Analysis of Renewable Identification Numbers (RINs) in the Renewable Fuel Standard (RFS)

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Summary

The federal Renewable Fuel Standard (RFS) was established in the Energy Policy Act of 2005 (EPAct) and significantly expanded in the Energy Independence and Security Act of 2007 (EISA). The RFS requires the use of renewable biofuels in transportation fuel. For 2013, the RFS requires the use of 16.55 billion gallons of renewable fuel. Within the larger mandate, there are sub-mandates ("carve-outs") for advanced biofuels (e.g., biomass-based diesel and cellulosic fuels). By 2022, the RFS requires the use of 36 billion gallons of renewable fuels, including 21 billion gallons of advanced biofuels.

The RFS is a market-based compliance system in which obligated parties (generally refiners and/or terminal operators) must submit credits to cover their obligations. These credits—Renewable Identification Numbers, or RINs—are effectively commodities that can be bought or sold like other commodities. For each gallon of renewable fuel in the RFS program, one RIN is generated. Each RIN is a 38-digit number, with blocks of digits corresponding to various data, including the year the RIN was generated, the producer of the fuel, and the type of fuel. RINs are valid for use in the year they are generated and the following year.

From the beginning of the RFS program, there have been concerns with RIN generation and the RIN market. As the RINs are essentially numbers in a computerized account, there have been errors and opportunities for fraud. Because of concerns over transposed digits, invalid characters, allegations of double-counting (intentional or unintentional) and other errors and inaccuracies, when EPA finalized rules for the RFS as expanded by EISA (the "RFS2"), EPA also established a new in-house trading system in an effort to address these concerns. All RIN transactions must be cleared through this in-house system, called the EPA Moderated Transaction System (EMTS). From the beginning of the RFS2 EPA has maintained that all due diligence remains the duty of obligated parties. Under this "buyer beware" system those purchasing or receiving RINs must certify their validity on their own, and they are responsible for any fraudulent RINs they pass on to other buyers or submit to EPA for compliance.

In late 2011 and early 2012, EPA issued Notices of Violations (NOVs) to three companies that the agency alleges fraudulently generated a combined 140 million biodiesel RINs in 2010 and 2011. Because of these RIN fraud cases, EPA is looking at establishing a system whereby RINs can be certified by third parties registered with EPA. EPA is considering whether such certification would provide obligated parties with an "affirmative defense" if RINs are later found to fraudulent—that is, obligated parties would not be liable for penalties under the Clean Air Act for the use of such RINs. Key questions include whether such an affirmative defense would also eliminate the requirement to purchase make-up RINs. EPA proposed a plan in January 2013, and projects that the rule will be finalized in October 2013.

Most RINs are bought and sold through private contracts registered with the EMTS. However, there are also spot markets for RINs, and since the beginning of 2013, conventional ethanol RIN prices have risen dramatically. Prices rose from roughly $0.07 per gallon in early January to over $1.00 per gallon in early July. Various factors have been identified by stakeholders as potentially causing the price increase, including whether sufficient amounts of ethanol can be blended into gasoline to meet the 2013 RFS mandates and the extent to which non-obligated parties are speculating in RIN markets.

In the 113th Congress several congressional hearings have been held and various bills have been proposed to address both RIN issues and the overall RFS.

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Introduction

The Energy Policy Act of 2005 (EPAct, P.L. 109-58) established a renewable fuel standard (RFS), requiring the use of biofuels (such as ethanol) in the nation's fuel supply. The Energy Independence and Security Act of 2007 (EISA, P.L. 110-140) significantly expanded this mandate.[1] The RFS mandate has been a major impetus to the development of U.S. biofuels industries, especially the ethanol and biodiesel industries. In 2005, the United States produced 3.9 billion gallons of ethanol and 0.1 billion gallons of biodiesel. In 2011, production had increased to roughly 14 billion gallons of ethanol and 1 billion gallons of biodiesel.

Covered parties meet their obligations under the RFS by surrendering renewable fuel credits to EPA equal to the number of gallons in their annual obligation. These credits, known as Renewable Identification Numbers (RINs), are generated when a batch of biofuel is produced, and separated from the fuel by obligated parties (generally gasoline and diesel fuel refiners or blenders). Once separated, these RINs may be traded like other commodities. Recent civil and criminal action against parties accused of registering and selling fraudulent RINs has raised questions about the integrity of the RIN market and EPA's oversight of the market.

This report outlines the RFS and the current RIN system, discusses the current market for various RINs, and outlines policy considerations to address RIN fraud going forward.

Current RFS Requirements

For 2013, the RFS requires the blending of 16.55 billion gallons of renewable fuel in transportation fuels, including at least 1.28 billion gallons of biomass-based diesel substitutes (BBD). The RFS increases to 36 billion gallons by 2022 with an increasing share coming from "advanced biofuels"—biofuels produced from feedstocks other than corn starch—including cellulosic biofuel and BBD fuels. As has been the case in previous years, in 2013 the vast majority of the mandate is expected to be met with U.S. corn ethanol (and a smaller amount of biodiesel, as well as sugarcane ethanol from Brazil).

By 2015 corn ethanol's share of the RFS is effectively capped at 15 billion gallons per year. The EISA amendments to the RFS specifically mandate the use of cellulosic biofuel (16 billion gallons by 2022) and biomass-based diesel fuel (at least 1.0 billion gallons annually by 2012). However, advanced biofuels, especially cellulosic fuels, have been slow to develop and fuel production lags the EISA's mandate schedule.[2]

Within the overall RFS mandate, there are sub-mandates for specific types of fuel. For example, for 2012 EISA required the use of 15.2 billion gallons of biofuels, of which 2.0 billion must be "advanced biofuels." Within the advanced biofuel carve-out for 2012, at least 1.0 billion gallons were to be biomass-based diesel (BBD) fuels and zero gallons were required for cellulosic biofuels.[3] In the early years of the program, the lion's share of the mandate is unspecified, and the

[1] For more information on the RFS, see CRS Report R40155, *Renewable Fuel Standard (RFS): Overview and Issues*, by Randy Schnepf and Brent D. Yacobucci.

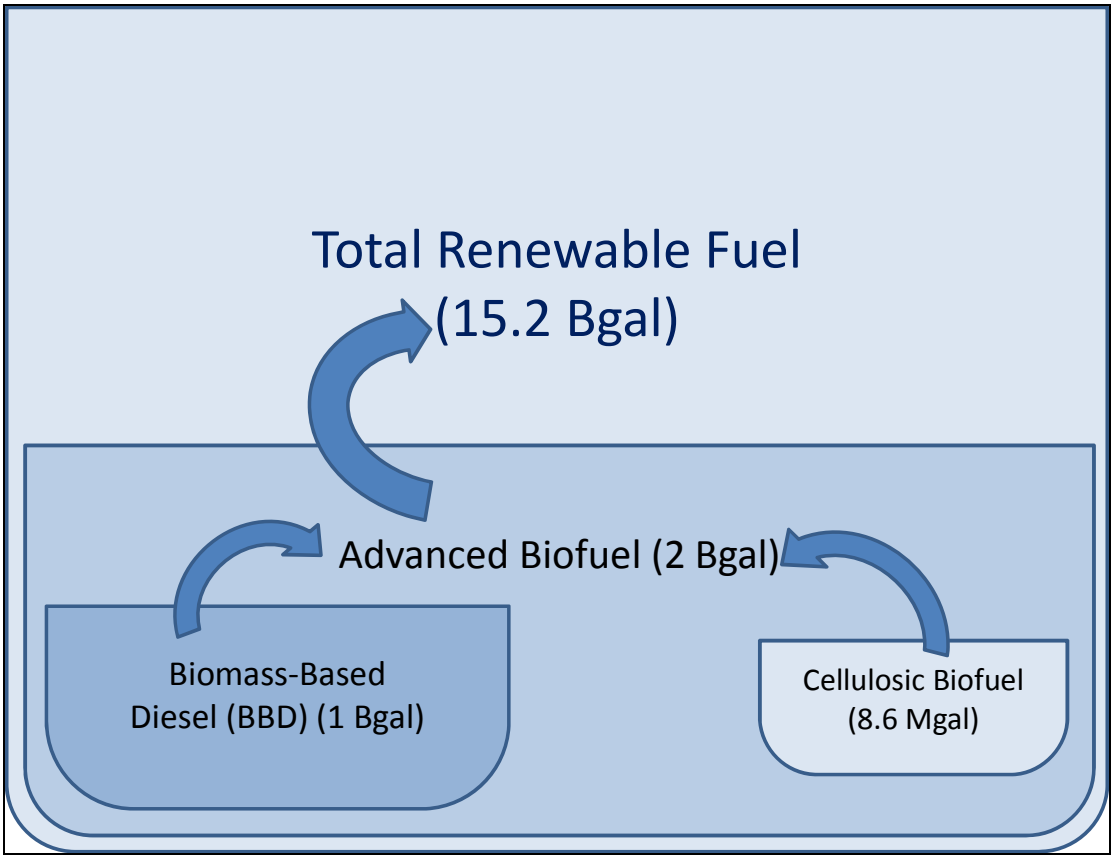
[2] See CRS Report R41106, *Meeting the Renewable Fuel Standard (RFS) Mandate for Cellulosic Biofuels: Questions and Answers*, by Kelsi Bracmort.

[3] The initial RFS for cellulosic biofuels for 2012 was 500 million gallons. In December 2011 EPA decreased the mandate to 10.45 million ethanol-equivalent gallons. In January 2013, the U.S. Court of Appeals for D.C. vacated (continued...)

vast majority of this unspecified portion has been—and is expected to be—supplied by corn-based ethanol largely produced in the Midwest. At the beginning of each year, EPA determines a percentage standard that all suppliers must meet, which is based on expected total U.S. gasoline and diesel demand for the prior year. For example, for 2012, the overall biofuel standard was 9.23%, the advanced biofuel standard was 1.21%, the BBD standard was 0.91%, and the cellulosic biofuel standard was 0.006%.[4]

Figure 1. Nested RFS Mandates for 2012

(not to scale)



Source: CRS.

Notes: As noted by the arrows, fuel qualifying as one type of biofuel in the RFS qualifies for all levels above it. For example, cellulosic biofuel may also be used to meet the advanced biofuel mandate and the overall RFS mandate. However, non-cellulosic advanced biofuel (e.g., sugarcane ethanol) may not be used to meet the cellulosic or BBD mandates. Likewise, corn starch ethanol may only be used to meet the total RFS mandate (and not the advanced, cellulosic, or BBD mandates). For illustrative purposes only, an 8.6 million gallons value is used for cellulosic biofuels. The 8.6 million physical gallons (10.45 million gallons ethanol-equivalent) was the required amount set by EPA before a federal court vacated the 2012 cellulosic biofuel standard. Following the court decision, EPA dropped the 2012 RFS for cellulosic biofuels to zero.

(...continued)

EPA's initial cellulosic mandate for 2012 and remanded EPA to replace it with a revised mandate. On February 28, 2013, EPA dropped the 2012 RFS for cellulosic biofuels to zero. For more information, see CRS Report R41106, *Meeting the Renewable Fuel Standard (RFS) Mandate for Cellulosic Biofuels: Questions and Answers*, by Kelsi Bracmort.

[4] The limitation on corn starch ethanol is roughly 8% on gasoline and diesel fuel combined.

The sub-mandates for advanced biofuels are nested together (**Figure 1**). As noted by the arrows in the figure, fuel qualifying as one type of biofuel in the RFS qualifies for all levels above it. For example, a gallon of cellulosic biofuel may be used to meet the cellulosic mandate, the advanced biofuel mandate, and the overall RFS. A gallon of other advanced biofuel (e.g., sugarcane ethanol) may be used to meet the advanced biofuel mandate and the overall mandate, but may not be used to meet the cellulosic or BBD mandates. Corn starch ethanol—the most widely used biofuel in the United States—may only be used to meet the overall RFS.[5]

The Role of RINs

Compliance with the RFS is measured using RINs. When qualifying biofuels are produced, each gallon is assigned a RIN. Until the biofuels are sold as fuel or blended into conventional fuels, the RINs are "attached" to the fuel. Once the biofuel has been blended or sold, the RINs are detached, and can then be bought and sold like other commodities. At the end of each year, fuel suppliers must multiply the above percentage standards by their total gasoline and diesel sales to calculate their renewable volume obligations (RVO), which indicate the total number of each type of RIN that the suppliers must submit to EPA. To the extent that a supplier has excess RINs, that supplier may sell them to others who may be short, or save them for use in the following year.

RINs

A RIN is a unique 38-character number that is issued (in accordance with EPA guidelines) by the biofuel producer or importer at the point of biofuel production or the port of importation.[6] Each qualifying gallon of renewable fuel has its own unique RIN. RINs are generally assigned by batches of renewable fuel production. (See box at right.)

Under the RFS2 RIN formulation, Code D identifies which of the four RFS categories—total, advanced, cellulosic, or biodiesel—the biofuel satisfies. Together, SSSSSSSS and EEEEEEEE identify the RIN block which demarcates the number of gallons of renewable fuel that the batch represents in the context of compliance with the RFS—that is, RIN gallons. The RIN-gallon total equals the product of the liquid volume of renewable fuel times its energy equivalence value (relative to a gallon of ethanol). For example, because biodiesel has an equivalence value (EV) of 1.5 when being used as an advanced biofuel, 1,000 gallons of biodiesel would equal 1,500 RIN gallons of advanced biofuels.[7] If the RIN block start for that batch was 1 (i.e., SSSSSSSS = 00000001), then the end value (EEEEEEEE) would be 00001000.

[5] Thus, the effective cap on corn-based ethanol is 13.2 billion gallons in 2012, based on the difference between the overall mandate (15.2 billion gallons) and the advanced biofuel mandate (2.0 billion gallons).

[6] For more discussion on RINs see Robert Wisner, "Renewable Identification Numbers (RINs) and Government Biofuels Blending Mandates," AgMRC Renewable Energy Newsletter, Agricultural Marketing Research Center, Iowa State University, April 2009, available at http://www.agmrc.org/renewable_energy/agmrc_renewable_energy_newsletter.cfm; or Wyatt Thompson, Seth Meyer, and Pat Westhoff, "Renewable Identification Numbers are the Tracking Instrument and Bellwether of U.S. Biofuel Mandates," EuroChoices 8(3), 2009, pp. 43-50.

[7] Unlike the other biofuel categories, the BBD mandate is a requirement on actual gallons. Thus, the 1.0 billion (actual) gallons required for the 2012 BBD mandate will generate 1.0 billion BBD RINs, but 1.5 billion advanced biofuel/renewable fuel RINs.

Any party that owns RINs at any point during the year (including domestic and foreign producers; refiners and blenders; exporters and importers of renewable fuels; and RIN traders) must register with the EPA and follow RIN record-keeping and reporting guidelines. RINs can only be generated if it can be established that the feedstock from which the fuel was made meets EISA's definitions of renewable biomass (including land-use restrictions), and if the fuel meets EISA's lifecycle greenhouse gas emission limits. The feedstock affirmation and record-keeping requirements apply to RINs generated by both domestic renewable fuel producers and RIN-generating foreign renewable fuel producers or importers.

RIN Codes

RIN=KYYYYCCCCFFFFFBBBBBRRDSSSSSSSSEEEEEEEE

Where

K = code distinguishing RINs still assigned to a gallon from RINs already separated

YYYY = the calendar year of production or import

CCCC = the company ID

FFFFF = the company plant or facility ID

BBBBB = the batch number

RR = the biofuel energy equivalence value

D = the renewable fuel category

SSSSSSSS = the start number for this batch of biofuel

EEEEEEEE= the end number for this batch of biofuel

EPA Moderated Transaction System (EMTS)

All RIN transactions, including generation, trade/sale/transfer, separation, and retirement, must be cleared through the EMTS. When biofuels change ownership (e.g., are sold by a producer to a blender), any attached RINs are also transferred.[8] The Code K status of the RIN is changed at separation (generally when the fuel is sold from a biofuel producer to an obligated party). (See **Figure 2**.)

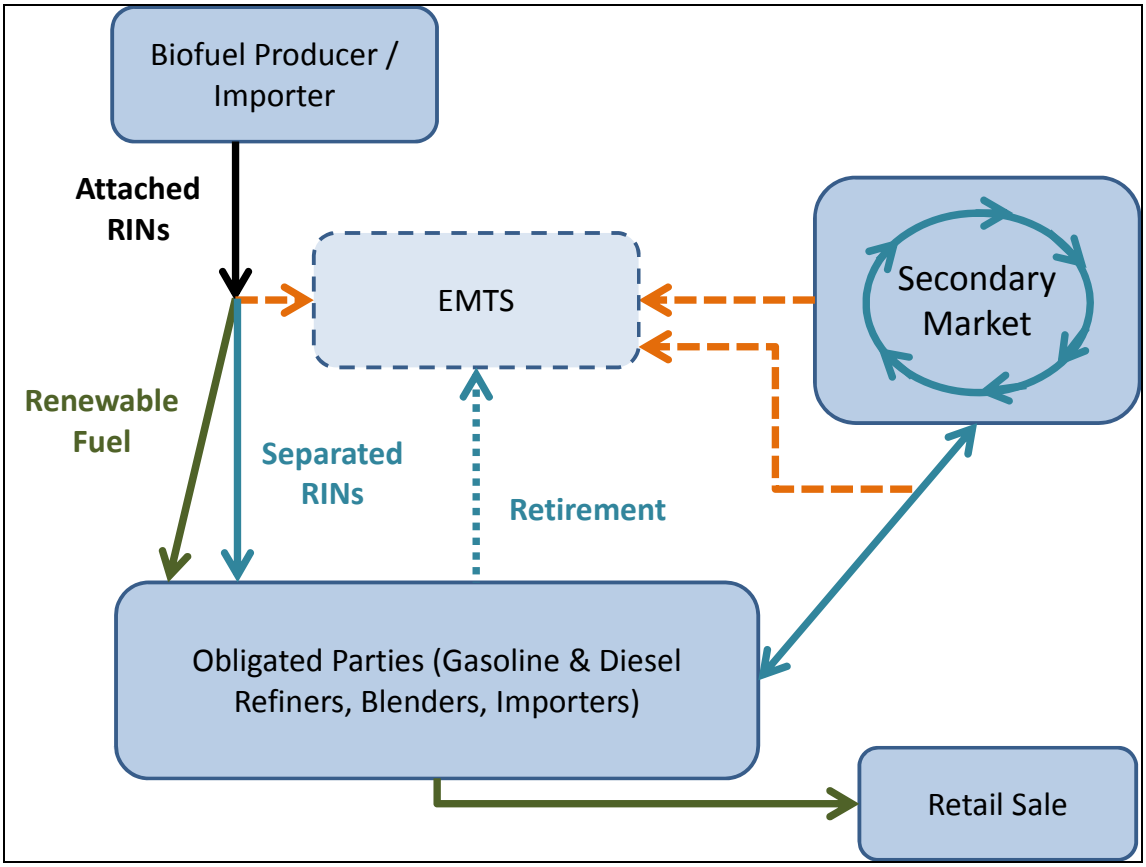
As noted by EPA in the rule establishing the RFS2 and the EMTS, EPA views the EMTS solely as a "screening" system, and all due diligence remains the duty of obligated parties.[9] Under this "buyer beware"[10] system those purchasing or receiving RINs must certify their validity on their own, and they are responsible for any fraudulent RINs they pass on to other buyers or submit to EPA for compliance.

[8] In many cases, the RINs are detached from the actual fuel at the point of initial sale or transfer, and thus RINs may be detached for fuel that has not yet been blended into motor fuel or sold as motor fuel.

[9] EPA, "Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program; Final Rule," 75 *Federal Register* 14732, March 26, 2010.

[10] Ibid., p. 14733.

Figure 2. Simplified Schematic of RIN Trading System



Source: CRS, based on Rakesh Radhakrishnan, *Market Considerations—RECs and RINs Overlap*, Thompson Reuters, September 25, 2012, p. 8, http://www.renewableenergymarkets.com/docs/presentations/2012/Radhakrishnan.pdf.

Notes: Black lines indicate RINs attached to actual biofuel gallons. Solid blue lines indicate separated RINs that may be traded among all market participants. Dashed blue line indicates end-of-year submission of RINs by obligated parties to EPA to meet RFS mandates. Green lines indicate actual biofuel gallons separated from RINs. Orange lines indicate that all RIN transactions must be cleared through EMTS.

The Market for RINs

RIN Prices

Because RINs may be bought and sold as commodities, there are RIN spot markets. However, these spot markets may only provide some insight into the actual value of the total pool of RINs in a given year, as RINs may or may not be traded after they are detached by fuel suppliers. Because RINs are not completely fungible, their values may or may not be affected by the markets for other RINs. For example, RINs for conventional ethanol may only be used for the overall (unspecified) renewable fuel mandate. However, biodiesel RINs may be used to meet the BBD, advanced biofuel, and overall RVOs.

It should also be noted that unlike other commodities, RINs generally may only be used in the year they are generated or for one additional year, although suppliers may only meet up to 20% of

their current-year obligation with the previous year's RINs. Thus, RIN values diminish over time and ultimately have no value in the second year after they are generated.

Prices Through 2012

Through 2012 there was generally an excess of corn ethanol (beyond what was allowed for meeting the unspecified portion of the RFS) in the U.S. market, and ethanol RINs generally traded at much lower prices than other RINs—generally between one and four cents per gallon, as opposed to a dollar per gallon or more for other fuels. (See **Figure 3**, **Figure 4**, and **Figure 5**.) Because much of the advanced biofuel mandate is met using BBD RINs, the advanced biofuel RIN price follows the BBD RIN price closely when adjusted for energy content. For example, when BBD RIN prices spiked in September 2011 (**Figure 4**), advanced biofuel RINs showed a similar spike (**Figure 5**); there was no spike at that time in corn ethanol RINs (**Figure 3**). Similarly, BBD and advanced biofuel RIN prices dropped in the second half of 2012 (apparently driven by concerns over the validity of biodiesel RINs), while ethanol RIN prices increased (but still remained relatively low) as the 2012 drought raised concerns over U.S. corn production and its effects on ethanol production.

Figure 3. Spot Renewable Fuel (Corn Ethanol) RIN Prices, 2011-2012

Source: "Ethanol and Gasoline Component Spot Market Prices," *OPIS Ethanol & Biodiesel Information Service*, various editions (January 10, 2011-January 7, 2013).

Notes: Average of daily high and low prices reported by OPIS. Most biofuels are sold under contract, and thus spot prices may not reflect the value of all RINs traded at any given time.

Figure 4. Spot BBD RIN Prices, 2011-2012

Source: "Ethanol and Gasoline Component Spot Market Prices," *OPIS Ethanol & Biodiesel Information Service*, various editions (January 10, 2011-January 7, 2013).

Notes: Average of daily high and low prices reported by OPIS. Most biofuels are sold under contract, and thus spot prices may not reflect the value of all RINs traded at any given time.

Figure 5. Spot Advanced Biofuel RIN Prices, 2011-2012

Source: "Ethanol and Gasoline Component Spot Market Prices," *OPIS Ethanol & Biodiesel Information Service*, various editions (January 10, 2011-January 7, 2013).

Notes: Average of daily high and low prices reported by OPIS. Most biofuels are sold under contract, and thus spot prices may not reflect the value of all RINs traded at any given time.

Prices Since January 2013

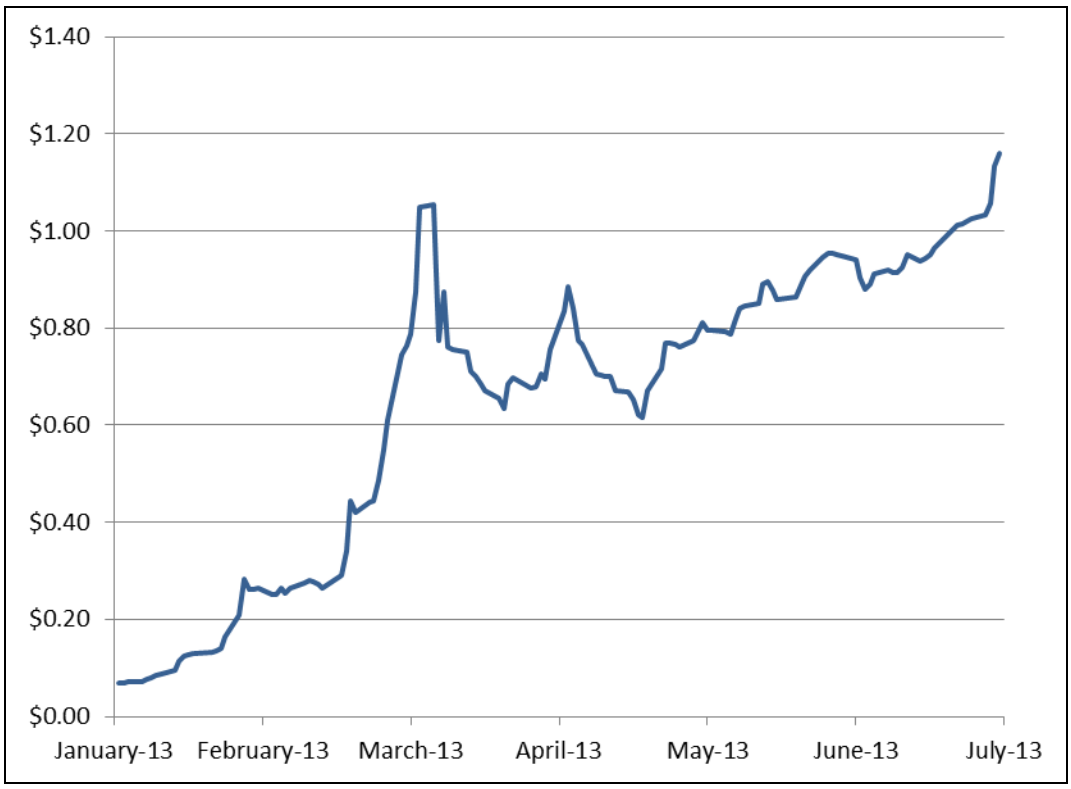
Spot prices for conventional (corn-based) ethanol RINs have risen dramatically since the start of 2013. On January 1, ethanol RINs were trading at roughly $0.07 per gallon, but they spiked to over $1.00 in mid-March, before receding and then rising to around $1.16 by July 11 (**Figure 6**). Several factors have been identified by stakeholders as potential causes for the run-up in prices. For example, many stakeholders are concerned that the fuel supply is rapidly approaching a "blend wall."[11] There are various factors that limit ethanol content in gasoline to a maximum of 10%. With a limited number of gasoline gallons sold each year, but an increasing RFS mandate, the amount of ethanol needed to meet the mandate may exceed the potential for gasoline blending in the near future. To address the blend wall and still meet the RFS mandates, obligated parties will need to do one of the following: (1) blend ethanol in gasoline at higher concentrations (e.g., 15%); (2) sell ethanol as an alternative fuel for flexible fuel vehicles (FFVs); or (3) supply non-

[11] Ryan Tracy, "U.S. Ethanol Mandate Puts Squeeze on Oil Refiners," *The Wall Street Journal*, March 10, 2013. For more information on the blend wall, see CRS Report R40445, *Intermediate-Level Blends of Ethanol in Gasoline, and the Ethanol "Blend Wall"*, by Brent D. Yacobucci.

ethanol biofuels. If none of these options are undertaken in sufficient quantity, there may be insufficient RINs for obligated parties to meet their RVOs. The rise in spot prices for corn ethanol RINs in 2013 may reflect a scarcity in RINs not seen in previous years. A second concern some stakeholders have raised is that non-fuel traders may be speculating in RIN markets and pushing up prices.[12]

Figure 6. Spot Renewable Fuel (Corn Ethanol) RIN Prices

(January to July 11, 2013)



Source: "Ethanol and Gasoline Component Spot Market Prices," OPIS Ethanol & Biodiesel Information Service, various editions (January 7, 2013-July 15, 2013).

Notes: Average of daily high and low prices reported by OPIS. Most biofuels are sold under contract, and thus spot prices may not reflect the value of all RINs traded at any given time.

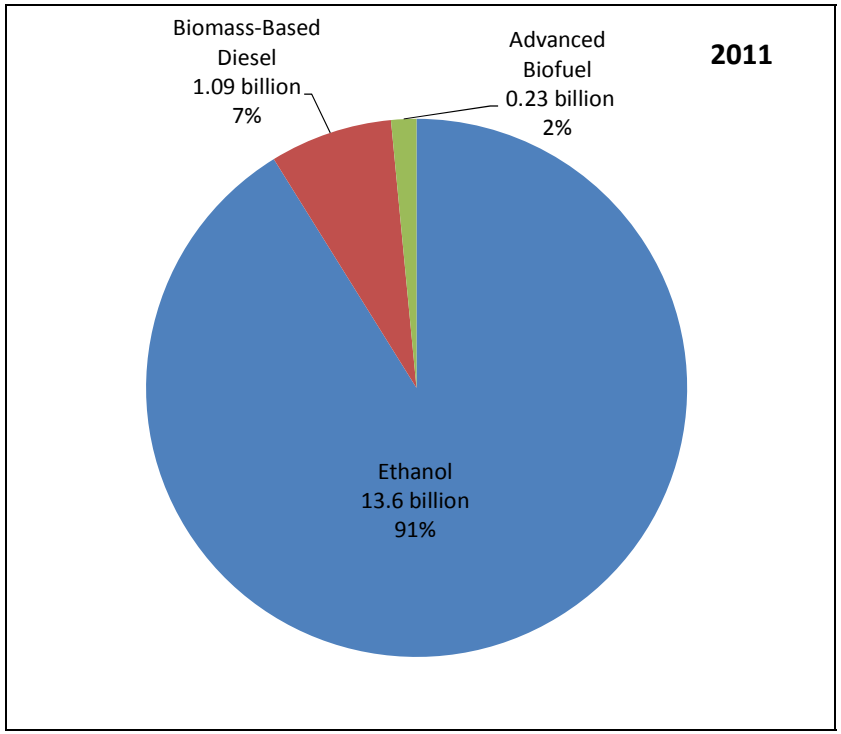
RIN Volumes

The market for RINs is potentially very large, although the amount of RIN trading that occurs is unclear. Although EPA reports total RINs registered by month, and the EMTS tracks trades and RIN prices, EPA does not report these data. Likewise, publicly available data from other sources are similarly limited.[13] **Figure 7** and **Figure 8** show total RINs registered for 2011 and 2012. As noted above, by volume the RFS is dominated by ethanol produced from corn starch.

[12] Renewable Fuels Association, *What Role Did Speculation Play in the March 2013 RIN Price Spike?*, 2013.

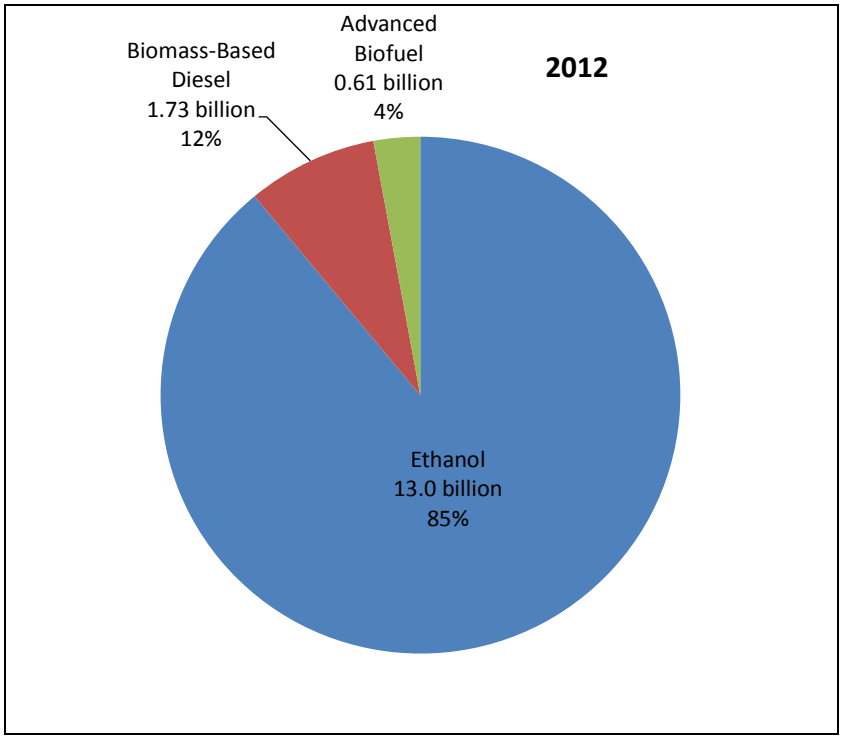
[13] For example, OPIS reports daily RIN spot prices for four types of RINs, but does not report trading volume.

Figure 7. Total RINs Registered 2011



Source: EPA, EPA Moderated Transaction System (EMTS).

Figure 8. Total RINs Registered 2012



Source: EPA, EPA Moderated Transaction System (EMTS).

Fraudulent RINs

As noted above, in late 2011 and early 2012, EPA issued Notices of Violations (NOVs) to three companies (Clean Green Fuels, LLC, Absolute Fuels, LLC, and Green Diesel, LLC) that the agency alleges fraudulently generated a combined 140 million biodiesel RINs in 2010 and 2011.[14] Subsequently, individuals representing two of these companies have also faced criminal prosecution.[15] Because these investigations involve potentially criminal actions, EPA has limited the amount of information available to traders and obligated parties who may have purchased fraudulent RINs. Thus, it is unclear whether any other NOVs will be issued in the future.

The 140 million fraudulent RINs from the three NOVs represent roughly 11% of the biodiesel RINs generated between mid-2010 and the end of 2011, but less than 1% of the total RINs generated—as noted above, ethanol produced from corn starch currently dominates the RFS. However, biodiesel RINs traded at considerably higher prices than ethanol RINs at that time.

Effects on Obligated Parties

In the regulations establishing the RFS2 and the EMTS, EPA specifically stated that "invalid RINs cannot be used to achieve compliance with the Renewable Volume Obligations (RVO) of an obligated party or exporter, regardless of the party's good faith belief that the RINs were valid at the time they were acquired."[16] Because of the "buyer beware" nature of the system, obligated parties who purchased the fraudulent RINs must pay fines for each RIN submitted (EPA and the companies have generally settled at about $0.10 per RIN), and must submit valid RINs to offset the fraudulent RINs. Thus, the combined economic costs to the obligated parties may include:

1. the original cost of the fraudulent RINs (spot prices ranged between $0.70 and $2.00 per RIN over that time);
2. penalties to EPA for Clean Air Act violations ($0.10 per RIN, capped at $350,000 per party);
3. the cost of all make-up RINs (trading at the time of settlement at roughly $0.50 per gallon); and
4. any legal costs in pursuing restitution from fraudulent actors.

Quality Assurance Program

Because of these RIN fraud cases, EPA is looking at establishing a quality assurance program whereby RINs can be certified by third parties registered with EPA. EPA intends that such certification would provide obligated parties with an "affirmative defense" if RINs are later found

[14] NOVs available at EPA, *Civil Enforcement of the Renewable Fuel Standard Program*, http://www2.epa.gov/enforcement/civil-enforcement-renewable-fuel-standard-program.

[15] On June 25, 2012, Rodney R. Hailey of Clean Green Fuels, LLC was found guilty of 8 counts of wire fraud, 32 counts of money laundering, and 2 counts of violating the Clean Air Act. On March 29, 2013, Jeffrey David Gunselman of Absolute Fuels, LLC pled guilty to 51 counts of wire fraud, 24 counts of money laundering and 4 counts of violating the Clean Air Act.

[16] 40 C.F.R. §80.1431(b)(2).

to be fraudulent—that is, obligated parties would not be liable for civil penalties under the Clean Air Act for the use of such RINs. As noted by Gina McCarthy, former EPA Assistant Administrator for Air and Radiation (now EPA Adminstrator), "the affirmative defense would ensure that refiners and other program participants who meet the conditions of the affirmative defense will not face civil penalties."[17]

A key component of a Quality Assurance Program would be the establishment of a quality assurance plan (QAP). The QAP would serve as the basis for audits by third party verifiers certified by EPA. EPA issued a proposed rule to create a QAP in January 2013 and projects the rule will be finalized in October 2013.[18]

Key questions include whether such an affirmative defense would also eliminate the requirement to purchase make-up RINs. While refiners and others would prefer to not "pay twice" for RINs, in general biofuel producers argue that not making up the RINs would undermine the legitimate RIN market. Simply put, if obligated parties are not required to replace invalid RINs with valid RINs, the size of the legitimate renewable fuel market is reduced. In EPA's proposed rule, nearly all invalid RINs would be required to be replaced by either the generator of the invalid RIN, the third party verifier, or the obligated party.

Policy Options

There are various policy options to address the issues of RIN fraud. EPA could undertake some of these options under existing Clean Air Act authority, while others would require congressional action. In general terms, there are at least four options:

1. Do nothing, and let market participants determine the credibility of actors they trade with;
2. Establish a Quality Assurance Program or some other certification to provide greater credibility, but do not tie it to EPA's determination on RIN validity;
3. Establish a certification procedure with an affirmative defense such that purchasers of invalid RINs are not liable for civil penalties (EPA's proposal); and
4. Establish a system where all certified RINs are valid for RFS compliance regardless of subsequent determination that they are fraudulent or otherwise deficient.

Currently, RIN market participants are acting under the first and second options. They are independently determining whether to trust the validity of the RINs they purchase. In many cases, after the RIN fraud came to light, obligated parties decided to purchase biodiesel and biodiesel RINs only from the largest producers.[19] At the same time, small producers have complained that they are unable to afford the verification procedures that some obligated parties now require.

[17] Letter from Gina McCarthy, Assistant Administrator for Air and Radiation, EPA, to The Honorable Gene Green, Ranking Member, Ranking Member Subcommittee on Energy and Economy, Committee on Energy and Commerce, August 14, 2012.

[18] EPA, "RFS Renewable Identification Number (RIN) Quality Assurance Program; Proposed Rule," 78 *Federal Register* 12158, February 21, 2013.

[19] Testimony of various biofuel companies before the House Committee on Energy and Commerce Hearing on "RIN Fraud: EPA's Efforts to Ensure Market Integrity in the Renewable Fuels Program." July 11, 2012.

Others have argued that the RIN fraud prosecutions have improved the integrity of the market. For example, one witness to a House Energy and Commerce Committee hearing on RIN fraud stated "[i]n essence, the Wild West of buying and selling RINs from market participants you don't know has ended, the wrongdoers are being rooted out, and everyone now knows that deals that are too good to be true are in fact too good to be true."[20]

Because of substantial remaining uncertainty about the integrity of the market, the National Biodiesel Board (NBB) and others are working to establish a more formal process for RIN certification. With the NBB, biodiesel producers have established a RIN Integrity Network where obligated parties can subscribe to a service where they can receive information on participating biodiesel producers.[21] This and similar efforts are in their early stages, and it is unclear how much credence RIN purchasers will give these networks. Further, it is unclear whether they will become the industry standard.

EPA is currently pursuing the third option, where a Quality Assurance Program is established with third parties auditing RIN generators. EPA has proposed an affirmative defense such that users of certified RINs would not be subject to civil penalties under the Clean Air Act. In most cases, under the proposal, the original RIN generator, the third party verifier, or the obligated party would be required to purchase additional RINs to make up for any certified RINs later found to be fraudulent. Obligated parties generally would prefer not to "pay twice" for RINs, adding to their compliance costs. However, eliminating this requirement would effectively shrink the market for biofuels under the RFS, harming legitimate biofuel producers. As EISA establishes specific fuel volume requirements, it is unclear whether EPA has the authority under existing statute to waive that requirement.

In addition to agency action, at least one bill has was introduced in the 112th Congress to amend the RIN system. H.R. 6444 would have required EPA to establish a RIN certification system by January 1, 2013. The bill would have precluded the agency from later invalidating any certified RINs. Thus, under the bill, any RIN found subsequently to be fraudulent would have still counted toward an obligated party's compliance, without penalties. As noted above, refiners and other obligated parties would have likely preferred this to other policy options, while biofuel producers were unlikely to support such blanket protection. No similar bills have been introduced in the 113th Congress.

Additional Questions

The concerns raised above, and proposed policy remedies, raise additional questions about the potential for RIN fraud in the future, as well as the effects on stakeholders from any policy solution. These questions include:

1. Beyond the instances of fraud currently being prosecuted, what other instances are unreported, and what other types of fraud are possible in the future?
2. How likely is fraud in the future, and what are the implications? and

[20] Joe Jobe, Chief Executive Officer, National Biodiesel Board, *Testimony Before the United States House of Representatives Committee on Energy and Commerce Hearing* "RIN Fraud: EPA's Efforts to Ensure Market Integrity in the Renewable Fuels Program," Washington, DC, July 11, 2012.

[21] Genscape, *Genscape's RIN Integrity Network*, http://info.genscape.com/RIN.

3. How do various players benefit from the different policy options?

What Other Types of RIN Fraud Are Possible?

In the three cases of RIN fraud currently reported by EPA, fraudulent RINs were generated for fuel that did not exist. However, other potential errors or opportunities for fraud include:

1. double counting, where the same RIN (representing a gallon of actual fuel) is transferred to two different entities;
2. improper split, where a batch of RINs is separated into two or more groups and sold to different entities, but the total number of RINs somehow changes (an example of double counting);
3. improper reporting of RIN data (type of fuel, size of batch, etc.);
4. failure to report export (for every gallon of fuel exported any RINs from that export must be retired, as the fuel was never used as transportation fuel in the United States).

The EMTS was established in part to address errors of the first three types. However, it is unclear whether the EMTS completely screens out these errors. Especially as regulations require all transactions be reported within five business days, the real-time reporting requirements may potentially lead to errors if entities feel rushed in completing reports and transactions on time. On the other hand, real-time reporting may make it easier to catch errors and irregularities than under the previous system, where most data verification was completed on a quarterly basis.

The latter issue, that fuel has been exported without retirement of necessary RINs, has been raised by some stakeholders.[22] RFS regulations are explicit that when renewable fuel is exported that the exporter must have RINs to offset that volume: "Any party that owns any amount of renewable fuel, whether in its neat form or blended with gasoline or diesel, that is exported from any of the regions described in § 80.1426(b) shall acquire sufficient RINs to comply with all applicable Renewable Volume Obligations under paragraphs (b) through (e) of this section representing the exported renewable fuel."[23]

It is unclear to what extent, or whether, parties have been exporting fuel without securing the necessary RINs. EPA has not reported any such activity to date. To the extent that this sort of fraud is occurring, as with other types of fraud, it would lead to lower domestic renewable fuel use than required under the act. That would likely lead to an oversupply of RINs and a lower RIN price received by all market participants. However, unlike other types of fraud, actual fuel would be produced, so the overall level of U.S. biofuel production may not decline.

How Likely Is RIN Fraud in the Future?

To date, all of the reported cases of fraud have occurred in the biodiesel market. There are several reasons that have been given for this: (1) the market price for BBD RINs had been much higher

[22] For example, see Jon P Fjeld-Hansen, Managing Director, Musket Corporation, *Testimony Before the United States House of Representatives Committee on Energy and Commerce Hearing* "RIN Fraud: EPA's Efforts to Ensure Market Integrity in the Renewable Fuels Program," Washington, DC, July 11, 2012.

[23] 40 C.F.R. §1430(a).

than that for ethanol RINs, making any transaction (legal or illegal) that much more valuable; (2) in general biodiesel producers are smaller operations than ethanol producers, and the companies involved may be less well known to market participants; and (3) limited verification procedures existed at the time.

Between actions taken by industry, proposed regulations from EPA, and potential congressional action, the latter two reasons for fraud in the biodiesel RIN market may be fully addressed. However, the first cause—a high price for some RINs—may continue in the future. By 2022, the RFS requires the use of 36 billion gallons of renewable fuels, more than double the amount required in 2012. Thus, the absolute volume of the market will be larger in the future. Further, of the 36 billion gallons required in 2022, 16 billion gallons are required to come from cellulosic biofuels. Currently, there is very limited production of these fuels, and their production costs are high. To the extent that cellulosic fuel costs remain high in the future, the aggregate value of the cellulosic RIN market could be significantly higher than the total RIN market today. The higher value of this market might be a draw to actors looking to circumvent the law.

How Do Various Players Benefit from the Different Policy Options?

As noted above, obligated parties would like any new certification system to include an affirmative defense against civil penalties if they act in good faith.The details of that affirmative defense will determine who might benefit from policy changes. For example, in general obligated parties are more likely to benefit from a blanket exemption from both civil penalties and the requirement to purchase RINs to make up for ones later found to be invalid.[24] In general, biofuel producers are more likely to benefit from a policy that still requires obligated parties to purchase make-up RINs. Otherwise, the market for RINs—and thus the fuel they represent—would effectively shrink by the amount of any fraudulent RINs.

Any third-party certification procedures will add to the cost of producing biofuels and RINs. Various actors may be more or less able to absorb those costs. For example, obligated parties may be able to pass the additional cost along to gasoline and diesel fuel consumers through higher pump prices. Further, larger biofuel producers may be able to take advantage of economies of scale and spread the cost across all gallons of fuel they produce. Smaller producers, however, may be less able to spread the cost over the fewer gallons they produce and thus their per-gallon production costs may increase relative to their larger competitors. As noted above, many biodiesel producers are smaller operations who may feel more of these effects than ethanol producers (who generally produce larger volumes of fuel). In the future, cellulosic biofuel producers may also face similar pressures as these facilities are expected to be on the smaller side.

Conclusion

The establishment of the Renewable Fuel Standard has created a market for RINs that has grown both in volume and in value over time and is expected to continue to grow over the next decade. However, cases of fraud in the early years of the biodiesel RIN market raise questions about the integrity of RIN markets, as well as EPA's oversight of the markets. A dramatic increase in corn

[24] H.R. 6444 (112th Congress) would have addressed this by removing EPA's authority to invalidate (for any reason) a certified RIN later found to be deficient. Thus, even a deficient RIN could be traded or used to meet a party's RVO as long as it had been certified by the agency.

ethanol RINs in 2013 has raised additional questions about the RIN system and the overall RFS. Various policies have been proposed to address these concerns, and the details of those policies will affect RIN markets as well as the relative benefits to different market players.

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