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The Renewable Fuel Standard: Is Legislative Reform Needed?

There is widespread and heightened interest in the Renewable Fuel Standard (RFS) among some Members of Congress and stakeholders. Recent developments—including meetings between some Members of Congress, the President and members of his cabinet, and industry representatives pertaining to the RFS, as well as the bankruptcy filing by Philadelphia Energy Solutions (PES) which the company attributes partly to the RFS compliance system—have reinvigorated the RFS reform discussion. Concerns about the RFS, and policy options that might address the concerns, evolve from many angles as the RFS integrates at least three sectors into a single mandate—energy, transportation, and agriculture—with an environmental component.

The Renewable Fuel Standard

The Renewable Fuel Standard requires that the nation's transportation fuel contains a minimum volume of renewable fuel (as defined by statute at 42 U.S.C. 7545). The minimum volume increases annually, starting with 4 billion gallons in 2006 and increasing to 36 billion gallons by 2022, with the U.S. Environmental Protection Agency (EPA) determining the volume amounts following 2022. In its most simple form, the RFS can be split into two categories: conventional biofuel (i.e., corn starch ethanol) and advanced biofuel (e.g., cellulosic ethanol, sugarcane ethanol, biomass-based diesel) (see **Figure 1**). Eligible biofuels for the RFS must meet greenhouse gas emission reduction thresholds, be derived from renewable biomass, and may only be used for transportation fuel (including jet fuel) or home heating oil. RFS compliance is met using a tradable credit system, whereby obligated parties submit credits (i.e., Renewable Identification Numbers, or RINs) to EPA that equal the number of gallons specified in their annual obligation. EPA has authority to waive the annual statutory volumes required, in whole or in part, if certain conditions prevail. Further, starting in 2016, the waiver authority allows EPA to reset the RFS for subsequent years if certain conditions prevail.

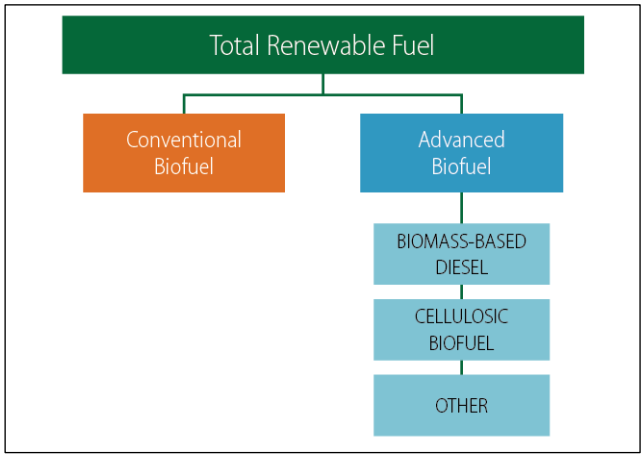
RFS Performance

Other than reaching the statute's volume requirements, stakeholders have expressed a wide range of priorities for the program, including increased biofuel production and consumption, greenhouse gas emission reduction, reduced consumer fuel costs, displacement of conventional fuels, new transportation fuel infrastructure, job creation, energy independence, or a stronger U.S. position in the global renewable energy market. Each of these priorities would lead to different performance metrics.

Conventional biofuel production capacity in the United States has kept pace with the mandate, almost tripling since 2007. In 2007—when the statute called for 4.7 billion gallons of conventional biofuel—there were some 100 U.S. plants with a production capacity of nearly 5.5 billion gallons. In 2017—when the statute called for 15 billion gallons—there were some 200 plants with a production capacity of 15.8 billion gallons.

As a whole, advanced biofuel production capacity has not similarly kept pace with the mandate. The statute contains a carve-out within the advanced biofuel mandate wherein it identifies statutory volume amounts for two specific types of advanced biofuel: cellulosic biofuel and biomass-based diesel. While biomass-based diesel has met the statutory volume amounts (production surpassed 2 billion gallons around 2015), cellulosic biofuel has not. Since 2014, the lack of cellulosic biofuel production has led EPA to use its waiver authority to reduce requirements for three of the four fuel categories for which annual volume amounts are identified in statute: the cellulosic biofuel mandate, the advanced biofuel mandate, and the total renewable fuel mandate. For 2017, the EPA requirement for cellulosic biofuel was 311 million gallons, compared to the 5.5 billion gallons of cellulosic biofuel called for in the statute.

Figure 1. RFS Fuel Classification



Source: CRS.

Potential Issues for Congress

In its continuing oversight of the RFS program, Congress has shown particular interest in three primary matters: RFS compliance (particularly RIN prices and market transparency), advanced biofuel production (particularly cellulosic biofuel production), and EPA's reset authority.

RFS Compliance

RFS compliance involves five different RIN types which are assigned based on a fuel's "D code." For instance, corn starch ethanol is assigned a D6 RIN. RIN transactions are registered with the EPA Moderated Transaction System (EMTS), but the system is limited in the types of information that it captures: for example, it is not clear whether EMTS accurately reflects prices for all RIN trades.

EPA reports that the companies that may register with EMTS are transportation fuel producers, exporters, and importers. Any company that seeks to own or trade RINs (i.e., "third parties"), or implement RIN Quality Assurance Plans under the RFS, may also register. In short, EMTS is the system to report RIN transactions; EMTS is not the RIN market.

The RIN market is not overseen by federal authorities in a way similar to other markets. There is a 2016 memorandum of understanding between EPA and the U.S. Commodity Futures Trading Commission (CFTC) that allows the agencies to share data and analysis and for CFTC to advise EPA on conducting appropriate oversight among other things. EPA acknowledges "the RFS program is based on a 'buyer beware' liability and compliance approach."

Obligated parties may use the market to obtain the RINs needed to demonstrate their compliance. Ultimately, how they obtain the RINs is up to them. They may choose to purchase the biofuel with RINs attached, or they may purchase RINs separated from the biofuel. Because the RIN market allows for participation from "third parties," there could be circumstances where an obligated party would purchase RINs from such a third party. Thus, some obligated parties that do not have the infrastructure to blend biofuels would be subject to the movements of the RIN market differently (e.g., PES) than other obligated parties. The extent of an obligated party's access to the RIN market depends on that obligated party's structure.

The cost to show RFS compliance—by purchasing RINs—has always been a concern when RIN prices escalate. RIN price escalation can happen for a variety of reasons, including the announcement of an annual standard, discussion of changes to the program, and/ or market speculation. From 2015 through 2017, conventional biofuel (i.e., corn starch ethanol) accounted for 78-83% of the RFS mandate, based on the EPA required volumes. Thus, D6 RINs are the predominant type submitted to EPA, and the type at the center of most RIN price discussions.

Some are concerned that the overall RIN market is not transparent. Because of this lack of transparency, some market participants argue that market volatility may be the result of manipulation. On the other hand, some stakeholders see volatility in the market as a sign that it is working. These concerns likely stem from who has access to observe market transactions, the costs associated with those transactions, and from obligated parties that must use the market to purchase additional RINs for compliance. Currently, access by the public to the RIN market is limited, with EPA providing some public data for the RFS and some secondary sources providing RIN price information.

Advanced Biofuel Production

The growth in biofuel production for the RFS was supposed to slowly transition from primarily biofuels made mostly from food crops to biofuels made from non-food crops. The transition has not happened. In the schedule set by Congress, cellulosic biofuel would constitute most of the advanced biofuel portion of the mandate. Indeed, come 2022, if cellulosic biofuel materialized in the volumes called for in statute it would make up 76% of the advanced biofuel pool and 44% of the total renewable fuel pool. Advanced biofuels have not materialized at the volumes identified in statute due to a slower-than-expected growth in gasoline consumption, emerging technology issues, lack of consistent support from the federal government, a lack of "drop-in" biofuels that can be used in the existing fuel infrastructure, and an EPA that some report as being too slow in its approval of some advanced biofuel pathways, among other things.

RFS Reset

The waiver authority for the RFS allows the EPA Administrator to modify the applicable volumes required given certain conditions. Specifically, the statute requires that the EPA Administrator modify the applicable volumes of the RFS in future years starting in 2016 if the Administrator waives the renewable fuel mandate, the advanced biofuel mandate, the cellulosic biofuel mandate, or the biomass-based diesel mandate by at least 20% for two consecutive years or by at least 50% for a single year. This "reset" has now been triggered for both advanced biofuel and cellulosic biofuel. Thus, EPA may modify the future volume amounts for these two fuel categories. However, EPA has not yet taken action on this matter. Further, the total renewable fuel category may be eligible for a reset in the near future if EPA reduces the 2019 total renewable fuel volume required. (For the first time, in 2018, EPA reduced the total renewable fuel volume required by more than 20% of the statutory level.)

Congressional Interest

Congress may further investigate the RFS, including options that address the above issues. For instance, would prices decrease if the RIN structure were modified (e.g., addition of a D8 RIN for corn starch ethanol blended into gasoline above 10%) or if the sale of higher ethanol-gasoline blends (e.g., E15) were expanded (e.g., by waiving the Reid Vapor Pressure requirements under the CAA for such fuels)? Would the RIN market be more transparent if it were overseen by a different agency (e.g., CFTC), if there were additional reporting requirements, or if periodic access to the market was granted to observers not registered with EMTS? Would the advanced biofuel statutory requirement be attainable if feedstocks other than biomass were eligible, if EPA finalized a renewable electricity pathway, or if incentives were granted to advanced "drop-in" biofuels? Any resolution would likely involve congressional agreement, stakeholders' willingness to compromise, and the ability of both Congress and the executive branch to articulate and enforce a comprehensive and forward-looking set of goals for the RFS program.

More Information

For more information, see CRS Report R43325, *The Renewable Fuel Standard (RFS): An Overview*, and CRS Report R44045, *The Renewable Fuel Standard (RFS): Waiver Authority and Modification of Volumes*.

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