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ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
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MEMORANDUM

June 20, 2016

To: Subcommittee on Energy and Power Democratic Members and Staff

Fr: Committee on Energy and Commerce Democratic Staff

Re: Hearing on "The Renewable Fuel Standard – Implementation Issues"

On **Wednesday, June 22, 2016, at 10:00 a.m. in room 2123 of the Rayburn House Office Building**, the Subcommittee on Energy and Power will hold a hearing on "The Renewable Fuel Standard – Implementation Issues."

I. BACKGROUND ON THE RENEWABLE FUEL STANDARD (RFS)

Congress first mandated that a portion of transportation fuel in the U.S. be produced from renewable biomass under the Energy Policy Act of 2005.[1] Two years later, legislators substantially expanded and modified this mandate under the Energy Independence and Security Act of 2007 (EISA).[2] The current RFS adopted under EISA is contained in section 211(o) of the Clean Air Act and is implemented through regulations adopted by the Environmental Protection Agency (EPA).[3] The ultimate goals of the RFS include reducing the nation's dependence on oil, enhancing energy security, bolstering the agricultural economy, and addressing the challenge of climate change by reducing greenhouse gas (GHG) emissions from the transportation sector.

Under the RFS, renewable fuels are those made from renewable biomass (e.g., grains, starches, sugars, waste biomass from crops or forests, and oilseeds) that meet specified criteria and can be substituted for the petroleum-based fuels conventionally used for transportation,

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[1] Energy Policy Act of 2005, Pub. L. No. 109-58 (2005).

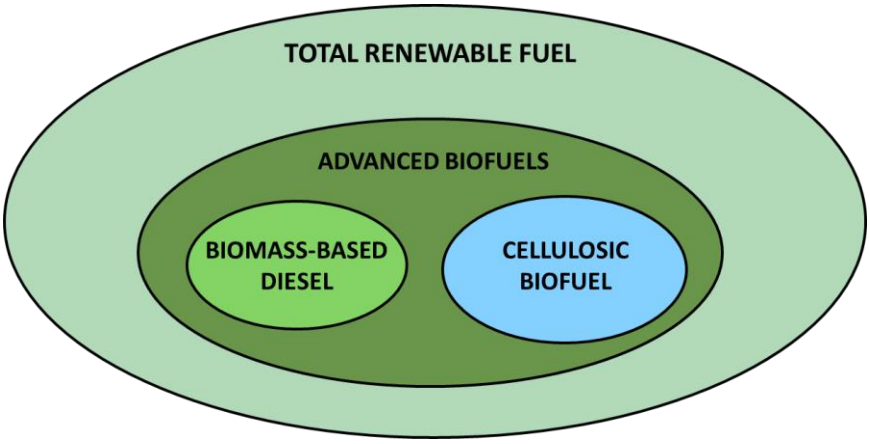
[2] Energy Independence and Security Act of 2007, Pub. L. No. 110-140 (2007).

[3] 42 U.S.C. § 7545(o). EPA finalized regulations to implement the RFS as modified by EISA in 2010. U.S. Environmental Protection Agency, *Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program*, 75 Fed. Reg. 14670 (Mar. 26, 2010).

home heating oil, or jet fuel. As illustrated in Figure 1, the RFS establishes specific annual volume requirements for four nested categories of renewable fuel: renewable fuel, advanced biofuels, cellulosic biofuel, and biomass-based diesel. The categories distinguish between fuel types based on the source materials, fuel use (e.g. gasoline vs. diesel), and degree to which the fuel reduces GHG emissions compared to petroleum-based fuel. These fuel types are measured on a life-cycle basis and account for all emissions from production to use.

Cellulosic biofuels are made from cellulosic materials like wood and grasses. The law requires that these fuels reduce GHG emissions by at least 60 percent as compared to baseline GHG emissions from gasoline or diesel. Biomass-based diesel substitutes for diesel, rather than gasoline, and reduces GHG emissions by at least 50 percent. Advanced biofuels encompass both cellulosic biofuels and biomass-based diesel, as well as other biofuels, such as sugar-cane based ethanol, and are required to reduce GHG emissions by at least 50 percent. Finally, renewable fuel encompasses all of the other categories, as well as corn-based ethanol.[4]

Figure 1: Nested Renewable Fuel Categories under the RFS[5]



A. RFS Volume Requirements

The RFS establishes annual volume requirements for most of the fuel categories through 2022, with advanced biofuels making up a larger share of the total renewable fuel requirement over time. The RFS also grants EPA authority to waive any or all of these requirements for one year if the agency determines on its own or in response to a petition that the RFS would "severely harm the economy or environment of a State, a region, or the United States" or "there is an inadequate domestic supply."[6]

[4] 42 U.S.C. § 7545(o)(1).

[5] Memorandum from Democratic Staff to Democratic Members of the House Committee on Energy and Commerce, Subcommittee on Energy and Power Hearing entitled *Overview of the Renewable Fuel Standard: Stakeholder Perspectives* (Jul. 22, 2013).

[6] *Id.* at (7)(A)-(D).

In recent years, EPA has relied on these waiver authorities to adjust the requisite volumes of total renewable fuel and individual advanced biofuel categories to account for projected available supplies and changes in consumer demand due to increased vehicle efficiency. For example, in 2016, the RFS requires that the transportation sector use 22.25 billion gallons of renewable fuel, including 7.25 billion gallons of advanced biofuels, with the balance (15 billion gallons) coming from either additional advanced biofuels or corn-based ethanol.[7] The statute also requires that at least 4.25 billion gallons of advanced biofuels must be cellulosic biofuel in 2016,[8] and EPA must establish a minimum volume for biomass-based diesel of at least 1 billion gallons per year.[9]

But the 2016 levels finalized by EPA requires only 18.11 billion gallons of renewable fuels, including 3.61 billion gallons of advanced biofuels and 230 million ethanol-equivalent[10] gallons of cellulosic biofuel.[11] EPA established these levels to "spur further progress in overcoming current constraints in renewable fuel distribution infrastructure, which in turn is expected to lead to substantial growth over time in the production and use of renewable fuels."[12]

B. RFS Compliance

The annual renewable fuel requirements apply to refiners, blenders, and importers, which are the "obligated parties" under the RFS. Each year, EPA determines the required renewable fuel volumes as described above. Then, using an estimate from Energy Information Administration (EIA) of the volume of gasoline and diesel fuel that will be used in the coming year, EPA calculates the percentages of this fuel that must be renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel in order to meet the RFS.[13]

Obligated parties are required to meet these percentages annually, but the RFS provides flexibility in doing so. For example, an obligated party may comply by blending the required renewable fuel directly or by purchasing excess credits from another obligated party. The RFS also allows those with excess credits to carry them over for use in the next compliance period.

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[7] *Id.* at (2)(B)(i)(I)-(II).

[8] *Id.* at (2)(B)(i)(III).

[9] *Id.* at (2)(B)(v).

[10] EPA's RFS regulations refer to cellulosic biofuels in ethanol-equivalent energy terms. Two hundred and thirty gallons of ethanol-equivalent fuel is the volume of cellulosic biofuel that contains the same energy content as 230 million gallons of ethanol. Since some cellulosic biofuels contain more energy content per unit volume than ethanol, the physical number of cellulosic gallons produced may be less than 230 million gallons.

[11] U.S. Environmental Protection Agency (EPA), *Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017*, 80 Fed. Reg. 77420 at 77422 (Dec. 14, 2015) (final rule).

[12] *Id.* at 77420.

[13] *Id.*

Finally, an obligated party is allowed to make up for a previous year's credit shortfall in the following year, provided that it meets its current obligations and generates enough credits to offset the previous year's deficit.[14] EPA assigns renewable identification numbers (RINs) to each gallon of renewable fuel produced, and it is these RIN credits that are bought, sold, or traded among interested parties.

II. ISSUES TO BE ADDRESSED IN THE HEARING

A. Ethanol-Gasoline "Blendwall"

EIA projects that gasoline use will decline through the year 2040.[15] Because the RFS requires increasing volumes of renewable fuel each year, declining gasoline use is likely to result in an increasing percentage by volume of renewable fuel in the U.S. transportation system.

This situation has raised concerns that obligated parties are approaching, or have already hit, the so-called ethanol "blendwall." The blendwall is the point at which the entire gasoline supply reaches 10 percent ethanol (E10) and blending additional volumes requires the use of gasoline-ethanol blends with higher ethanol content. A number of different interests have raised concerns about the use of higher ethanol blends. For example, higher levels of ethanol can be corrosive for certain materials, and older vehicles, non-road equipment, and dispensing facilities at gas stations are designed to use fuels that contain no more than 10 percent ethanol.[16] There are concerns that manufacturers' warranties for vehicles or other equipment may be voided by the use of higher ethanol blends.[17] Higher ethanol blends also pose safety concerns for motorcycles, boats, and other small engine equipment such as lawnmowers.[18]

Due to the blendwall, there is a concern that blending opportunities could become limited and that obligated parties will increasingly need to purchase RINs to comply with the RFS rather than directly blending ethanol into gasoline. At the same time, fewer blending opportunities will

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[14] 42 U.S.C. § 7545(o)(5).

[15] U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2016: Energy Use: Total Motor Gasoline* (online at www.eia.gov/forecasts/aeo/data/browser/#/?id=2-AEO2016&region=1-0&cases=ref2016&start=2014&end=2040&f=A&linechart=ref2016-d032416a.124-2-AEO2016.1-0&ctype=linechart&sourcekey=0).

[16] U.S. EPA, *Partial Grant and Partial Denial of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Decision of the Administrator*, 75 Fed. Reg. 68094, at 68129 (Nov. 4, 2010).

[17] Consumer Reports, *Warranties void on cars burning E15, say automakers* (Jul. 7, 2011) (online at http://news.consumerreports.org/cars/2011/07/warranties-void-on-cars-burning-e15-say-automakers.html).

[18] U.S. EPA, *Partial Grant and Partial Denial of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Decision of the Administrator*, 75 Fed. Reg. 68094, at 68098, 68133 (Nov. 4, 2010).

limit the number of RINs that can be created, and could restrict RIN supply just as RIN demand increases. This could raise RIN prices and possibly increase gas prices.[19]

There are several potential options to address concerns about the blendwall, but there is considerable controversy over the degree to which these options are currently available. One option would be to use higher blends of ethanol in the normal gasoline supply. EPA has approved a partial waiver that permits the use of fuels with 15 percent ethanol (E15), but only in on-road vehicles model years 2001 and later.[20] Some parties have raised concerns that owners of older vehicles may inadvertently fuel with E15 if this product is sold alongside E10 blends. To minimize this risk, EPA requires measures, such as certified mitigation plans and clear labeling of E15 by fuel sellers.[21] Currently, E15 is sold in only 100 stations in the Midwest.[22]

Another option for addressing the blendwall would be to increase use of E85 (up to 85 percent ethanol) in flex-fuel vehicles, which are vehicles that can use this higher ethanol blend as well as conventional gasoline and lower ethanol blends. Currently, there are over 16 million flex-fuel vehicles on the road,[23] but a small number of these vehicles are actually fueled with E85, primarily due to the scarcity of refueling stations.[24]

In addition, EPA could potentially use its authority under the RFS to waive renewable fuel volume requirements on an annual basis to mitigate any serious impacts of the blendwall.

B. Advanced Biofuel Development

The statutory volume mandates under the RFS require the quantity of advanced biofuels to grow to 21 billion gallons by 2022, although as noted above the actual volume mandates are set each year by EPA based on expected availability.

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[19] *See, e.g., U.S. Refiners Feel the Pinch of Renewable Fuel Standard Costs: Fuel for Thought*, Platts (May 16, 2016) (online at blogs.platts.com/2016/05/16/us-refiners-renewable-fuel-standard-costs/).

[20] U.S. EPA, *Partial Grant of Clean Air Act Waiver Application Submitted by Growth Energy to Increase the Allowable Ethanol Content of Gasoline to 15 Percent; Decision of the Administrator,* 76 Fed. Reg. 4662 (Jan. 26, 2011).

[21] U.S. EPA, *Regulation to Mitigate the Misfueling of Vehicles and Engines With Gasoline Containing Greater Than Ten Volume Percent Ethanol and Modification to the Reformulated and Conventional Gasoline Programs,* 76 Fed. Reg. 44406 (Jul. 25, 2011) (final rule).

[22] U.S. Department of Energy (DOE), *Alternative Fuels Data Center: E15* (Mar. 30, 2016) (online at www.afdc.energy.gov/fuels/ethanol_e15.html).

[23] U.S. EIA, *Today in Energy: Almost all U.S. Gasoline is Blended with 10% ethanol* (May 4, 2016) (online at www.eia.gov/todayinenergy/detail.cfm?id=26092).

[24] U.S. EPA, *Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017,* 80 Fed. Reg. 77420 at 77460 (Dec. 14, 2015) (final rule).

In the case of cellulosic biofuel, actual volumes have been only a fraction of the levels specified in the statute. U.S. commercial production in 2015 was just over 130 million gallons compared to EISA's expectation of 3 billion gallons.[25] Accordingly, EPA has set much lower volume requirements for cellulosic biofuels.

Although cellulosic biofuel levels have been lower than anticipated in the first few years of EISA, recent trends indicate, and EPA and EIA both project, that this industry will rapidly scale up its production in the coming years. In September 2015, EIA reported to EPA that U.S. cellulosic biofuel production could reach 10 million gallons in 2016.[26] Based on these data and its own analysis, EPA set the 2016 cellulosic biofuel requirement at 230 million ethanol-equivalent gallons.[27]

The advanced biofuel mandate also includes biomass-based diesel, which has been able to meet and exceed the RFS mandates. Based on this success, EPA set the 2016 biomass-based diesel requirement at 1.90 billion gallons, which is 900 million gallons above the minimum 1 billion gallons required by the statute for 2013.[28] Biomass-based diesel is mainly produced from soybean and corn oil, recycled cooking oil, and animal wastes. It is generally approved for use in diesel engines at blend levels of 20 percent biodiesel (B20) and below.

C. Greenhouse Gas Emissions

As noted above, EISA added a mandate to the RFS to begin addressing climate change by requiring that renewable fuels emit fewer GHGs than baseline gasoline. Absent the production and use of advanced biofuels, the RFS would likely achieve no GHG reductions compared to gasoline use. EISA grandfathered in fuel produced by production facilities that were existing or under construction at the time of enactment, which exempted the majority of corn-based ethanol production from the GHG reduction requirements, including a large number of facilities powered by coal. Analysis indicates that corn ethanol produced from coal-fired facilities emits more lifecycle carbon pollution than gasoline. On average, corn ethanol production from natural gas powered facilities releases 21 percent less carbon emissions than baseline gasoline. In contrast, cellulosic ethanol is projected to reduce GHG emissions by at least 75 percent below baseline

[25] Congressional Research Service (CRS), *The Renewable Fuel Standard (RFS): Waiver Authority and Modification of Volumes* (Apr. 7, 2014) (RS22870).

[26] U.S. EPA, *Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017*, 80 Fed. Reg. 77420 at 77501 (Dec. 14, 2015) (final rule).

[27] U.S. EPA, *Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017*, 80 Fed. Reg. 77420 at 77422 (Dec. 14, 2015) (final rule).

[28] U.S. EPA, *Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017*, 80 Fed. Reg. 77420 at 77422 (Dec. 14, 2015) (final rule).

gasoline with an average reduction of 110 percent when excess electricity generated during production is captured and used.[29]

D. Economic Impacts on Agriculture and Food Prices

Some have raised concerns about producing renewable fuel from food stocks such as corn and the impact that this may have on the agricultural economy and food production. There is general agreement that the RFS has benefited corn growers and the rural economy. Further, the Congressional Budget Office concluded that the price of food would be similar with or without the RFS.[30]

Nevertheless, both the livestock and food industries will likely face higher feed costs due to the RFS, as corn remains a primary feed source for poultry and swine. If those impacts cause severe economic harm to a state, region, or the nation, EPA could employ its waiver authority to reduce renewable fuel requirements and lessen the demand for corn to use in ethanol production. Only two waiver requests have been made to EPA to date. One came in 2008 due to a severe drought across Texas. The second came in 2012 due to the historic drought that covered over 60 percent of the U.S. Both requests were denied. In denying the most recent waiver request, EPA explained that its analysis indicated that the one-year waiver would have "little or no impact on corn, food, or fuel prices" in that year and, thus, was not justified.[31]

E. Current Litigation

A number of renewable fuel producers, pro-RFS groups, and refiners have filed legal challenges to EPA's final RFS standards for 2014, 2015, and 2016.[32] Most of the arguments focus on the specific targets set by the rule and EPA's use of waiver authority to set the targets. Oral arguments before the U.S. Court of Appeals for the D.C. Circuit are not expected to occur until 2017.

III. WITNESSES

The following witnesses have been invited to testify:

Panel 1

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[29] U.S. EPA, *Regulation of Fuels and Fuel Additives: Changes to the Renewable Fuel Standard Program*, 75 Fed. Reg. 14670, at 14792 (Mar. 26, 2010) (final rule).

[30] Congressional Budget Office, *One-Page Summary of the Renewable Fuel Standard: Issues for 2015 and Beyond* (Nov. 3, 2015).

[31] U.S. EPA, *EPA Decision to Deny Requests for Waiver of the Renewable Fuel Standard*, at 2 (Nov. 2012)(online at www.epa.gov/sites/production/files/2015-08/documents/420f12075.pdf).

[32] *See eg, Factbox: U.S. EPA faces lawsuits over its biofuels plan*, Reuters (Feb. 12, 2016) (online at www.reuters.com/article/usa-biofuels-lawsuit-idUSL2N15R1R9); *RFS Critics Outline Opposing Attacks in Suit Over Multi-Year Fuel Targets*, InsideEPA (Mar. 23, 2016).

Ms. Janet McCabe
Acting Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency

Mr. Howard K. Gruenspecht
Deputy Administrator
U.S. Energy Information Administration

Panel 2

Mr. Robert Dinneen
President and CEO
Renewable Fuels Association

Mr. Brooke Coleman
Executive Directory
Advanced Biofuels Business Council

Ms. Anne Steckel
Vice President of Federal Affairs
National Biodiesel Board

Mr. R. Timothy Columbus
Partner
Steptoe & Johnson, LLP
On behalf of the National Association of Convenience Stores and the Society of Independent Gasoline Marketers Association of America

Mr. Chet Thompson
President
American Fuel & Petrochemical Manufacturers

Mr. Todd J. Teske
Chairman, President, and CEO
Briggs & Stratton Corporation

Mr. Collin O'Mara
President and CEO
National Wildlife Federation