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# **The Renewable Fuel Standard (RFS): Waiver Authority and Modification of Volumes**

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## Summary

The Clean Air Act requires that transportation fuels contain a minimum amount of renewable fuel. This renewable fuel standard (RFS) was established by the Energy Policy Act of 2005 (EPAAct05; P.L. 109-58) and amended by the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140). The RFS includes scheduled volume mandates that grow each year (starting with 9 billion gallons in 2008 and ascending to 36 billion gallons in 2022), with the U.S. Environmental Protection Agency (EPA) determining the annual volume amounts following 2022. Within the overall RFS, there are sub-mandates for advanced biofuels, including cellulosic biofuel, biomass-based diesel, and other advanced biofuels.

EPA, which is responsible for administering the RFS, has the authority to waive the RFS requirements, in whole or in part, if certain conditions outlined in statute prevail. More specifically, the statute identifies a general waiver and waivers for two types of advanced biofuel: cellulosic biofuel and biomass-based diesel. The statute requires EPA to announce each year's standards by November 30 of the previous year, except for biomass-based diesel, which must be announced 14 months before the year for which the applicable volume will apply. Further, the final section of the waiver provision—which some refer to as the “reset” section—requires a modification of the applicable volumes of the RFS starting in 2016 if certain conditions are met. The potential for full or partial RFS waivers can contribute to uncertainty for policymakers, industry, financiers, and other interested parties.

Several instances have led to EPA using, proposing to use, or being petitioned to use its waiver authority when implementing the RFS. In late 2015, EPA announced in its final rule for the RFS that it was using its waiver authority to reduce the total renewable fuel volume required for 2014, 2015, and 2016. EPA used both the general waiver and the cellulosic biofuel waiver to do so. For the first time since the program's implementation, EPA issued a general waiver implicitly reducing the volume allowed for conventional biofuel. EPA has repeatedly issued a cellulosic biofuel waiver to reduce the volume allowed for cellulosic biofuel. According to the agency, it has done so due to lack of actual production of cellulosic biofuel at the volumes required to meet the RFS cellulosic biofuel mandate. For various reasons, the cellulosic biofuel industry has been unable, by a wide margin, to produce the volume amounts identified in statute. EPA reports the volume reductions for 2014, 2015, and 2016 were necessary due to “real-world challenges.” Last, the final rule issued by EPA triggers the RFS reset provision for both advanced biofuel and cellulosic biofuel. It is unclear what impact the reset provision will have on RFS standards in future years.

This report discusses the process and criteria that EPA may use to waive various portions of the RFS, and the modification of applicable volumes.

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## Introduction

The Renewable Fuel Standard (RFS) requires that the nation's transportation fuel supply contain renewable biofuels.<sup>1</sup> This mandate—established in the Energy Policy Act of 2005 (EPAAct; P.L. 109-58) and expanded in the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)—requires the use of renewable fuel, but it does not explicitly require the production of that fuel. Obligated parties, such as refiners or importers of gasoline or diesel fuel, are responsible for complying with the RFS requirements. The Environmental Protection Agency (EPA) administers the mandate, which is an amendment of the Clean Air Act, under its authority to regulate fuels.<sup>2</sup> The statutory renewable fuel volume amounts increase annually until 2022, with EPA determining the volume amounts after 2022 within certain limitations. EPA has the authority to waive the RFS requirements, in whole or in part, if certain conditions outlined in statute prevail.

The RFS is a complex and highly technical policy initiative. It deals with multiple sectors and requires the use of some advanced renewable fuel technologies that have yet to reach maturity. The RFS also incorporates greenhouse gas emission reduction thresholds. All of this complexity is combined with multiple stakeholders that have unique perspectives of what the RFS should accomplish, how it should be implemented, and whether it should even exist, which leads to intense discussions about the RFS and its future. Congressional debate about the RFS is expected to continue, particularly about how EPA administers the program.<sup>3</sup> As Congress proceeds with discussing the RFS, it may be useful to understand the RFS waiver authority granted to EPA. This report discusses the waiver provision of the RFS, including the modification-of-volumes section.

## RFS Requirements

The RFS statute calls for the consumption of 9 billion gallons of total renewable fuel in 2008 and ascends to 36.0 billion gallons in 2022, with EPA determining the annual volume amounts after 2022. The statute identifies four categories of renewable fuels that must be used to meet the mandate, but essentially these four categories can be aggregated into two major categories: unspecified biofuel (i.e., cornstarch ethanol) and advanced biofuel (i.e., cellulosic biofuel, biomass-based diesel, and other advanced biofuels). (See **Figure 1**.) Over time, the growth in the RFS slowly transitions from consisting primarily of biofuels made mostly from food and feed crops to biofuels made from non-food and non-feed crops. If actual renewable fuel production were to match what is in the statute for 2022, advanced biofuels would constitute close to 60% of the 36.0 billion gallon mandate and unspecified biofuel would constitute about 40%.

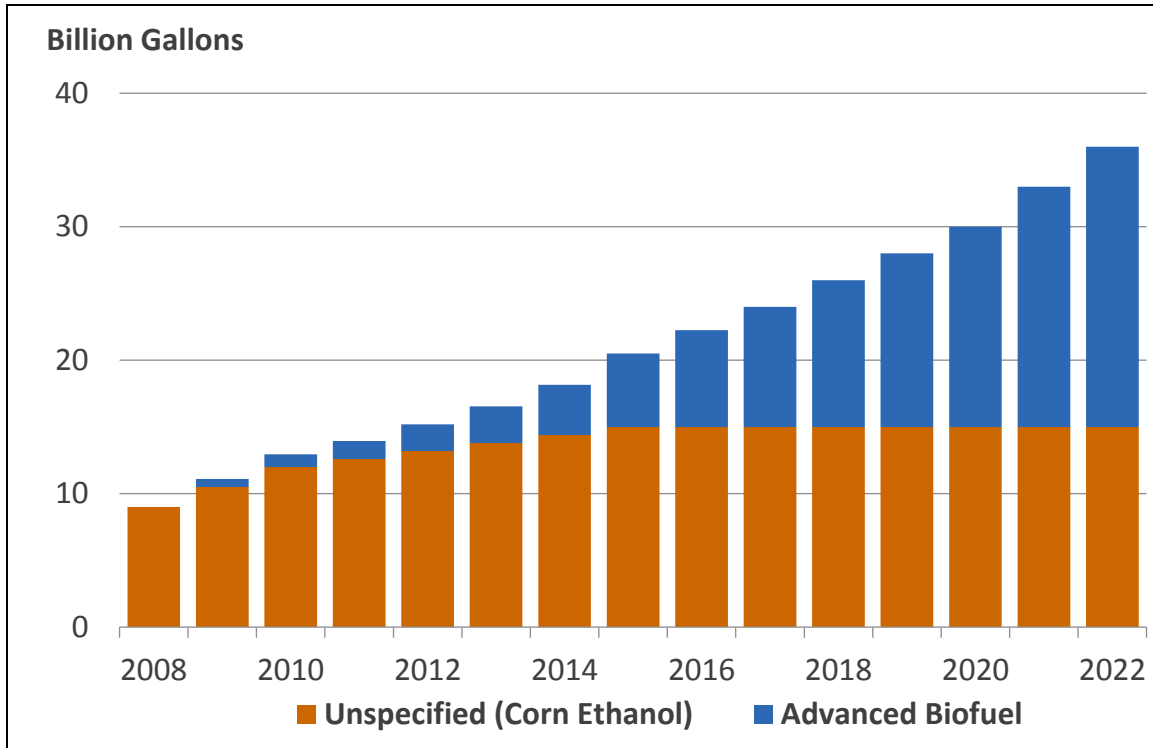
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<sup>1</sup> For more information on the Renewable Fuel Standard (RFS), see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

<sup>2</sup> Clean Air Act, Section 211(o); 42 U.S.C. 7545.

<sup>3</sup> Legislation has been proposed in the 114<sup>th</sup> Congress that would repeal or modify the RFS (e.g., S. 1584, S. 577, S. 934, H.R. 434, H.R. 703, H.R. 704, and H.R. 3228). To date, the 114<sup>th</sup> Congress has held seven hearings related to the RFS or renewable fuels.

**Figure I. Scheduled Renewable Fuel Standard (RFS) Mandates Under EISA**



**Sources:** Congressional Research Service (CRS) with mandates in the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140).

## RFS Annual Volume Reduction Deadlines

Congress gave the EPA Administrator waiver authority to adjust the renewable fuel volume amounts identified in statute given certain conditions (e.g., inadequate domestic renewable fuel supply).<sup>4</sup> The EPA Administrator is required to set all of the standards by November 30 of the preceding year (e.g., the 2017 standard should be announced by November 30, 2016).<sup>5</sup> Further, when the EPA Administrator reduces the cellulosic biofuel volume amount, she also may reduce the total renewable fuel and total advanced biofuel volume amounts by the same or a lesser volume. For biomass-based diesel, the statute specifies volume amounts for four years (2009-2012) and requires EPA to announce the remaining annual biomass-based diesel volume amounts “14 months before the first year for which such applicable volume will apply” (e.g., the 2018 biomass-based diesel standard should be announced by November 2016).

<sup>4</sup> These conditions are further explained in the “RFS Waiver Provision” section of this report.

<sup>5</sup> 42 U.S.C. 7545 (o)(3)(B)(i).

## Current RFS Requirements

EPA issued the 2014, 2015, and 2016 standards (and the 2017 standard for biomass-based diesel) in late 2015, putting the RFS back on statutory schedule.<sup>6</sup> The RFS statutory requirements and the EPA requirements for those years are provided in **Table 1**.

**Table 1. EISA and EPA 2014, 2015, and 2016 RFS Requirements**  
(in billions of gallons)

Year	Total Renewable Fuel	Unspecified Biofuel	Advanced Biofuel (cellulosic biofuel component)
2014 Statutory	18.15	14.4	3.75 (1.75)
2014 EPA Final	16.28	13.61	2.67 (0.033)
2015 Statutory	20.5	15.0	5.5 (3.0)
2015 EPA Final	16.93	14.05	2.88 (0.123)
2016 Statutory	22.25	15.0	7.25 (4.25)
2016 EPA Final	18.11	14.5	3.61 (0.230)

**Sources:** EISA (P.L. 110-140); U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017; Final Rule,” 80 *Federal Register* 239, December 14, 2015.

**Note:** All volumes are ethanol-equivalent.

## Biofuel Production

One indicator of whether the goals of the RFS are being met is actual renewable fuel gallons produced.<sup>7</sup> The actual volumes produced for both unspecified biofuel and biomass-based diesel were generally in alignment with what the RFS required through 2015 (see **Table 2**). Cellulosic biofuel production has been produced only in very limited quantities, far short of the quantities called for in statute.

<sup>6</sup> U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017; Final Rule,” 80 *Federal Register* 239, December 14, 2015. For more information on the proposed volume requirements, see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

<sup>7</sup> For simplicity purposes, this section discusses actual fuel production as a measure of RFS accomplishment. It could be argued that a better RFS accomplishment indicator is the Renewable Identification Numbers (RINs) generated each year, which take into consideration the energy content of the fuel with an equivalence value. A RIN is a credit that is assigned to each gallon of renewable fuel, and each year obligated parties are to submit a certain number of RINs to Environmental Protection Agency (EPA) to demonstrate RFS compliance. There has been a host of issues with RINs, leading with price volatility and transparency concerns. For more information on RINs, see CRS Report R42824, *Analysis of Renewable Identification Numbers (RINs) in the Renewable Fuel Standard (RFS)*, by Brent D. Yacobucci.

**Table 2. Actual Biofuel Production**  
(in billions of gallons)

Year	RFS Unspecified Biofuel Requirement	Actual U.S. Ethanol Production <sup>a</sup>	RFS Biomass-Based Diesel Requirement	Actual Biomass-Based Diesel <sup>b</sup>	RFS Cellulosic Biofuel Requirement	Actual Cellulosic Biofuel <sup>c</sup>
2009	10.5	10.9	0	0.55	0	—
2010	12.0	13.3	1.15	0.31	0.0065	0
2011	12.6	13.9	0.80	1.10	0	0
2012	13.2	13.2	1.00	1.10	0	0.00002 <sup>d</sup>
2013	13.8	13.3	1.28	1.80	0.0008	0.0005 <sup>e</sup>
2014	13.61	14.3	1.63	1.75	0.033	0.033 <sup>f</sup>
2015	14.05	14.53 <sup>g</sup>	1.73	1.2 <sup>h</sup>	0.123	0.13 <sup>i</sup>

**Sources:** EISA (P.L. 110-140); U.S. Environmental Protection Agency RFS Final Rules.

**Notes:** RFS requirements for 2014 are the statutory requirements, except for the biomass-based diesel requirement, which EPA was authorized to set starting in 2013.

- a. Renewable Fuels Association, Historic U.S. Fuel Ethanol Production, 2015.
- b. National Biodiesel Board, Production Statistics, 2015; National Biodiesel Board, “National Biodiesel Board Calls for EPA to Act on RFS,” press release, January 30, 2015.
- c. EPA Moderated Transaction System (EMTS) RFS2 Data.
- d. Production amount from cellulosic ethanol (20.1 thousand gallons) and cellulosic diesel (1.0 thousand gallons).
- e. Production amount from cellulosic renewable gasoline (281.8 thousand gallons) and cellulosic diesel (232.8 thousand gallons).
- f. Renewable compressed natural gas (CNG) and renewable liquefied natural gas (LNG) consisted of approximately 98% of the 2014 cellulosic biofuel production total (17.4 million gallons of renewable LNG; 15.2 million gallons of renewable CNG; 728.5 thousand gallons of cellulosic ethanol; 50.4 thousand gallons cellulosic heating oil; 29.4 thousand gallons of cellulosic renewable gasoline; and 5.2 thousand gallons of cellulosic diesel). EPA reports that 2014 was the first year where some Renewable Identification Numbers were generated using imported cellulosic biofuel, specifically cellulosic heating oil.
- g. “US ethanol production rises to 14.53 billion gallon annual rate,” *Biofuels Digest*, October 25, 2015.
- h. January to November 11-month total for 2015; U.S. Energy Information Administration, *Monthly Biodiesel Production Report*, January 2016.
- i. Renewable compressed natural gas (CNG) and renewable liquefied natural gas (LNG) consisted of approximately 98% of the 2015 cellulosic biofuel production total (72.8 million gallons of renewable CNG; 53.2 million gallons of renewable LNG; 2.2 million gallons of cellulosic ethanol; and 275.3 thousand gallons cellulosic heating oil).

## RFS Waiver Provision

The RFS statute contains a waiver provision.<sup>8</sup> The provision contains three waivers that the EPA Administrator may use—a general waiver, a cellulosic biofuel waiver, and a biomass-based diesel waiver—to waive, in whole or in part, the volume of renewable fuel mandated by statute. If a waiver is issued, it expires after one year (60 days for the biomass-based diesel waiver), but the Administrator may renew the waiver. Additionally, the waiver provision allows for a modification

<sup>8</sup> 42 U.S.C. 7545(o)(7).

of applicable volumes. The waivers and the modification of applicable volumes are described in further detail in the following sections of this report.

## **General Waiver**

The general waiver gives the EPA Administrator the authority to waive the overall RFS requirements, in whole or in part, if

1. there is inadequate domestic renewable fuel supply to meet the mandate, or
2. implementation of the requirement would severely harm the economy or environment of a state, a region, or the United States.<sup>9</sup>

The Administrator may issue the general waiver at her discretion or if petitioned by a state or fuel provider. In those instances in which the Administrator receives a petition for a waiver, she has 90 days after receipt of the petition to approve or disapprove the petition. Further, prior to making her decision, the Administrator is to consult with the Secretaries of Agriculture and Energy and to allow for public notice and the opportunity for comment. If a general waiver is granted, any adjustment applies to the total national renewable fuel requirement. Thus, EPA may not issue a general waiver to waive the requirement for an individual state or supplier within a state.

## **Cellulosic Biofuel Waiver**

The cellulosic biofuel waiver obligates the EPA Administrator to reduce the cellulosic biofuel mandate when the projected production capacity for a given year is less than what is identified in statute.<sup>10</sup> As written, the law does not require the EPA Administrator to consult with the Secretaries of Agriculture or Energy when issuing a cellulosic biofuel waiver, or to give public notice and opportunity for comment, but the Administrator must base the projection on the U.S. Energy Information Administration estimate provided under the applicable percentages provision.<sup>11</sup> Although it is not required by the statute to do so, EPA has consulted with federal agencies, industry, and others when EPA has considered issuance of a cellulosic biofuel waiver. EPA has also provided opportunity for public comment. The Administrator must set the new required amount at the “projected available volume during that calendar year” by November 30 of the preceding year. Should the Administrator reduce the cellulosic biofuel volume, she also *may* reduce the volumes of advanced biofuel and renewable fuel by the same or lesser volume. When a cellulosic biofuel waiver is issued, the Administrator must offer cellulosic biofuel waiver credits for obligated parties to purchase for that compliance year.<sup>12</sup>

## **Biomass-Based Diesel Waiver**

The biomass-based diesel waiver gives the EPA Administrator the authority to reduce the amount of biomass-based diesel mandated for up to 60 days if she determines that there are significant market circumstances (including feedstock disruptions) “that would make the price of biomass-based diesel fuel increase significantly.”<sup>13</sup> If these market circumstances continue past the initial

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<sup>9</sup> 42 U.S.C. 7545(o)(7)(A).

<sup>10</sup> 42 U.S.C. 7545(o)(7)(D).

<sup>11</sup> 42 U.S.C. 7545(o)(3)(A).

<sup>12</sup> The formula to calculate the price of these credits is written in statute. For more information on cellulosic biofuels and the RFS, see CRS Report R41106, *The Renewable Fuel Standard (RFS): Cellulosic Biofuels*, by Kelsi Bracmort.

<sup>13</sup> 42 U.S.C. 7545(o)(7)(E); for more information on biodiesel, see CRS Report R41282, *Agriculture-Based Biofuels*: (continued...)



60-day period, the Administrator may issue another waiver for an additional 60 days. The Administrator is to consult with the Secretaries of Energy and Agriculture prior to issuing such a waiver. If the Administrator issues a biomass-based diesel waiver, she also *may* reduce the volumes of advanced biofuel and renewable fuel by the same or lesser volume.

## **Modification of Applicable Volumes**

The modification-of-applicable-volumes section of the RFS is referred to by some as the “reset” section for the RFS.<sup>14</sup> This section gives the EPA Administrator the authority to adjust the applicable volumes of the RFS in future years starting in 2016 if certain conditions are met. Specifically, it provides that, starting in 2016, the EPA Administrator shall modify the applicable volumes of the RFS for subsequent years 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. The section does not state that the Administrator must “reduce” the volume amount, nor does it allude to what the modified amount must be (i.e., projected available volume during that calendar year).

## **RFS Waiver Authority Use**

The EPA Administrator has issued one general waiver and seven cellulosic biofuel waivers for 2010 through 2016.<sup>15</sup> The Administrator used the waivers for 2014, 2015, and 2016 to reduce the total renewable fuel (including a lowering of the unspecified biofuel), advanced biofuel, and cellulosic biofuel volume requirements. EPA reports that it used the general waiver and cellulosic biofuel waiver to reduce the 2014, 2015, and 2016 standards to address “real-world challenges” including fuel infrastructure, lack of advanced biofuel production, and other constraints.<sup>16</sup> The Administrator has not granted a biomass-based diesel waiver.

## **RFS Waiver Impacts**

Waiver authority can impact RFS implementation and market confidence, as well as contribute to RFS uncertainty. Waiver authority is intended to assist EPA with timely administration of the RFS. In practice, it appears to have done the opposite, contributing to the delay of final standards. Waiver authority, in conjunction with other factors, could weaken confidence in renewable fuel

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(...continued)

*Overview and Emerging Issues*, by Mark A. McMinimy.

<sup>14</sup> 42 U.S.C. 7545(o)(7)(F).

<sup>15</sup> The three-year final rule issued in 2015 marks the first time the Administrator has used the general waiver. Previously, the Administrator had not issued a general waiver, even when petitioned to do so by states in 2008 and 2012. For more information on waiver petitions from the states, particularly for 2008 and 2012, see CRS Report RS22870, *Waiver Authority Under the Renewable Fuel Standard (RFS)*, by Brent D. Yacobucci. The EPA Administrator used the cellulosic biofuel waiver in 2010 to reduce the mandate from the statutory volume of 100 million gallons to 6.5 million ethanol-equivalent gallons, in 2011 from 250 million gallons to 6.0 million ethanol-equivalent gallons, in 2012 from 500 million gallons to 10.45 million ethanol-equivalent gallons, in 2013 from 1 billion gallons to 810,185 ethanol-equivalent gallons, in 2014 from 1.75 billion gallons to 33 million ethanol-equivalent gallons, in 2015 from 3.0 billion gallons to 123 million ethanol-equivalent gallons, and in 2016 from 4.25 billion gallons to 230 million ethanol-equivalent gallons. EPA’s 2012 standard was vacated by a court decision, and EPA rescinded the 2011 cellulosic biofuel standard.

<sup>16</sup> U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017; Final Rule,” 80 *Federal Register* 239, December 14, 2015.

markets and the chosen technologies, specifically cellulosic biofuel.<sup>17</sup> Many aspects of the RFS and biofuels could be viewed as unstable (e.g., approval of fuel pathways for the RFS, bringing advanced biofuels on line at a sizeable scale, issuing federal support for biofuels, biofuel infrastructure) partly because Administration decisions—including the use of RFS waiver authority—have not been made in a timely manner.

## **Impacts of the RFS Modification-of-Applicable-Volumes Section**

The volume requirements announced by EPA in the RFS three-year final rule trigger the “reset” provision for both advanced biofuels and cellulosic biofuels. Many have questions and concerns about how EPA will implement the reset provision (the modification-of-applicable-volumes section of the RFS) in 2016. This provision allows the EPA Administrator to modify the applicable volumes of the RFS in its entirety starting in 2016 if certain conditions are met. It is not clear how the provision will be implemented. The Administrator has the sole discretion to set the modified amounts, which in theory could be similar to or completely different from what is listed in statute. Some may question whether the impact of this provision could be limited to one renewable fuel category (e.g., cellulosic biofuel) or whether there would be a domino effect whereby other renewable fuel categories (e.g., advanced biofuel) would be impacted. For instance, could public and private investment for other advanced biofuels be influenced by a significant reset of the cellulosic biofuels requirement? Finally, if the provision were implemented solely for cellulosic biofuels, with EPA drastically lowering the cellulosic biofuel volumes, would the opportunity to satisfy one of the original purposes of the policy (i.e., promoting a steep expansion in the use of advanced biofuels) be undermined? Going forward, the implementation of this provision could have important implications for the biofuel industry, with a potential for EPA to significantly reduce the applicable volumes or to maintain ambitious targets.

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<sup>17</sup> Advanced Ethanol Council, “33 Advanced Biofuel Companies Ask President Obama to Reconsider the Proposed RFS Rule for 2014,” press release, May 16, 2014; Advanced Ethanol Council, “AEC, BIO Joint Letter to White House over Proposed 2014 RFS Volumetric Blending Requirements,” October 29, 2013.