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

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January 26, 2017

**Congressional Research Service**

7-5700

[www.crs.gov](http://www.crs.gov)

R44045

## 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 for the overall RFS and waivers for two types of advanced biofuel: cellulosic biofuel and biomass-based diesel. 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 permanent modification of applicable volumes of the RFS starting in 2016 and is carried forward, 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 November 2016, EPA announced in its final rule for 2017 for the RFS that it was using the cellulosic biofuel waiver authority to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volume requirements. The 2017 final rule follows the precedent set in the previous final rule, which involved EPA's use of the waiver authority to reduce the total renewable fuel volume required for 2014, 2015, and 2016. However, unlike the previous final rule, whereby EPA used both the general waiver and the cellulosic biofuel waiver to reduce the volume requirements, for the 2017 final rule EPA used only the cellulosic biofuel waiver.

EPA's use of the cellulosic biofuel waiver authority is not new. EPA has repeatedly issued a cellulosic biofuel waiver to reduce the volume required for cellulosic biofuel. For the last few years, the use of the cellulosic biofuel waiver led EPA to also reduce the total advanced biofuel volume requirement. According to the agency, it has used the cellulosic biofuel waiver due to lack of actual domestic production of cellulosic biofuel at the volumes required to meet the RFS cellulosic biofuel mandate. For various reasons, the U.S. cellulosic biofuel industry has been unable, by a wide margin, to produce the volume amounts identified in statute.

The 2017 final rule issued by EPA—like the previous final rule—triggers the RFS “reset” section of the waiver provision for both advanced biofuel and cellulosic biofuel. It is unclear what impact the reset section will have on RFS standards in future years. In November 2016, EPA reported that it intends to address the reset requirements with a separate rulemaking.

This report discusses the process and criteria that EPA may use to waive various portions of the RFS and the reset section and briefly analyzes the potential impacts.

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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. In general, 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 of the economy 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 on what the RFS should accomplish, how it should be implemented, and whether it should exist, which leads to intense discussions about the RFS and its future. Congressional debate about the RFS is expected to continue with special attention to 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 provisions of the RFS, including the modification-of-applicable-volumes section.

## RFS Requirements

The RFS statute calls for the consumption of 9 billion gallons of total renewable fuel in 2008, ascending to 36 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 (mainly 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 transitions from biofuels that, in practice, are 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 billion gallon mandate and unspecified biofuel would constitute about 40%.

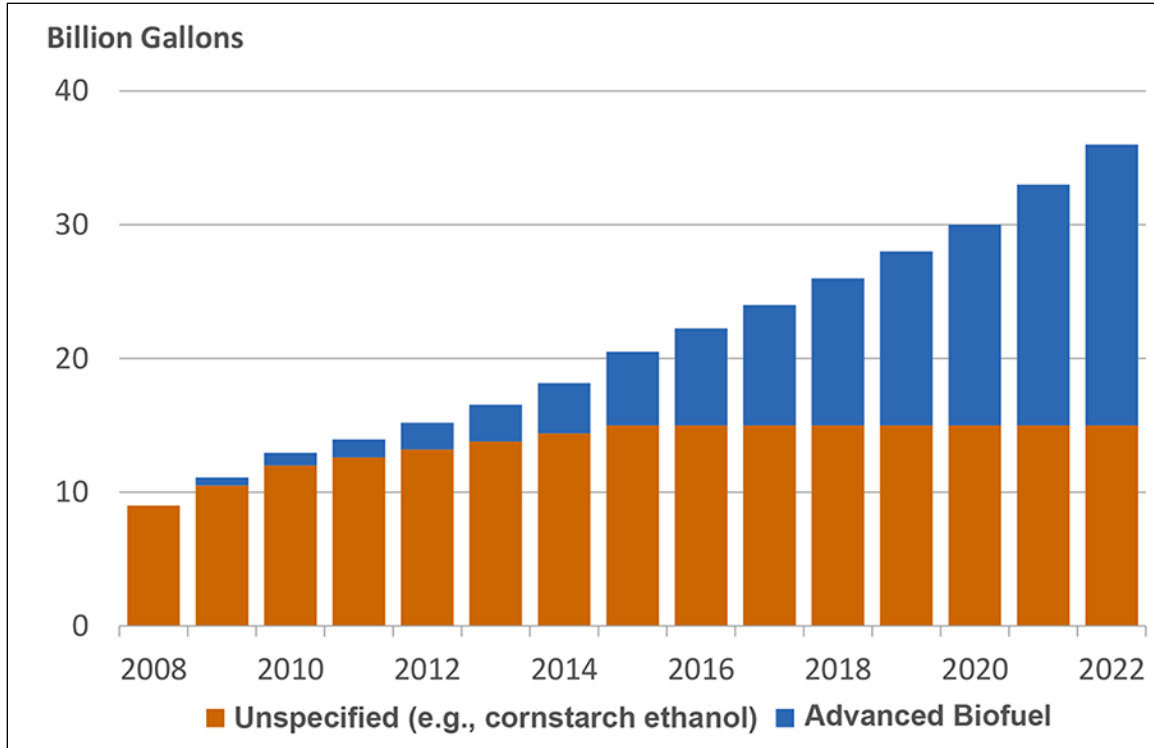
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<sup>1</sup> For more information on the Renewable Fuel Standard (RFS), see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

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

<sup>3</sup> Legislation was proposed in the 114<sup>th</sup> Congress that would repeal or modify the RFS (e.g., S. 1584, S. 577, S. 791, S. 934, S. 1584, H.R. 434, H.R. 703, H.R. 704, H.R. 1487, and H.R. 3228). The 114<sup>th</sup> Congress held multiple hearings related to the RFS or renewable fuels.

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



**Sources:** Congressional Research Service (CRS) using 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 the standards by November 30 of the preceding year (e.g., the 2018 standard should be announced by November 30, 2017).<sup>5</sup> Further, when the EPA Administrator reduces the cellulosic biofuel volume amount, the Administrator 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 2019 biomass-based diesel standard should be announced by November 2017).

<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 2017 standards (and the 2018 standard for biomass-based diesel) in late 2016, maintaining the statutory schedule for the RFS.<sup>6</sup> The RFS statutory requirements and the EPA requirements for 2014 through 2017 are provided in **Table 1**.

**Table 1. EISA and EPA RFS Requirements**  
(in billions of gallons)

Year	Total Renewable Fuel	Unspecified Biofuel	Advanced Biofuel (cellulosic biofuel component) <sup>a</sup>
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)
2017 Statutory	24.0	15.0	9.0 (5.5)
2017 EPA Final	19.28	15.0	4.28 (0.311)

**Sources:** EISA (P.L. 110-140); U.S. Environmental Protection Agency (EPA), “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; U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018; Final Rule,” 81 *Federal Register*, December 12, 2016.

**Note:** All volumes are ethanol-equivalent. Ethanol equivalent is the amount of fuel needed to give the same amount of energy as one gallon of ethanol.

- a. Advanced biofuels can include cellulosic biofuel, biomass-based diesel, biogas, butanol and more. Advanced biofuel is defined as renewable fuel, other than cornstarch ethanol, that has lifecycle greenhouse gas emissions that are at least 50% lower relative to petroleum products.

## RFS Waiver Provision

The RFS statute contains a waiver provision.<sup>7</sup> The provision contains three separate waivers—a general waiver, a cellulosic biofuel waiver, and a biomass-based diesel waiver—that the EPA Administrator may use 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), unless the Administrator renews the waiver. Additionally, starting in 2016, the waiver provision allows for a modification of applicable volumes. The waivers and the modification of applicable volumes are described in further detail in the following sections of this report.

<sup>6</sup> U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018; Final Rule,” 81 *Federal Register*, December 12, 2016. For a few years, the final rule was not issued by the statutory deadline. Additionally, EPA announced on January 26, 2017, that it would temporarily delay the effective date for the 2017 final rule to March 21, 2017. For more information on the final rule release dates and the volume requirements as well as the postponement of the 2017 final rule effective date, see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

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

## General Waiver

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

- there is inadequate domestic renewable fuel supply to meet the mandate, or
- implementation of the requirement would severely harm the economy or environment of a state, a region, or the United States.<sup>8</sup>

The Administrator may issue the general waiver at his or her discretion or if petitioned by a state or fuel provider. In those instances in which the Administrator receives a petition for a waiver, the Administrator has 90 days after receipt of the petition to approve or disapprove it.<sup>9</sup> Prior to making a 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 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 the agency has considered issuance of a cellulosic biofuel waiver. EPA also has 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, the Administrator 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 in lieu of using actual cellulosic biofuel.<sup>12</sup>

## Biomass-Based Diesel Waiver

The biomass-based diesel waiver gives the EPA Administrator authority to reduce the amount of biomass-based diesel required for up to 60 days if the Administrator determines that there are

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

<sup>9</sup> It is not clear what would happen should the Administrator take no action for a considerable amount of time following the 90-day deadline, as the timeframe to approve or disapprove a petition under the waiver provision has not been interpreted by the courts or by EPA in its federal regulations. Information regarding petitions, including the time frame for EPA to issue a denial for 2008 and 2012 waiver requests, is available at the EPA Requests for Volume Requirement Waiver under the Renewable Fuel Standard Program website.

<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.

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 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, the Administrator also *may* reduce the volumes of advanced biofuel and renewable fuel by the same or lesser volume.

## **Modification of Applicable Volumes**

The last section of the waiver provision is the modification-of-applicable-volumes section, referred to by some as the “reset” section for the RFS.<sup>14</sup> This section requires that the EPA Administrator modify 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. This reset section does not state what the modified amount must be. Rather, it requires that the Administrator determine the applicable volumes—in coordination with the Secretaries of Energy and Agriculture—based on a review of program implementation thus far and analysis of certain factors (e.g., the impact of the production and use of renewable fuels on the environment).<sup>15</sup>

## **RFS Waiver Authority Use**

In November 2016, EPA announced the final RFS volume requirements for 2017, whereby the agency used the cellulosic biofuel waiver to reduce the total renewable fuel requirement, including the advanced biofuel volume requirement and cellulosic biofuel volume requirement, for 2017.<sup>16</sup> The EPA Administrator issued a general waiver for the previous final rule (which covered 2014 through 2016) and repeatedly issued cellulosic biofuel waivers for 2010 through 2017.<sup>17</sup> The Administrator used the waivers for 2014, 2015, and 2016 to reduce the total

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<sup>13</sup> 42 U.S.C. 7545(o)(7)(E); for more information on biodiesel, see CRS Report R41282, *Agriculture-Based Biofuels: Overview and Emerging Issues*, by Mark A. McMinimy.

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

<sup>15</sup> The Administrator is directed to promulgate a rule that modifies the applicable volumes in compliance with 42 U.S.C. 7545(o)(2)(B)(ii).

<sup>16</sup> U.S. Environmental Protection Agency, “Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018; Final Rule,” 81 *Federal Register*, December 12, 2016.

<sup>17</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. The three-year final rule issued in 2015 marks the first time the Administrator 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 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, in 2016 from 4.25 billion gallons to 230 million ethanol-equivalent gallons, and in 2017 from 5.5 billion gallons to 311 million gallons. EPA’s 2012 standard was vacated by a court decision, and EPA rescinded the 2011 cellulosic biofuel standard.



renewable fuel (including a lowering of the unspecified biofuel mandate), advanced biofuel, and cellulosic biofuel volume requirements. The Administrator has not granted a biomass-based diesel waiver.

## **RFS Waiver Impacts**

Waiver authority is intended, in part, to assist EPA with implementation and timely administration of the RFS. In practice, it appears to have done the opposite by at times contributing to the delay of final standards.<sup>18</sup> Granting of waivers, in conjunction with other factors, could weaken confidence in renewable fuel markets and the chosen technologies, specifically cellulosic biofuel.<sup>19</sup> At the same time, the waivers have provided EPA with the flexibility to establish volume requirements that are attainable. Many aspects of the RFS and biofuel production 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, and biofuel infrastructure) partly because Administration decisions—including the use of RFS waiver authority—have not been made in a timely manner.

## **Impacts of RFS Modification of Applicable Volumes**

With both the 2017 final rule and the previous RFS three-year final rule, EPA triggered the “reset” section of the waiver provision for both advanced biofuels and cellulosic biofuels. Many have questions and concerns about how EPA will implement the reset section (the modification-of-applicable-volumes section of the RFS). This section requires 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 EPA will implement the reset section. In November 2016, EPA reported that its intent was to address the reset requirements with a separate rulemaking.<sup>20</sup> The Administrator has the discretion to set the modified amounts, which in theory could be similar to or completely different from what is listed in statute. A key policy question is whether the impact of the reset section 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 reset section 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 RFS (i.e., promoting a steep expansion in the use of advanced biofuels) be undermined? Going forward, reset implementation could have implications for the biofuel industry, given the potential for EPA to reduce the applicable volumes or maintain ambitious targets.

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<sup>18</sup> For a list of final rule release dates for the RFS, see table 1 in CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

<sup>19</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.

<sup>20</sup> EPA, Renewable Fuel Standard Program - Standards for 2017 and Biomass-Based Volume for 2018: Response to Comments, November 2016.

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