

**Statement of
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**Before the
U.S. House Committee on Energy and Commerce,
Subcommittee on Environment**

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**Hearing on
“High Octane Fuels and High Efficiency Vehicles: Challenges and Opportunities.”**

I. SUMMARY OF TESTIMONY

- With the 2022 sunset of statutorily mandated blending targets under the Renewable Fuel Standard (“RFS”) Program, fuels industry stakeholders must consider the future of the program post-2022.
- NACS and SIGMA consider an “octane solution,” which will require automobiles to be built to use fuel with a minimum of 95 Research Octane Number (“RON”) after a date to be determined (presumably post-2022), to be a viable option to consider as part of RFS reform. Given those automobiles’ need to run on 95 RON fuel, this solution would spur demand for 95 RON fuel, which is already being sold in the marketplace today. Such a plan should be phased in gradually and maintain a strong market for renewable fuels such as ethanol and biodiesel. This is achievable even if it includes gradual off-ramps for RFS mandates.
- The octane solution would put the United States on a world standard and incentivize higher efficiency engines, which can improve gas mileage and limit emissions. It would provide a pathway for auto manufacturers to meet fuel economy standards, provide fuel blend flexibility to retailers and refineries, and provide market opportunity for renewable fuels producers.
- To achieve the environmental benefits of the octane solution, however, automobiles manufactured after a certain date would need higher octane fuels. In order for the plan to be successful, therefore, retailers will need misfueling liability protections; national standardization of signage; and a 1 lb. waiver for fuels with a Reid Vapor Pressure (“RVP”) of less than or equal to E10, among other regulatory changes.

II. INTRODUCTION

Chairman Shimkus, Ranking Member Tonko, and members of the Subcommittee, thank you for the opportunity to testify on the challenges and opportunities related to high octane fuel. My name is Tim Columbus, and I am speaking today on behalf of the National Association of Convenience Stores (“NACS”)¹ and the Society of Independent Gasoline Marketers of America (“SIGMA”)² (collectively the “Associations”).³ The Associations represent those who sell the preponderance of motor fuels at retail in the United States.

The Associations’ members are effective surrogates for consumers. In the U.S., gasoline purchases account for about five percent of all consumer spending in a year. Retailers’ competition for market share, along with certain market pricing realities, have made the U.S. fuels market one of the most competitive and transparent markets in the country. It is not unusual to see price swings throughout the day as gas stations adjust to market fluctuations. Consumers will often change where they buy gas to save just a few cents per gallon.⁴

As Congress, the Administration, and relevant industry stakeholders continue to debate the future of liquid fuels, I am pleased to provide fuel retailers’ and marketers’ perspectives.

A. Background on the Fuel Retailing and Convenience Industry

In 2016, the fuel wholesaling and convenience industry employed more than 2.7 million workers and generated \$549.9 billion in total sales, representing approximately 3 percent of U.S. Gross Domestic

¹ NACS is an international trade association representing the convenience store industry with more than 2,100 retailer and 1,750 supplier members, the majority of whom are based in the United States.

² SIGMA represents a diverse membership of approximately 260 independent chain retailers and marketers of motor fuel.

³ Mr. Columbus is counsel to NACS and SIGMA.

⁴ According to a 2017 NACS survey, 67% of consumers say they would drive five minutes out of their way to save 5 cents per gallon and 61% say that price is the most important factor in determining where they buy gas. See *How Consumers Behave at the Pump*, NACS, <http://www.convenience.org/YourBusiness/FuelsCenter/Pages/How-Consumers-Behave-at-the-Pump.aspx#.Ws4QQS7wbb0>.

Product. Of those sales, approximately \$317 billion came from fuel sales alone. Because of the number of fuel and other transactions in which the industry engages, fuel retailers and marketers handle approximately one of every 30 dollars spent in the United States. Fuel retailers serve about 160 million people per day—around half of the U.S. population—and the industry processes over 73 billion payment transactions per year. Nevertheless, the convenience store and fuel retail industry is truly an industry of small businesses. Approximately 63 percent of convenience store owners operate a single store.

The fuel wholesaling and convenience store market is one of the most competitive in the United States. Fuel retailers operate on tiny margins and are unable to absorb incremental cost increases without passing them on to consumers. Today, there are approximately 150,000 retail fueling facilities throughout the nation. The majority are owned by independent companies, whether single-store operators or regional chains, and each of these businesses have different approaches to how they buy and sell fuel. Less than 5 percent are owned and operated by the integrated oil companies.

III. BACKGROUND ON THE RFS

First established by Congress in 2005 and then substantially expanded in 2007,⁵ the RFS is intended to: (1) enhance the energy security and independence of the United States by displacing petroleum products from unstable sources with renewable fuels, and (2) increase the use of renewable fuels that have more favorable emissions characteristics than traditional petroleum-based products.

To accomplish its objectives, the RFS calls for the introduction and blending of an increasing amount of biofuels into the nation's fuel supply, culminating in the use of 36 billion gallons of renewable fuels by 2022. Specifically, through 2022, the RFS establishes four annual renewable volume

⁵ Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005); Energy Independence and Security Act, Pub. L. No. 110-140, 121 Stat. 1492 (2007).

obligations (“RVOs”), which specify the volumes of certain renewable fuels that must be blended each year into the nation’s transportation fuel supply. The four renewable fuel categories are: (1) cellulosic biofuel, (2) biomass-based diesel, (3) advanced biofuel, and (4) total renewable fuel. While “conventional” biofuels (generally, corn-based ethanol) do not have a specific mandate under the Program, the category generally makes up the difference between total renewable fuels and advanced biofuels. Conventional biofuel RVOs are, however, capped at a maximum of 15.0 billion gallons for each year after 2015.

The program has, to a large extent, achieved its objectives and broadened the domestic fuels market. Furthermore, retailers—whose sole objective is to sell legal products, in a lawful way, to customers who want to buy them—have embraced the program and worked in a flexible way with EPA and other stakeholders to ensure the program’s functionality for more than a decade.

It is important to note, however, that the program has seen controversy since its creation in 2005. There have been a number of debates over the past decade as to how the RFS should be implemented. Throughout these policy discussions, retailers’ primary objectives have been ensuring stable, efficient, diverse markets that set the stage for an environment where consumers have a variety of cost-effective options from which to choose, and businesses that make investments based on the RFS’s incentives are rewarded rather than punished.

For example, the Associations supported the Environmental Protection Agency (“EPA” or “the Agency”) exercising its statutory “waiver authority” to lower RVOs below statutory levels in order to avoid breaching the “blend wall” (the point at which there are insufficient Renewable Identification Numbers (“RINs”) to fulfill obligated parties’ RVOs), and the dramatic market disruption and rise in fuel prices that would result. The Associations also opposed shifting the “point of obligation”

downstream from importers and refiners to “position holders” at the terminal rack, as this would have discouraged marketers from incorporating renewable fuels into their supply, punished businesses that responded to congressional incentives, and led to higher fuel prices.

As we approach 2022, the year when the statutorily mandated blending requirements end and full control over setting RVOs will be given to EPA, it is important to consider what changes should be made to the program. In looking for a way to handle the RFS post-2022, Congress must take into account both the program’s successes—as well as its shortfalls—to ensure that any solution successfully shapes the future of the liquid transportation fuels market in the U.S.

IV. RFS & OCTANE

As Congress moves forward with RFS reform, the Associations encourage lawmakers to examine higher octane fuel as a possible avenue to address competing interests in the fuels sphere because of its benefits for fuel efficiency. Octane is a measure of the maximum compression that can be handled by a fuel before it ignites; in other words, it is the measure of a particular fuel’s ability to resist premature ignition (also known as “knocking”). A higher octane measure generally correlates with a lower risk of knocking, and when the risk of premature ignition is lower, possible engine damage from the phenomenon is minimized. This is why higher compression engines, which can improve both fuel efficiency and car performance, generally require higher octane fuels.

As we approach the 2022 RFS sunset, it is worth considering: what can be done to improve fuel efficiency, enhance emissions benefits, and reduce volatility in the fuels market? Establishing a standard for newly manufactured automobiles (after a certain model year) that requires them to run on a minimum octane of 95 Research Octane Number (RON) may be part of the answer.⁶ This is comparable

⁶ As the National Renewable Energy Laboratory notes, “For modern technology engines, RON is the better measure of performance (knock prevention)” compared to the current way of calculating octane (RON+MON/2). Moving to a RON

to about 91-92 octane under the current U.S. octane rating system, which is already available today to consumers.⁷ (Further discussion on why the standard should be 95 RON is found below in subsection IV.A)

The use of 95 RON would be a floor, not a ceiling, meaning that retailers could still offer premium fuels with a higher octane rating to consumers if the market demands it (which the Associations fully expect it will). *It is also important to note that transitioning new cars to a higher octane fuel would not mean that all cars in the United States would be required to use 95 RON fuel.* Rather, *only* cars manufactured after a certain model year (to be determined) would be required to run on a minimum octane of 95 RON. Thus, all other cars would be able to continue using what is sold today as 87 octane regular fuel.

Critically, the new cars would require the motor fuels market to meet a performance standard – there would not be a formulaic mandate for fuels. This would ensure that market dynamics would influence how businesses, which would respond to consumer demand for particular types of fuel, choose what fuel components to blend to produce gasoline at retail that would meet the standard. By establishing a performance standard for automobiles as opposed to a fuel formula, the government would not be mandating a particular fuel blend solution, but would instead allow the market to find the most cost effective solutions—and as history has shown, that will likely lead to a much better result both for the businesses involved with the technology and U.S. consumers.

To move away efficiently from the current regime, the Associations support a phase-in of the performance specifications. This would allow time to provide responsible off-ramps for the existing

regime would also place the U.S. on a standard consistent with the standard used in other parts of the world (e.g., Europe). *See infra* note 8.

⁷ The current rating system calculates octane ratings by using an average of RON and the Motor Octane Number (MON). RON tests fuel performance in an engine with variable compression levels, while MON uses a similar engine, but tests under more severe conditions, such as higher speeds. The U.S. lists fuel on pumps using a formula for the average of: $(RON + MON)/2$, also known as Anti-Knock Index (AKI).

renewable fuel mandates, while still maintaining a market for these fuels. Ethanol has long been used as a high-octane fuel component, and as such, would ostensibly be guaranteed market share as an oxygenate under the proposal. Indeed, done properly, the phase-*down* of the RFS mandates for corn ethanol would correspond to the phase-*in* of vehicles that must run on higher octane fuels.

Implementation of the new regime would allow retailers to work within a market governed by free market principles. Given the close relationships that fuel retailers have with consumers, the regime will see smoother implementation into the marketplace with retailers on board.

A. BENEFITS OF OCTANE

As lawmakers consider a post-2022 pathway for the RFS program, the benefits of an octane solution are appealing. First, an octane solution would not overwhelm or necessitate an overhaul of the fuels system. Rather, it is a solution that builds on the existing system and would not require drastic infrastructure or other changes for existing stakeholders to adopt the standard. For instance, 95 RON is comparable to about 91-92 octane under the current U.S. octane rating system, which means 95 RON is *already* a product that is sold at retail to consumers and supported by the fuels supply chain.

Second, moving to a 95 RON standard, while it will necessitate changes to labeling and consumer education, nonetheless brings certain benefits and efficiencies to the system. As the National Renewable Energy Laboratory notes, “For modern technology engines, RON is the better measure of performance (knock prevention)” compared to the current way of calculating octane $(RON+MON/2)$.⁸ Moving to a RON regime would also place the U.S. on a standard consistent with the standard used in other parts of the world (e.g., Europe). Inter-market uniformity enhances overall market efficiencies, a net benefit.

⁸ McCormick, Robert. (March 17, 2016). *High Octane Fuels: Benefits and Challenges*. Presentation. Available at https://cleancities.energy.gov/files/u/news_events/document/document_url/158/CC_HOF_Webinar_Combined.pdf.

Third, implementing a national octane standard would further support automakers' efforts to reduce emissions via the use of higher efficiency engines that can run on high octane fuel. Engines that run more efficiently can improve automobile performance and gas mileage, and result in positive environmental benefits by reducing emissions.⁹ With regard to a floor of 95 RON, fuels and auto industry stakeholders have said that between 94 RON and 96 RON is where “the cost to reduce emissions and improve efficiency is lowest for both automotive and fuel manufacturers.”¹⁰ Automakers have generally delivered on fuel economy standards by developing technologies to improve the fuel efficiencies of cars. However, another way to help meet the standards is to adjust the fuels used by the nation's current transportation fleet.

Using an octane specification as opposed to an octane formula also allows the market to tailor blendstocks to create desired fuel mixes. The benefits of such flexibility are discussed in greater detail below.¹¹ There may also be other benefits that other industry sectors (*i.e.*, automakers) find particularly appealing.

V. OCTANE & RETAIL

⁹ Economic and Environmental Benefits of Higher-Octane Gasoline. Raymond L. Speth, Eric W. Chow, Robert Malina, Steven R. H. Barrett, John B. Heywood, and William H. Green. *Environmental Science & Technology*, 2014, 48 (12), 6561-6568. DOI: 10.1021/es405557p (The 2014 study from MIT found that the U.S. could reduce carbon dioxide emissions by up to 35 million tons annually and save \$6 billion a year by switching to higher octane fuel—in this case 98 octane.)

¹⁰ See Everett Wheeler, *US refiners consider boosting octane to maintain domestic market share*, S&P Global Market Intelligence, (March 15, 2018), <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/43892604>.

Furthermore, at 95 RON, the automobile industry could meet “roughly one-third of future [Corporate Average Fuel Economy (CAFE)] reduction required under current regulations for which the automobile industry [has] not yet developed technological solutions.” *Ibid.*

Enacted by Congress in 1975, the CAFE standards are intended to reduce domestic energy consumption by increasing the fuel economy of automobiles, with the overall goal of ensuring domestic energy security. The most recent standards were promulgated in 2012. See Environmental Protection Agency, Final Rule, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62623 (Oct. 15, 2018).

¹¹ See section VII. Why Will the Market Adjust Promptly?

From the fuel retailing and marketing perspective, an octane solution would be a way to move forward that provides certain benefits to all domestic fuels market stakeholders. Such a solution would provide more predictability, less volatility, and less federal intervention in the fuels market. In implementing any solution, however, retailers will need to see certain adjustments to the fuel regime to ensure they can easily, legally, and affordably sell fuels that consumers want at the pump.¹²

The most important of these adjustments would be misfueling liability protection. Given the diversification of fuel blends, and the bifurcation of consumer vehicles (*i.e.*, some cars will require 95 RON, while others could run on standard 87 octane fuel), retailers will require liability protection from consumer misfueling. This is necessary because in order to reap the benefits (*i.e.*, improved mileage and decreased emissions) of the octane solution, cars manufactured after the transition date must run on higher octane fuel.¹³ To properly allocate responsibility in refueling transactions, therefore, retailers should be required to notify consumers via signage of which fuel they are purchasing. Once retailers have done so, however, they have fulfilled their responsibilities and must not be held responsible for a motorist ignoring those signs. In other words, such misfueling liability protection should only apply provided that (1) retailers have correctly followed all applicable laws and regulations pertaining to the sale and labeling of fuels, and (2) consumers have misfueled through no fault of the retailer.¹⁴ In the

¹² Consumers would need to purchase 95 RON fuel because that would be what their car engines (produced after a certain date) would require.

¹³ This transition would be analogous to the phase-in of leaded fuel in the 1970s.

¹⁴ *See generally* U.S.C. § 7545; *see also* 40 C.F.R. 80.1504; *see also* EPA, Final Rule, 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. 44406 (July 25, 2011); *see also* Federal Trade Commission, Final Rule, Automotive Fuel Ratings, Certification and Posting RIN 3084-AB390, 81 Fed. Reg. 2054 (Jan. 14, 2016).

Today, if a consumer misfuels (*i.e.*, puts fuel in a non-approved engine), retailers can be held responsible for violating the Clean Air Act and be subject to fines of up to \$37,500 per violation. Even if the retailer is fully compliant with EPA's misfueling mitigation requirements, it may be subject to civil litigation under the Act's private right of action provision. *See* 42 U.S.C. § 7604.

transition to a national octane standard, therefore, there must be a mechanism for the government to disincentivize both deliberate and accidental consumer misfueling and protect retailers who follow the rules.¹⁵ Otherwise, too many retailers will be reluctant to sell the higher octane fuel that newer cars will need to run.

In addition, ethanol is likely to play a critical role in the higher octane standard regime—and as the market evolves, there may be demand for fuels containing higher blends of ethanol (*i.e.*, blends containing more than 10 or 15 percent ethanol). To expedite the market’s ability to respond to demand and to support manufacturers producing higher compression engines, EPA’s fuel registration process needs to be streamlined. EPA will need to expeditiously clarify registration and other requirements for any new fuels and fuel blends offered under the octane regime. These changes will need to be accompanied by any other regulatory changes necessary to ensure a smooth transition from the current regime to a solely RON regime, including: (1) amending the Petroleum Marketers Practices Act;¹⁶ (2) directing EPA to amend Product Transfer Document requirements;¹⁷ and (3) directing EPA to facilitate and expeditiously process registration for 95 RON gasoline. Retailers will also need assurances that signage requirements at the federal level will preempt state-level requirements to ensure standardized requirements nation-wide.

Legislation introduced in the past would have addressed many of the retailer liability concerns relating to selling fuels containing more than 10 percent ethanol. *See* H.R. 4345, the Domestic Fuels Protection Act of 2012, 112th Cong. (2012)(introduced by Rep. John Shimkus (R-IL)); H.R. 1214, the Domestic Fuels Protection Act of 2013, 113th Cong. (2013)(introduced by Rep. John Shimkus (R-IL)).

¹⁵ For example, during the transition from leaded to unleaded fuel, retailers were required to install different size nozzles at pumps, which were designed to prevent accidentally fueling leaded gasoline into unleaded vehicles (which automakers designed with smaller fill pipes). To disincentivize deliberate misfueling, the government could consider fining consumers at vehicle inspections or otherwise preventing them from re-registering vehicles if there is evidence of misfueling (*i.e.*, fuel tank discoloration reflecting dyed fuel).

¹⁶ 15 U.S.C. §§2821, 2822.

¹⁷ *See generally* 40 C.F.R. §§80.1503 and 80.1453.

In addition, the anachronistic limitation of the 1lb. waiver to E10 should be eliminated. To ensure the greatest fuel component flexibility, current law will need to be amended to provide a 1 lb. waiver for fuel blends that have a RVP equal to or lower than that of E10. E10 itself is already the recipient of a 1 lb. waiver that was granted in 1978 and if new fuel blends are able to match or stay under the RVP of E10, these fuels ought to be granted a waiver as well. This is not to say, however, that E15 or any other specific blend should be mandated under the new plan. The octane solution simply allows for these or any other fuels that meet octane and RVP specifications to be sold, with the market dictating what blends are sold in what areas. In some areas, blends may be more petroleum-heavy, while in others, ethanol or other renewable fuels may feature more prominently.

Finally, while fuel retailers and marketers must contend with infrastructure concerns on a daily basis, the octane solution, as aforementioned, does not mandate the sale of any particular fuel blend and existing infrastructure already permits selling 95 RON fuel to consumers. Thus, while the octane standard may spur infrastructure changes over time, this would be a gradual change as the automobile fleet turns over. That is, retailers will not be required to sell E15 or other higher level ethanol blends if they do not want to, which could help them to keep using existing infrastructure. However, to the extent that demand for certain fuel blends is high, retailers may face market pressure to sell these fuels, which would require addressing the infrastructure limitations that prevent retailers from offering higher ethanol blends today.¹⁸

VI. OCTANE, THE MARKET, AND OTHER STAKEHOLDERS

¹⁸ For example, the Occupational Safety and Health Administration's (OSHA) regulations require retailers to use equipment that has been listed by a nationally recognized testing laboratory as compatible with the fuel the equipment it is storing and dispensing.

In considering any change to the fuels market, it is relevant to consider how the market will adjust to meet the new requirements. In the case of the octane solution, the key to successful retailer integration is the *flexibility* of the RON regime. As previously discussed, if a fuel meets RON and RVP specifications, it is up to the market to determine which fuel blends are desired by customers. This gives retailers some ability to provide diversified fuels to meet consumer demands. This is also important for ethanol and renewable fuels producers, as they will still be able to find a market for their products as a fuel component (*i.e.*, oxygenate).

Since the octane solution relies on a performance specification for automobiles, demand for the fuels will be guaranteed, and demand pulls supply. Under the plan, when consumers need to fuel their cars manufactured post-2022 (date to be determined), they will need to purchase a certain type of fuel—minimum 95 RON. Filling the cars with lesser octane fuels would run the risk of damaging the engine, thereby guaranteeing demand by incentivizing consumers to get on board with the new options and buy higher octane fuels.¹⁹ As such, a retailer can do a net present value analysis for capital investment on his or her business based on what he or she believe the supply and demand will be.

Refiners and manufacturers will see a freedom from federal intervention that has generally not been present in the fuels market. The octane solution will incentivize them to sell certain blendstocks based on market forces, but like retailers, refiners and manufacturers can still make their own decisions about what the best products are for them to sell. Similarly, because there would be no mandated octane formula, renewable fuels producers would have the opportunity to compete for business and market share.

VII. CONCLUSION

¹⁹ The idea is similar to the switch from leaded to unleaded gasoline in the 1970s. Changes in automobile designs meant that consumers needed to buy unleaded fuel or risk misfueling.

In conclusion, the octane solution outlined above has the potential to provide market freedom and improve both business and consumer choice regarding liquid fuels. The RON and RVP specifications will incentivize the development of higher performance, cleaner engines, with better fuel mileage. Overall, the U.S. fuels market will be able to function in a more flexible manner, with less federal intervention and according to free market forces.

With proper safeguards, including misfueling liability protection, clarification of related laws and regulations, a 1 lb. waiver for certain fuels, and consideration of retailer infrastructure concerns, the retail community will be able to ensure a smooth transition to an octane regime that will benefit government, businesses, and the American consumer.

Thank you for the opportunity to testify before you today. I am happy to answer any questions this testimony may have raised.