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July 27, 2015

Attention: Docket ID [EPA-HQ-OAR-2015-0111; FRL-9927-28-OAR]

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Comments on Proposed Rule for 2014, 2015 and 2016 Standards for the Renewable Fuel Standard

Dear Administrator McCarthy;

This letter provides our comments in response to the U.S. Environmental Protection Agency's (EPA) proposed rule regarding 2014, 2015, and 2016 Standards for the Renewable Fuel Standard Program (80 Fed. Reg. 33,100; June 10, 2015).

The Energy Policy Research Foundation, Inc. (EPRINC) is a non-profit, non-partisan public policy research organization that has published extensively on developments in U.S. and world energy markets since 1944. Our focus is on the intersection of petroleum economics and public policy. We have been called on to testify at every session of Congress in the last decade and routinely provide briefings on our research for industry, nonprofit organizations, federal, state, and local agencies and Congressional staff. EPRINC has been a source of expertise for numerous government studies and its chairman and president have served on virtually every National Petroleum Council study. EPRINC has undertaken research and analysis on the petroleum markets, especially developments in petroleum product markets and downstream operations (refining, distribution, and marketing) since the early days of our organization.

We recognize the difficult task EPA has before it in balancing the requirements of U.S. law and price risks driven by constraints in technology and consumer resistance to mandates of higher volumes of renewable fuels. However, Congress provided EPA with widespread latitude to ensure the volumetric targets set by EPA would be tempered by common sense, the current state of technology, available supply, and even economic harm to the national economy. In this regard, EPA should be commended for recognizing emerging price and technology constraints from requiring blending volumes of renewable fuel above 10 percent of the gasoline pool.

One of the key issues regarding corn-derived ethanol/gasoline blends is the concept of the "blendwall:" the design specifications of most gasoline-powered vehicles in the U.S. is for gasoline blends with 10% or less of ethanol (known as E10). Fueled this way, the U.S. auto fleet can operate correctly within the parameters of their design specifications and remain under warranty. Only a small fraction of vehicles operating in the U.S., known as FlexFuel vehicles, can utilize the highest ethanol blends (E85, or gasoline-ethanol blends whose composition contains up to 85% ethanol). With RFS-mandated fuel ethanol consumption approaching 10% of total US gasoline consumption, generally referred to as the "blendwall," a central public policy issue is whether the costs of requiring higher volumes of biofuel into the U.S. transportation fuel market will impose unacceptable price risks to U.S. consumers.

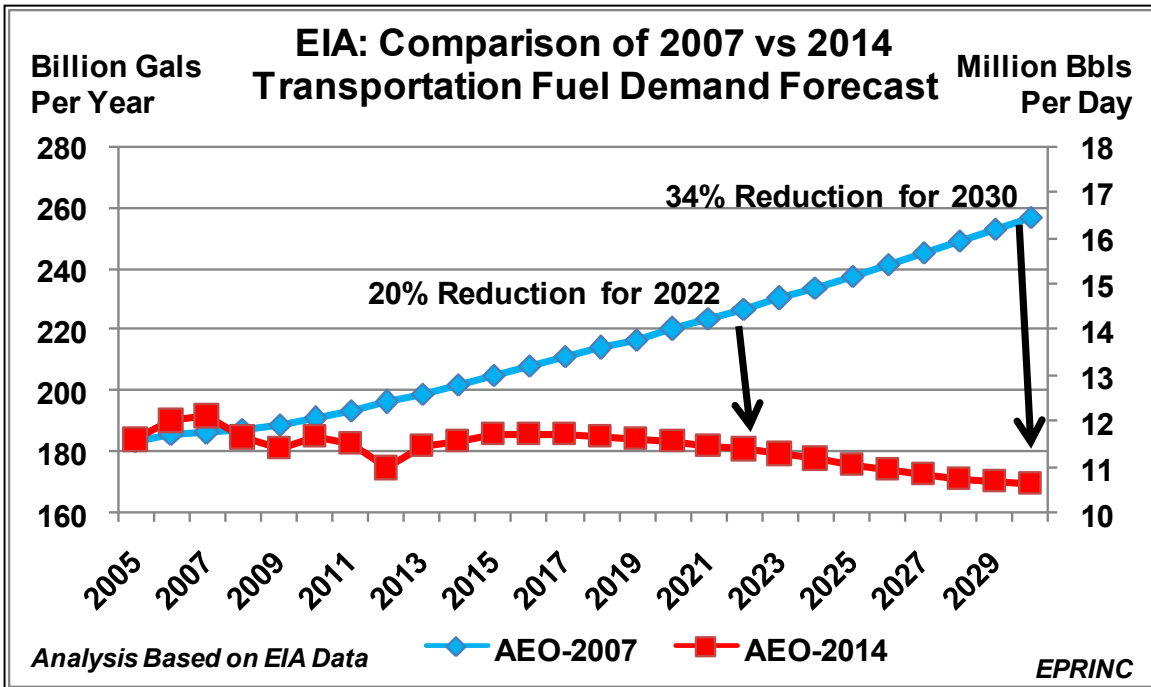
On balance, careful consideration of uncertainties in the capability to produce renewable fuels, the capacity for the U.S. auto fleet to absorb these fuels, potential for misfueling, feedstock costs for the production of transportation fuels (corn, advanced biofuels, and crude oil), and consumer resistance to higher blends of renewable fuels impose very high price risks to the national economy. These price risks escalate whenever volumetric targets are set above the blendwall.

The problem is not ethanol or renewable fuels per se, but the fundamental structure of the mandate which severely limits the capability of U.S. manufacturers (and consumers) of gasoline and diesel fuel to make effective cost minimizing adjustments to changes in market conditions and manufacturing costs. EPA is now entering the unenviable role of setting, at least at the margin, the price of gasoline and diesel fuel in the U.S. Specifically, EPA will be raising the price of E10 to lower the price of E85, but the magnitude of the cross subsidy is not easily known nor are the price risks easily contained given uncertainties described above.

Understanding the Risks of Mandating Higher Biofuel Blends

After eight years and at the midpoint of the RFS program, it is important to assess the effectiveness of the program's implementation. A central challenge facing policy makers, and fully recognized by EPA, is whether continually increasing volumes of biofuels can be technically and cost-effectively incorporated into the U.S. transportation fuels market. The critical impediments to future blending volume increases are flat (possibly declining) demand growth for transportation fuels (Figures 1 & 2), combined with both technical challenges in the form of the blendwall, and consumer resistance.

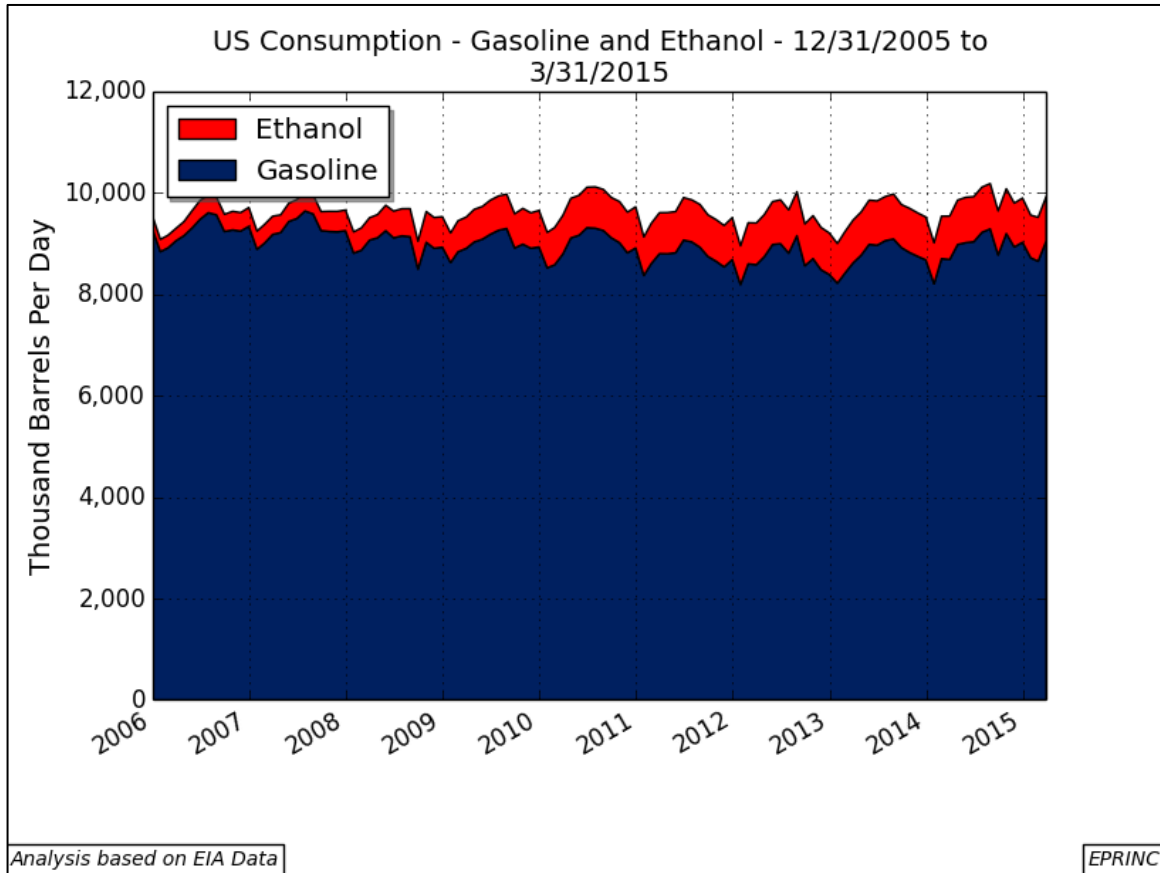
FIGURE 1



In 2007, the twin requirement of GHG reduction and mitigation of petroleum imports appeared as tenable rationales. However, several challenges that were present then have become more apparent since implementation. Clearly, policy makers did not anticipate the remarkable recovery in domestic hydrocarbon production from new technologies or the rapid deceleration in domestic consumption of transportation fuels. The U.S. is expected to soon be the largest producer of crude oil, and net imports of crude oil and petroleum products have declined from an average high of 11.4 MBD in 2005 to 4.3 MBD in 2014, over 50 percent which are provided by Canada. Notably in this period, OPEC crude imports have declined from 5.5 MBD to 3 MBD. As the net import data demonstrate, much of these crude imports are processed into value added petroleum products and shipped to foreign markets.

Since 2005 there has been no growth in gasoline consumption (any and all combinations that include ethanol). In 2014, U.S. drivers consumed about 8.9 million barrels/day (MBD) of gasoline, 4% less than the U.S. record high consumed in 2007. Until now, the way to stay within RFS2 compliance was to expand E10 blends throughout the U.S. to the point where very little gasoline sold in the US has no ethanol. But now with flat demand growth and rising statutory volumetric requirements, increasingly higher ethanol-blends is the only remaining path to RFS

FIGURE 2

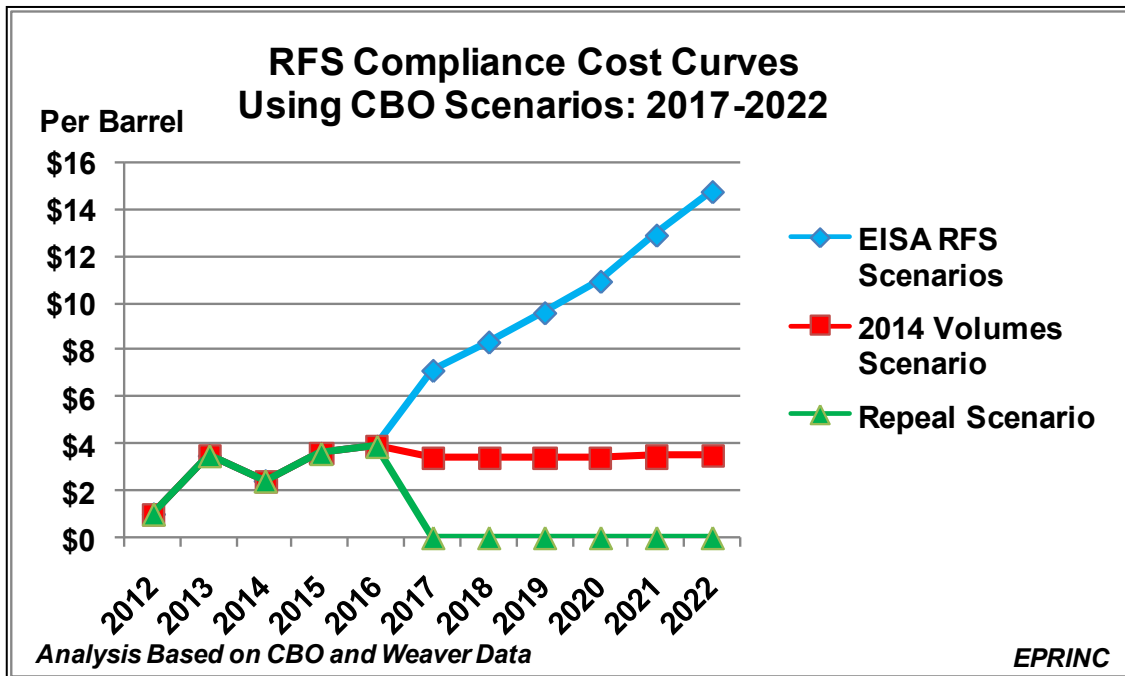


compliance. However, these higher ethanol blends would damage a large majority of existing conventional US automobile engines and potentially render them inoperable. They also impose a rising risk to the performance of small and marine engines. For E85 to be competitive with E10, at a minimum it needs to be priced on an energy-parity basis. Since the implementation of the RFS, E85 prices have been trending towards parity, but nevertheless are at a premium, averaging about 84% of those of E10. However, parity pricing is not likely to be sufficient to induce consumers to substantially increase the use of E85 as a transportation fuel. We have substantial evidence of consumer resistance to E85 in those states that have promoted its use. Its low energy content requires more fueling stops and its long-term economic viability presents substantial investment risks to retail establishments considering installing fueling pumps and tanks. While EPA might believe it can induce consumers to purchase more E85, or other costly advanced biofuels, the price risks of actually achieving that goal are largely unknown.

We note that RIN prices have risen in value. 2015 RIN obligations recently have increased to 9 cents per gallon or over \$3.50 per barrel. In the current low-price crude-oil environment, the RVO obligation would represent an additional cost equal to almost 7% of the prevailing WTI price. Modeling the period from 2017 to 2022 and viewing the scenario with the most aggressive

adoption of the RFS mandate (Figure 3), EPRINC's calculations forecasts that RVO obligations would rise from \$7.12 per barrel in 2017 to \$14.73 in 2022. We are in the process of estimating

FIGURE 3



the compliance costs of lower RVO targets (below statutory requirements for 2022), but we would caution that any calculation on the cost of producing transportation fuels under EPA volumetric targets comes with considerable uncertainty. Using EIA's Annual Energy Outlook WTI Price forecasts, the 2017 RVO compliance target would add an additional 9.4% of the expected crude oil price in terms of refinery production costs; this would increase to 16.2% in 2022. Also, note that if we enter a period of sustained lower oil prices (no longer an unrealistic outcome), higher corn prices, or lower gasoline demand, the compliance cost can easily escalate substantially above \$14.73/barrel in 2022.

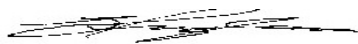
As EPA has pointed out, refiners with more integrated operations along the supply chain that include blender terminals can capture some of the "detached" RINs for their RVO compliance. In addition, there is some evidence in previous years that higher RIN values have been compensated somewhat by lower ethanol prices. But overall, RIN compliance costs to Obligated Parties have become and will continue to be substantial. Although compliance costs will remain uncertain, the fundamental problem with the program is the mandate limits options for market participants to adjust to changes in either the cost of biofuels or the cost of complying with the

regulation. As long as the mandate remains, both technical constraints and cost challenges pose substantial risks to increasing the cost of transportation fuels to consumers.

Containing Price Risks

EPA's states in the proposed rule that it intends to aggressively require higher volumes of renewable fuels into the transportation fuels market above the blendwall. This regulatory strategy might in fact succeed in increasing the volume of renewable fuels in the U.S. fuels market, but it may very well come at a very high price. In the absence, of more detailed work estimating the longer-term production cost of transportation fuels under the regulation, including a careful assessment of price risks to American consumers, we would recommend a more cautious approach. EPA may believe Obligated Parties will adjust to higher volumetric targets for renewable fuels by incentivizing the use of E85, but a range of technical constraints and cost considerations may also see the adjustment take place through lower production of transportation fuels (cuts in refinery runs), higher exports of petroleum products (not part of RVO requirement), lower imports of petroleum products, or even greater production of fuels (jet fuel, etc.) which are outside the RVO. Given the absence of a careful and detailed assessment of the longer-term production cost of transportation fuels, and the likely price risks to U.S. consumers under the volumetric mandates, we recommend EPA keep volumetric renewable fuel targets below the blendwall until more careful assessments of the consequences of higher renewable fuel mandates are fully evaluated.

Sincerely,



Lucian Pugliaresi
President