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to the

House Committee on Energy and Commerce

Subcommittee on Environment

Oversight Hearing on "Examining Renewable Identification Numbers Under the Renewable Fuel Standard"

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Executive Summary

In order for companies to make investments in new technologies and renewable fuel production facilities, they need clear, consistent, long-term policies and regulations — and of course, they need financial incentives. The Subcommittee on Environment has the opportunity to bring the old standards current with new technologies and a changing marketplace.

First, before considering the allowable methods for producing renewable fuel, the subcommittee should review volume targets. Since the RFS regulations were originally enacted, demand for fuel has been lower than projected, and it is expected to decline in the future. Total fuel demand caps the potential for renewables, because such fuels are usually blended into petroleum fuels at low percentages.

Next, you should be aware that there are currently inconsistencies and barriers that limit or even prevent some renewable fuel generation. In 2016, EPA proposed revisions to address some of those barriers; however, the regulations were never enacted, leaving in place several problematic requirements.

Some renewable fuels are prohibited from qualifying for Renewable Identification Numbers (RINs), such as fuels that require two separate facilities to be produced, biogas used to produce electricity that powers motor vehicles, and renewable fuel to be used in an ocean-going vessel.

Other activities have such stringent (or outdated) requirements that few generators can qualify: for example, waste wood or logging residues as feedstocks, and biogas or fuels from mixed cellulosic and non-cellulosic feedstock.

The fuels of the future depend on a renewable fuel producer's ability not only to generate RINs, but on the type and quantity of RINs that can be made for each gallon of fuel. This dependency holds true for both stand-alone production facilities and for petroleum refineries wanting to co-process renewable feedstocks in their facilities.

Testimony on Examining Renewable Identification Numbers

Under the Renewable Fuel Standard

My name is Sandra Dunphy and I am a director in the Energy Compliance Services group of Weaver and Tidwell, L.L.P. (Weaver). Weaver is a certified public accounting firm ranked among the 40 largest CPA firms in the U.S. ., with nine offices nationwide. Founded in Texas, Weaver has always focused on providing services to energy companies; the Energy Compliance Services group helps companies of all sizes understand regulatory requirements, maintain compliance, and identify and maximize benefits available under applicable programs. My specific area of expertise is the Renewable Fuel Standard (RFS) program.

Weaver is the largest provider of attestation services under the EPA's gasoline and RFS programs and was the first auditor approved by the EPA under the RFS Quality Assurance Plan. Weaver verified more than 1.1 billion RINs in 2017, and we are currently auditing about 50 renewable fuel production facilities.

Our client base for these RFS-related services is very diverse: renewable fuel producers, importers, exporters, blenders and consumers. Our clients also include gasoline and diesel refiners and importers – those companies classified as "Obligated Parties" under the RFS program because they must acquire Renewable Identification Numbers (RINs) to comply with the renewable fuel blending targets set annually by EPA. With our diverse customer base, Weaver takes a neutral position on the RFS regulations. My comments to you today are intended to provide useful information as you explore potential revisions and updates to the RFS regulations, not to advocate for any particular position or provision.

My testimony will address the future of transportation fuels and the possible roles that the RFS program and RINs could play. I've been asked to describe some of the nuances or inconsistencies that exist in the current regulations, so that will be my area of focus.

The RFS program is probably one of the most complex set of regulations that EPA has ever implemented. The goal of the program — to encourage the expansion of opportunities for renewable fuels to be used in the transportation fuel market — is straightforward; its complexity lies in the myriad details involved in the actual production and use of renewable fuels and the generation and use of RINs. The work Weaver does for our clients is to help bring clarity to the requirements that affect them, and I can assure you, it's a full time job. The observations I will share have been gleaned from our work with project and technology developers and with Obligated Parties.

Just to clarify, Obligated Parties are companies that produce or import gasoline or diesel fuel into the U.S. in any given year. They are the entities that need to acquire RINs and use them for compliance at the end of the year, and they are subject to penalties for noncompliance or for the use of any invalid RINs. Whether they only import gasoline or only produce diesel fuel, each obligated party must own RINs to cover all four compliance categories: cellulosic, biomass-based diesel, advanced and renewable fuel RINs.

Projected vs. Actual Fuel Demand and Effects of Demand on Renewable Fuel Production

When the annual Congressional mandates for the RFS program were established under the Energy Independence and Security Act of 2007 (EISA), the target volume of total renewable fuels was set to increase year after year through 2022. Gasoline demand had increased steadily in the years leading up to 2007, and it was expected to continue increasing through about 2015.

The objective of EISA was to transition, beginning in 2015, from "conventional" to "second generation" or "advanced" biofuels — that is, from fuels that achieve a 20% greenhouse gas reduction compared to the petroleum fuels they displace to fuels that achieve a 50–60% reduction.

Volume Standards as Set Forth in EISA

Year	Cellulosic Biofuel (60% GHG ↓)	Biomass-Based Diesel (50% GHG ↓)	Advanced Biofuel (50% GHG ↓)	Total Renewable Fuel	"Conventional" Biofuel (20% GHG ↓)
2009	NA	0.5	0.6	11.1	10.5
2010	0.1	0.65	0.95	12.95	12
2011	0.25	0.8	1.35	13.95	12.6
2012	0.5	1	2	15.2	13.2
2013	1	*	2.75	16.55	13.8
2014	1.75	*	3.75	18.15	14.4
2015	3	*	5.5	20.5	15
2016	4.25	*	7.25	22.25	15
2017	5.5	*	9	24	15
2018	7	*	11	26	15
2019	8.5	*	13	28	15
o2020	10.5	*	15	30	15
2021	13.5	*	18	33	15
2022	16	*	21	36	15

*statute sets 1 billion gallons minimum, but EPA may raise requirement

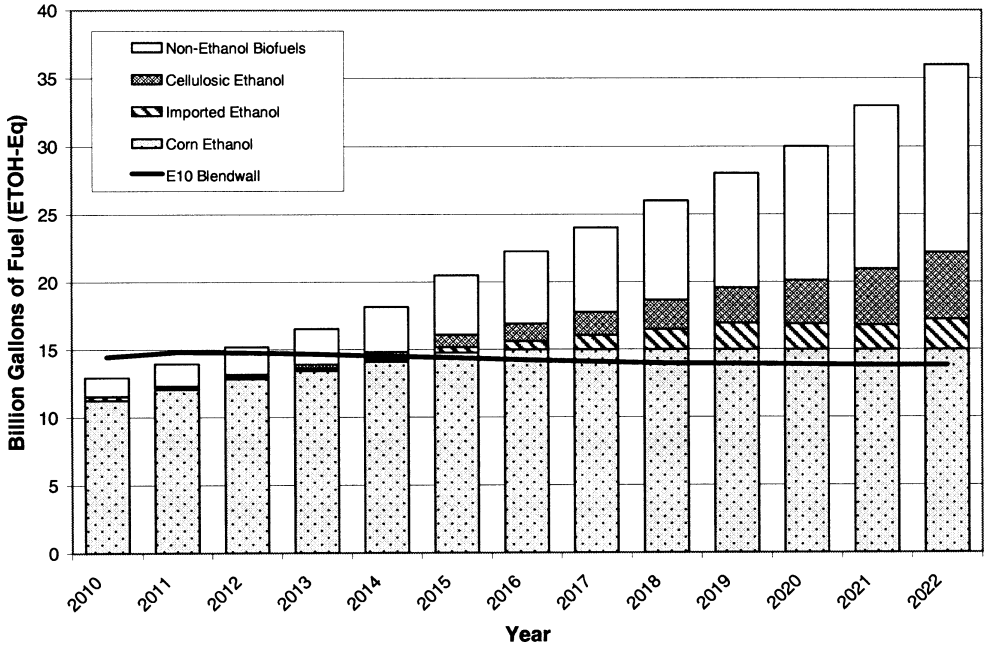
Note: There is no statutory volume requirement for "conventional" biofuel. The conventional volumes in the table are calculated (total – advanced), and are biofuels that do not qualify as advanced.

When the RFS2 regulations were published in early 2010, the expectation was that gasoline demand would continue to grow until about 2013, then taper off. The preamble to the RFS2 regulations stated, "Based on the primary ethanol growth scenario we're forecasting under today's RFS2 program, the nation is expected to hit the 14–15 billion gallon blend wall by

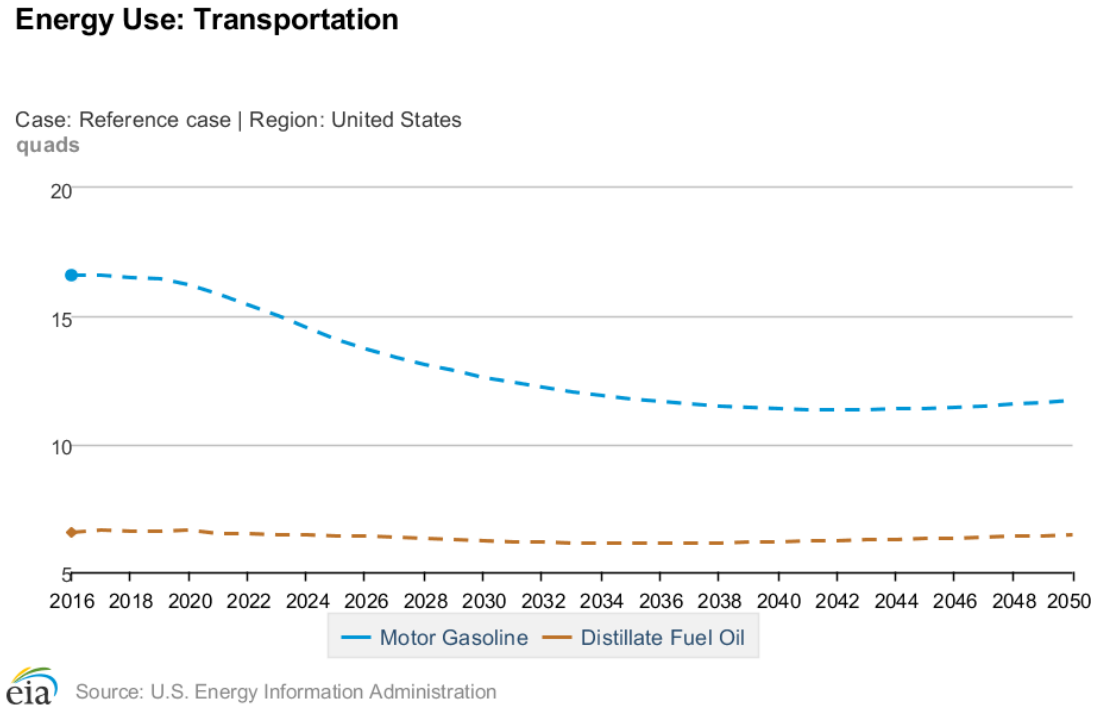
around 2014 (refer ahead to Figure IV.D.2–1), although it could be sooner if gasoline demand is lower than expected. It [the blend wall] could also be lower if projected volumes of non-ethanol renewables do not materialize and ethanol usage is higher than expected."

Figure IV.D.2-1

RFS2 Primary Control Case Compared to E10 Blend Wall



As we now know, gasoline demand from 2010 to 2013 was lower than expected, and the U.S. did indeed hit the blend wall in 2013. Gasoline demand then increased from 2014 through 2017, another peak; the current 2018 EIA Annual Energy Outlook is now indicating that gasoline demand will begin to decrease in 2018 or 2019 and continue to decline until around 2045 (see chart below). Diesel demand is expected to stay relatively constant over this period.



Since liquid renewable fuels are generally blended into gasoline and diesel fuel at relatively low percentages, this demand outlook greatly impacts the ability to blend ever-increasing volumes of renewable fuels into petroleum fuels, in the absence of new internal combustion engine technologies or the greater availability and use of higher ethanol blends. (The subject of higher ethanol blends is not addressed in this testimony, but EPA has recently issued supporting documents related to the 2019 proposed standards, including "Market Impacts of Biofuels in 2019" by David Korotney, which discusses market constraints.) It should be noted that there are some renewable fuels that are "drop-in" fuels (such as hydrotreated renewable diesel fuel) displacing the entire gallon of petroleum fuel. Several municipal truck fleets in California have already switched to using 100% renewable diesel and reported achieving significant GHG reductions and improved vehicle performance versus petroleum diesel fuel.

Highly Restrictive or Inconsistent RFS Requirements in Current Law

To encourage companies — whether petroleum refiners or new renewable fuel producers — to make the necessary investments in new technologies and renewable fuel production facilities, they need clear, consistent, long-term policies and regulations, and of course, they need financial incentives. Under the RFS program, that financial incentive comes primarily from RINs. If new technologies and fuels are able to meet the stringent criteria for feedstock, production processes and finished fuel requirements under the RFS, then RINs are the reward. Likewise, if certain feedstocks, processes or fuels fail to meet the RFS requirements, then no RINs can be generated and facilities cannot acquire the funding needed to get built, or they have no incentive to expand.

Let me provide a few examples of things that are currently either not allowed under either the law or the regulations, or where the regulations are so stringent that few, if any, facilities can comply. These issues impact the availability and viability of renewable fuels and therefore RINs.

1. **Fuels that are produced using two separate facilities** are not allowed. For example, if it requires one facility to convert wood/straw/grasses or municipal solid waste (MSW) feedstock into liquid and a separate facility, such as a petroleum refinery, to turn that liquid into a finished vehicle fuel, then the resulting fuel does not meet the definition of "renewable fuel" under the regulations.
    - This is often called the "biointermediate" or "co-location" issue, and it applies to feedstock that is "substantially altered" from its original renewable biomass form (i.e., converted at one location into an altered product that can then be made into renewable fuel at a second location). As one would expect, new technologies have

emerged to ameliorate feedstocks high in lignin content or impurities so that they can then undergo a more traditional fuel production process such as catalytic cracking, hydrotreating or transesterification. However, the cost for building these feedstock treatment facilities often precludes that same facility from having the capital to build another treatment facility to utilize these altered feedstocks for producing high-quality motor vehicle fuel. The definition of "facility" under the RFS regulations is "all of the activities and equipment associated with the production of renewable fuel starting from the point of delivery of feedstock material to the point of final storage of the end product, which are located *on one property, and are under the control of the same person* (or persons under common control)" (emphasis added). Therefore, the facility must not only receive renewable biomass but also produce a renewable fuel at a single location.

- EPA addressed this issue under the proposed Renewable Enhancement and Growth Support regulations in late 2016 by adding new rules related to the accepted use of biointermediate feedstocks by renewable fuel producers. These new rules have not yet been enacted.

2. **Biogas used to produce electricity that then is used to power electric vehicles** is also disallowed.

    - The biogas-to-electricity-for-vehicles pathway has been in place since 2014. However, EPA has had concerns over the potential for double-counting of RINs, since several entities in the chain of title of either the gas or the electricity may want to generate RINs on the same electrons.

- EPA proposed and sought comment on four potential solutions for managing RIN generation for this pathway under the proposed Renewable Enhancement and Growth Support regulations in late 2016. These new rules have not yet been enacted.

3. **Municipal Solid Waste as a qualifying feedstock** is difficult to get approved.
    - The definition of "renewable biomass" includes only "separated yard or food waste" and not simply MSW. The objective of the separation process is to remove non-biogenic materials. EPA therefore requires companies wanting to use MSW as a feedstock to file and get approved a "Separated MSW Plan." That approval can take as long as two years.
    - Facilities using MSW as a feedstock to produce a renewable fuel still must test their finished fuel's biogenic content through Carbon-14 testing, which is very expensive.

4. **Renewable fuel that is used in an ocean-going vessel** requires RIN retirement.
    - Currently, RINs associated with renewable fuel that gets used in an ocean-going vessel must be retired, or made unavailable for compliance use by an Obligated Party. Fuels used in such vessels are usually higher sulfur fuels and are not motor vehicle quality. Renewable diesel and biodiesel could be blended into these fuels, but that does not happen today because of the need to retire RINs.
    - Interestingly, renewable fuel used to displace jet fuel, which is also high in sulfur content, that is loaded onto jets leaving the U.S., does not require RIN retirement.

5. **Sawdust and wood chip wastes from a lumber mill, waste wood pulled from construction and demolition debris, old railroad ties, and diseased or insect-infested trees** generally don't qualify for use as feedstocks for renewable fuel production.

    - These wastes are described as either whole trees or tree residue. EPA requires that these trees come from man- or machine-planted tree farms on non-federal land that was cleared at any time prior to December 19, 2007, and actively managed on that date.
    - Wood debris and piles of railroad ties or diseased trees are virtually impossible to trace back to the land on which the trees they derived from were grown.
    - Despite being included in the definition of "renewable biomass," whole trees are not listed as a qualifying feedstock under any cellulosic pathway.
    - Tree residues generated during the processing of planted trees cannot be mixed with similar residue from trees that do not originate in tree farms. So any sawmill that receives a single tree from federal land, or from land that was not man- or machine-planted, disqualifies all of the other qualifying woody residues produced from that mill for use as feedstock.
    - In order to buy only qualifying saw dust or wood chips from a mill, the mill would have to change its wood procurement methods, thereby making all of the wood products they produce and the woody residues they generate more expensive.

6. **Tree thinnings and forest floor logging residues** from non-federal lands are also very difficult to use, even if sustainably harvested.

- EPA describes these woody biomass feedstocks as "Slash" and "Pre-commercial thinnings." Generally, Slash includes treetops, branches and bark that result from logging activity, storms, fires, delimbing or other similar disturbances. Pre-commercial thinnings are trees that are removed to reduce stocking and concentrate growth on more desirable healthy trees.
- Due to the downturn in demand for paper products, the demand for pulpwood has declined. In sustainably managed forests, pulpwood trees and underbrush are often removed to make room for hardwoods to grow. These pulpwood trees can be chipped onsite for ease of transportation and are usually burned for power generation or compressed into pellets for domestic use or export. Further guidance is needed from EPA to help potential feedstock suppliers determine whether such sustainable harvesting practices can allow for qualification as pre-commercially thinned trees.

7. **Biogas from digesters located at farms or wastewater treatment facilities** that take in a variety of wastes — some cellulosic and some non-cellulosic — are only allowed to make non-cellulosic RINs if they co-process any amount of non-cellulosic material. Being able to make only non-cellulosic RINs often kills a new project.
    - EPA classifies all digester feedstocks based on their cellulosic content. Feedstocks with a cellulosic content ≥ 75% are able to generate D3 RINs on 100% of the output biogas. As of July 19, 2018, D3 digesters' RIN value is ~$27/MMBtu of pipeline quality gas.

- However, if a digester takes in any feedstock that does not meet the minimum cellulosic content level, all of the pipeline-quality biogas produced by the digester is relegated to generating D5 RINs at a present value of ~$5/MMBtu.
- EPA has been studying this issue, but as of this writing, has not published guidance on using both cellulosic and non-cellulosic feedstocks to generate different types of RINs for the same digester project.

8. **Corn kernel fiber (cellulosic) and corn starch (non-cellulosic) processed at a single facility** to produce ethanol are very difficult to qualify for RINs.
    - The issue for these materials is similar to the general issue with cellulosic vs. non-cellulosic materials described above.
    - EPA has not yet offered guidance on how to generate two types of RINs from a single ethanol production facility. In the EPA document that supports the proposed 2019 standards, "Cellulosic Biofuel Producer Company Descriptions (May 2018)" by Dallas Burkholder, EPA describes this issue as follows: *"A significant issue that must be resolved to register a facility to generate cellulosic biofuel RINs for ethanol produced from corn kernel fiber at an existing ethanol production facility is the quantification of the volume of ethanol produced from cellulosic feedstocks rather than non-cellulosic feedstocks such as starch. This quantification is easier for processes that sequentially convert the starch components of the corn kernel, followed by a conversion of the cellulosic components in a subsequent process. However, it can be especially challenging for technologies that hydrolyze both the starch and cellulosic portions of the corn kernel fiber in the same process step. We*

do not believe it would be appropriate to include potential production of cellulosic biofuel from companies that have not successfully addressed the quantification of the volume of ethanol produced from cellulosic vs. non-cellulosic feedstocks until these companies develop a methodology for quantifying cellulosic biofuel production that is approved by EPA."

9. **Renewable fuel produced at a petroleum refinery** through co-processing cannot currently use the Feedstock Energy equations included in the regulations as the basis for generating RINs.

    - This issue is quite similar to the previous two issues in that EPA has not yet approved any co-processing refiner to determine the quantity of RINs they should generate using the Feedstock Energy equations in 40 CFR 80.1426(f)(4)(i)(A). But these refiners are being allowed to test their finished fuel for its biogenic content using Carbon-14 testing. Unfortunately, this test's results round to the nearest integer. Therefore, a refiner processing 0.5% renewable content or less would not actually generate any RINs, despite making a partially renewable fuel.
    - Refiners who elect to co-process generate a D5 RIN on the renewable portion of their fuel. Stand-alone renewable diesel producers generate D4 RINs, which are more valuable. (Co-processors are also unable to claim the Blender's Tax Credit of $1.00/gallon, which is available to stand-alone facilities, when in effect).

10. **Exports of petroleum diesel fuel** – segregation requirements are outdated.

- Refiners are allowed to exclude exports of gasoline or diesel from their annual volume obligations, but only if each volume of exported fuel is segregated from other fuel from the time it leaves the refinery gate to the U.S. border. In other words, the fuel cannot be commingled in a tank with other like product along the way.
- Because gasoline specifications can vary from batch to batch, the segregation requirement is reasonable. However, because all motor vehicle diesel fuel contains ≤15 ppm sulfur, there should be no requirement to keep diesel fuel segregated from refinery to border.

Conclusion

The fuels of the future depend on a renewable fuel producer's ability not only to generate RINs but on the type and quantity of RINs that can be made for each gallon of fuel. This holds true both for stand-alone renewable fuel production facilities and for petroleum refineries wanting to co-process renewable feedstocks in their facilities. In fact, petroleum refiners are more interested than ever in producing partially renewable fuels, especially if offered a level playing field with stand-alone facilities.

The RFS regulations, by their very nature, dictate winners and losers in the renewable fuel market. Whatever changes you may propose to make to the RFS regulations, I encourage you to seek clear predictable, practical standards and consider utilizing RINs to help effectuate the desired changes.

Thank you for your work in reviewing how RINs can help incentivize production of the best fuels for the environment and the American consumer. Weaver stands ready to assist your subcommittee in any way possible as you consider different options for accomplishing these goals. Please feel free to contact me if you have any questions about the potential impact of proposals you are considering.