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Submitted via www.regulations.gov

Request for Comments on the Reconsideration of the Final Determination of the Midterm Evaluation of Greenhouse Gas (GHG) Standards for Model Year 2022-2025 Light-duty Vehicles.

Dear Administrator Pruitt and Mr. Lieske:

On behalf of the members of the American Coalition for Ethanol (ACE), thank you for the opportunity to submit comments on the Environmental Protection Agency's (EPA) Reconsideration of the Final Determination of the Midterm Evaluation of Greenhouse Gas (GHG) Standards for Model Year 2022-2025 Light-duty Vehicles.

ACE is a grassroots advocacy organization, powered by people from all walks of life who have built an innovative industry that sustainably delivers clean biofuel and valuable food for a growing world. Our members include U.S. ethanol biorefineries, investors in biofuel facilities, farmers and commodity organizations, and companies that supply goods and services to the U.S. ethanol industry. More information about ACE and its members can be found at www.ethanol.org

We have been in dialogue with automakers, agricultural organizations, government researchers and many others to develop strategies and action plans to accelerate the transition of North American transportation fuels to low cost, fuel efficient, high-octane biofuels such as ethanol. CAFE-GHG standards present a natural and timely opportunity for this transition to occur.

Unfortunately, the January determination issued by former Administrator McCarthy missed the opportunity to enable high-octane blends to play a role in improving fuel economy and reducing CO2 emissions from light-duty vehicles. EPA instructed automakers to do a job but wouldn't give them access to one of the most useful tools in the toolbox; high-octane fuel.

That's why we are encouraged by EPA's reconsideration of the final determination and applaud the Agency for inviting comment on the "impact of the standards on advanced fuels technology, including…the potential for high octane blends."[1]

While the CAFE-GHG program has resulted in meaningful progress with respect to fuel efficiency and GHG emissions, this progress will plateau unless EPA increases the octane rating of fuel used in future engines. With a blending-octane rating of 113, American-made ethanol is the lowest-cost, low-carbon source of octane on the planet.

Today, thanks to the Renewable Fuel Standard (RFS), more than 15 billion gallons of American-made ethanol is already helping refiners boost the octane of finished fuel. Instead of gearing up their facilities to produce expensive octane components from petroleum, most refiners instead choose to make a "V-grade" gasoline blendstock in the neighborhood of 84 octane and add 10 percent ethanol to make an 87 octane finished fuel. Adding ethanol to boost octane saves them money and cuts back on refinery emissions.

Just as refiners have optimized to benefit from ethanol's octane value, automakers want to take advantage of how 25 to 30 percent ethanol can help them realize efficiency gains from technologies such as turbochargers and higher compression ratios in engines which recommend or require the use of high octane fuel.

Below are ACE's recommendations with respect to the final determination of fuel economy and emissions standards for the 2022-2025 model years:

1. Enable automakers to test future vehicles on a high-octane blend by approving an alternative certification fuel with 25 to 30 percent ethanol and a minimum octane of 98-100 RON.

2. Establish a performance standard for fuel with a minimum octane level of 98-100 RON. This will help foster a marketplace in which the private sector competes and innovates to produce low-cost high-octane fuels.

3. Make three important updates or corrections so ethanol is no longer penalized with respect to fuel economy or emissions. First, correct the fuel economy equation (R-factor) used to certify vehicles operating on high-ethanol blends to at least 1.0. Second, consider crediting ethanol's upstream GHG reductions or its displacement of petroleum as EISA 2007 permits. Third correct the outdated MOVES2014 model used in calculating the GHG emissions of ethanol.

4. Restore credits to automakers for the manufacture of flexible fuel vehicles (FFVs) and consider a new incentive for future engines designed to achieve optimal efficiency on high-octane fuels.

5. Ensure that EPA's GHG standards are harmonized with the Department of Transportation's CAFE requirements and efforts to improve fuel economy and reduce CO2 emissions by the California Air Resources Board. Automakers need "one stop" compliance procedures.

[1] Request for Comment on Reconsideration of the Final Determination of the Mid Term Evaluation of Greenhouse Gas Standards of 2022-2025 MY Vehicles. https://www.gpo.gov/fdsys/pkg/FR-2017-08-21/pdf/2017-17419.pdf

6. Provide Reid vapor pressure (RVP) relief to E15 and higher ethanol blends.

7. Update the lifecycle analysis of corn ethanol.

Historical efforts by EPA to reduce petroleum use and improve fuel economy via GHG standards have unfortunately overlooked the inescapable link between the efficiency of engines and the fuels used to power them. According to research by Derek Splitter of the U.S. Department of Energy's (DoE) Oak Ridge National Laboratory (ORNL), ""…it is hard to argue that the current stagnant fuel octane number can be sustained over the long term. Therefore, increasing fuel octane number offers significant motivation to achieve fuel economy and CO2 targets."[2]

The private sector agrees. Consider what Dan Nicholson, Vice President of Global Propulsion Systems for General Motors (GM), said about high-octane fuel at the 2016 CAR Management Briefing Seminars. "Higher octane fuels are the cheapest CO2 reduction on a well-to-wheels analysis…Fuels and engines must be designed as a total system. It makes absolutely no sense to have fuel out of the mix of engine technology discussions."[3]

ACE believes progress made via the CAFE-GHG program will eventually plateau unless EPA takes steps to establish a minimum octane quality or performance standard for fuel. That's why we are pleased EPA appears to be changing course by seeking comment on the potential for high-octane blends to help meet future GHG standards.

A minimum octane performance standard for fuel does not need to pick winners and losers. Rather, EPA should simply establish a 98-100 Research Octane Number (RON) performance standard and allow fuel producers to invest in technologies that can meet that standard at the lowest cost. There are a host of petroleum-based octane components that could potentially help meet this standard. Likewise, there is a large body of evidence pointing toward ethanol as an economical solution to making high-octane fuel a reality. Indeed, automakers, scientists, and U.S. government researchers who have researched engine technologies and fuel properties agree that ethanol is the most promising way to make a low-cost, high-efficiency, high-octane fuel for future engines.

Tony Ockelford, Director of Product and Business Strategy at Ford Powertrain, said the following about octane and engine efficiency at the 2016 CAR Management Briefing Seminars. "Raise the compression ratio and you are raising the efficiency of the engine. One thing everyone would agree: 100 RON, if ever you could get there, is a nice place."[4]

EPA made an implicit admission that fuel octane is an essential ingredient for successfully meeting the 2022-2025 CAFE-GHG standards based on some of the testing and engine modeling in the 2016 Technical Assessment Review (TAR). Page 5-509 of the TAR indicates: "All the turbocharged direct injection engines described below have been developed using 93 octane. NHTSA understands that using such fuel might lead to overestimating the effectiveness of this technology, especially for high BMEP engines." It should also be noted that the EPA gasoline turbocharged direct injection package

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[2] A Historical Analysis of the Co-evolution of Gasoline Octane Number and Spark-Ignition Engines. Splitter D, Pawlowski A, and Wagner R. Front. Mech. Eng. 1:16. DOI: 10.3389/fmech2015.00016 (2016).

[3] CAFE Standards: What's Biomass Got to do with it? Rebecca Chillrud. EESI. September 10, 2016.

[4] OEMs Continue Push for High-Octane Gas. Wards Auto. April 20, 2016. Tom Murphy.

was tested with 96 RON fuel and pages 5-284 through 5-285 of the TAR refer to fuel specifications with 98 RON indolene.

As you know, automakers use 91 RON (87-88 AKI) fuel for certification, instead of the high-octane 96-98 RON (93 AKI) fuel the agencies relied upon for some of the engine testing and modeling. If EPA anticipated the 2022-2025 standards could be met with existing powertrain technologies and no changes in fuel, why did those predictions rely in part upon modeling simulations that used high-octane fuel for downsized and turbocharged engines? If agency modeling relies upon high-octane fuel to test and verify that future standards can be met, it is imperative that there is real-world availability of high-octane fuel. One way to achieve that is by establishing a minimum octane of 98-100 RON for 2022-2025 and beyond model year vehicles.

Light-duty vehicles account for 63 percent of petroleum use and 61 percent of GHG emissions. EPA has the legal authority to regulate the octane composition of fuel and the Tier 3 rule contemplates a potential certification pathway for high-octane fuel. Moreover, in a briefing related to Energy Future Coalition et al. v. EPA, the agency recognized that it has discretion to approve an alternative test/certification fuel that is not currently on the market. We encourage EPA to acknowledge and support the role high-octane fuels comprised of between 25 and 30 percent ethanol can play to help automakers comply with the 2022-2025 standards.

Automakers have responded to the CAFE-GHG standards with an impressive array of technologies such as variable valve timing, multi-valve engines, turbocharging, engine downsizing, improved aerodynamics, light-weighting, low rolling resistance tires, stop-start features, and improved air conditioning systems. The one obvious factor that EPA and others have failed to take into consideration as part of the CAFE-GHG program is fuel.

High-octane fuel has been on the wish list of automakers for several years. Mitch Bainwol, President and CEO of the Alliance of Automobile Manufacturers, made the following request of then-EPA Administrator Lisa Jackson in an October 6, 2011 letter. "Furthermore, to help achieve future requirements for the reduction of greenhouse gas emissions, we also recommend increasing the minimum market gasoline octane rating, commensurate with increased use of ethanol. Adding ethanol to gasoline increases its octane rating. To attain necessary octane levels, it is important that refiners not be permitted to reduce base gasoline octane ratings in light of the additional octane contribution from higher ethanol."[5]

Reuters Market Analyst John Kemp reports that the "percentage of new light-duty gasoline vehicles sold with turbocharged engines has climbed from just 3.3 percent in the 2009 model year to 17.6 percent in the 2015 model year. In 2015, the National Research Council found turbocharged engines had been installed in nearly half of all Ford's popular F-150 light trucks. By 2025, more than 80 percent of all new gasoline vehicles sold in the United States will include turbocharged engines, according to the Energy Information Administration (EIA). But to prevent fuel detonation ("knocking") engines with higher compression rations need to run on fuels with a higher octane rating."[6]

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[5] Letter from Mitch Bainwol, Alliance of Automobile Manufacturers, to The Honorable Lisa Jackson, EPA Administrator. October 6, 2011. (attachment A) https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0799-9574

[6] "Vehicle efficiency spurs premium gasoline sales, octane demand." September 7, 2016. Reuters Market Analyst John Kemp.

These engines will operate with today's fuel but the efficiency and GHG reduction benefits will not be sustained unless an affordable higher-octane fuel is introduced to the marketplace. While premium fuel sales have been on the rise, premium is not a long-term solution because it provides insufficient octane at a cost-prohibitive price. Higher blends of ethanol in the 25 to 30 percent range can cost-effectively contribute to a higher RON and heat of vaporization, properties which make it an ideal fuel for new engine technologies. BMW has acknowledged this fact and already recommends the use of E25 (98-99 RON) in some models of the MINI Cooper and other vehicles. BMW took this action in response to fuel economy requirements and says "it is MINI's intention that all new models with be E25 compatible."[7] Ethanol can and should be part of the solution to the problem of meeting the future standards.

Splitter sums it up well in his conclusion that "…since fuel lead removal began in the mid-1970s, fuel octane number has remained stagnant while engine efficiency and performance improvements have resulted from digital controls and design refinements. This relaxation of the fundamental coupling between fuel octane number and engine compression ratio is a long-term unsustainable trajectory."

The role that ethanol-gasoline blends in the range of 20 to 30 percent can play as an octane enhancer is supported by a paper from J.E. Anderson et al of Ford Motor Corporation.[8] "The high octane rating of ethanol could be used in a mid-level ethanol blend to increase the minimum RON of regular grade gasoline. We estimate that large increases (4 to 7 points) in the RON of U.S. gasoline are possible by blending in an additional 10 to 20 percent by volume ethanol above the 10 percent ethanol already present. Keeping the blendstock at 88, we estimate RON would be increased to 94.3 for E15 to as much as 98.6 for E30. Even further RON increases may be achievable assuming changes to the blendstock RON and/or hydrocarbon composition. For the ethanol and blendstock RON scenarios considered, compression ratio increases were estimated to be on the order of 1 to 3 units for port fuel injected engines as well as for direct injection engines in which greater evaporative cooling can be fully utilized. It appears that substantial societal benefits may be associated with capitalizing on the inherent high octane rating of ethanol in future higher octane number ethanol-gasoline blends."

AVL Powertrain Engineering, BP North America, and GE Energy helped contribute to a paper published by SAE International which reinforces the findings of Ford above and provide further support to the use of ethanol to increase the octane rating of gasoline.[9]

Steve Vander Griend, chair of the technical committee for the Urban Air Initiative has said "Adding ethanol to gasoline improves it in every way. It lowers carbon, reduces common air pollutants for smog formation, lessens CO2 emissions, reduces sulfur content, and provides clean octane as a replacement for toxic aromatics. In short, it makes gasoline significantly better than what would otherwise go in your tank."

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[7] "MINI Cooper Shares E25 Know-How with BMW," Canadian Report on Fuel Ethanol, Volume 6, No. 5, September 14, 2016.

[8] "High octane number ethanol-gasoline blends: Quantifying the potential benefits in the U.S." Anderson, J.E. et al, Ford Motor Company. July 2012.
http://www.sciencedirect.com/science/article/pii/S0016236112002268

[9] "Octane Numbers of Ethanol-Gasoline Blends: Measurements and Novel Estimation Method from Molar Composition." Anderson, J., Leone, T., Shelby, M., Wallington, T. et al., "Octane Numbers of Ethanol-Gasoline Blends: Measurements and Novel Estimation Method from Molar Composition," SAE Technical Paper 2012-01-1274, 2012, doi:10.4271/2012-01-1274.

In July 2016, ORNL, NREL, and ANL released the Summary of High-Octane, Mid-level Ethanol Blends Study.[10] This comprehensive paper examined the GHG emission benefits of high-octane mid-level ethanol blends, knock-resistance and ethanol blends, the economics of ethanol, and marketplace issues such as retail and terminal infrastructure. "The experimental and analytical results of this study considered together show that HOF, specifically mid-level ethanol blends (E25-E40), could offer significant benefits for the United States. These benefits include an improvement in vehicle fuel efficiency in vehicles designed and dedicated to use the increased octane. The improved efficiency of 5-10% could offset the lower energy density of the increased ethanol content, resulting in volumetric fuel economy parity of E25-E40 blends with E10. Most of the flex-fuel vehicles on the road today would be expected to have faster acceleration using HOF, which offers a marketing opportunity in the near term. Furthermore, dedicated HOF vehicles would provide lower well-to-wheel GHG emissions from a combination of improved vehicle efficiency and increased use of ethanol. If ethanol were produced using cellulosic sources, GHG emissions would be expected to be up 17 to 30% lower than those from E10 using conventional ethanol and gasoline. Refinery modeling suggests that refiners could use higher levels of ethanol to meet potentially high market shares of HOF. Analysis of the HOF market and the primary stakeholders reveals that the automotive OEMs, consumers, fuel retailers, and ethanol producers all stand to benefit to varying degrees as HOF increases its market share. The results depend on the underlying assumptions; but HOF offers an opportunity for improved fuel economy, and these dedicated vehicles are likely to be appealing to consumers."

GM's Nicholson said in *Automotive News* that he could boost fuel economy in most engines by about 5 percent if America had the same high-octane fuel as Europe. According to Michael Wang, Senior Scientist at DoE's Argonne National Lab, "if you get a 5 percent gain in fuel economy, you will get about a 4.5 percent reduction in GHG emissions. In some cases, you could achieve up to a 10 percent gain in fuel economy for high-octane fuel, which would give you about a 9 percent reduction in GHG emissions."[11]

Leone et al conducted a literature review examining fuel and engine factors that impact knock resistance and their contribution to higher engine efficiency and lower tailpipe CO2 emissions.[12] The paper found that future vehicle regulations striving to improve fuel economy and reduce criteria emissions will require cleaner and higher-octane fuel. "New vehicle trends to improve efficiency include higher compression ratio, downsizing, turbocharging, downspeeding, and hybridization, each involving greater operation of spark-ignited engines under higher-load, knock-limited conditions. Higher octane ratings for regular-grade gasoline (with greater knock resistance) are an enabler for these technologies. Higher ethanol content is one available option for increasing the octane ratings of gasoline and would provide additional engine efficiency benefits for part and full load operation."

Authors associated with AVL Powertrain Engineering, BP North America, Deere and Company, Ford, and ICM found similar evidence about ethanol and engine efficiency: "For a given gasoline

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[10] Summary of High-Octane, Mid-level Ethanol Blends Study. July 2016. ORNL, NREL, ANL. U.S. Department of Energy. http://info.ornl.gov/sites/publications/files/Pub61169.pdf

[11] "In Pursuit of High-Octane Fuels." Downstream Business. June 22, 2016. Bryan Sims.

[12] "The Effect of Compression Ratio, Fuel Octane Rating, and Ethanol Content on Spark-Ignition Engine Efficiency." *Environ. Sci. Technol.*, 2015, *49* (18), pp 10778–10789. DOI: 10.1021/acs.est.5b01420 Publication Date (Web): August 3, 2015. American Chemical Society. http://pubs.acs.org/doi/10.1021/acs.est.5b01420

blendstock, increasing ethanol content significantly increased knock-limited performance with combustion phasing near the thermodynamic optimum. However, due to ethanol's high sensitivity, knock-limited performance improved to a much greater extent with increased ethanol content as combustion phasing was retarded. This effect was further enhanced by a charge cooling with direct injection. Increasing ethanol content also significantly increased the knock-limited performance before enrichment was required to control exhaust gas temperature."[13]

It should be noted that Europe's use of 102 RON fuel helps deliver a ten percent fuel efficiency improvement in engines operating with a compression ratio of 11.5:1 or more compared to lower compression engines using the lower octane (95 RON) fuel that is normally marketed as mid-grade there.

A paper by Eric W. Chow of MIT recommends raising the minimum octane of fuel for new vehicles, and changing the octane standard from AKI to RON, in order to meet increasingly stringent fuel economy regulations.[14] The primary goal of his paper was to quantify the reduction in fuel consumption and GHG emissions if new vehicles were designed to use higher-octane fuel. Among the findings, "For a compression ratio increase of 1.5:1, this results in a 4.7 percent efficiency gain for a downsized, naturally-aspirated, spark-ignition vehicle. If the vehicle is turbocharged, a 6.9 percent efficiency gain is possible due to additional boosting and further downsizing. Ultimately, by redesigning vehicles to take advantage of 100 RON fuel, fuel consumption and GHG emissions for the fleet can be reduced by about 6 percent over the baseline case." The paper goes on to note that RON is the predominant octane standard for much of the world, with only the U.S., Canada, Brazil, and a few other countries still using AKI.

As part of the Tier 3 rulemaking, EPA identified E30 and higher ethanol blends as fuels which could help automakers increase compression ratios in engines to comply with fuel efficiency standards.[15] Automakers such as Ford and the Auto Alliance concurred with EPA, noting that high-octane blends containing increased ethanol content have the real potential to enable the next phase of more efficient engines. EPA also acknowledged in the Tier 3 rulemaking that it has the authority to announce a new certification fuel, such as E30, or grant an application request for such a cert fuel from an automaker. ACE requests that EPA enable automakers to test future vehicles on a high-octane blend by approving an alternative certification fuel with 25 to 30 percent ethanol and a minimum octane of 98-100 RON.

In order to pave the way for a certification fuel with 25-30 percent ethanol and a minimum octane performance standard for fuel in the range of 98-100 RON, EPA needs to update and correct some calculations that currently penalize ethanol.

First, EPA must correct the R-factor fuel economy equation. According to Bob McCormick, Principal Engineer for the Fuels Performance Group at NREL, "…current CAFE calculations penalize high-octane fuel through and outdated conversion factor that aims to put modern fuels on a comparable

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[13] Stein, R., Polovina, D., Roth, K., Foster, M. et al., "Effect of Heat of Vaporization, Chemical Octane, and Sensitivity on Knock Limit for Ethanol - Gasoline Blends," *SAE Int. J. Fuels Lubr.* 5(2):823-843, 2012, doi:10.4271/2012-01-1277. http://papers.sae.org/2012-01-1277/

[14] "Exploring the Use of a Higher Octane Gasoline for the U.S. Light Duty Vehicle Fleet" Eric W. Chow. 2013 Massachusetts Institute of Technology. http://web.mit.edu/sloan-auto-lab/research/beforeh2/files/Eric_Chow_Thesis.pdf

[15] Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards, 79, Federal Register 23, 414, 23, 528-29. April 28, 2014.

footing with 1975 test fuel. The R-factor is the ratio of the percent change in fuel economy to the percent change in volumetric energy content when comparing the two fuels. It is used to adjust fuel economy test results to a baseline fuel energy content corresponding to an outdated 1975 test fuel. In the 1980s, fuel economy tests indicated that R was 0.6, which a more recent testing shows that the value for modern cars is 1.0. This makes midlevel ethanol high-octane fuel a less powerful tool to meek future CAFE standards."[16] It is our understanding EPA continues to hold ethanol's R-factor at 0.6 despite testing by automakers and government scientists that the R-factor should be in a range from 0.96 to 1.0. We ask that EPA appropriately update the R-factor. Second, we urge the Agency to consider the use of clean, high-octane blends by crediting ethanol's upstream GHG reductions or its displacement of petroleum. Third, the MOVES2014 model needs to be fixed. The Motor Vehicle Emissions Simulator (MOVES) model is EPA's tool for estimating emissions from motor vehicles, based on multiple variables, including fuel composition. It is used by state regulators to determine compliance with air quality standards. While adding ethanol to gasoline has been scientifically proven to lower emissions of particulate matter and nitrous oxides, EPA's MOVES2014 model predicts increased emissions from ethanol. We believe the MOVES2014 model is severely flawed and needs to be fixed. MOVES2014 is based on an EPA-commissioned fuel study that purported to analyze the emissions effects of different fuel parameters, including ethanol content, while artificially and unnecessarily holding other fuel parameters constant. This so-called "match-blending" methodology unfairly blames ethanol for the emissions effects of including toxic aromatic hydrocarbons in the test fuel to maintain certain arbitrary distillation points that are naturally and harmlessly lowered by higher concentrations of ethanol. As EPA tested higher levels of ethanol, the agency also added more toxic aromatics to the gasoline. Furthermore, research used to help build the MOVES2014 model curiously examined T50 and T90, but not T70, which clearly shows how ethanol reduces emissions from gasoline. We encourage EPA to recognize the scientific flaws in the MOVES model and fix the inequities accordingly.

One of the ways to transition from today's legacy fleet to new vehicles with advanced engine technologies designed to run optimally on a higher octane fuel is to look at flexible fuel vehicles (FFVs) as the bridge. There are approximately 20 million FFVs on the road today. U.S. DoE has investigated the use of high-octane ethanol blends such as E25 and E30 in FFVs and legacy vehicles to serve as that bridge.[17] (It should be noted that Leone et al found that if the minimum octane rating of the fuel available to customers was increased, it may be technically feasible to update, or "reflash," the engine calibrations on existing legacy vehicles to extract the most benefit from the improved fuel properties. A lesser gain would be realized on most, if not all, vehicles without a calibration change). Key findings in the DoE report include: "Experiments were performed with four FFVs using an E10 (92.4 RON) and E30 (100.7 RON) fuel. The two GDI FFVs demonstrated performance improvements for E30 compared to E10 of 2.5 to 3 percent, based on the 15-80 WOT acceleration time. Three of the four FFVs showed performance improvement with high-octane E30 compared to regular E10. A non-flex fuel vehicle with a small turbocharged GDI was tested with ethanol-free gasoline (90.7 RON) and E15 (97.8 RON). Significant WOT performance improvement was measured for this vehicle. Marketing E25 or E30 to FFV owners as a performance fuel may enable greater utilization of ethanol in the near term, and could help establish the refueling infrastructure to enable manufacturers to build dedicated vehicles designed for a high-octane midlevel ethanol blend."

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[16] "In Pursuit of High-Octane Fuels." Downstream Business. June 22, 2016. Bryan Sims.

[17] "Effects of High Octane Ethanol Blends on Four Legacy FFVs and a Turbocharged GDI Vehicle." Thomas, J., West, and Huff, S., U.S. DoE-ORNL. March 2015.
https://www.fueleconomy.gov/feg/pdfs/ORNL_High_Octane_Legacy_Vehicles_Report%28final%29.pdf

With respect to refueling infrastructure, it should be noted that in 2009, Underwriters' Laboratory approved a new certification path for the 87A listed standard to include 87A-E25, which addresses gasoline and mid-level ethanol fuel blends up to E25 (including E15).[18] Furthermore Wayne Fueling Systems recently became the first manufacturer to supply all North American retail fuel dispensers as compatible and UL-listed to E25 as a standard feature. The shift from the standard UL listing of E10 to E25 is effective for Wayne Ovation and Helix fuel dispensers.[19]

Generous multiplier incentives are available for most model year 2017-2025 alternative fuel vehicles with the exception of FFVs. This is not equitable or good public policy which could result in fewer FFVs on the road in the future. Electric vehicles, plug-in hybrids, fuel cell vehicles and CNG vehicles are allowed to count as more than one vehicle in the manufacturer's compliance calculation while FFV credits erode from 0.8 miles per gallon in model year 2017 to zero for model years 2020 and beyond. All alternative fuel vehicle technologies ought to receive fair and equal treatment by the agencies instead of the inherent bias of the current program which penalizes FFVs.

It should be noted that in California, the nation's largest fuel market, sales of E85 have tripled over a five year period. In a letter to Graham Noyes of the Noyes Law Corporation, the California Air Resources Board reports that sales rose from 6.5 million gallons in 2012 to 18.7 million gallons in 2016. With the benefit of this data, it is appropriate for EPA to rebalance the playing field by enabling automakers to receive a meaningful credit or multiplier for future FFV production and consider a new incentive for engines that are optimized for efficiency on high-octane fuels comprised of between 25 and 30 percent ethanol.

It is imperative that EPA maintain robust FFV incentives because infrastructure investments on the part of fuel retailers have resulted in approximately 4000 locations around the country where the 20 million FFVs can fill up on E85 blends which save customers between 50 to 60 cents less per gallon than straight gasoline. In fact failing to restore and maintain FFV credits will strand the millions of dollars invested by retailers, the U.S. government (through the USDA Biofuels Infrastructure Partnership), and the biofuels industry (through programs such as the Prime the Pump Fund) to ensure equipment is in place to dispense high-ethanol (high-octane) blends such as E85.

Automakers have called on EPA and other agencies involved with the CAFE-GHG program to ensure much greater harmonization of the standards. We agree that trying to comply with sometimes inconsistent programs from EPA, the National Highway Traffic Safety Administration (NHTSA), and CARB presents compliance challenges for automakers. Steps should be taken to help harmonize the inconsistencies and develop "one-stop" compliance procedures.

Finally, there are two issues we will discuss before concluding our comments. EPA may argue these issues are outside the scope of the reconsideration of the final determination of the midterm evaluation of GHG standards for 2022-2025 model year vehicles, but these matters are of such importance to the overall future of high-octane high-ethanol blends that we must comment on them.

The first issue is the need for EPA to provide Reid vapor pressure (RVP) relief for E15 and higher ethanol blends. The Clean Air Act requires EPA to control the evaporative emissions of gasoline from

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[18] "UL Announces a New Certification Path for Ethanol Fuel Dispensers" August 10, 2009. http://www.ul.com/newsroom/pressreleases/ul-announces-new-certification-path-for-ethanol-fuel-dispensers/

[19] "Wayne Standardizes Offering for All North American Retail Fuel Dispensers to E25" August 30, 2016. https://wayne.com/en/press-releases/2016-08-30-wayne-standardizes-offering-for-all-north-american-retail-fuel-dispensers-to-e25/

the June 1 through September 15 summer driving season to reduce ground-level ozone and smog. In 1990 Congress amended the Clean Air Act to allow gasoline with ten percent ethanol a "one pound waiver" of EPA's evaporative emission limit [CAA § 211(h)(4)]. In other words, Congress gave EPA the authority to allow the use of E10 (the maximum amount of ethanol allowed in gasoline in 1990) during the June 1 through September 15 season. In 2011 EPA approved the use of E15, a fuel with lower RVP emissions than E10 and straight gasoline. Unfortunately, EPA refuses to apply the same RVP standard to E15 that applies to E10.

EPA's current interpretation of its evaporative emissions regulation handcuffs retailers in conventional gasoline areas of the country. These retailers want to sell E15 in the summer months because the fuel is less-emitting and lower cost than E10 and straight gasoline. This RVP limitation on E15 and higher blends is the most burdensome hurdle preventing more widespread use of ethanol nationwide. The Agency has a number of options at its disposal to make a commonsense regulatory change to its fuel volatility standard that would allow consumers to have access to E15 and other lower cost fuels that improve air quality. Whether EPA decides to extend the one-pound RVP waiver to E15 and higher blends, lower the volatility of gasoline blendstock, or take another approach, we urge you to take immediate steps to provide RVP regulatory relief so stations can offer E15 and higher blends to their customers.

The second matter relates to EPA's lifecycle analysis (LCA) of corn ethanol under the RFS. Scientists at the U.S. Department of Energy have repeatedly calculated that the GHGs of corn ethanol are far lower than assumed by EPA in its original 2010 regulatory analysis under the RFS. In January, USDA released an independent analysis indicating corn ethanol GHG emissions are already 43 percent below 2005 baseline gasoline and 30 percent below EPA's estimate for corn ethanol in 2022.

EPA has resisted updating the lifecycle analysis for corn ethanol because it is grandfathered under the RFS as being at least 20 percent better than baseline gasoline and cannot currently qualify as an advanced or cellulosic biofuel. What EPA fails to recognize is that state regulators and others working on low carbon fuel programs use the Agency's outdated analysis as an excuse to limit the GHG reductions allocated to corn ethanol. For example, Brazil is considering the implementation of a new program called RenovaBio which government officials there say is modeled after the RFS and California Low Carbon Fuel Standard (LCFS). If Brazil relies upon EPA's outdated LCA for U.S. corn ethanol to assign our exports with a higher carbon intensity under RenovaBio, it could severely curtail the competitiveness of U.S. ethanol in one of the most important export destinations on the planet. EPA has expressed interest as of late in the global trade of renewable fuels. One way to help keep U.S. ethanol's competitive edge, beyond blending economics and octane advantages, is to update the LCA for corn ethanol. Until and unless EPA updates the LCA for corn ethanol the Agency is penalizing American farmers who want to help meet the growing demand for low carbon fuels. We have written extensively on this subject in the past and stand ready to provide detailed comments on the various steps the Agency can take to make the appropriate updates.

Thank you for your time and consideration of these comments.

Sincerely,

Brian Jennings, Executive Vice President
American Coalition for Ethanol