



July 20, 2009

VIA ELECTRONIC FILING/E-DOCKET

U.S. Environmental Protection Agency
EPA Docket Center
Mailcode 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attn: Docket No. EPA-HQ-OAR-2009-0211

Re: Comments of the Renewable Fuels Association on the Notice of Receipt of a Clean Air Act Waiver Application to Increase the Allowable Ethanol Content of Gasoline to 15 Percent, 74 Fed. Reg. 18,228 (Apr. 21, 2009)

Dear Sir or Madam:

The Renewable Fuels Association (RFA) submits these comments on the Notice of Receipt of a Clean Air Act Waiver Application to Increase the Allowable Ethanol Content of Gasoline to 15 Percent, 74 Fed. Reg. 18,228 (Apr. 21, 2009).

RFA is the leading trade association for America's ethanol industry. Its mission is to advance the development, production, and use of ethanol fuel by strengthening America's ethanol industry and raising awareness about the benefits of renewable fuels. Founded in 1981, RFA represents the majority of the U.S. ethanol industry and serves as the premier meeting ground for industry leaders and supporters. RFA's 300-plus members are working to help America become cleaner, safer, more energy independent and economically secure. Today's ethanol industry consists of 196 ethanol plants nationwide that have the capacity to produce approximately 12.6 billion gallons of high octane, clean burning motor fuel (as of June 16, 2009).

As the national trade association for the U.S. ethanol industry, RFA supports EPA action to increase the allowable amount of ethanol in gasoline in the United States. Increasing permissible levels of ethanol in gasoline is consistent with Congressional goals in establishing the renewable fuel standard (RFS) in the Energy Policy Act of 2005, and in expanding the RFS in the Energy Independence and Security Act of 2007 (EISA) to require 36 billion gallons of renewable fuel be used in the United States by 2022. Indeed, the RFS program is a vital part of the energy policy of this country as it moves toward less dependence on foreign oil and supports investment in advanced biofuels, such as cellulosic ethanol.

The corn ethanol industry has paved the way for advanced biofuels, and it is a necessary component to ensure continued investment in and development of an advanced biofuel industry. Allowing for additional ethanol blending will help to ensure that RFA members who are on the cutting edge of technology, can continue pursuing new processes, new energy sources, and new feedstocks to increase efficiency and reduce emissions and expand renewable fuel availability and use. Our members include the first company to start building a commercial-scale cellulosic ethanol biorefinery in the United States.

Ultimately, allowing mid-level blends, will be an important part of meeting the RFS volume requirements under the EISA, and EPA should move expeditiously to approve the waiver request or otherwise allow increased use of ethanol in gasoline.

The following points summarize our comments below:

- While the request contains substantial data supporting a waiver, there is additional data that supports a grant of a waiver for use of up to E15 blends in motor vehicles and motor vehicle engines. In addition, there are many ongoing projects researching the effects of E15 and E20, which should be available prior to the time EPA is required to respond to the waiver application. RFA strongly suggests that EPA consider all new information in support of higher level ethanol blended fuels as it becomes available.
- EPA's review of the waiver request should be limited to the requirements for granting a waiver under Section 211(f)(4), specifically whether mid-level blends to be approved are compatible with emissions controls.
- If necessary, EPA has authority to limit a Section 211(f)(4) waiver to motor vehicles and motor vehicle engines. Appropriate labeling and public education would guard against misfueling in nonroad vehicles and nonroad engines.
- Section 211(f) authorizes use of E12 regardless of EPA's determination on E15, and EPA should affirm in any final action that such blends are authorized.

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RFA appreciates the opportunity to submit the attached comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Dinneen", with a long horizontal stroke extending to the right.

Bob Dinneen
President and CEO

Attachments

**Comments of the Renewable Fuels Association
on the Notice of Receipt of a Clean Air Act Waiver Application to Increase
the Allowable Ethanol Content of Gasoline to 15 Percent**

74 Fed. Reg. 18,228 (Apr. 21, 2009)

EPA Docket No. EPA-HQ-OAR-2009-0211

Dated: July 20, 2009

I. Available Data Supports Granting a Waiver Under Section 211(f)(4) for Ethanol Blends Up to 15 Percent (“E15”).

A. The waiver request includes substantial data to support a finding that E15 “will not cause or contribute to a failure of any emission control device or system” for motor vehicles and motor vehicle engines.

Section 211(f) generally prohibits any new fuel or fuel additive for use, or increased use of a fuel or fuel additive, by any person in motor vehicles manufactured after model year 1974 which is not substantially similar to any fuel or fuel additive utilized in the certification of any model year 1975 or subsequent model year, motor vehicle or motor vehicle engine. 42 U.S.C. § 7545(f)(1). Section 211(f)(4) authorizes EPA to waive this prohibition if the Administrator determines an applicant establishes that such fuel or fuel additive and the emission products of such fuel or fuel additive:

will not cause or contribute to a failure of any emission control device or system (over the useful life of the motor vehicle, motor vehicle engine, nonroad engine or nonroad vehicle in which such device or system is used) to achieve compliance by the vehicle or engine with the emission standards with respect to which it has been certified.

Id. at § 7545(f)(4). Pursuant to this provision, on March 6, 2009, Growth Energy submitted an application for a waiver (hereafter “waiver request” or “waiver application”) to blend ethanol with gasoline up to 15% by volume (*i.e.*, E15). In making a waiver determination, EPA has indicated that it will evaluate data on exhaust emissions, evaporative emissions, and durability issues (materials compatibility and driveability or operability). The waiver request provides data to address each of these categories for E15 use. Based on this data, EPA is therefore required to determine solely the fuel or fuel additive’s effects on applicable vehicle or engine emission standards -- that is, whether E15 use will cause the emissions controls of a vehicle to fail to comply with applicable emission standards and if the Administrator believes that E15 will not prevent compliance with applicable emission standards, the waiver must be granted.¹ *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1058 (D.C. Cir. 1995) (“ . . . 42 U.S.C. § 7545(f)(4), is specific and

¹ “EPA believes that harm to emission control devices or systems which adversely affects vehicle performance, such that removal or rendering inoperative of such devices or systems may be reasonably expected, should be considered a basis under section 211(f)(4) for denying a waiver. Where the potential for such harm is evidenced, the applicant has the burden of proving that such harm will not occur.” 43 Fed. Reg. 24,131, 24,132 (June 2, 1978). No such harm has been shown for E15.

definite; it does not permit the Administrator to consider other factors ‘in the public interest.’”). *See also Motor Vehicle Mfrs. Ass’n of U.S. v. EPA*, 768 F.2d 385, 390 (D.C. Cir. 1985) (affirming EPA’s view that Section 211(f)(4) does not require no increases in emissions).²

In making a determination under Section 211(f)(4), EPA is not required to have perfect information. It can make a determination to grant a waiver application, even if additional testing may be helpful. *Ethyl Corp.*, 51 F.3d at 1059 (“Congress’s use of the word ‘may’ refers . . . to the Agency’s general discretion in evaluating scientific data.”). *See also NRDC v. EPA*, 529 F.3d 1077, 1086 (D.C. Cir. 2008) (citation omitted) (“We generally defer to an agency’s decision to proceed on the basis of imperfect scientific information, rather than to invest the resources to conduct the perfect study.”).

In this case, the waiver application provides substantial information to support a waiver for E15 and as discussed further below, additional available information only provides more support for allowing mid-level blends up to E15.

Specifically, the recent Department of Energy Study on E15 and E20, cited in the waiver application, concluded that “[r]egulated tailpipe emissions remained largely unaffected by the ethanol content of the fuel.” Oak Ridge National Laboratory, *Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1*, at xvii (Oct. 2008) (EPA-HQ-OAR-2009-0211-0334). Additional studies cited by or submitted with the waiver request on blends greater than E15 similarly showed emission levels below applicable federal standards and even a *decrease* in tailpipe emissions of CO, average NO_x, and average total hydrocarbons. *See* Waiver Application, at 21 (citing Rochester Institute of Technology, *Report to the US Senate on E-20 Ethanol Research*, Oct. 2008) (EPA-HQ-OAR-2009-0211-0002.6). EPA has recognized that increased ethanol use may increase acetaldehyde, but that acetaldehyde emissions are currently about one-seventh the magnitude of benzene emissions from motor vehicles. 72 Fed. Reg. 8428, 8478 (Feb. 26, 2007). EPA, however, declined to regulate acetaldehyde emissions from motor vehicles pending further review, establishing a benzene only control standard for certification.³ *Id.* There is no question that ethanol use reduces benzene emissions from motor vehicles, because fuels blended with ethanol have less benzene content. *See, e.g.*, EPA Fact Sheet, *EPA Finalizes Regulations for a Renewable Fuel Standard (RFS) Program for 2007 and Beyond*, EPA420-F-07-019, at 2 (Apr. 2007).

Also as recognized by studies cited by the waiver application, testing confirmed no statistically significant increase in diurnal permeation rates between E6 and E20. Waiver Application, at 22-23 (citing Coordinating Research Council (“CRC”), *Fuel Permeation from Automotive Systems: E-0, E-6, E-10, E-20, and E-85* (CRC Report No. E-65-3), at 2 (Dec. 2006))⁴ (EPA-HQ-OAR-2009-0211-0002.6).⁵ In addition, as the studies cited by the waiver

² The waiver provision relates only to current emission standard requirements. *See* 44 Fed. Reg. 1447, 1447 n.5 (Jan. 5, 1979).

³ EPA also declined to directly regulate aromatics, finding increasing ethanol use will reduce such emissions. 72 Fed. Reg. at 8479.

⁴ This report is available at <http://www.crcao.com/reports/recentstudies2006/E-65-3/CRC%20E-65-3%20Final%20Report.pdf> and is attached to these comments.

⁵ Moreover, any changes in evaporative emissions may be controlled through adjustments in the volatility of the finished fuel.

request have found, E15 has not been found to have significant durability issues. See, e.g., Stockholm University, *et al.*, *Blending of Ethanol in Gasoline for Spark Ignition Engines: Problem Inventory and Evaporative Measurements*, at 4 (2004-2005) (“Stockholm Study”) (EPA-HQ-OAR-2009-0211-0002.12) (“The main conclusion from using ethanol-gasoline blends in practice is that blends with up to 15 percent ethanol will not have any significant negative effects on the wear of the engine or vehicle performance.”);⁶ David Kittelson, *et al.*, University of Minnesota, Department of Mechanical Engineering, *Demonstration and Driveability Project to Determine the Feasibility of Using E20 as a Motor Fuel*, Final Report submitted to Minnesota Department of Agriculture, at 4 (Oct. 19, 2007 (IR)) (“Minnesota Study”) (EPA-HQ-OAR-2009-0211-0002.25) (finding “no significant differences between paired E0 and E20 vehicles were observed in driveability, reliability, or fuel economy”).

B. Although not submitted with the waiver application, additional information supports a Section 211(f)(4) waiver for ethanol blends up to E15.

RFA submits the following data and citations that further support a waiver under Section 211(f)(4) for ethanol blends up to E15.

- **CRC Project No. E-65-3, Fuel Permeation from Automotive Systems: E0, E6, E10, E20 and E85, December 2006.** This report was follow on research to CRC Project No. E-65. E-65-3 added an E20 fuel examination in legacy vehicles. RFA was a participant in the development of the information presented in this report. Additional information of importance from this report indicates that the ethanol content fuels had a lower specific reactivity than the E0 fuels offsetting the increase in permeation and diurnal emissions. There were increased stabilized permeation rates for E20 when compared to E0 and/or E10 specifically. However, the diurnal permeation rates increased between fuels E6 and E20, and though measurable, were not statistically significant. The average specific reactivity for the E20 fuel permeate was 3.04 compared to 3.99 for E0.
- **CRC Report No. 648, 2006 Hot-Fuel-Handling Program, January 2007.** This research program concluded that under high ambient temperature conditions, too few driveability demerits were assigned in order to assess the effects of fuel volatility properties or ethanol content under hot ambient conditions. The final research program evaluated 23 late model, light duty vehicles and 4 older model vehicles screened for sensitivity from a larger fleet of 66 vehicles. The tested vehicles were selected to represent as wide a variety as possible of engines, makes, and models. The test fuels for this program included E0, E5, E10 and E20. Ultimately, this program showed too few driveability demerits to assess the effects, *i.e.*, performance was similar, regardless of the ethanol content. This conclusion suggests that no driveability concerns will be experienced by the consumer utilizing higher ethanol content fuels than today’s standard ethanol content of 10% under a hot ambient temperature range, nominally 105°F-115°F.

⁶ This study recognized potential wear issues found in studies done in Australia on E20, but noted that the observed issues may be linked to the sulfur content in that fuel, which was not considered in the reports, rather than increased ethanol content. Stockholm Study, at 89 (EPA-HQ-OAR-2009-0211-0002.27).

- CRC Report No. 652, 2008 CRC Cold-Start and Warm Up E85 and E15/20 Driveability Program, October 2008.** This program was originally designed as an E85/Flex-Fuel vehicle performance program. Upon request from the National Renewable Energy Laboratory, E15 and E20 fuels were included in the fuel matrix of this test program. As an addendum to the program, there is E15/E20 data included in this report. This program evaluated six 1981-2008 model year, light duty vehicles in the E15/E20 fuel evaluation. This fleet consisted of six conventional (non-flex-fuel) vehicles including two older vehicles. The vapor pressures for the E15 blends were 7.1 and 9.9 psi. The vapor pressure for the E20 blend was 7.1 psi. The vapor pressures for the two E0 gasolines were 5.9 and 8.1 psi. There was no significant effect of vapor pressure or fuel type on vehicle driveability. Average ambient temperature categories for this evaluation were 23°F, 33°F, and 47°F. E15/E20 driveability improved with increasing ambient temperature. The six-vehicle fleet consisted of various fuel-delivery system technologies including two older vehicles utilizing a feedback-control carburetor and a throttle-body-injection system. The remaining vehicles were equipped with port-fuel-injection fuel delivery systems. On average, the conventional vehicles generated higher total weighted demerits than the E85 flex-fuel vehicles on all fuels evaluated.
- University of Minnesota Center for Diesel Research, E20 Effects in Small Non-Road SI Engines – A Literature and Information Search, 15 January 2008.** This report is an extensive list of published literature and research focused on (oxygenated) ethanol blended fuels in small, non road, spark ignition engines. Included is a list of 34 published references. Most small engine manufacturers allow for the use of oxygenated fuels in their equipment, however most limit the fuels content not to exceed 10% ethanol content by volume. This equipment may be susceptible to leaner air/ a fuel ratio which in turn leads to increased exhaust temps and possible engine operational problems. This fuel engine enrichment condition paired with ethanol's higher latent heat of vaporization increases fuel ignition difficulties. Overall higher ethanol content fuel impact on small non road engine wear is ambiguous due to the little specific information publicly available.
- Minnesota State University, An Examination of Fuel Pumps and Sending Units During a 4000 Hour Endurance Test in E20, March 2009.** This report included the results of a testing program evaluating of the effects of E20 versus E10 and gasoline on fuel pumps and sending units. The study evaluated 24 fuel pumps and 9 sending units utilizing three different fuels subjected to a 4000 hour dynamic endurance test. No clear trends in pump performance between any of the fuels were found, fuel pump wear and failure were found in all fuels in different instances. Even though several sending units displayed greater surface corrosion on E20, this surface corrosion did not appear to affect the fuel senders' functionality.
- API E10+ Blending Study, results presented at the API/ USCAR Stakeholders meeting, June 3, 2009 USCAR Headquarters, Southfield, MI.** This API E10+ fuel volatility study was designed to further the understanding of the impact ethanol has on the base fuel volatility. There is a wealth of information on the volatility of E10 fuel blends and only recently much improved information on E85 fuel blends volatility from RFA and GM. This study goes further than previously available data and provides the

baseline for the volatility characteristics of 0, 10, 12.5, 15 and 20% ethanol fuel blends when the balance of the blend is varying seasonal unleaded gasolines. Laboratory data was collected on vapor pressure, distillation, and vapor lock protection characteristics of each fuel blend along with confirmation of the ethanol and gasoline content. The data will allow for more precise determination of the predictive volatility of the fuel blends spanning the range of ethanol content from 0 to 30%. Preliminary indications of the data show that ethanol's impact on gasoline volatility peaks at the 10% volume level, showing decreasing effects post 10% by volume. This is critical information for determining emission impacts due to volatility for new ethanol/ gasoline blends such as E15. Final plans for this research project include completing the octane measurements and a final report is expected to be published late summer 2009.

These studies shed further light on the use of blends higher than E10. For example, one concern that has been expressed by some vehicle manufacturers about higher level blends, such as E15 and E20, is that their use would result in a lean setting that could illuminate the Malfunction Indicator Light (MIL) commonly called the "check engine light." However, recent tests demonstrate this does not occur. In the fleet test program conducted by the University of Minnesota, 40 pairs of vehicles with 1 of each vehicle pair operating on E20 did not display such problems. The report's authors note:

Throughout the project, only two vehicles had a check-engine light illuminate. One was Vehicle License Number 911297, which ran on E20. The fuel pressure regulator failed; however, the shop manager does not believe this was due to the fuel being used. He indicated this is a common hardware failure for that specific make and model. The other vehicle was License Number 914209, which also ran on E20. It appears that mice had eaten the wiring around the Electronic Control Unit (ECU).

Minnesota Study, at 4, 10. These findings have been confirmed by other studies, which have failed to note any such failures. In a recent CRC study, a fleet of 23 late model and 4 older model vehicles were operated on fuels containing 0, 5, 10, and 20% ethanol.⁷ Tests were performed using CRC procedures and trained raters, which would have recorded if the MIL would have been illuminated. No illuminations of the MIL are noted in this work. Another CRC Project on six 1981-2007 conventional vehicles operating on blends of E15 and E20 indicates similar results.⁸ Again, there is no mention of MIL illumination problems during drive cycles in this report.

There are many ongoing projects researching the effects of E15 and E20 on vehicle engine, catalysts, Powertrain systems, fuel system damper, level sensors, and general material compatibility. Additional evidence of effects on vehicle emissions both exhaust and evaporative, are also currently underway. RFA strongly suggests that EPA consider all new information in

⁷ CRC, *2006 CRC Hot-Fuel-Handling Program, Final Report* (CRC Report No. 648), at iii (Jan. 2007), available at http://www.crcao.com/reports/recentstudies2007/CRC%20648/CRC_648_HFH_Final_Report%20adobe.pdf.

⁸ CRC, *2008 CRC Cold-Start and Warmup E85 and E15/E20 Driveability Program, Final Report* (CRC Report No. 652), at iii (Oct. 2008), available at <http://www.crcao.org/reports/recentstudies2008/652/CRC%20652.pdf>. CRC found, for E15/E20, that "[t]here was no significant effect of vapor pressure or fuel type on driveability." *Id.* at 3.

support of higher level ethanol blended fuels as it becomes available. EPA has recognized the Administrator may consider “all of the available information and data.” 44 Fed. Reg. 37,074, 37,074 n.4 (June 25, 1979).²

C. Section 211(f)(4) is limited to a determination regarding compatibility with emissions controls.

As noted above, the D.C. Circuit has made clear that EPA may not consider factors other than the “cause or contribute” factors in the statute in determining whether to grant a Section 211(f)(4) waiver. *Ethyl Corp. v. EPA*, 51 F.3d 1053 (D.C. Cir. 1995). While some stakeholders have raised concerns unrelated to the statutory factors (*e.g.*, fuel economy, warranty issues), such issues are not relevant to EPA’s determination and should not influence the response to the waiver request. Moreover, suggestions that certain constituents will increase or decrease in the exhaust stream due to the increase in ethanol content is not relevant unless it leads to a failure to meet the standards. This makes sense of course because any change to fuel formulation necessarily increases and decreases a variety of constituents as demonstrated through the models used by regulatory authorities to evaluate the range of gasolines that are currently on the market. The mere fact that a particular constituent will change is not relevant to the determination, however, unless it will cause a limit to be exceeded or the emission control devices to fail.¹⁰

We note that concerns have been raised that the widespread introduction of E10 is relatively recent and, thus, the potential impacts of its use are not well-known. RFA disputes this notion as ethanol blends of up to 10% have been in use in the United States since at least the early 1980s, and both EPA and Congress have repeatedly recognized the environmental benefits of ethanol use. In addition, Brazil has used ethanol blends greater than E10 for decades. Indeed, since at least 1975, the Brazilian government has made it mandatory to blend ethanol with gasoline, fluctuating between 20% to 22%.¹¹ In 2007, the mandate was set at E25.¹² Widespread use of ethanol blends of E10 and higher, therefore, are not a recent phenomenon, and much is known about their use in motor vehicles. For example, the Brazilian experience has indicated that the catalyst formulations developed for conventional U.S. vehicles will likely work in a higher ethanol blend environment, providing the necessary conditions exist (*e.g.*, temperature),

² To the extent EPA determines there is insufficient evidence to support a waiver for E15, EPA has recognized that a subsequent request may be submitted based on additional information. 43 Fed. Reg. 41,424, 41,424 (Sept. 18, 1978); 44 Fed. Reg. at 1449.

¹⁰ This also makes sense because EPA, under Section 211(c), is given authority to regulate fuels and fuel additives based on determinations of endangerment to public health or welfare. 42 U.S.C. § 7545(c). Under that section, EPA may make a determination that certain increases in emissions may be tolerable given the substantial decreases in other emissions. With respect to ethanol, for example, the substantial reduction in greenhouse gases, carbon monoxide, benzene emissions and aromatics far outweigh potential increases in other emissions.

¹¹ Don Hofstrand, co-director AgMRC, Iowa State University Extension, *Brazil's ethanol industry -- part two*, AgDM Newsletter February, 2009, available at <http://www.extension.iastate.edu/agdm/articles/hof/HofFeb09.html>.

¹² *Id.* These blends have been used in conventional vehicles, which may have required some modifications. While E100 vehicles were available in the market since at least 1979, flexible fuel cars were not introduced in Brazil until around 2003. *Id.*; William Lemos, *Brazil's burgeoning sales of flexible-fuel vehicles has juiced up ethanol demand, and consumption has risen to record highs*, Nov. 12, 2007, available at <http://www.icis.com/Articles/2007/11/12/9077311/brazils-flex-fuel-car-production-rises-boosting-ethanol-consumption-to-record-highs.html>. Flexible fuel vehicles allow the Brazilians to use either blended gasoline or E100, depending on the price.

and higher ethanol blends can also have a positive effect on a catalyst's efficiency.¹³ Moreover, air quality improved in Brazil based on increased ethanol use: "From 1975 to 2000, the replacement of gasoline with ethanol reduced carbon emissions by 100 million tons. Big city improvements in air quality in the 1980s were evident. Conversely, the air quality degradation from a partial return to gasoline in the 1990s was also evident."¹⁴ Indeed, Brazil, as Congress clearly envisioned in establishing the RFS, has made great strides to move away from foreign imports of petroleum to the benefit of their agricultural community and the environment.

EPA also requests comment on additional regulatory changes that may be needed if the E15 waiver is granted. 74 Fed. Reg. at 18,230. EPA properly recognizes these are "not a specific criterion by which to evaluate a waiver request under section 211(f)." *Id.* Additional regulatory processes will address these issues and are not relevant to EPA's determination on the waiver request.¹⁵

II. EPA Has the Legal Authority to Limit a Waiver to Motor Vehicles and Motor Vehicle Engines to Give Additional Time to Further Develop Data on Potential Impacts of E15 on Nonroad Vehicles and Nonroad Engines and Should Exercise That Authority if It Determines a Complete Waiver Cannot Be Granted.

EPA requests comment on legal and technical aspects regarding a partial waiver under Section 211(f)(4). 74 Fed. Reg. at 18,230. EPA has recognized, and applied, its authority to issue a conditional or partial waiver under that section. To the extent that a complete waiver is not granted, EPA should use its authority here to give time to continue to develop data on the use of mid-level ethanol blends in nonroad vehicles and nonroad engines, rather than issue a blanket denial.

A. EPA has authority to issue a partial waiver.

Under Section 211(f)(4), EPA "may" issue a waiver. Use of the term "may" gives EPA broader discretion in fashioning an appropriate waiver. In fact, Congress recognized that the prohibitions under Section 211(f) could be "conditionally waived" and that EPA's waiver under Section 211(f)(4) "may be under such conditions, or in regard to such concentrations as he deems appropriate consistent with the intent of this section." S. Rep. No. 95-127, at 91 (1977).

EPA has long recognized its authority under Section 211(f)(4) to "grant a waiver conditioned on time or other limitations." 43 Fed. Reg. at 41,424 (citation omitted). *See, e.g.*, 44 Fed. Reg. at 37,077 (placing conditions on grant of waiver, including condition that waiver may be revoked based on subsequent durability testing); 46 Fed. Reg. 56,361, 56,361 (Nov. 16, 1981), 51 Fed. Reg. 39,800, 39,804 (Oct. 31, 1986), 53 Fed. Reg. 3636, 3637 (Feb. 8, 1988), 53 Fed.

¹³ C. Hammel-Smith, *et al.*, *Issues Associated with the Use of Higher Ethanol Blends (E17-E24)*, NREL/TP-510-32206, at 8 (EPA-HQ-OAR-2009-0211-0002.7). These mid-level blends have also been stored and distributed in Brazil "for over 20 years without any major upsets or unresolved problems." *Id.* at 10. Part of Brazil's efforts to promote ethanol use in the late 1970s was to require E100 pumps at each retail station. Brazil also serves as an example, therefore, of retailers' ability to accommodate more than one blend of ethanol and the consumers' ability to distinguish fuel types depending on their vehicle with no major adverse consequences.

¹⁴ Don Hofstrand, *supra* note 11.

¹⁵ The summertime volatility exemption of 1.0 psi is only for conventional blends of 9 to 10 volume percent ethanol. This would need to be adjusted to account for any allowed higher ethanol volume. *See also infra* n. 27.

Reg. 33,846, 33,847 (Sept. 1, 1988) (placing conditions on grant of waiver, including condition requiring actions to keep finished fuel from being blended with other oxygenated materials such as noting condition on shipping manifests).¹⁶

Thus, to the extent EPA believes there is insufficient evidence to determine whether E15 emissions will cause or contribute to nonroad vehicles and nonroad engines failing to meet emission standards required for certification, EPA should still grant a waiver for E15, but limit such waiver to motor vehicles and motor vehicle engines. The prohibition in Section 211(f)(1) relates to motor vehicles and motor vehicle engines only, indicating the grant of the waiver is not dependent on findings with respect to nonroad vehicles and nonroad engines. As described above, courts found that Congress limited the factors EPA could consider in determining whether to deny a Section 211(f)(4) waiver. Congress in 2007 granted EPA authority to consider potential impacts of new fuels and new fuel additives on nonroad vehicles and nonroad engines. This grant of authority came at the same time Congress substantially increased the renewable fuel standard's volume mandates, showing Congress' intent to promote use of ethanol. Although Section 211(f)(4) was amended in 2007 to address concerns that increased ethanol blends may adversely impact nonroad vehicles and nonroad engines that may rely on the same fuel stations as motor vehicles, nothing in the statute or the legislative history indicates that this amendment sought to limit EPA's discretion to issue a Section 211(f)(4) waiver with respect to the prohibition on use of new fuels and new fuel additives in motor vehicles or motor vehicle engines. Rather EPA may properly consider such impacts in fashioning the waiver, but nothing in section 211(f)(4) indicates that EPA is required to deny a waiver with respect to motor vehicles and motor vehicle engines to the extent EPA finds insufficient evidence on nonroad vehicles and nonroad engines.¹⁷

B. Limited technical changes would be needed to meet partial waiver requirements.

Use of blends up to E15 will not require substantial changes at the pump. Underwriter Laboratories (UL) has issued favorable guidance regarding dispensing gas with up to a 15% concentration of the alcohol fuel. In February 2009, UL announced:

Underwriters Laboratories (UL), a world leader in independent product safety testing and certification, announced today that it supports Authorities Having Jurisdiction (AHJs) who decide to permit legacy system dispensers, Listed to UL 87 and currently

¹⁶ Such conditions may include imposing a time condition on the waiver, pending additional study. Here substantial new information is expected within one year. As outlined in the waiver request and the data cited above, evidence indicates that limited use of E15 will not cause or contribute to failure of motor vehicles to meet emissions requirements. EPA could grant the waiver subject to adverse findings by the additional studies.

¹⁷ EPA has indicated that it "does not believe that failure of a single model, or even a limited group of models, necessarily warrants denial of a waiver." Vehicle Selection & Sample Size Issues for Catalyst and Evap Durability Testing, at 3 (Nov. 12, 2008) (EPA-HQ-OAR-2005-0161-0793), cited in 74 Fed. Reg. 24,904, 25,014 n.244 (May 26, 2009).

installed in the market, to be used with fuel blends containing a maximum ethanol content of 15 percent.¹⁸

In their own evaluation, UL states that significant fuel property changes do not occur until after the ethanol content is above 15%. Kenneth Boyce, P.E., Principal Engineer – North America, Underwriters Laboratories Inc., *Underwriters Laboratories Research Program on Material Compatibility and Test Protocols for E85 Dispensing Equipment*, at 2 (Dec. 2007) (“High-percentage ethanol fuel blends, with ethanol content above 15%, have different characteristics than traditional gasoline fuels.”).

UL is the leading authority on the evaluation and safety of retail fuel distribution equipment. Their favorable guidance indicates that existing listed equipment is safe and effective for use for gasoline/ethanol blends containing up to 15% ethanol. Underwriters Laboratories Listed dispensers -- those legacy dispensers currently in service and used most often in gas stations around the country today -- are certified under UL 87 and are authorized for dispensing blends up to 15% ethanol. Data gathered as part of UL’s ongoing research to investigate the impact of using higher ethanol blends in fuel dispensing systems supports that existing dispensers can be used with ethanol blends up to 15 percent. UL goes further to advise AHJs to consult with the dispenser manufacturer to confirm that the dispenser is compatible with the fuel to be dispensed. UL researchers found that using equipment certified to UL 87 to dispense ethanol blends with a maximum ethanol content of 15 percent should not result in critical safety concerns. UL stressed that dispensers pumping this higher percentage of ethanol should be subject to regular inspection and preventative maintenance as specified by the dispenser manufacturer for the blend of fuel being dispensed because the potential for degradation of the metals and materials (*e.g.*, plastics, elastomers and composites) used in a dispensing system increases as the percentage of ethanol increases. Many states already require increased inspection for fuel dispensing systems.

UL determined that there is no significant incremental risk of damage between E10 and fuels with a maximum of 15 percent ethanol. This conclusion was reached after careful examination of the effects of varying levels of ethanol on components. AHJs are the local regulatory and approval entities that make the final determination of the acceptance of fuel dispensing devices. UL makes its research findings available to the AHJs for their consideration. Standard UL 87 is used by UL research and testing staff members to evaluate fuel dispenser systems and their component parts for use with motor fuels with ethanol blends up to E15.

Because UL did use a safety margin during equipment testing, some subassemblies have been tested with fuels containing 15% ethanol. As the focus of UL has primarily focused on the fuel dispenser and associated equipment such as dispensing hoses and nozzles, UL provides additional support for the evaluation and certified rating of underground storage tanks and piping for use with high percentage ethanol blends including E85 therefore offering a seamless safety standard for the safe dispensing of gasoline/ethanol blends containing up to 15% ethanol.

¹⁸ Underwriters Laboratories announces support for authorities having jurisdiction who decide to permit the use of existing UL Listed gasoline dispensers with automobile fuel containing up to a maximum of 15% Ethanol, *available at* http://www.ul.com/global/eng/content/corporate/newsroom/data/underwriters-laboratories-announces-support-for-authorities-having-jurisdiction_20090219140900.xml.

(<http://www.ul.com/global/eng/pages/offerings/industries/chemicals/flammableandcombustiblefluids/faq/>)

While users of nonroad vehicles and engines may use gasoline from retail stations for motor vehicles, retail stations could continue to provide E10 in the event EPA grants a waiver for E15 for continued use of E10 in nonroad vehicles and nonroad engines to ensure availability of fuel for use in nonroad vehicles and nonroad engines.

C. EPA could require labeling to ensure against misfueling.

If EPA grants a waiver for E15, labeling may also be required to ensure against its use in nonroad vehicles and nonroad engines. EPA has imposed conditions on waivers to ensure the limits of the waiver are being complied with. *See, e.g.*, 47 Fed. Reg. 22,404, 22,404 (May 24, 1982) (placing conditions on grant of waiver, including requiring manufacturer of fuel to inform customers of conditions and provide guidance on how to meet conditions). RFA is willing to work with marketers to provide education to retailers and the public regarding fueling of nonroad vehicles and nonroad engines.

Labeling requirements would not be onerous. EPA is proposing to require labeling for pumps that contain blends higher than E10 to explain the limits of the use of such blends and potential risk of using such blends in non-flex fuel vehicles. 74 Fed. Reg. at 24,977. EPA need merely to revise the label requirements to include a warning, to the extent necessary, that blends greater than E10 should not be used in nonroad vehicles or nonroad engines subject to the vehicle or engine's instructions for use. As EPA has initially found, such warnings are sufficient to protect against misfueling. *Id. See also id.* at 25,143 (proposed 40 C.F.R. § 80.1469). In addition, the Federal Trade Commission and many states already require labeling of pumps for gasoline containing ethanol. *See generally* Federal Trade Commission, Labeling Alternative Fuels, *available at* <http://www.ftc.gov/bcp/edu/pubs/business/energy/bus30.shtm>; American Coalition for Ethanol, *Status '07, A State-by-State Handbook*, at 72, *available at* http://www.ethanol.org/pdf/contentmgmt/ACE120_Status_07_web.pdf.

EPA has previously required labeling to support fuel regulation and to help prevent misfueling.

For any multiple-fuel program like the two-step program we are finalizing today, we believe that the clear labeling of nonroad diesel fuel pumps is vital so that end users can readily distinguish between the several grades of fuel that may be available at fueling facilities, and properly fuel their nonroad equipment. . . . To help prevent misfueling of nonroad, locomotive and marine engines, and to thus ensure that the environmental benefits of the program are realized, we are finalizing pump labeling requirements similar to those adopted in the highway diesel rule (40 CFR 80.570).

69 Fed. Reg. 38,957, 39,084 (June 29, 2004). *See also* 40 C.F.R. § 80.35 (labeling of retail gasoline pumps; oxygenated gasoline); 40 C.F.R. §§ 80.570-80.574 (labeling requirements for highway and nonroad, locomotive or marine (NRLM) diesel fuel (including nonroad (NR) and

locomotive or marine (LM)), or heating oil). With respect to the diesel fuel, oil refiners supported requiring labeling at the pumps, noting that the pump labeling requirements are “necessary, and can be adopted into weights and measures guidelines and laws.” EPA, *Summary and Analysis of Comments: Control of Emissions from Nonroad Diesel Engines* at 10-44, EPA420-R-04-008 (May 2004) (citing API, ExxonMobil, Marathon-Ashland), available at <http://www.epa.gov/nonroad-diesel/2004fr/420r04008.pdf>.¹⁹

III. EPA Can Authorize Use of an Ethanol Blend Higher than E10 by Making a Substantially Similar Finding or Issuing a New Waiver for Blends up to E12, in the Event EPA Determines Additional Information is Needed to Support a Waiver For E15.

EPA requests comment on whether EPA should grant a waiver for an ethanol blend between E10 and E15. 74 Fed. Reg. at 18,230. Currently, the definition of “substantially similar” fuels limits ethanol content to 2.7% by weight oxygen. 73 Fed. Reg. 22,277, 22,277 (Apr. 25, 2008). However, to the extent that EPA does not grant the waiver for E15, it should revise the definition of “substantially similar” fuels to increase the weight percent oxygen to allow up to E12 for use in motor vehicles, motor vehicle engines, nonroad vehicles, and nonroad vehicles and engines under its authority to define “substantially similar” under Section 211(f)(1). This action would make sense because, historically, blends with oxygen content equivalent to nearly E12 have been in the market place without adverse effect. In the alternative, given that we believe there is sufficient information for an E15 waiver, there is clearly overwhelming information to support a Section 211(f)(4) waiver for E12.

EPA has authority to define E12 blends are “substantially similar” to fuels used in certified motor vehicles. The basis for this conclusion is that the weight percentage of oxygen that EPA allows in oxygenated gasoline actually equates to an oxygen percentage that would be present in “E11.73.”²⁰ Since the voiced concerns regarding higher ethanol blends are largely based on the potential for increased oxygen content to cause issues with the engine, if oxygen content that would equate to 11.73% ethanol in gasoline is already allowed, EPA has the legal authority to make a substantially similar finding for such blends under Section 211(f)(1).

EPA has granted waivers for fuels with oxygen content up to 3.7 weight %. *See* 46 Fed. Reg. at 56,361 (granting waiver that would allow up to 3.5 weight % oxygen); 50 Fed. Reg. 2615 (Jan. 17, 1985) (granting waiver that would allow a maximum of 3.7 weight % oxygen); 53 Fed. Reg. at 3637 (same). Although some of these waivers involved methanol blends, EPA relied on these findings to find that fuel blended with ethanol at up to 2.7 weight % oxygen is “substantially similar” to certification fuel under Section 211(f)(1). 56 Fed. Reg. 5352, 5353-5354 (Feb. 11, 1991). EPA also found that non-methanol alcohols are likely to have less

¹⁹ If EPA finds E15 may damage nonroad engines and nonroad vehicles, labeling is the appropriate response, not denial of the waiver. Under Section 211(c), EPA may control the “offering for sale” or “sale” of fuels or fuel additives if emission products of such fuel or fuel additive will impair to a significant degree the performance of any emission control device or system which is in general use, or which the Administrator finds has been developed to a point where in a reasonable time it would be in general use were such regulations to be promulgated. 42 U.S.C. § 7545(c). While section 211(f)(4) allows fuels and fuel additives to enter the market, EPA still has authority to regulate those fuels under Section 211(c). *Am. Methyl Corp. v. EPA*, 749 F.2d 826, 836-37 (D.C. Cir. 1984).

²⁰ We have rounded 11.73% volume ethanol to E12.

materials compatibility problems to support its finding. *Id.* at 5354. Indeed, EPA based its substantially similar finding on its experience with fuels with levels up to 2.7 weight % oxygen in use at the time. *Id.* As outlined below, substantial evidence supports a similar finding for ethanol blends greater than E10 (at least up to 11.73%).

In 1978, the original “gasohol waiver” (December 16, 1978) permits up to 10% ethyl alcohol (ethanol). 44 Fed. Reg. 20,777, 20,777 (Apr. 6, 1979). Though the Federal Register notice did not repeat the application specifics regarding the ethanol volume and weight percent, the waiver application filed by Gas Plus specifically requested 10% volume ethanol and the waiver has always been interpreted to allow this volume. *See, e.g.*, 47 Fed. Reg. 14,596, 14,596 (Apr. 5, 1982) (clarifying that the waiver allowed fuels containing up to 10% ethanol, known as “Gasohol”). Note that the waiver allows the use of 10% ethanol exclusive of denaturant and denaturant contains oxygen as well. First, in a letter to Robert E. Reynolds (July 30, 1993) (Attachment 7), EPA indicated that the weight percent oxygen of ethanol per volume percent was 0.3473%. Consequently, although the waiver does not include a specific weight percent oxygen limit, this guidance indicates that 10 volume percent denatured ethanol at the time contained 3.473 weight percent oxygen and, thus, 10 volume percent pure ethanol, which was approved by the waiver, equates to 3.534 weight percent oxygen.²¹

Second, in an October 1992 memorandum, EPA found that a maximum weight percent oxygen for ethanol blended fuels is 3.8%. Memorandum from Mary T. Smith, Director, Field Operations and Support Division, to State/Local Oxygenated Fuels Contacts, Oct. 5, 1992, cited in 74 Fed. Reg. at 25,018 (EPA-HQ-OAR-2005-0161-0297). Based on EPA’s oxygen content estimate from the July 30, 1993 letter, using today’s 2.5 volume % denaturant amount, fuels with 10.73 volume % ethanol would be allowed.²²

Third, in a letter to Marilyn Herman (September 7, 1988) (Attachment 8), EPA acknowledged that base fuels containing no more than 2.0 volume percent MTBE (from unintentional co-mingling) were permitted to be added to 10 volume percent ethanol. *See also* 74 Fed. Reg. at 25,018. MTBE is 18 weight percent oxygen. Adding the 2% MTBE oxygen equivalent of 0.36 weight % equates to another 1 volume percent ethanol.

Therefore, the combination of these rules could easily be read to *already* allow 11.73 volume percent ethanol but for the limitation in the “substantially similar” interpretive rule. Moreover, since fuels with oxygen content equivalent to E12 are likely to have been in commerce since the early 1990s,²³ EPA should be able to find, therefore, that a higher oxygen blend than 2.7 weight percent is supportable, allowing at least E12 blends without a waiver. Further supporting this view, the 12 volume percent oxygen level is near the 4.0 valid range in the EPA Complex Model.²⁴ Considering this, EPA should acknowledge that it has already

²¹ At the time of the EPA letter, denaturant was typically 4.76% of the ethanol used to blend with gasoline.

²² Using today’s denaturant, oxygen percent would be 35.42, divided into 3.8% oxygen range from the 1992 Memorandum, results in an oxygen level equivalent to 10.73 volume percent ethanol.

²³ EPA also allows a 0.3% measurement tolerance for ethanol volume.

²⁴ *See* 74 Fed. Reg. at 25,018 (citing EPA’s 1995 RFG/Anti-Dumping Q&A). Initially, EPA used a 3.7 weight percent as the upper limit of the acceptable range of oxygen. “EPA defined the oxygen limits so as to encompass all oxygenated gasolines which meet EPA’s ‘substantially similar’ requirements, including a small blending tolerance.” EPA, *Final Regulatory Impact Analysis for Reformulated Gasoline Rule*, at 194, EPA420-R-93-017 (Dec. 1993),

permitted E12 blends in terms of equivalent oxygen content and that, such blends are “substantially similar” to certification fuels under its interpretation.

In any event, current and past use of fuels with this higher oxygen content with no reported problems can support a waiver under Section 211(f)(4) by EPA for ethanol volumes of at least E12.²⁵ See 44 Fed. Reg. 10,530, 10,532 & n.16 (Feb. 21, 1979) (granting waiver for 0-7% Arconol where up to 5% Arconol has been used since 1970 and up to 7% since 1974 without apparent material compatibility problems and “[t]herefore, the vehicle manufacturers should have already accommodated for Arconol in their design.”).²⁶ In particular, it is reasonable to assume that there would have been fuels with this higher percent of oxygen by weight given the prevalence of MTBE prior to it being banned. Given the measurement tolerance generally applied by EPA, the waiver could be extended to E12. For an E12 blend of 4.021weight % oxygen it is a difference of only 0.512%. This is well within the authority range of vehicle oxygen sensors and engine management calibrations.²⁷ In the alternative, EPA should exercise its discretion and grant a Section 211(f)(4) waiver up to E12 (which should account for EPA’s 0.3% volume measurement tolerance) for use in motor vehicles, motor vehicle engines, nonroad vehicles, and nonroad vehicles and engines.

available at http://www.epa.gov/otaq/rfg_regs.htm, cited in 59 Fed. Reg. 7716, 7731 (Feb. 16, 1994). EPA raised this to 4% to account for “fuels which are already being produced.” 59 Fed. Reg. 36,944, 36,947-48 (July 20, 1994). EPA recognized, therefore, that fuels with up to 4% oxygen by weight would likely be in the system, requiring these fuels to be modeled to ensure compliance with Clean Air Act requirements.

²⁵ The data submitted by in the waiver application and referenced above would similarly support a waiver for a blend less than E15.

²⁶ Section 211(f)(4) requires consideration of a vehicle’s “useful life.” EPA has found a motor vehicle’s useful life is typically 10-11 years (or 120,000 miles, whichever comes first). 72 Fed. Reg. at 8469. By 1998, motor vehicles would have had substantial time to account for ethanol blends. Moreover, EPA has recognized that Tier 1 vehicles will be beyond the full useful life and national low emission vehicles will mostly be beyond their useful life by 2012. See Vehicle Selection & Sample Size Issues for Catalyst and Evap Durability Testing, at 5 (Nov. 12, 2008) (EPA-HQ-OAR-2005-0161-0793), cited in 74 Fed. Reg. at 25,014 n.244.

²⁷ The summertime volatility exemption of 1.0 psi is only for conventional blends of 9 to 10 volume percent ethanol. This would need to be adjusted to account for any allowed higher ethanol volume. Without adjusting the exemption to account for higher blends, it would cost a refiner more in light-end removal than they gain from the ethanol addition. There is ample evidence the RVP does not increase any in going from 10 volume percent to 12 volume percent. Adjusting the RVP exemption would be in agreement with the environmental air quality benefits of moving to E12 blends.

Attachments to RFA Comments

1. CRC Project No. E-65-3, Fuel Permeation from Automotive Systems: E0, E6, E10, E20 and E85, December 2006.
2. CRC Report No. 648, 2006 Hot-Fuel-Handling Program, January 2007.
3. CRC Report No. 652, 2008 CRC Cold-Start and Warm Up E85 and E15/20 Driveability Program, October 2008.
4. University of Minnesota Center for Diesel Research, E20 Effects in Small Non-Road SI Engines – A Literature and Information Search, 15 January 2008.
5. Minnesota State University, An Examination of Fuel Pumps and Sending Units During a 4000 Hour Endurance Test in E20, March 2009.
6. API E10+ Blending Study, results presented at the API/ USCAR Stakeholders meeting, June 3, 2009 USCAR Headquarters, Southfield, MI.
7. Letter from Mary T. Smith, Director, Field Operations and Support Division, U.S. EPA, to Robert E. Reynolds, President, Downstream Alternatives, Inc. (July 30, 1993).
8. Letter from Richard D. Wilson, Director, Office of Mobile Sources, U.S. EPA, to Marilyn Herman, President, Herman and Associates (Sept. 7, 1988).