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

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# Summary

Federal law requires that transportation fuels contain a minimum amount of renewable fuel. This renewable fuel standard (RFS)—established by the Energy Policy Act of 2005 (EPAct05; P.L. 109-58) and amended by the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140)—includes scheduled volume mandates that grow each year (starting with 9 billion gallons in 2008 and ascending to 36 billion gallons in 2022). Within the overall RFS there are sub-mandates for advanced biofuels, including cellulosic biofuel, biomass-based diesel, and other advanced biofuels. The Environmental Protection Agency (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 are present. 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 has an earlier announcement deadline. Further, the final section of the waiver provision—which some refer to as the "reset" section—allows for a modification of the applicable volumes of the RFS starting in 2016 if certain conditions are met.

Several instances have led to EPA using, proposing to use, or being petitioned to use its waiver authority when implementing the RFS. For example, actual production of cellulosic biofuel at the volumes required to meet the RFS cellulosic biofuel mandate has not been achieved. For various reasons, the cellulosic biofuel industry has, by a wide margin, been unable to produce the volume amounts identified in statute. Thus, EPA has issued cellulosic biofuel waivers repeatedly from 2010 through 2013. For instance, under the cellulosic biofuel waiver authority, EPA reduced the 2013 mandate for cellulosic biofuels from the statutory volume of 1 billion gallons to 810,185 ethanol-equivalent gallons. EPA has not granted a general waiver, even when petitioned to do so by a group of states in 2008 and 2012.

The potential for full or partial RFS waivers can contribute to uncertainty—for policymakers, industry, financial supporters, and other interested parties. This is especially true when final annual standard announcements are delayed, partly because a waiver(s) has been proposed. This is the case for the 2014 and 2015 proposed standards, for which EPA proposes to use both the general waiver authority and the cellulosic biofuel waiver authority to reduce the volume amounts required for both total renewable fuel and advanced biofuel. In May 2015, EPA re-proposed the 2014 volume requirements and issued the 2015 and 2016 proposed volume requirements. For instance, EPA proposes to lower the 2014 total renewable fuel mandate from 18.15 billion gallons to 15.93 billion gallons. The agency's reasoning includes the amount of ethanol that can be blended into gasoline (e.g., the *blend wall*) leading to "inadequate supply" concerns and the inability of industry to produce sufficient volumes of advanced biofuel. EPA anticipates it will finalize volume requirements for 2014, 2015, and 2016 by November 30, 2015. Although EPA has not yet issued the 2014 or 2015 final standard, biofuel producers, obligated parties, and others continue to operate, but they do so in an uncertain RFS environment.

This report discusses the process and criteria for EPA 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 renewable fuel be blended into the nation's transportation fuel supply.[1] This mandate—established in the Energy Policy Act of 2005 (EPAct; 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 renewable 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.[2] The statutory renewable fuel volume amounts increase annually until 2022, with EPA determining the volume amounts after 2022 within certain limitations.

The RFS is a complex and highly technical policy initiative. It deals with multiple sectors and 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.[3] 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

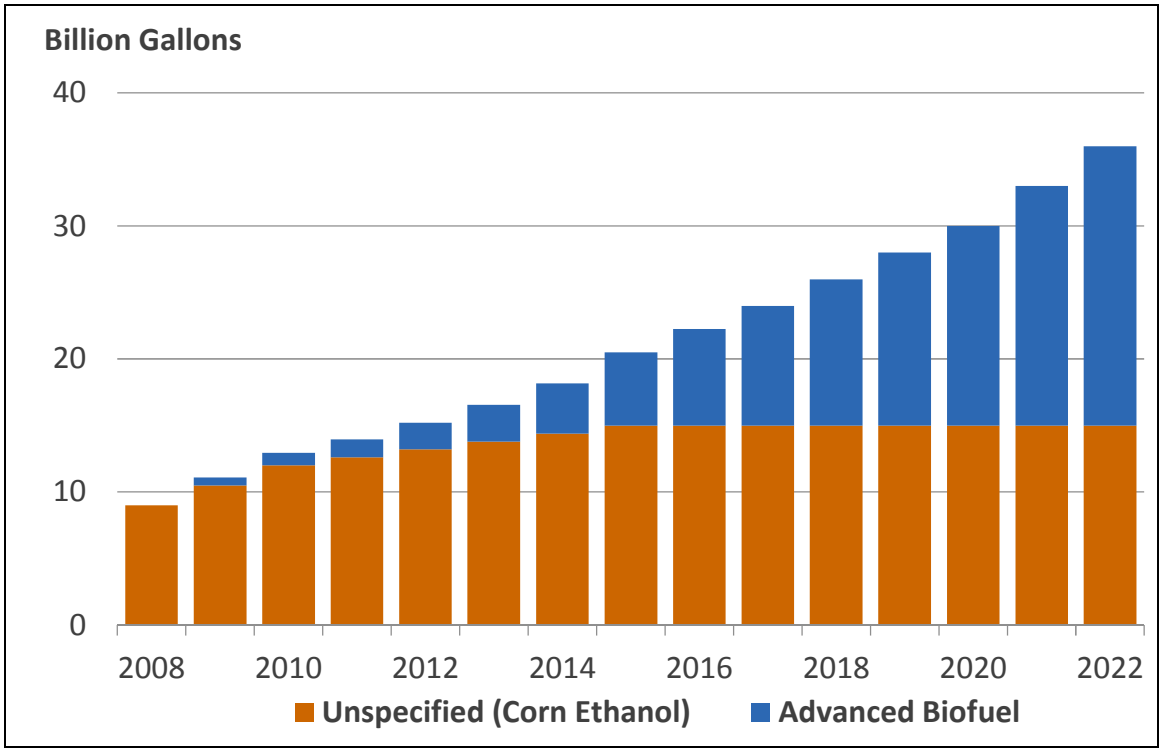
The RFS statute calls for the consumption of 9 billion gallons of total renewable fuel in 2008 and ascends to 36.0 billion gallons in 2022. The statute identifies four categories of renewable fuels that must be used to meet the mandate, but essentially these four categories can be aggregated into two 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%.

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

[2] Clean Air Act, Section 211(o); 42 U.S.C. 7545.

[3] Legislation has been introduced in the 114th Congress that would repeal or modify the RFS (S. 1584, S. 577, S. 934, H.R. 434, H.R. 703, and H.R. 704). The 113th Congress held seven hearings related to the RFS or renewable fuels.

**Figure 1. 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).[4] The EPA Administrator is required to set all of the standards by November 30 of the preceding year (e.g., the 2014 standard should have been announced by November 30, 2013).[5] 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 2014 biomass-based diesel standard should have been announced by November 2012).

# Current RFS Requirements

EPA has not yet issued the 2014 standard or the 2015 standard. In May 2015, the agency re-proposed the 2014 volume requirements and issued the 2015 and 2016 proposed volume

[4] These conditions are further explained in the "RFS Waiver Provision" section of this report.

[5] 42 U.S.C. 7545 (o)(3)(B)(i).

requirements.[6] EPA anticipates it will finalize volume requirements for 2014, 2015, and 2016 by November 30, 2015. The RFS statutory requirements and the EPA proposed requirements for 2014, 2015, and 2016 are provided in **Table 1**.

**Table 1. EISA and EPA Proposed 2014, 2015, and 2016 RFS Requirements**

(in billions of gallons)

| Year | Total Renewable Fuel | Advanced Biofuel (cellulosic biofuel component) | Unspecified Biofuel |
|---|---|---|---|
| 2014 | 18.15 | 3.75 (1.75) | 14.4 |
| *2014 EPA Proposal* | *15.93* | *2.68 (0.033)* | *13.25* |
| 2015 | 20.5 | 5.5 (3.0) | 15.0 |
| *2015 EPA Proposal* | *16.3* | *2.9 (0.106)* | *13.4* |
| 2016 | 22.25 | 7.25 (4.25) | 15.0 |
| *2016 EPA Proposal* | *17.4* | *3.4 (0.206)* | *14.0* |

**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; Proposed Rule," 80 *Federal Register* 33099, June 10, 2015. 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.[7] Cornstarch ethanol is the dominant biofuel produced in the United States. The actual volumes produced for both unspecified biofuel and biomass-based diesel were in alignment with what the RFS required (see **Table 2**). Cellulosic biofuel production is not as easy to quantify. Measurable amounts of cellulosic biofuel production have begun only over the last year, and some of the production may not be reported.

[6] U.S. Environmental Protection Agency, "Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017; Proposed Rule," 80 *Federal Register* 33099, June 10, 2015. For more information on the proposed volume requirements, see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort.

[7] 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[a] | RFS Biomass-Based Diesel Requirement | Actual Biomass-Based Diesel[b] | RFS Cellulosic Biofuel Requirement | Actual Cellulosic Biofuel[c] |
|---|---|---|---|---|---|---|
| 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[d] |
| 2013 | 13.8 | 13.3 | 1.28 | 1.80 | 0.006 | 0.0005[e] |
| 2014 | 14.4 | 14.3 | 1.28 | 1.75 | 1.75 | 0.033[f] |

**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 (728.5 thousand gallons of cellulosic ethanol; 29.4 thousand gallons of cellulosic renewable gasoline; 5.2 thousand gallons of cellulosic diesel; 50.4 thousand gallons cellulosic heating oil; 15.2 million gallons of renewable CNG; 17.4 million gallons of renewable LNG). EPA reports that 2014 was the first year where some Renewable Identification Numbers were generated using imported cellulosic biofuel, specifically cellulosic heating oil.

# RFS Waiver Provision

The RFS statute contains a waiver provision.[8] 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 the RFS. If a waiver is issued, it expires after one year, but the Administrator may renew the waiver. Additionally, 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.

[8] 42 U.S.C. 7545(o)(7).

## General Waiver

The general waiver gives the EPA Administrator the authority to waive the 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.[9]

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. To date EPA has not granted a waiver under this provision, but it has proposed doing so for 2014, 2015, and 2016.[10]

## Cellulosic Biofuel Waiver

The cellulosic biofuel waiver obligates the EPA Administrator to reduce the cellulosic biofuel mandate when the projected volume amount for a given year is less than what is identified in statute.[11] 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.[12] Although it is not written in statute, EPA consultation has been carried out with federal agencies, industry, and others when EPA has discussed issuance of a cellulosic biofuel waiver, and opportunity for public comment also has been provided. 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.[13]

## 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

[9] 42 U.S.C. 7545(o)(7)(A).

[10] U.S. Environmental Protection Agency, "Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017; Proposed Rule," 80 *Federal Register* 33099, June 10, 2015.

[11] 42 U.S.C. 7545(o)(7)(D).

[12] 42 U.S.C. 7545(o)(3)(A).

[13] 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.

market circumstances (including feedstock disruptions) "that would make the price of biomass-based diesel fuel increase significantly."[14] 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, 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.[15] This section gives the EPA Administrator the authority to adjust the applicable volumes of the RFS starting in 2016 if certain conditions are met. Specifically, it requires that, starting in 2016, the EPA Administrator 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

Thus far, the EPA Administrator has issued only cellulosic biofuel waivers. Indeed, the Administrator has done so repeatedly, issuing cellulosic biofuel waivers in 2010, 2011, 2012, and 2013.[16] The Administrator has not granted a biomass-based diesel waiver or a general waiver, even when petitioned to do so by states in 2008 and 2012.[17] The 2014, 2015, and 2016 RFS proposal included waivers for cellulosic biofuel, advanced biofuel, and total renewable fuel (including a lowering of the unspecified portion).

## Current RFS Waiver Requests

If the time frame written in law for determining waivers had been met, stakeholders already would be aware of their 2015 RFS obligations and possibly could be in discussions with EPA about a forthcoming 2016 proposed rule. However, the 2014 and 2015 standards—due November 30, 2013, and November 30, 2014, respectively—have not yet been issued by EPA. As a result, the present RFS discussion is focused on what the 2014, 2015, and 2016 RFS standards will be and what waiver authority may be used. The 2014, 2015, and 2016 proposed rule was released in

[14] 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.

[15] 42 U.S.C. 7545(o)(7)(F).

[16] 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, and in 2013 from 1 billion gallons to 810,185 ethanol-equivalent gallons. EPA's 2012 standard was vacated by a court decision, and in its 2014 proposed rule for the RFS EPA proposes to rescind the 2011 cellulosic biofuel standard.

[17] 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.

May 2015. EPA proposes using both the general waiver authority and the cellulosic biofuel waiver authority to reduce the volume amount for both advanced biofuel and total renewable fuel. Its reasons include the blend wall[18] and the inability of industry to produce sufficient volumes of advanced biofuel.[19]

# 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 fuels policy and the chosen technologies, specifically cellulosic biofuel.[20] Many aspects of the RFS and biofuels could be viewed as unsteady (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

There are questions and concerns about how EPA will implement the modification-of-applicable-volumes section of the RFS in 2016. These concerns are partly due to the history of cellulosic biofuel volumes being reduced by significant percentages every year, making it very likely that the modification-of-applicable-volumes section will be implemented for cellulosic biofuels. Also, it is not clear how the section will be implemented. Moreover, the Administrator has the sole discretion to set the modified amounts, which in theory could be similar to what is listed in statute already or completely different. There may be questions about whether the impact of the modification section could be contained to one advanced biofuel (e.g., cellulosic biofuel) or whether there would be a domino effect whereby other renewable fuels were impacted. Lastly, if the modification section were implemented for cellulosic biofuels, with EPA drastically lowering the cellulosic biofuel volumes, would the opportunity to satisfy one of the original purposes of the policy be undermined (i.e., promoting a steep expansion in the use of advanced biofuels)? Going forward, the implementation of this section could have important implications for the biofuel

[18] The *blend wall* is the upper limit of how much ethanol can be blended into gasoline. In general, only a certain amount of ethanol can be blended into gasoline for use in vehicles and other equipment. Currently, much of the RFS is being met with ethanol. Because the RFS is a volume mandate, it is possible that the RFS could require more biofuel (e.g., ethanol) than can be blended into gasoline. Thus, some are concerned the blend wall is in direct conflict with the biofuel volumes mandated by the RFS. For more information, see CRS Report R40445, *Intermediate-Level Blends of Ethanol in Gasoline, and the Ethanol "Blend Wall"*, by Kelsi Bracmort.

[19] For more information on EPA's proposal, see CRS Report R43325, *The Renewable Fuel Standard (RFS): In Brief*, by Kelsi Bracmort and CRS Report IN10294, *The Renewable Fuel Standard (RFS): EPA Releases the Proposed Rule for 2014, 2015, and 2016*, by Kelsi Bracmort.

[20] 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.

industry, with a potential for EPA to significantly reduce the applicable volumes or to maintain ambitious targets.

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