA's traditional criteria, E20 is "substantially similar" to E10 certification fuel.

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[13] *Revised Definition of Substantially Similar Rule for Alaska*, 73 Fed. Reg. 22,277, 22,281 (Apr. 25, 2008) (imposing a 2.7% oxygen limit on gasoline). This interpretation is inconsistent with the E10 certification fuel under any interpretation of the sub-sim law, because 10% ethanol corresponds to more than 2.7% oxygen.

[14] 40 C.F.R. §§ 79.2(d), 80.29(d). EPA correctly interprets the phrase "allowable amount" in § 79.2(d)(2) as synonymous with the amount of ethanol allowed by the sub-sim law. *See* 84 Fed. Reg. at 10,594.

[15] Proposed Rule, 84 Fed. Reg. at 10,598.

II. COMMENTERS' INTEREST IN THE PROPOSED RULE.

Urban Air Initiative (UAI) is a social welfare organization dedicated to educating the public about the health threats posed by current formulations of gasoline, and to taking positive steps to reduce these health threats by encouraging a change in the formulations of such fuels. Raising the concentration of high-octane ethanol in gasoline would promote public health by reducing harmful air pollution and improving vehicle efficiency.

Siouxland Ethanol LLC; Little Sioux Corn Processors, LLC; Golden Grain Energy, LLC; and Absolute Energy LLC are renewable fuel producers currently engaged in the production of ethanol for fuel. They are united by their common interest in expanding the concentration of clean-burning, high-octane ethanol in gasoline.

III. EPA'S PROPOSALS ARE INCONSISTENT WITH THE TEXT OF THE SUB-SIM LAW, BECAUSE ETHANOL IS A FUEL ADDITIVE UTILIZED IN CERTIFICATION.

The sub-sim law prohibits introducing into the market for the first time a new fuel or fuel additive that is "not substantially similar to any fuel or fuel additive utilized in . . . certification,"[16] absent a waiver pursuant to section 211(f)(4). The sub-sim statute also makes it unlawful to "increase the concentration in use" of certain fuel additives—but, again, only those that are "not substantially similar to any . . . fuel additive utilized in . . . certification."[17] For example, the sub-sim law limits the concentration of fuel additives that had already been "introduce[d] into commerce" at the time of the passage of section 211(f) and yet are not present in certification fuel. The law also makes it unlawful to exceed the "specified concentration" of new fuel additives for which EPA has granted a sub-sim waiver under section 211(f)(4).[18] But the sub-sim law states one simple, categorical exception: Fuel additives used to certify vehicles are not prohibited by the sub-sim law; manufacturers may increase their concentration in gasoline unless another law prohibits them from doing so.

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[16] *Id.*

[17] *Id.*

[18] *Id.* § 7545(f)(4).

A. Ethanol Is a Fuel Additive Utilized in Vehicle Certification.

In the past, when EPA controlled ethanol content under the sub-sim law, ethanol was not present in the gasoline test fuels used to certify gasoline-operated motor vehicles. As relevant here, manufacturers use two gasoline test fuels to certify vehicles for emissions: an emissions test fuel and a mileage accumulation test fuel.[19] Historically, "the fuel used in emissions testing . . . contained no oxygenates (*e.g.*, ethanol) and was often referred to by its brand name, 'indolene.' "[20] Until 2004, the mileage accumulation fuel also contained no ethanol.[21]

In 2004, EPA required that the mileage accumulation test fuel used to comply with evaporative emissions durability standards "must employ gasoline fuel for the entire mileage accumulation period which contains ethanol in, at least, the highest concentration permissible in gasoline under federal law and that is commercially available in any state in the United States."[22] In 2010, however, EPA rejected industry arguments that the mileage accumulation fuel "qualifies as a 'certification fuel'" for purposes of the sub-sim law.[23] In that decision, EPA stressed that

> all exhaust and evaporative emissions testing for certification purposes is conducted using an E0 fuel. Thus, E10 plays a limited role in the certification process for a limited subset of motor vehicles. In contrast, E0 has been and remains the primary fuel used in certification since it is the actual test fuel for all of the actual emissions standards testing required for certification."[24]

In 2010, therefore, indolene (E0) was still the relevant certification fuel for purposes of the sub-sim law.[25] Based on that E0 certification fuel, EPA had previously defined "substantially

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[19] Proposed Rule, 84 Fed. Reg. at 10,597.

[20] *Id.*

[21] *Id.*

[22] 40 C.F.R. § 86.1824-08(f)(1).

[23] *See Partial Grant and Partial Denial of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent*, 75 Fed. Reg. 68,094, 68,143 (Nov. 4, 2010).

[24] *Id.*

[25] *Id.*

similar" to limit the addition of aliphatic alcohols, including ethanol, to gasoline: gasoline had to contain no more than "2.7 weight percent" oxygen—approximately 7.7% ethanol—to be "substantially similar" to the E0 certification fuel.[26]

Thus, at the time, it would have been a violation of section 211(f)(1) to "increase the concentration in use" of ethanol in gasoline beyond 15 percent, the amount allowed by the E15 waiver under 211(f)(4): Ethanol was not substantially similar to a gasoline certification fuel additive, because the gasoline certification fuel contained no ethanol, and EPA's sub-sim waiver for E15 was limited to that "specified concentration" of ethanol.

That changed by 2017. In the 2014 Tier 3 rulemaking, EPA "updated the certification test fuel for Tier 3 certified motor vehicles and changed the certification test fuel from E0 to E10 to reflect the widespread use of E10 in the marketplace."[27] The new Tier 3 test fuel contains 9.6 to 10% ethanol.[28] Some manufacturers were required to use this test fuel starting in 2017, and almost all model year 2020 and later vehicles will be certified with the Tier 3 test fuel.[29]

B. The Sub-Sim Law No Longer Limits the Concentration of Ethanol in Gasoline.

Under the plain meaning of the sub-sim law, ethanol is now "substantially similar" to a "fuel additive utilized in . . . certification." Indeed, ethanol *is* indisputably a gasoline "fuel additive utilized in . . . certification."[30] Whatever range of interpretations the term

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[26] Proposed Rule, 84 Fed. Reg. at 10,597; *see also Regulation of Fuels and Fuel Additives; Definition of Substantially Similar*, 56 Fed. Reg. 5352, 5355–56 (Feb. 11, 1991) (1991 Sub-Sim Definition).

[27] *Id.* at 10,597; *see also Control of Air Pollution From Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards*, 79 Fed. Reg. 23,414, 23,810 (Apr. 28, 2014), *codified at* 40 C.F.R. § 1065.710(b)(2).

[28] 40 C.F.R. § 1065.710(b)(2).

[29] Proposed Rule, 84 Fed. Reg. at 10,597 ("The requirement to use Tier 3 E10 certification fuel may have applied as early as MY2015 if a manufacturer elected to comply early with the Tier 3 vehicle emissions standards, but the requirement to use E10 in at least some vehicles began with MY2017. Almost all MY2020 and newer vehicles must be certified for emissions testing with Tier 3 E10 certification fuel with some exceptions for small volume vehicle manufacturers, which must use Tier 3 E10 certification fuel by MY2022.").

[30] EPA's interpretative rules under the sub-sim law recognize that "aliphatic alcohols," including ethanol, are gasoline "fuel additives." *See Fuels and Fuel Additives; Definition of Substantially Similar*, 45

"substantially similar" may allow, the term cannot reasonably be interpreted to *exclude* fuel additives that are *chemically identical* to those used in the emissions certification fuel. Because ethanol is a "fuel additive utilized in . . . certification," the sub-sim law no longer limits the concentration of ethanol in gasoline.

EPA's proposed rule ignores the plain meaning of the law. In its proposed definition of "substantially similar," EPA ignores the statutory term "fuel additive" and considers solely "whether E15 is substantially similar to Tier 3 E10 certification fuel when used in Tier 3 light-duty vehicles."[31] Based on this comparison, EPA proposes a definition of "substantially similar" that "is limited to gasoline that contains up to 15% ethanol."[32] In an effort to implement this definition of "substantially similar," EPA also proposes to limit the 1 psi waiver in its RVP regulations to blends with "no more than 15% . . . ethanol," a limit that is flatly inconsistent with EPA's proposed interpretation of the 1 psi RVP waiver statute, § 211(h)(4).

EPA's proposed rule fails to grapple with the text of the sub-sim law. In defining "substantially similar," EPA reads the words "or to increase the concentration in use of" a "fuel additive" out of the statute. That violates the fundamental canon of construction that "[a] court should give effect, if possible, to every clause and word of a statute."[33] If EPA could control the concentration of sub-sim fuel *additives* through its "substantially similar"

Fed. Reg. 67,443, 67,447 (Oct. 10, 1980) (1980 Sub-Sim Definition). This treatment is consistent with EPA's definition of the term "additive" under section 211(a): "Additive means any substance, other than one composed solely of carbon and/or hydrogen, that is intentionally added to a fuel named in the designation (including any added to a motor vehicle's fuel system) and that is not intentionally removed prior to sale or use." 40 C.F.R. § 79.2(e). It is also consistent with the Agency's actual practice: ethanol is registered as an unleaded gasoline additive. *See* EPA, List of Registered Gasoline Additives, https://www3.epa.gov/otaq/fuels1/ffars/web-gas.htm. Although EPA's past definitions of substantially similar limited the concentration of some fuel additives to 0.25 percent by weight, aliphatic alcohols have never been subject to that cap. They have instead been subject to an oxygen cap. *Regulation of Fuels and Fuel Additives; Definition of Substantially Similar*, 56 Fed. Reg. 5352, 5355–56 (Feb. 11, 1991) (1991 Sub-Sim Definition) (interpretive rule limiting the oxygen content of gasoline to 2.7 percent by weight, equivalent to about 7.7% ethanol).

[31] Proposed Rule, 84 Fed. Reg. at 10,598.

[32] *Id.* at 10,601.

[33] *See Moskal v. United States*, 498 U.S. 103, 109 (1990) (internal quotation marks omitted).

definition for *fuel*, the statute's reference to "any fuel additive" and to "increas[ing] the concentration in use" would be redundant. Congress could just as well have said that all fuels are unlawful unless they are substantially similar to certification test fuel, omitting any reference at all to fuel additives used in the certification test fuel. Congress did not do so.

EPA's proposed interpretation also fails to appropriately distribute the terms "increase the concentration in use of" and "any fuel or fuel additive" throughout the sub-sim law. The distributive canon "recognizes that sometimes '[w]here a sentence contains several antecedents and several consequents,' courts should 'read them distributively and apply the words to the subjects which, by context, they seem most properly to relate.' "[34] The phrase "concentration in use of" in context can only relate to the term "fuel additive," because only fuel additives can be increased in concentration.[35] It makes no sense to assume that the antecedent prohibition against "increas[ing] the concentration in use of" relates to the consequent terms "fuel . . . utilized in . . . certification" instead of "fuel additive utilized in . . . certification." Yet that is what EPA assumes when it reads the sub-sim law to limit the concentration of ethanol in gasoline based on the concentration of ethanol in the certification fuel.

The neighboring provisions of the sub-sim law confirm EPA's error. In CAA § 211(f)(2), Congress made it "unlawful for any manufacturer of any fuel to first introduce into commerce any gasoline which contains a concentration of manganese in excess of .0625 grams per gallon of fuel."[36] At the time, EPA had intended to require the use of manganese-based additives in the certification fuel to account for the growing use of methylcyclopentadienyl manganese tricarbonyl (MMT), an octane-enhancing additive.[37] Thus, when Congress wanted to control the specific concentration of an additive used in

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[34] *Id.* (quoting 2A N. Singer & S. Singer, Sutherland Statutes and Statutory Construction § 47:26, p. 448 (rev. 7th ed. 2014)).

[35] *Cf.* 40 C.F.R. § 79.2(g) ("Range of concentration means the highest concentration, the lowest concentration, and the average concentration *of an additive* in a fuel.") (emphasis added).

[36] 42 U.S.C. § 7545(f)(2).

[37] EPA intended to require "that 1979 certification fuel contain a minimum of 0.125 grams of manganese per gallon." *See* Senate Comm. On Env't & Public Works, 95th Cong., A Legislative History of the Clean Air Act Amendments of 1977, at 1464 (1977 Legislative History).

gasoline certification fuel, it knew how to do so. Instead, Congress limited the sub-sim law's prohibition to fuel additives not used in certification and singled out manganese-based additives for special treatment. This makes sense. Congress enacted § 211(f) out of concern that fuel additives with atypical elements similar to manganese could cause a vehicle's catalyst to deteriorate or otherwise harm its emission controls.[38] That concern does not apply to fuel additives used to certify vehicles, given that EPA has broad authority to prescribe specifications for the certification test fuel.[39] Apart from lead and phosphorous-based fuel additives, which were later prohibited, the gasoline emissions certification fuel has always consisted of carbon, hydrogen, oxygen, nitrogen, and sulfur (CHONS).[40] These are typical gasoline elements that—excepting sulfur—do not present significant threats to vehicle emission controls.[41] EPA may also continue to regulate the concentration of sulfur-based additive packages under the sub-sim law, as it has in the past, because the Tier 3 test fuel contains no sulfur-based additive packages.[42] Thus, interpreting the sub-sim law

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[38] *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1062–63 (1995) (*Ethyl II*) (reviewing the legislative history of § 211(f)); *see also* 1977 Legislative History 1464–65 (testimony "indicated that . . . MMT . . . was impairing the performance of emission control systems and increasing hydrocarbon emissions in test vehicles"); *see also id.* at 362 (Sen. Muskie) ("The conference adopted an amendment to deal with the problem if the fuel additive MMT which will effectively deal with this situation. It will also prevent the untested use of additives with cavalier disregard for harmful effects on emission control systems and devices.").

[39] 42 U.S.C. § 7545(h).

[40] *See* 40 C.F.R. § 85.075-10 (1975) (gasoline specifications for 1975 emissions and mileage accumulation test fuels), https://bit.ly/2uIe2MC.

[41] *See Fuels and Fuel Additives; Revised Definition of "Substantially Similar,"* 46 Fed. Reg. 38,582, 38,585 (July 28, 1981) (stating that "additives composed of carbon, hydrogen, oxygen, nitrogen, and/or sulfur should combust to form materials which are already present in automobile exhaust"); Refinery "processes used to produce gasoline remove non-CHONS elements." Proposed REGS Rule, 81 Fed. Reg. at 80,842.

[42] Under EPA's interpretative rule for gasoline, fuel additives other than hydrocarbons, ethers or alcohols must be used "at a concentration of no more than 0.25 percent by weight which contributes no more than 15 ppm sulfur by weight to the fuel." 1991 Sub-Sim Definition, 56 Fed. Reg. at 5356. By definition, such fuel additives are not "substantially similar" to any fuel additives utilized in certification, so EPA may continue to control their concentration in market fuel under the sub-sim law. EPA also controls sulfur content pursuant to its general authority under § 211(c) to regulate harmful fuel components. *See Control of Air Pollution From Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards*, 79 Fed. Reg. 23,414, 23,567 (Apr. 28, 2014) (regulating gasoline sulfur).

according to its plain meaning would pose no risk of harmful concentrations of sulfur or atypical elements that would damage vehicle emission controls.

Other provisions confirm this reading. In CAA § 211(c), Congress authorized EPA to "control" the concentration of substantially similar fuel additives in gasoline, but only "by regulation," and only if EPA meets certain standards and procedural requirements.[43] Under the canon that the "mention of one thing implies the exclusion of another thing," EPA's express authority to control the concentration of sub-sim fuel additives under § 211(c) must be interpreted to exclude the authority to impose similar controls on fuel additives through "substantially similar" definitions under § 211(f)(1).[44] There is "no need to imply" a power to control the concentration of "substantially similar" fuel additives through interpretative rules under § 211(f)(1), "when Congress explicitly directed" EPA to control the concentration of fuel additives under § 211(c).[45] Implying this power would allow EPA to evade the "very definite scheme" that Congress enacted for the control of "substantially similar" fuel additives.[46]

C. EPA May Control the Concentration of Ethanol in Gasoline Under § 211(a) and § 211(c).

EPA also has other tools at its disposal to limit high concentrations of ethanol (or any other fuel additive) in gasoline. Fuel manufacturers may sell E16–49 blends as motor vehicle gasoline only after satisfying the registration emissions and health-effects testing requirements imposed by EPA pursuant to section 211(a) of the Clean Air Act.[47] EPA can also control ethanol blending under section 211(c) of the Clean Air Act if some concentration of ethanol in gasoline "causes, or contributes to, air pollution which may

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[43] *See* 42 U.S.C. § 7545(c).

[44] *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1061 (D.C. Cir. 1995) (citing *American Methyl Corp. v. EPA*, 749 F.2d 826, 845–36 (D.C. Cir. 1984)).

[45] *Ethyl Corp.*, 51 F.3d. at 1062–63 (holding that EPA lacks authority to consider "public health" under § 211(f)(4), in part because only § 211(c) grants EPA that authority).

[46] *Id.* 1062.

[47] 40 C.F.R. §§ 79.11(j), 79.32(a)(1)

reasonably be anticipated to endanger the public health or welfare" or (2) causes "emissions products" that "impair to a significant degree the performance of any emission control device or system which is [or would soon be] in general use."[48] Indeed, EPA has already exercised this authority to prohibit the use of gasoline with more than 10% ethanol in "any model year 2000 or older light-duty gasoline motor vehicle, any heavy-duty gasoline motor vehicle or engine, any highway or off-highway motorcycle, or any gasoline-powered nonroad engines, vehicles or equipment."[49] That prohibition would continue to apply regardless of how EPA interprets the sub-sim law. And EPA is already required to assess the need for additional fuel regulations to mitigate renewable fuel emissions in its forthcoming Energy Independence and Security Act anti-backsliding study, so interpreting the sub-sim law according to its plain meaning would not impose any significant additional burdens on the Agency.[50]

On the other hand, EPA's atextual, restrictive reading of the sub-sim law would stifle innovation in the market for fuels. EPA's approach could delay the sale of higher gasoline-ethanol blends for years, and perhaps indefinitely, thwarting Congress' intent to promote "innovative alternatives to traditional sources of energy [that] provide a possible means of freeing ourselves from inherently polluting fossil fuels and an important route to independence from foreign sources of petroleum."[51] Under EPA's restrictive interpretation of § 211(f), "the public and this nation would suffer from lack of innovation in fuels and fuel additives, to the ultimate detriment of air quality and our national security."[52] This

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[48] 42 U.S.C. § 7545(c)(1).

[49] 40 C.F.R. § 80.1504(a)(1); *Regulation To Mitigate the Misfueling of Vehicles and Engines With Gasoline Containing Greater Than Ten Volume Percent Ethanol and Modifications to the Reformulated and Conventional Gasoline Programs*, 76 Fed. Reg. 44,406, 44,411 (July 25, 2011) (citing 42 U.S.C. § 7545(c)).

[50] 42 U.S.C. § 7545(v)(1).

[51] *American Methyl*, 749 F.2d at 840 n.87. The delays attendant to the 211(f)(4) process are illustrated by MMT. It took 18 years for MMT to receive a waiver under § 211(f)(4). *See Fuels and Fuel Additives; Grant of Waiver Application*, 60 Fed. Reg. 36,414 (July 17, 1995).

[52] *American Methyl*, 749 F.2d at 840 (holding that EPA could not revoke § 211(f)(4) waivers).

innovation-stifling approach is impermissible under the sub-sim law, and it is unreasonable given the minimal risks posed by gasoline-ethanol blends.

D. EPA Should Not Create New Barriers to Ethanol Blending.

The Trump Administration initiated this rulemaking to "protect the corn-based ethanol and biofuels that power our country."[53] But EPA's proposed rule will set up new limits on ethanol blending even as it attempts to open the market to year-round E15. EPA should not finalize its proposed interpretation of the sub-sim law in the final rule, because it is inconsistent with the plain meaning, structure, and history of the statute, and because it evades the statutory scheme Congress established for EPA's regulation of fuel components. Now that ethanol is a "fuel additive utilized in . . . certification," ethanol does not require a sub-sim waiver, so no "waiver conditions under section 211(f)" are applicable to the ethanol content of gasoline. Nor should EPA finalize its proposed 15% ethanol limit on the gasoline blends eligible for the 1 psi RVP waiver.

Instead, EPA should confirm that the sub-sim law no longer limits the concentration of ethanol in gasoline, and EPA should extend the 1 psi RVP waiver to all gasoline containing at least 10% ethanol, consistent with EPA's interpretation of the RVP statute. As amended, the text of 40 C.F.R. § 80.27(d)(2) should read as follows:

> In order to qualify for the special regulatory treatment specified in paragraph (d)(1) of this section, gasoline must contain denatured, anhydrous ethanol. The concentration of the ethanol, excluding the required denaturing agent, must be at least 9% ~~and no more than 15%~~ (by volume) of the gasoline. The ethanol content of the gasoline shall be determined by the use of one of the testing methodologies specified in § 80.47. ~~The maximum ethanol content shall not exceed any applicable waiver conditions under section 211(f) of the Clean Air Act.~~

EPA should also remove omit all other references to "no more than 15% ethanol"; "between 9 and 15 percent ethanol"; and "does not exceed 15 percent" ethanol from the text of the final rule.[54]

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[53] Fact Sheet, *President Donald J. Trump Is Expanding Waivers for E15 and Increasing Transparency in the RIN Market* (Oct. 11, 2018), https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-expanding-waivers-e15-increasing-transparency-rin-market/.

[54] Proposed Rule, 84 Fed. Reg. at 10,625–26.

IV. EVEN UNDER EPA'S INTERPRETATION OF THE SUB-SIM LAW, E20 IS "SUBSTANTIALLY SIMILAR" TO THE TIER 3 E10 CERTIFICATION FUEL.

Even assuming that the sub-sim law continues to limit the concentration of ethanol in gasoline, EPA's definition of "substantially similar" is underinclusive. EPA claims that it only has "sufficient data and information to support" a definition of "substantially similar" that is limited to "gasoline that contains up only ethanol content up to 15 percent."[55] Not so. The available data also support a conclusion that E20 is "substantially similar" to E10 certification fuel. EPA should define "substantially similar" to include E20 or at a minimum seek additional comment on this question.

A. E20 and E10 Are "Physically and Chemically Similar."

To define what fuels are "substantially similar" under the sub-sim law, EPA considers a market fuel's "general physical and chemical characteristics" and compares those to a fuel used in certification.[56] The characteristics of E20 are "substantially similar" to the characteristics of E10 certification fuel.

A 2018 study by the University of California, Riverside (UCR study), which EPA cites in the proposed rule, demonstrates the substantial similarities in the fuels' characteristics. The UCR study tested a Tier 3 E10 test fuel (labeled "Fuel 3") and an E20 fuel (labeled "Fuel 8") created by adding (splash-blending) ethanol into the Tier 3 E10 test fuel.[57] As UCR's fuel analyses show, the fuel properties of E20 are similar to the properties of the E10 test fuel, and well within the range of typical market gasoline, with one exception other than ethanol: oxygen content, which doubles from 3.67% oxygen by weight in Fuel 3 to 7.2% oxygen by weight in Fuel 8.[58] As discussed next, this difference in ethanol and

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[55] Proposed Rule, 84 Fed. Reg. at 10,601.

[56] *Id.* at 10,597.

[57] *Id.* at 10,599 (citing Georgios Karavakalis et al., Impacts of Aromatics and Ethanol Content on Exhaust Emissions from Gasoline Direct Injection (GDI) Vehicles, Final Report, at 4 (Apr. 2018) (2018 UCR Study), https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-0034).

[58] 2018 UCR Study, *supra* note 57, at 4–5, Table 2.1 & Appendix A.

oxygen content is unlikely to lead to significant differences in emissions during a vehicle's useful life.

B. E20 and E10 Produce Substantially Similar Exhaust Emissions.

EPA has traditionally considered differences in emissions relevant to determining whether a market fuel is substantially similar to an emissions certification fuel. But small differences in emissions are not dispositive. EPA may determine that a fuel is "substantially similar" "even if it leads to some emissions increase."[59]

An extensive literature shows that E20 and the E10 certification fuel have substantially similar exhaust emissions.[60]

1. E20 does not increase nitrogen oxide exhaust emissions compared to E10 certification fuel.

When EPA first capped the oxygen content of gasoline containing ethanol in the 1980s and early 90s, it did so in order to limit the possible "enleanment" of the air-fuel mixture "which could lead to NO_X emission increases in some cars."[61] This rationale has been substantially weakened by technological advances. Most vehicles that are still within their useful life use advanced calibration strategies to tightly control air-fuel ratios and prevent the enleanment of the fuel mixture in order to maintain emissions performance over the useful life of the vehicles.[62]

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[59] *Partial Grant and Partial Denial of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Decision of the Administrator*, 75 Fed. Reg. 68,094, 68,145 (Nov. 4, 2010).

[60] *See generally* Nigel Clark et al., Effects of Ethanol Blends on Light-Duty Vehicle Emissions: A Critical Review, Final Report, at 42–54 (Dec. 24, 2018) (reviewing the literature); Weichang Yuan et al., *Comparison of Real-World Vehicle Fuel Use and Tailpipe Emissions for Gasoline-Ethanol Fuel Blends*, 249 Fuel 352, 354 & Table 1 (2019) (summarizing studies and concluding they show "no clear trend in NO_X and PM emission rates").

[61] 1991 Sub-Sim Definition, 56 Fed. Reg. at 5354. "Enleanment refers to increasing the amount of oxygen in the mixture of air and fuel that enters the engine for combustion." *Partial Grant of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent*, 76 Fed. Reg. 4662, 4669 n.19 (Jan. 26, 2011) (2011 E15 Partial Waiver).

[62] *See* Georgios Karavalakis, *Impacts of Ethanol Fuel Level on Emissions of Regulated and Unregulated Pollutants from a Fleet of Gasoline Light-Duty Vehicles*, 93 Fuel 549, 551–52 (2012) (finding that "[o]lder technology vehicles" made before 1996 lacked "sophisticated controls of air-fuel ratios at" the levels

For Tier 2 vehicles, the majority of on-road vehicles today, most studies show that E20 has no significant adverse effect on (and can even lower) immediate NO_X emissions, as compared to E10.[63]

In newer Tier 3 vehicles, NO_X emissions are even less sensitive to changes in ethanol content. The 2018 UCR study tested five gasoline direct injection (GDI) vehicles certified to Tier 3 (or California-equivalent) vehicle standards, using (among other fuels) a Tier E10 test fuel (Fuel 3) and a splash-blended E20 test fuel (Fuel 8).[64] UCR found no statistically significant difference in NO_X emissions for these two fuels.[65] The NO_X emissions of the E20 test fuel were similar to the emissions of the Tier 3 test fuel and were lower on average for three out of five vehicles.[66] Even considering other match-blended test fuels used in the study, "the results did not show any significant effect in NO_X emissions with ethanol."[67]

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required to prevent enleanment with E10, E20, and higher ethanol levels, but showing no statistically significant difference in NO_X emissions for model year 1996 and later vehicles); *see also* Clark, *supra* note 58, at 10–11, 57 (noting that newer vehicles respond differently to NO_X emissions).

[63] *See, e.g.,* Georgios Karavalakis et al., *Regulated Emissions, Air Toxics, and Particle Emissions from SI-DI Light-Duty Vehicles Operating on Different Iso-Butanol and Ethanol Blends*, SAE Tech. Paper 2014-01-1451, at 6 (finding no statistically significant difference in NO_X emissions between E10, E15, and E20); John M. Storey et al., *Ethanol Blend Effects On Direct Injection Spark-Ignition Gasoline Vehicle Particulate Matter Emissions*, 3 SAE Int. J. Fuels Lubr. 650, 653 (2010) (finding lower NO_X emissions for E20 relative E10); Keith Knoll et al., *Effects of Mid-Level Ethanol Blends on Conventional Vehicle Emissions*, SAE Tech. Paper 2009-01-2723, at 1 ("Vehicles found to apply long-term fuel trim (LTFT) to power-enrichment fueling showed no statistically significant fuel effect on . . . NO_X" when using E15 and E20 instead of E10), https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-0020; Brian West et al., Intermediate Ethanol Blends Catalyst Durability Program 3-9, 3-14, Table 3.7 (Feb. 2012) (Showing generally lower "immediate" NO_X emissions for E20 compared to E10 in Tier 2 vehicles) (DOE Catalyst Durability Program); Brian West, Effects of High-Octane E25 on Two Vehicles Equipped with Turbocharged Direct-Injection-Engines 24 (Sept. 2018) (West E25 Study) (No significant changes in NO_X emissions for E10 certification fuel and splash-blended E25 fuel); Carolyn Hubbard et al., *Ethanol and Air Quality: Influence of Fuel Ethanol Content on Emissions and Fuel Economy of Flexible Fuel Vehicles*, 48 Environ. Sci. & Tech. 861, 863 (2014) (finding lower NO_X emissions for E20 relative to E10).

[64] 2018 UCR Study, *supra* note 57, at 9.

[65] *Id.* at 10–11.

[66] *Id.* at 23.

[67] *Id.* at 22.

A University of North Carolina study (UNC study) also recently tested three Tier 3 vehicles and two Tier 2 vehicles using E0, regular and premium E10, and E27 under real-world driving conditions, as well as under EPA's federal and highway test procedures.[68] The study concluded that "the differences in cycle average NO_X emissions" for the E10 fuels and E27 were not statistically significant.[69] E27 reduced NO_X emissions by 7 to 1% compared to regular E10, "indicating similarity."[70] E27 reduced NO_X emissions by 6 to 17% compared to premium E10.[71] Thus, although the differences were not statistically significant, "E27 had lower NO_X emission rates than" premium E10 and emission rates that were "comparable" to regular E10.[72]

2. E20 does not increase hydrocarbon or non-methane organic gas exhaust emissions compared to E10 certification fuel.

The data also justify a conclusion that E20 and the E10 certification fuel produce similar hydrocarbon and organic gas emissions.

The 2018 UCR study did not find any statistically significant differences in total hydrocarbon (THC) and non-methane hydrocarbon (NMHC) emissions between the E10 certification fuel and the E20 splash-blended fuel.[73] The differences between both fuels were small.[74] Even considering match-blended test fuels, UCR concluded that ethanol content had no statistically significant effect on THC and NMHC emissions; these emissions were dominated by aromatic content, which tends to be lower in fuels with higher concentrations

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[68] Yuan et al., *supra* note 60, at 355, Table 2. All except one Tier 2 vehicle were GDI-equipped.

[69] *Id.* at 362–63.

[70] *Id*. at 362.

[71] *Id.*

[72] *Id.* at 363.

[73] 2018 UCR Study, *supra* note 57, at 10–11, 17.

[74] *Id.* at 18.

of ethanol, because ethanol is a high-octane additive that displaces aromatics.[75] The 2019 UNC study supports similar conclusions.[76]

Earlier studies reached similar conclusions. As part of its mid-level ethanol blend vehicle testing program, the Department of Energy tested 16 vehicles ranging from model year 1999 through model year 2007.[77] The study used an indolene test fuel and denatured fuel ethanol to blend E10, E15, and E20 test fuels.[78] The study concluded that exhaust "NMHC [emissions] . . . showed statistically significant reductions with increasing ethanol content."[79] The study also found that E20 had "minimal if any effect" on vehicle NMHC emissions compared to E10.[80] Vehicle non-methane organic gas (NMOG) exhaust emissions also did not show any "statistically significant" differences in emissions for E20 compared to E10, and the measured differences between the E10 test fuel and the E20 test fuel were very small.[81] A follow-up DOE study aimed primarily at testing the effects of ethanol blends over the useful life of light-duty vehicles also concluded that increasing ethanol content reduced immediate NMHC exhaust emissions and had no effect on immediate NMOG emissions.[82]

3. E20 does not increase particulate matter exhaust emissions compared to E10 certification fuel.

E20 and E10 certification fuel would have substantially similar particulate matter (PM) emissions. "[T]he reduction of PM emissions with the addition of ethanol . . . has

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[75] *Id.* at 16–17; *see also* AIR, Inc., Growth Energy Ethanol and Aromatics Testing Program 28–29 (Mar. 7, 2018), https://www.epa.gov/sites/production/files/2018-04/documents/03-growth-energy-ethanol-aromatics-testing-2018-03-07.pdf.

[76] Yuan et al., *supra* note 60, at 362–63 (no statistically significant differences in hydrocarbon emissions for E27 compared to regular and premium E10).

[77] Knoll, *supra* note 62, at 4.

[78] *Id.* at 5.

[79] *Id.* at 8.

[80] *Id.*

[81] *Id.*

[82] DOE Catalyst Durability Program, *supra* note 63, at 3-13, 3-14, D-7, D-8.

been demonstrated in many studies and is supported by fundamental combustion chemistry considerations."[83] PM formation is strongly correlated with high-boiling-point saturated hydrocarbons with a high double-bond-equivalent (DBE) value (hydrocarbons with a high Particle Mass Index, or "PMI").[84] This PM-increasing "trend is particularly notable with aromatics substances."[85] In contrast to aromatics, ethanol has "a DBE value of zero" and "a relatively high vapor pressure and low boiling point," so it is not expected to contribute to PM emissions.[86]

Because of its greater ethanol content, a splash-blended E20 fuel would have a lower PMI than E10, which should reduce PM emissions. For example, adding 10% ethanol to a Tier 3 E10 certification fuel with a PMI of 1.89 results in an E20 fuel with a PMI of 1.61, a 15% reduction in the PMI of the fuel.[87] Consistent with ethanol's reduction of the PMI of gasoline, many studies have found that adding ethanol to gasoline reduces PM emissions in legacy vehicles.[88]

Some recent match-blending studies have theorized that ethanol's high heat of vaporization may exacerbate a fuel's tendency to form PM emissions by hindering the

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[83] James E. Anderson et al., *Issues with T50 and T90 as Match Criteria for Ethanol-Gasoline Blends*, 7 SAE Int'l J. Fuels & Lubr.1027, 1031 & nn.1, 13, 14, 15, 16, 17 (citing ten "particularly well documented" studies); 2018 UCR Study, *supra* note 57, at 2 (discussing literature showing ethanol reduces PM).

[84] Koichiro Aikawa et al., *Development of a Predictive Model for Gasoline Vehicle Particulate Matter Emissions*, 3 SAE Int'l J. Fuels & Lubr. 610, 611 (Oct. 25, 2010).

[85] *Id.* at 611; *see also* Georgios Karavalakis et al., *Evaluating the Effects of Aromatics Content in Gasoline on Gaseous and Particulate Matter Emissions from SI-PFI and SIDI Vehicles*, 49 Environ. Sci. & Tech. 7021 (2015) (demonstrating significantly "higher PM emissions with increasing aromatics in the fuel"); 2018 UCR Study, *supra* note 57, at 35 ("The DBEs of paraffins is 0, while DBEs of aromatic hydrocarbons are about 4 to 7.").

[86] Robert A. Stein et al., *An Overview of the Effects of Ethanol-Gasoline Blends on SI Engine Performance, Fuel Efficiency, and Emissions*, SAE-2013-01-1635, at 11.

[87] 2018 UCR Study, *supra* note 57, at 45.

[88] *See* 2018 UCR Study, *supra* note 57, at 2 (discussing literature); West E25 Study, *supra* note 63, at 21 (testing a 2016 Ford F-150 with E10 certification fuel and a splash-blended E25 fuel found "a statistically-significant PM reduction of more than 35%" when using E25 in a cold-start-only LA-4 drive cycle used for the Federal Test Procedure (FTP)); Storey et al., *supra* note 63, at 653 (testing a Tier 2, GDI vehicle and finding that compared to E10, E20 reduced PM emissions from 3.43 mg/mi to 2.58 mg/mi over the FTP and from 14.11 mg/mi to 8.79 mg/mi over the more aggressive US06).

vaporization of higher-molecular-weight components.[89] These studies do not disprove the conclusion that E20 and E10 certification fuel have substantially similar particulate matter emissions. At most, they suggest that ethanol's heat of vaporization may have a small effect on PM, depending on "the operating condition and injection timing" of the vehicle.[90] This effect, if it exists, is overwhelmed by ethanol's displacement of high-PMI hydrocarbons—a real-world phenomenon that must be accounted for when interpreting the results of match-blending studies. In the 2018 UCR study cited in the proposed rule, for instance, the E10 certification fuel and the splash-blended E20 fuel showed no statistically significant differences in PM emissions.[91] Even considering the other match-blended test fuels used in the UCR study, the study's data at most suggest that ethanol had a weak, statistically insignificant positive effect on composite exhaust PM emissions, a trend that was significantly influenced by a single test vehicle.[92] By contrast, the positive effect of aromatic content on composite PM emissions was statistically significant and stark.[93]

The 2019 UNC study supports the conclusion that E20 will not significantly raise (and may in fact lower) PM emissions. The study found that across all of the driving cycles examined in the test program, the E27 test fuel "tended to reduce PM emission rates compared to" the regular and premium E10 test fuels, although the differences were not statistically significant.[94] The E27 fuel had "[c]onsistently 17%–19% lower" PM emissions than the E10 regular fuel, an effect that was "attributable to the lower aromatic content of

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[89] *See* 2018 UCR Study, *supra* note 57, at 2–3; Aron Butler et al., *Influence of Fuel PM Index and Ethanol Content on Particulate Emissions from Light-Duty Vehicles*, SAE Tech. Paper 015-01-1072; Rafal Sobotowski et al., *A Pilot Study of Fuel Impacts on PM Emissions from Light-Duty Gasoline Vehicles*, SAE Tech. Paper 2015-01-9071.

[90] Yu Chen et al., *Effects of Ethanol Evaporative Cooling on Particulate Number Emissions in GDI Engines*, SAE Tech. Paper 2018-01-0360, at 8.

[91] *Id.* at 11–12, 28–32. PM emissions were similar for both fuels. *Id.* at 12 (1.4 mg for E10 and 1.5 mg for E20).

[92] At most, the data suggested "a possible ethanol interaction effect for the higher aromatic blends." *Id.* at 11; *see also* Air Inc., *supra* note 75, at 28–29; *id* at 36 (showing that the Kia Optima was the only vehicle with a trend of increasing composite PM emissions with higher ethanol content).

[93] Air Inc., *supra* note 75, at 28–29.

[94] Yuan et al., *supra* note 60, at 363.

E27."[95] E27 showed even better PM results compared to premium E10.[96] The weight of the evidence suggests that in the real world, when ethanol displaces aromatics in gasoline, it reduces PM emissions.

4. The EPAct fuel effects model does not disprove the conclusion that E20 and E10 certification fuel have substantially similar exhaust emissions.

a. The EPAct study is biased against ethanol.

In the Proposed Rule, EPA seeks "comment and request[s] any additional information related to the potential effects on the exhaust emissions of E15 compared to Tier 3 E10 certification fuel, particularly in Tier 3 certified vehicles."[97] EPA's request for comment raises an important concern with some of the studies cited in the proposed rule. In particular, EPA relies on statistical models developed in the EPAct/V2/E-89 fuel effects study (EPAct study) to estimate the effect of E15 on exhaust emissions.[98] The EPAct study is outdated and biased against ethanol, so it is incapable of producing an accurate comparison between E10 certification fuel and higher ethanol blends, particularly in Tier 3 vehicles. EPA should discount the EPAct model's predictions in defining "substantially similar."

First, the EPAct study's fuel effects model is outdated.[99] The EPAct study relied exclusively on Tier 2 vehicles that had been certified with an indolene test fuel (E0).[100] It is likely that current Tier 3 vehicles certified to comply with EPA's emission standards using an E10 test fuel will have different fuel effects—particularly for ethanol—than vehicles

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[95] *Id.* at 362–63.

[96] *Id.* at 363.

[97] See Proposed Rule, 84 Fed. Reg. at 10,599.

[98] *See id.* at 10,598, 10,603–04.

[99] 42 U.S.C. § 7545(v)(1)(A).

[100] *Id.* at 68.

certified on indolene.[101] The EPAct study ignores these differences. All of the test vehicles in the EPAct study also used port-fuel injection (PFI) engines. But vehicles equipped with GDI engines have accounted for about 50% of new vehicle sales in recent years.[102] GDI-equipped vehicles are also likely to have different fuel effects than PFI vehicles.[103] The EPAct study ignores these differences. Indeed, EPA staff has concluded that "PM fuel effects in [GDI] vehicles" are not "well explained by existing models" (*i.e.*, the EPAct study) and it has suggested EPA needs to "collect more fuel effects data on Tier 3 compliant [GDI] vehicles."[104] If EPA relies on the EPAct study to compare the exhaust emissions of E10 certification and higher ethanol blends like E20 in the final rule, EPA would be ignoring these relevant factors. EPA should place no weight on the EPAct model's results to determine fuel effects on GDI and Tier 3 vehicles. EPA should instead rely on the newer UNC and UCR studies.[105]

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[101] *See* Clark et al., *supra* note 60, at 57 ("Adopting a certification test fuel that is reflective of real-world fuels is likely to enhance emissions performance and fuel economy on the road by aligning regulatory requirements with the vehicle's mission.").

[102] *See* EPA, Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2017 at 61 (Jan. 2018) ("Engines using GDI were first introduced into the market with very limited production in MY 2007. Only 9 years later GDI engines were installed in about 48% of MY 2016 vehicles, and are projected to achieve a 52% market share in MY 2017."); *see also* Dep't of Energy, EERE, Fact of the Week #1077 (Apr. 15, 2019) (concluding that GDI is the most widely adopted fuel-saving technology), https://www.energy.gov/eere/vehicles/articles/fotw-1077-april-15-2019-emerging-fuel-saving-technologies-gasoline-direct.

[103] *See* Clark et al., *supra* note 101, at 57 (arguing that studies with GDI engines show different NO_X and PM effects for ethanol than studies with PFI engines).

[104] Aaron Butler & Rafal Sobotowksi, PM Emission Trends in LDVs Using Tier 2 & Tier 3 Certification Test Gasolines 15 (Mar. 28, 2017).

[105] EPA cites the E-94-2 and E-94-3 studies in the proposed rule to suggest that GDI vehicles "may be more [ethanol] sensitive for PM" and that PM emissions may increase by "around 10%" with E15. 84 Fed. Reg. at 10,598–99. These studies tested E0 and E10 blends in Tier 2 vehicles, so EPA may not draw any conclusions about Tier 3 vehicles or higher ethanol blends based on these studies. Moreover, these studies failed to adequately control for aromatic variation in the test fuels, so the derived ethanol effect may be the result of confounding variables. *See* Clark et al., *supra* note 101, at 48 ("Noting the sensitivity of ethanol blend properties to aromatic content and makeup, it is likely that the variables in the [E-94] study will identify correlation rather than cause, and that it will be difficult to assign results to real world fuel performance.").

Second, the EPAct study is erroneous even for the Tier 2 PFI vehicles it attempts to model. The EPAct study is premised on the notion that accurate fuel effect models can be derived using unrealistic test fuels designed to have T50, T90, ethanol, aromatics, and Reid Vapor Pressure properties arbitrarily matched at extreme levels.[106] The EPAct study's match-blending approach led to uncontrolled differences in the test fuels that biased the results against ethanol. In particular, EPA's attempt to match T50 across pre-determined ethanol, RVP, aromatics, and T90 levels required blending gymnastics that "distort[ed] the expected distillation curve" of the ethanol blended test fuels and that contradicted how refiners blend fuels in the market.[107] This distortion is apparent in the elevated upper distillation temperatures of the EPAct study's ethanol-blended test fuels.[108] Indeed, the T70 temperature of the ethanol-blended test fuels was so elevated that two out of nine E10 test fuels, two out of three E15 test fuels, and three out of seven E20 test fuels had T70 temperatures that were in excess of the highest T70 value reported by the Auto Alliance survey in 2006 (270°F), the survey data relied on by EPA to design the EPAct study.[109] By contrast, not a single E0 test fuel had elevated T70 temperatures. (If anything, the T70 temperature of the E0 test fuels is actually depressed.)[110] This is important, because "[h]igher T60, T70, and T80 values will likely have an adverse impact in tailpipe emissions,"[111] and the EPAct study omitted T70 from the parameters it studied. Indeed, a statistical analysis of

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[106] T50 and T90 are the temperatures at which 50% and 90% of a fuel's volume vaporizes. Reid Vapor Pressure is a measure of the fuel's tendency to vaporize at 100°F.

[107] Clark et al., *supra* note 101, at 81.

[108] *See* State of Kansas et al., Request for Correction re EPAct/V2/E-89 Fuel Effects Study and Motor Vehicle Emissions Simulator Model (MOVES2014), RFC # 17001, at 38 (Jan. 19, 2017) (RFC # 17001), *available at* https://www.epa.gov/quality/epa-information-quality-guidelines-requests-correction-and-requests-reconsideration#17001; *see also* ASTM D4818-16e ("high levels of certain blending components (such as reformate) can cause the distillation curve to have a hump between the 50 % and 90 % evaporated temperatures that is centered at the 70 % evaporated temperature.").

[109] RFC # 17001, *supra* note 108, at 38. T70 is the temperature at which 70% of a fuel's volume vaporizes.

[110] Steven VanderGriend, Ethanol's Emission Effects in MOVES2014 39 (Mar. 2018), https://www.epa.gov/moves/march-2018-moves-model-review-work-group-meeting-materials.

[111] *See* Anderson et al., *supra* note 83, at 1031.

the EPAct study's data showed that T70 adversely affected PM emissions, and concluded that, contrary to the model's predictions, "if T70 is added to the Bag 1 [cold-start] EPAct model and used in EPA's MOVES2014 emission inventory model, increased ethanol levels beyond E10 are predicted to reduce PM from on-road motor vehicles in the U.S."—the opposite of the modeled results.[112]

As a result of EPA's flawed match-blending design, the EPAct study's fuel effects model makes non-sensical predictions. One striking example is the EPAct model's $T50^2$ term. The $T50^2$ aims to capture non-linear changes in emissions as T50 increases or decreases.[113] The model term's coefficients predict that all other things being equal, Bag 1 PM emissions *increase* when T50 temperatures fall below 185°F.[114] That prediction is contradicted by fundamental combustion chemistry. Reducing the boiling point of the fuel's hydrocarbons can only reduce PM emissions.[115] The model's $T50^2$ effect is instead likely attributable to the EPAct study's uncontrolled T70: significantly, the test fuels designed to have a T50 below 190°F had disproportionately elevated T70 temperatures.[116] This can be verified by calculating the fuels' deviation from a linear distillation profile at T70—what ASTM labels the T70 "bump."[117] Test fuels with T50 design temperatures at or above 190°F had depressed T70 temperatures compared to a linear distillation profile. By contrast, test fuels with T50 design temperatures below 190°F had significantly elevated T70 temperatures compared to a linear distillation profile.

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[112] Thomas L. Darlington et al., *Analysis of EPAct Emission Data Using T70 as an Additional Predictor of PM Emissions from Tier 2 Gasoline Vehicles*, SAE Technical Paper 2016-01-0996, at 1.

[113] Anderson et al., *supra* note 83, at 1035.

[114] *Id.*

[115] *Id.*

[116] https://www.epa.gov/sites/production/files/2016-05/epact-v2-e89-fuel-properties-dha.xlsx.

[117] T70 Bump = T70 – (T50 +T90 /2). ASTM D4818-16e, X1.12.5, at 16.

Low T50 Fuels (>190°F)		High T50 Fuels (≤190°F)	
Fuel No.	**T70 "Bump" (°F)**	**Fuel No.**	**T70 "Bump" (°F)**
1	-0.4	2	-16.7
12	29.1	3	-13.2
20	4.1	4	-9.7
21	18.9	5	-10.1
22	3.6	6	3.3
23	20.5	7	-17.1
24	14.5	8	-15.8
25	29.2	9	-7.0
26	27.5	10	11.7
30	28.9	11	7.5
31	25.3	13	-10.4
Average	18.3	Average	-7.0

This correlation was largely due to the EPAct study's attempt to match T50 and T90. Test fuels with a T50 design temperature below 190°F and a high or intermediate T90 temperature had extreme non-linearities centered around T70, with the upper distillation profile of these test fuels resembling a "dumbbell." This resulted in impaired driveability and higher emissions from those fuels.[118] The EPAct study misattributes these unaccounted-for differences in distillation profiles to the effect of T50.[2]

Low T50 (>190°F) & High or Intermediate T90 (≤325°F) Fuels							
Fuel No.	12	23	24	25	26	30	31
T70 "Bump" (°F)	29.1	20.5	14.5	29.2	27.5	28.9	25.3

EPA has rejected criticisms that the EPAct study's model suffers from confounding bias for two reasons. Both are flawed. First, EPA argues that "T70 was not a design parameter and has uncontrolled correlations with other fuel parameters also being included

[118] "Vehicle testing has shown" that driveability is degraded for fuels with a T70 bump in excess of "22°F." ASTM D4818-16e, X1.12.5, at 16. By this standard, five out of seven test fuels with a low T50 and intermediate or high T90 had impaired driveability.

in the models."[119] But that is precisely the problem. T70 temperature is uncontrolled, even though T70 is correlated with higher ethanol content and low T50 in the EPAct study. Second, EPA disputes that "T70 is a more important predictor of PM emissions" than T90. But nobody makes that assertion. Instead, the assertion is that gasoline blendstocks with a higher T70 temperature, much like blendstocks with a higher T90 temperature, have higher PM emissions, because hydrocarbons that boil at higher temperatures contribute more to PM.[120] The T70 and T90 effects are not wholly dependent on one another. EPA cannot dispute this scientific reality, and it cannot rebut the evidence that the elevated upper distillation temperatures of the EPAct study's gasoline-ethanol test fuels biased the emission results against ethanol blends.

b. The EPAct study reports similar exhaust emissions effects for E20 and the E10 certification fuel.

Even according to the EPAct study's flawed fuel effects model, E20 and E10 have substantially similar exhaust emissions.

For instance, the E10 certification fuel and the splash-blended E20 fuel used in the 2018 UCR study had the following fuel properties of relevance to the EPAct model:

	Fuel properties used in analysis				
Fuel	Ethanol vol (%)	Aromatics vol (%)	RVP (psi)	T50 (°F)	T90 (°F)
Baseline: E10 certification fuel	9.98	21.4	8.97	188.6	317.5
E20 (splash)	19.61	19.1	8.59	161.2	311

For these fuel properties, the EPAct model predicts the following changes in carbon monoxide (CO), NMOG, NO_X, and PM emissions:

[119] EPA Response to RFC # 17001, at 52

[120] Anderson et al., *supra* note 83, at 1035 ("Higher T60, T70, and T80 values will likely have an adverse impact on tailpipe emissions . . . even though T50 and T90 are the same.").

	E20 compared to baseline E10 (EPAct Model)			
Fuel	CO (%)	NMOG (%)	NO_X (%)	PM (%)
Bag 1	-2.1	5.8	2.5	9.2
Bag 2	-6.5	-1.8	6.9	6.6

Although the EPAct model predicts increased NMOG, NO_X and PM emissions with a splash-blended E20, these changes would not cause light-duty vehicles to exceed their emission standards and are therefore "within the scope of what [EPA has] determined to be sub sim in [its] prior sub sim interpretative rulemakings."[121]

It is important to consider that, as discussed above, the EPAct model is biased against ethanol blends, so these predictions are inaccurate. For example, the predicted increase in NMOG and Bag 1 PM emissions is due to the model's nonsensical $T50^2$ term. If that nonsensical term is "turned off," the EPAct model predicts the following more favorable results:

	E20 compared to baseline E10[122]			
Fuel	CO (%)	NMOG (%)	NO_X (%)	PM (%)
Bag 1	-9.3	-5.0	2.5	-4.4
Bag 2	-6.5	-9.0	6.9	6.6

Thus, simply eliminating the erroneous $T50^2$ term shows that E20 would reduce NMOG and would have little or no effect on PM emissions.

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[121] Proposed Rule, 84 Fed. Reg. at 10,599; *see* E15 Partial Waiver, 76 Fed. Reg. at 4673 (showing manufacturer compliance margins exceeding 50% on average for model year 2001 to 2006 vehicles).

[122] The CO, NO_X and PM Bag 2 models do not have a $T50^2$ term.

C. E20 and E10 Have Substantially Similar Evaporative Emissions.

The available data show that E20 and E10 have "substantially similar" evaporative emissions. At least three major evaporative emission studies, including one co-sponsored by EPA, tested E10 and E20 blends in Tier 2 and pre-Tier 2 vehicles.[123] These studies did not show any "discernible worsening" of permeation emissions when E10 is compared to fuels with "higher ethanol concentrations" like E20.[124] There is even less reason to expect that Tier 3 vehicles will increase evaporative emissions with increased ethanol content: Unlike vehicle models tested in prior evaporative emissions studies, which were aged with E0 or E10 mileage accumulation fuels to comply with certification standards, Tier 3 vehicles must be aged on an E15 mileage accumulation fuel to comply with evaporative emissions durability requirements.[125]

Other vehicle evaporative emissions are caused by the RVP of the fuel, not ethanol content.[126] As a study sponsored by the American Petroleum Institute concluded, "the vapor pressure [of gasoline] is greatest when the concentration of ethanol in gasoline is 10% by volume."[127] Adding ethanol to the same gasoline blendstock *reduces* the RVP of the fuel, thereby reducing evaporative emissions.

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[123] Harold M. Haskew et al., *Fuel Permeation from Automotive Systems: E0, E6, E10, E20, and E85*, Final Report, CRC Project No. E-65-3, at 3 (2006); Harold M. Haskew et al., *Enhanced Evaporative Emissions Vehicles*, CRC Project No. E-77-2 (2010); Harold M. Haskew et al., *Evaporative Emissions from In-Use Vehicles: Test Fleet Expansion*, CRC Project No. E-77-2b, Final Report, EPA-420-R-10-025 (2010); *see also* Harold M. Haskew et al., *Study to Determine Evaporative Emission Breakdown, Including Permeation Effects and Diurnal Emissions Using E20 Fuels on Aging Enhanced Evaporative Emissions Certified Vehicles*, CRC Project No. E-77-2c, Final Report, at 19 (2010) (aggregating results from the E-77 test program and finding that permeation was "lower with E20 compared to E10" in Tier 1 vehicles and not "markedly different" for Tier 2 vehicles).

[124] Proposed Rule, 84 Fed. Reg. at 10,599.

[125] *Id.* at 10,599.

[126] *Id.* ("Refueling, diurnal, and running loss evaporative emissions increase as fuel volatility increases, with gasoline with an RVP of 10.0 psi producing significantly more vapor for the evaporative emission control system to capture and purge through the engine than gasoline with an RVP of 9.0 psi.").

[127] API, Determination of the Potential Property Ranges of Mid-Level Ethanol Blends at 9 (2010), https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-0018.

D. E20 and E10 Have Substantially Similar Materials Compatibility.

EPA considers "[m]aterials compatibility" to be a "key factor in considering what fuels or fuel additives are sub sim to certification fuel, insofar as poor materials compatibility can lead to serious exhaust and evaporative emission compliance problems . . . over the full useful life of vehicles and engines."[128]

The available data show that E20 would not adversely affect vehicle emissions over their full useful life.

An extensive catalyst durability study by the Department of Energy found no long-term adverse effect on exhaust emissions in Tier 2 and pre-Tier 2 vehicles aged with E10, E15, and E20 blends compared to vehicles aged with E0.[129] As EPA has noted, the results of this study "provide compelling support for the conclusion that long-term use of E15 will not cause or contribute to" vehicles exceeding exhaust emission standards over their full useful lives.[130] But the results are equally compelling for E20.

DOE's catalyst durability program suggests that Tier 2 and pre-Tier 2 vehicles' electronic control modules adapt to E20: over two years of testing, none of the 86 vehicles tested had any fuel-related check-engine light incidents when operating with E20.[131] A follow-up DOE study tested 22 Tier 2 and pre-Tier 2 vehicles to estimate the rate of fuel-related check-engine lights incidents in those vehicle models. At worst, the study estimated that the incidence rate "for the 22 models studied was 662 [out of every million vehicles] using E15 and 2083 [out of every million vehicles] using E20, or 0.066% and 0.21% respectively."[132] The higher incidence rate for E20 was largely driven by a single vehicle

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[128] *Id.* at 10,600.

[129] DOE Catalyst Durability Program, *supra* note 63, at 3-13

[130] 2011 E15 Partial Waiver, 76 Fed. Reg. at 4671.

[131] C. Scott Sluder et al., *Investigating Malfunction Indicator Light Illumination Due to Increased Oxygenate Use in Gasoline*, 5 SAE Int. J. Fuels Lubr. 1360, 1361 (2012) ("The DOE-sponsored Intermediate Ethanol Blends Emissions Control Durability testing program tested 86 vehicles using fuels containing up to 20% ethanol by volume. No MILs associated with fuel trim levels were experienced during the program.").

[132] *Id.* at 1369.

(vehicle 11), which was predicted to have an incidence rate of 1% per million vehicles in a worst-case scenario; other vehicle models were predicted to have incident rates close to or below 0.1% in a worst-case scenario, or essentially zero.[133] The low risk of check-engine light incidents with E20 supports a conclusion that E20 is "substantially similar" to E10 certification fuel.

The UNC study also supports the conclusion that E20 will not substantially increase the rate of vehicle check-engine light incidents. The study found that all five tested vehicles successfully adapted to the higher-ethanol fuel.[134] "No malfunction indicator light was triggered" in any of the vehicles.[135] All five vehicles maintained an air-fuel ratio that was "very close to the theoretical stoichiometric" ratio for each fuel, suggesting that all vehicles adjusted well to E27.[136]

E20 will not lead to long-term adverse effects on evaporative emissions control systems. In the E15 partial waiver decisions, EPA concluded that E15 would have no long-term effect on evaporative emission control systems, because "auto manufacturers have been required to age vehicles on E10 for evaporative emissions durability testing since MY 2004."[137] At least since model year 2014, auto manufacturers have been using an E15 service accumulation fuel to comply with evaporative emissions durability requirements.[138] Just as the use of E10 supported a conclusion that E15—a fuel with 50% more ethanol—would have no long-term effects on evaporative emissions, so to, does the use of E15 as a mileage

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[133] *Id.* E10 was predicted to cause check-engine light incidents in some small number of vehicles. In a worst-case scenario for vehicle model 11, the study predicted that 3,500 vehicles out of every million would experience check-engine light incidents operating on E10. *Id.* at 1368.

[134] Yuan et al., *supra* note 60, at 357.

[135] *Id.*

[136] *Id.* at 358.

[137] Proposed Rule, 84 Fed. Reg. at 10,599.

[138] *Id.* at 10,600 ("Auto manufacturers have used E15 for service accumulation for evaporative durability testing since at least MY2014. This means that many Tier 2 certified vehicles since MY2014 and all Tier 3 certified vehicles have been aged on E15 and have been designed with materials capable of handling E15 for extended periods of time.").

accumulation fuel support the conclusion that E20—a fuel with only 33.3% more ethanol—will not lead to long-term adverse effects on evaporative emissions.[139]

E. E20 and E10 Have Substantially Similar Driveability.

EPA considers "whether fuels or fuel additives have an adverse effect on driveability relative to certification fuel to define what is substantially similar."[140]

The driveability characteristics of E20 and E10 blends are substantially similar. In 2010, the American Petroleum Institute (API) sponsored a study to examine "the fuel property impacts resulting from the blending of ethanol in motor gasoline at concentrations within the range of 10 to 30% by volume."[141] The API blending study used "71 ethanol-free gasoline samples representing six ASTM volatility classes."[142] The fuels were "blended with denatured fuel ethanol" and measured for "dry vapor pressure equivalent [RVP], distillation [temperature], temperature for a vapor-liquid ratio of 20 (TV/L=20)[,] and octane number."[143] These fuel characteristics are used by ASTM to set gasoline specifications that ensure adequate vehicle performance—driveability.[144] The study concluded that "blending ethanol into gasoline at concentrations between 10% and 30% should pose no additional

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[139] In 2012, the Coordinating Research Council published the results of an evaporative emissions durability study that aged nine vehicles (model years ranging from 2002 to 2010) with E0 and E20. Keith Vertin et al., *Evaporative Emissions Durability Testing*, CRC Project No. E-91, at 4 (2012). Two out of nine vehicles aged on E20 had "a pronounced increase in evaporative emissions following E20 fuel exposure." *Id.* at 81. But despite this increase in emissions, "[e]vaporative emissions from all of the vehicles were below the federal certification standards." *Id.* at 3. And in any event, none of these vehicles used E15 as a mileage accumulation fuel.

[140] Proposed Rule, 84 Fed. Reg. at 10,601.

[141] API, Determination of the Potential Property Ranges of Mid-Level Ethanol Blends at 3 (2010), https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-0018.

[142] *Id.* at 1.

[143] *Id.*

[144] "Driveability describes how an engine starts, warms up, and runs. It is the assessment of a vehicle's response to the use of its accelerator relative to what a driver expects. Driveability problems include hard starting, backfiring, rough idling, poor throttle response, and stalling (at idle, under load, or when decelerating)." Chevron, Motor Gasolines Technical Review at 1 (2009).

challenge to meeting the volatility requirements in the current ASTM D4814-9b specifications."[145] The API ethanol blending study made the following specific findings:

- **RVP.** "For the ethanol blend levels tested, the vapor pressure is greatest when the concentration of ethanol in gasoline is 10% by volume."[146]
- **Distillation.** E20 differed from E10 only for "mid-range volatility," represented by T50 temperature.[147] This difference would pose no difficulty in meeting the minimum ASTM distillation requirement applicable to E10.[148]
- **Vapor-Liquid Ratio. "**[M]ixing ethanol and gasoline at a concentration of 10% by volume significantly depresses the temperature for a vapor-liquid ratio of 20 (TV/L=20). Additions of higher levels of ethanol generally result in either no change or a slight increase in the TV/L=20 over the range of ethanol concentrations and base gasoline samples analyzed in this study. Blending ethanol in gasoline at concentrations between 10 and 30% by volume should not pose a problem for meeting ASTM D4814-9b minimum vapor lock protection specifications."[149]
- **Octane.** Octane and sensitivity increase with higher concentrations of ethanol. The increase in octane is "relatively constant for ethanol blend concentrations ranging from zero up to about 20% by volume but may decline slightly at higher levels."[150]

These findings confirm that E20 should pose no challenge to meeting industry driveability requirements.

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[145] The study concluded that for certain volatility classes of gasoline, the T50 specification for E15 and higher ethanol blends would need to be adjusted down to 150°F, just as with E10. API, *supra* note 141, at 1, 18.

[146] *Id.* at 9.

[147] 18–21. The range of measured T50 for E10 fuels was 153°F to 226°F, while for E20 it was 157°F to 167°F. *Id.* at 21, Table 6.

[148] *Id.*

[149] *Id.* at 21.

[150] *Id.*

V. EPA'S "PREFERRED APPROACH" IS UNLAWFUL, BECAUSE THE 2011 SUB-SIM WAIVER CONDITIONS DO NOT APPLY TO A SUB-SIM FUEL.

EPA's "preferred approach" would retain "the waiver conditions put in place for E15," which "set the maximum RVP level at 9.0 psi."[151] EPA would exempt certain ethanol blenders from these conditions by clarifying that they are excepted from the class of "fuel manufacturers" that must comply with the waiver conditions. EPA's preferred approach is unlawful because even under EPA's flawed interpretation of the sub-sim statute, E15 is substantially similar to E10 certification fuel.[152] And as these comments explain, any gasoline blend with up to 49% ethanol is compliant with the sub-sim law.

Fuels that are "substantially similar" to a certification fuel do not need a sub-sim waiver. It follows that fuel manufacturers that sell E15 are no longer bound by the E15 sub-sim waiver conditions.[153] Thus, EPA's preferred approach is inconsistent with the law.

EPA preferred approach is also bad policy. Under EPA's preferred approach, "if a refiner or importer were to choose to blend E15, including but not limited to blending at a co-located terminal or at a terminal downstream of a refinery operated by the refiner or importer, they would not be able to use the 1-psi waiver."[154] Subjecting refiners to a more stringent RVP standard for E15 is unfair, inefficient, and bad for the environment. It is unfair because it places refiners at an economic disadvantage. It is inefficient because it hampers the sale of E15 and causes unnecessary rigidities in the structure of the market. And it is bad for the environment because it will incentivize refiners to continue blending E10 with a 1 psi RVP waiver, the most volatile gasoline-ethanol blend. EPA should finalize a revised definition of "substantially similar" that embraces E15 and higher ethanol blends and eliminates the outdated sub-sim waiver conditions.

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[151] Proposed Rule, 84 Fed. Reg. at 10,587.

[152] *See id.* at 10,598–602.

[153] *Id.* at 10,596 ("This proposed interpretative rule would, if finalized, make it lawful for refiners and importers (e.g., fuel manufacturers as described in 40 CFR 79.2(d) discussed above) to make and introduce into commerce E15 at 10.0 psi RVP without the use of the E15 partial waivers since we would now interpret E15 as sub sim to Tier 3 E10 certification fuel.").

[154] *Id.* at 10,594.

VI. EPA SHOULD NOT COMPARE THE CERTIFICATION FUEL TO 10 PSI E15 MARKET FUEL.

In the proposed rule, EPA asks whether it should compare "E15 at 10.0 psi to Tier 3 E10 certification fuel at 9.0 psi to evaluate differences in evaporative emissions."[155] EPA alternatively proposes to "compare E15 at 9.0 psi, the fuel without a 1-psi waiver under CAA sec. 211(h)(4), to Tier 3 E10 certification fuel at 9.0 psi."[156]

EPA should not compare the certification fuel to 10 psi E15. This would be comparing apples and oranges. The RVP of market fuels varies widely across different geographical locations and seasons to meet different economic, performance-related, and environmental goals, and there is no reason to pick a particular market fuel volatility level—let alone the highest RVP level permitted during the summer season—for purposes of defining "substantially similar." RVP is controlled under § 211(h), not the sub-sim statute, § 211(f). That is why EPA has never defined "substantially similar" to mandate a precise RVP specification for market fuel.[157] Instead, EPA has always allowed gasoline to be sold as long as its RVP meets any one of ASTM's gasoline volatility standards.[158] For decades, refiners have sold gasoline with an RVP in excess of 9 psi during the winter.[159] These high-

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[155] Proposed Rule, 84 Fed. Reg. at 10,599. EPA alternatively proposes to "compare E15 at 9.0 psi, the fuel without a 1-psi waiver under CAA sec. 211(h)(4), to Tier 3 E10 certification fuel at 9.0 psi."

[156] *Id.*

[157] *Id.* at 10,600 ("[W]e have not generally considered the expected increase in RVP resulting from the addition of [ethanol] when determining whether a fuel is sub sim to gasoline certification fuel.").

[158] *Id.* at 10,599 n.118 ("Historically, we have defined sub sim with regards to volatility as being anything within the general ASTM specifications for volatility for any location and time of year."); *id.* at 10,600 ("Historically, the primary purpose of the requirement under the definition of substantially similar that gasoline must meet a volatility class under the ASTM specification for gasoline was to ensure that the fuel was physically and chemically similar to gasoline as to be used in a gasoline-fueled motor vehicle. For example, in the 1980 sub sim interpretative rulemaking, we allowed gasoline-ethanol blends containing up to 2.0 weight percent oxygen (about 5.5 volume percent ethanol); such fuel would experience a similar 1-psi increase to E10 or E15 if produced using the same base gasoline. Even during 1980, certification fuel used for gasoline-fueled motor vehicles was expected to have an RVP of 9.0 psi. Therefore, we have not generally considered the expected increase in RVP resulting from the addition of [ethanol] when determining whether a fuel is sub sim to gasoline certification fuel.").

[159] Class E fuels, for sale during the winter months, have a maximum RVP of 15 psi. ASTM D4818-16e, Table 1, at 2, Table 4, at 6–7.

RVP fuels have always been considered "substantially similar" to the 9 psi indolene test fuel as long as they meet ASTM's RVP requirements for winter gasoline.[160] There is no reason for EPA to depart from that traditional approach here. Instead of comparing 10 psi E15 to the E10 certification fuel, EPA should follow its historical practice of defining a market fuel as "substantially similar" to certification fuel as long as the market fuel complies with at least one of ASTM's seasonal and geographic volatility standards.

Even if a comparison to "a specific RVP level" in market fuel were "appropriate," the more sensible apples-to-apples comparison would be a splash-blended fuel created by adding ethanol to the E10 certification fuel, similar to EPA's proposed alternative of comparing 9 psi E15 fuel to the E10 certification fuel.[161] EPA "expect[s] any E15 introduced into the market to displace E10 that is already sold and that carriers the 1-psi waiver in convention gasoline areas."[162] E15 will be made "from the same" gasoline blendstock as E10, and it will reduce the RVP of market fuels.[163] Splash blending five percent ethanol into the E10 certification fuel would lower the certification fuel's RVP below 9 psi.[164] Thus, the reasonable conclusion is that E15 would reduce evaporative emissions compared to the E10 certification fuel.

VII. CONCLUSION

EPA should recognize in its final rule that the sub-sim law no longer controls the concentration of ethanol in gasoline because ethanol is a fuel additive utilized in certification. Under this approach, all gasoline-ethanol blends qualify for the 1 psi RVP waiver, and the sub-sim law poses no bar to the sale of any gasoline-ethanol blends.

Even assuming, for the sake of argument, that the sub-sim law still controls the concentration of ethanol in gasoline (and for the reasons discussed above, it does not), at a

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[160] Proposed Rule, 84 Fed. Reg. at 10,599 n.118.

[161] *Id.* at 10,600.

[162] *Id.* at 10,603.

[163] *Id.*

[164] *Id.* at 10,603 ("E15 is expected to lower the volatility of in-use gasoline by as much as 0.1 psi.").

very minimum the data shows that E20 is substantially similar to the E10 certification fuel. EPA must not restrict its "substantially similar" definition to E15 blends.