ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 80

[EPA–HQ–OAR–2017–0091; FRL–9964–86–OAR]

RIN 2060–AT04

Renewable Fuel Standard Program: Standards for 2018 and Biomass-Based Diesel Volume for 2019

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: Under section 211 of the Clean Air Act, the Environmental Protection Agency (EPA) is required to set renewable fuel percentage standards every year. This action proposes the annual percentage standards for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel that apply to gasoline and diesel transportation fuel produced or imported in the year 2018. Relying on statutory waiver authority that is available when projected cellulosic biofuel production volumes are less than the applicable volume specified in the statute, the EPA is proposing volume requirements for cellulosic biofuel, advanced biofuel, and total renewable fuel that are below the statutory applicable volumes, and lower than the 2017 requirements. In this action, we are also proposing the applicable volume of biomass-based diesel for 2019.

DATES: Comments must be received on or before August 31, 2017. EPA will announce the public hearing date and location for this proposal in a supplemental **Federal Register** document.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2017–0091, at *http://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Julia MacAllister, Office of Transportation and Air Quality, Assessment and Standards Division, Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, MI 48105; telephone number: 734–214–4131; email address: *macallister.julia@epa.gov.*

SUPPLEMENTARY INFORMATION: Entities potentially affected by this proposed rule are those involved with the production, distribution, and sale of transportation fuels, including gasoline and diesel fuel or renewable fuels such as ethanol, biodiesel, renewable diesel, and biogas. Potentially regulated categories include:

Category	NAICS [1] codes	SIC [2] codes	Examples of potentially regulated entities
Industry	324110	2911	Petroleum Refineries.
Industry	325193	2869	Ethyl alcohol manufacturing.
Industry	325199	2869	Other basic organic chemical manufacturing.
Industry	424690	5169	Chemical and allied products merchant wholesalers.
Industry	424710	5171	Petroleum bulk stations and terminals.
Industry	424720	5172	Petroleum and petroleum products merchant wholesalers.
Industry	221210	4925	Manufactured gas production and distribution.
Industry	454319	5989	Other fuel dealers.

[1] North American Industry Classification System (NAICS).
[2] Standard Industrial Classification (SIC) system code.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this proposed action. This table lists the types of entities that EPA is now aware could potentially be regulated by this proposed action. Other types of entities not listed in the table could also be regulated. To determine whether your entity would be regulated by this proposed action, you should carefully examine the applicability criteria in 40 CFR part 80. If you have any questions regarding the applicability of this proposed action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

Outline of this preamble

I. Executive Summary

The Renewable Fuel Standard (RFS) program began in 2006 pursuant to the requirements in Clean Air Act (CAA) section 211(o) that were added through the Energy Policy Act of 2005 (EPAct). The statutory requirements for the RFS program were subsequently modified through the Energy Independence and Security Act of 2007 (EISA), leading to the publication of major revisions to the regulatory requirements on March 26, 2010.[1] EISA's stated goals include moving the United States toward ''greater energy independence and security [and] to increase the production of clean renewable fuels.'' Today, nearly all of the approximately 143 billion gallons of gasoline used for transportation purposes contains 10 percent ethanol (E10), and on average diesel fuel contains approximately 4 percent biodiesel and/or renewable diesel.

The statute includes annual volume targets, and requires EPA to translate those volume targets (or alternative volume requirements established by EPA in accordance with statutory waiver authorities) into compliance obligations that obligated parties must meet every year. In this action, we are proposing the annual percentage standards for cellulosic biofuel, biomass-based diesel (BBD), advanced biofuel, and total renewable fuel that would apply to all gasoline and diesel produced or imported in 2018. We are also proposing the applicable volume of BBD for 2019.

Real-world challenges, such as the slower-than-expected development of the cellulosic biofuel industry, have slowed progress towards meeting Congressional goals for renewable fuels, even as progress has been made in some areas. Those challenges have made the volume targets established by Congress for 2018 beyond reach for all fuel categories other than BBD, for which the statute specifies a minimum requirement of 1.0 billion gallons. After careful review of the information before us, for 2018 we propose to use the cellulosic waiver authority provision provided by Congress to reduce the volume requirement for cellulosic biofuel to the projected volume available in 2018, and establish volume requirements for advanced biofuel and total renewable fuel that are lower than the statutory targets, but nevertheless will ensure these renewable fuels will continue to play a critical role as a complement to our petroleum-based fuels. We are not proposing to provide volume reductions through use of the general waiver authority.[2]

We note that while we are proposing to reduce the required volume of all of the fuel categories other than BBD due to an anticipated shortfall in the production of cellulosic biofuel, the proposed BBD volume exceeds the statutory minimum and the proposed volumes of total renewable fuel, advanced biofuel and cellulosic biofuel would achieve the implied statutory volumes for conventional biofuel[3] and non-cellulosic advanced biofuel.[4]

The proposed volume requirements for 2018 are shown in Table I–1 below. Relative to the levels finalized in 2017, the proposed 2018 volume requirements for advanced biofuel and total renewable fuel are lower by 40 million gallons. For the first time EPA is proposing in 2018 to reduce the advanced biofuel and total renewable fuel volumes by the same amount as we would reduce the required volume of cellulosic biofuel. These reductions effectively preserve the implied statutory volumes for conventional renewable fuel and non-cellulosic advanced biofuels, rather than requiring additional volumes of non-cellulosic advanced biofuels to backfill for some of the shortfall in cellulosic biofuel, as EPA has done in previous years. We are proposing no increase, relative to the finalized 2018 levels, in the volume requirement for biomass-based diesel for 2019.

TABLE I–1—PROPOSED VOLUME REQUIREMENTS [a]

	2018	2019
Cellulosic biofuel (million gallons)	238	n/a
Biomass-based diesel (billion gallons)	[b] 2.1	2.1
Advanced biofuel (billion gallons)	4.24	n/a
Renewable fuel (billion gallons)	19.24	n/a

[a] All values are ethanol-equivalent on an energy content basis, except for BBD which is biodiesel-equivalent.

[b] The 2018 BBD volume requirement was established in the 2017 final rule (81 FR 89746, December 12, 2016).

The Clean Air Act requires EPA to ''reset'' the statutory volume targets for future years when certain conditions are met. As discussed later in this Executive Summary, the Administrator has directed staff to begin technical analysis to inform a future reset rulemaking action.

A. Purpose of This Action

The national volume targets of renewable fuel that are intended to be achieved under the RFS program each year (absent an adjustment or waiver by EPA) are specified in CAA section

[1] 75 FR 14670, March 26, 2010.

[2] See 42 U.S.C. 7545(o)(7)(A)(i–ii). See also the discussion of the general waiver authority in Section II.A.2. below.

[3] Throughout this proposed rule conventional biofuel refers to biofuel that qualifies as renewable fuel, but does not qualify as an advanced biofuel. RINs generated for conventional biofuels have a D code of 6.

[4] Throughout this proposed rule non-cellulosic advanced biofuel refers to biofuel that qualifies as advanced biofuel, but does not qualify as cellulosic biofuel. RINs generated for non-cellulosic advanced biofuels have a D code of 4 or 5.

211(o)(2). The statutory volumes for 2018 are shown in Table I.A–1. The cellulosic biofuel and BBD categories are nested within the advanced biofuel category, which is itself nested within the total renewable fuel category. This means, for example, that each gallon of cellulosic biofuel or BBD that is used to satisfy the individual volume requirements for those fuel types can also be used to satisfy the requirements for advanced biofuel and total renewable fuel.

TABLE I.A–1—APPLICABLE 2018 VOLUMES SPECIFIED IN THE CLEAN AIR ACT

[Billion gallons] [a]

Cellulosic biofuel	7.0
Biomass-based diesel	≥1.0
Advanced biofuel	11.0
Renewable fuel	26.0

[a] All values are ethanol-equivalent on an energy content basis, except values for BBD which are given in actual gallons.

Under the RFS program, EPA is required to determine and publish annual percentage standards for each compliance year. The percentage standards are calculated to ensure use in transportation fuel of the national ''applicable volumes'' of the four types of biofuel (cellulosic biofuel, BBD, advanced biofuel, and total renewable fuel) that are set forth in the statute or established by EPA in accordance with the Act's requirements. The percentage standards are used by obligated parties (generally, producers and importers of gasoline and diesel fuel) to calculate their individual compliance obligations. Each of the four percentage standards is applied to the volume of non-renewable gasoline and diesel that each obligated party produces or imports during the specified calendar year to determine their individual volume obligations with respect to the four renewable fuel types. The individual volume obligations determine the number of RINs of each renewable fuel type that each obligated party must acquire and retire to demonstrate compliance.

EPA is proposing the annual applicable volume requirements for cellulosic biofuel, advanced biofuel, and total renewable fuel for 2018, and for BBD for 2019.[5] Table I.A–2 lists the statutory provisions and associated criteria relevant to determining the national applicable volumes used to set the percentage standards in this proposed rule.

TABLE I.A–2—STATUTORY PROVISIONS FOR DETERMINATION OF APPLICABLE VOLUMES

Applicable volumes	Clean air act reference	Criteria provided in statute for determination of applicable volume
Cellulosic biofuel	211(o)(7)(D)(i)	Required volume must be lesser of volume specified in CAA 211(o)(2)(B)(i)(III) or EPA's projected volume.
	211(o)(7)(A)	EPA in consultation with other federal agencies may waive the statutory volume in whole or in part if implementation would severely harm the economy or environment of a State, region, or the United States, or if there is an inadequate domestic supply.
Biomass-based diesel [6]	211(o)(2)(B)(ii) and (v)	Required volume for years after 2012 must be at least 1.0 billion gallons, and must be based on a review of implementation of the program, coordination with other federal agencies, and an analysis of specified factors.
	211(o)(7)(A)	EPA in consultation with other federal agencies may waive the statutory volume in whole or in part if implementation would severely harm the economy or environment of a State, region, or the United States, or if there is an inadequate domestic supply.
Advanced biofuel	211(o)(7)(D)(i)	If applicable volume of cellulosic biofuel is reduced below the statutory volume to the projected volume, EPA may reduce the advanced biofuel and total renewable fuel volumes in CAA 211(o)(2)(B)(i)(I) and (II) by the same or lesser volume. No criteria specified.
	211(o)(7)(A)	EPA in consultation with other federal agencies may waive the statutory volume in whole or in part if implementation would severely harm the economy or environment of a State, region, or the United States, or if there is an inadequate domestic supply.
Total renewable fuel	211(o)(7)(D)(i)	If applicable volume of cellulosic biofuel is reduced below the statutory volume to the projected volume, EPA may reduce the advanced biofuel and total renewable fuel volumes in CAA 211(o)(2)(B)(i)(I) and (II) by the same or lesser volume. No criteria specified.
	211(o)(7)(A)	EPA in consultation with other federal agencies may waive the statutory volume in whole or in part if implementation would severely harm the economy or environment of a State, region, or the United States, or if there is an inadequate domestic supply.

As shown in Table I.A–2, the statutory authorities allowing EPA to modify or set the applicable volumes differ for the four categories of renewable fuel. Under the statute, EPA must annually determine the projected volume of cellulosic biofuel production for the following year. If the projected volume of cellulosic biofuel production is less than the applicable volume specified in section 211(o)(2)(B)(i)(III) of the statute, EPA must lower the applicable volume used to set the annual cellulosic biofuel percentage standard to the projected production volume. In Section III of this proposed rule, we present our analysis of cellulosic biofuel production and the

[5] The 2018 BBD volume requirement was established in the 2017 final rule.

[6] CAA section 211(o)(7)(E) also authorizes EPA in consultation with other federal agencies to issue a temporary waiver of applicable volumes of BBD where there is a significant feedstock disruption or other market circumstance that would make the price of BBD fuel increase significantly.

proposed applicable volume for 2018. This analysis is based primarily on information reported to EPA through our Electronic Moderated Transaction System (EMTS) and an evaluation of producers' production plans and progress to date following discussions with cellulosic biofuel producers.

With regard to BBD, CAA section 211(o)(2)(B) specifies the applicable volumes of BBD to be used in the RFS program only through year 2012. For subsequent years the statute sets a minimum volume of 1 billion gallons, and directs EPA, in coordination with the U.S. Departments of Agriculture (USDA) and Energy (DOE), to determine the required volume after review of implementation of the renewable fuels program and consideration of a number of factors. The BBD volume requirement must be established 14 months before the year in which it will apply. In the 2017 final rule we established the BBD volume for 2018. In Section VI of this preamble we discuss our assessment of statutory and other relevant factors and our proposed volume requirement for BBD for 2019, which has been developed in coordination with USDA and DOE. We are proposing an applicable volume of 2.1 billion gallons of BBD for use in deriving the BBD percentage standard in 2019. This volume is equal to the applicable volume of BBD established in a prior rulemaking for 2018, and would provide continued support to an industry that is a significant contributor to the pool of advanced biofuel while at the same time setting the volume requirement in a manner anticipated to provide continued incentive for the development of other types of advanced biofuel.

Regarding advanced biofuel and total renewable fuel, Congress provided several mechanisms through which the statutory targets could be reduced if necessary. If we reduce the applicable volume of cellulosic biofuel below the volume specified in CAA section 211(o)(2)(B)(i)(III), we also have the authority to reduce the applicable volumes of advanced biofuel and total renewable fuel by the same or a lesser amount. We refer to this as the ''cellulosic waiver authority.'' We may also reduce the applicable volumes of any of the four renewable fuel types using the ''general waiver authority'' provided in CAA section 211(o)(7)(A) if EPA, in consultation with USDA and DOE, finds that implementation of the statutory volumes would severely harm the economy or environment of a State, region, or the United States, or if there is inadequate domestic supply. Sections II, IV, and V of this proposed rule describe our use of the cellulosic waiver authority alone to derive proposed volumes of advanced biofuel and total renewable fuel that are below the statutory target volumes, and our assessment that the resulting volumes can be met. We believe that reductions in the statutory targets for 2018 are necessary. However, in light of our review of available information, we are proposing to make those reductions under the cellulosic waiver authority alone and are not proposing any additional increment of reduction under the general waiver authority. Thus, the reductions proposed can be attributed to the significant shortfall in cellulosic biofuel production, as compared to the statutory targets. EPA, however, solicits comment on whether it would be appropriate to exercise the general waiver authority in the final rule, and will evaluate comments and updated data to consider whether such an approach is warranted.

B. Summary of Major Provisions in This Action

This section briefly summarizes the major provisions of this proposed rule. We are proposing applicable volume requirements and associated percentage standards for cellulosic biofuel, advanced biofuel, and total renewable fuel for 2018; for BBD we are proposing the percentage standard for 2018 and the applicable volume requirement for 2019.

1. Approach to Setting Volume Requirements

The approach we have taken in this proposed rule to project cellulosic biofuel is modified from that presented in the 2017 final rule, as described in further detail below. The approach we have taken in this proposed rule of using the cellulosic waiver authority to reduce advanced biofuel and total renewable fuel is similar to that presented in the 2017 final rule, however, we are proposing to reduce the advanced biofuel and total renewable fuel volume requirements by the same amount as the cellulosic biofuel volume requirement. In previous years we have used the cellulosic waiver authority to reduce the advanced biofuel and total renewable fuel volume requirements by a lesser amount than the cellulosic biofuel volume requirement to allow reasonably attainable volumes of advanced biofuels to partially backfill for missing cellulosic biofuel volumes. In this rule we are proposing to reduce all three volume requirements by the same amount after considering the greenhouse gas (GHG), energy security benefits, and anticipated costs of advanced biofuels beyond the level proposed in this rule.

Section II provides a general description of our approach to setting volume requirements in today's rule, including a review of the statutory waiver authorities and our consideration of carryover RINs. Section III provides our assessment of the 2018 cellulosic biofuel volume based on a projection of production that reflects a neutral aim at accuracy. Sections IV and V describe our assessments of advanced biofuel and total renewable fuel, respectively. Finally, Section VI provides our determination regarding the 2019 BBD volume requirement, and reflects an analysis of a set of factors stipulated in CAA section 211(o)(2)(B)(ii).

2. Cellulosic Biofuel

In the past several years the cellulosic biofuel industry has continued to make progress towards increased commercial scale production. Cellulosic biofuel production reached record levels in 2016, driven largely by compressed natural gas (CNG) and liquefied natural gas (LNG) derived from biogas. Cellulosic ethanol, while produced in much smaller quantities than CNG/LNG derived from biogas, was produced consistently on a commercial scale in 2015. Cellulosic ethanol production levels increased from existing facilities in 2016, and significant work continues to be done to enable the production of cellulosic ethanol at new facilities, as well as to increase production volumes at existing facilities in 2017 and beyond. In this rule we are proposing a cellulosic biofuel volume requirement of 238 million ethanol-equivalent gallons for 2018 based on Renewable Identification Number (RIN) generation data available to EPA through EMTS, the information we have received regarding individual facilities' capacities, production start dates and biofuel production plans, a review of cellulosic biofuel production relative to EPA's projections in previous annual rules, input from other government agencies, and EPA's own engineering judgment. We expect to update all of this information for the final rule, and to take into account the Energy Information Administration's (EIA) projection of cellulosic biofuel availability, which should be available in October 2017.

As part of estimating the volume of liquid cellulosic biofuel that will be made available in the U.S. in 2018, we considered all potential production sources by company and facility. This included facilities still in the commissioning or start-up phases, as

well as facilities already producing some volume of cellulosic biofuel.[7] From this universe of potential liquid cellulosic biofuel sources, we identified the subset that is expected to produce commercial volumes of qualifying liquid cellulosic biofuel for use as transportation fuel, heating oil, or jet fuel by the end of 2018. To arrive at projected volumes, we collected relevant information on each facility. We then developed projected production ranges based on factors such as the status of the technology being used, progress towards construction and production goals, facility registration status, production volumes achieved, and other significant factors that could potentially impact fuel production or the ability of the produced fuel to qualify for cellulosic biofuel RINs. We also used this information to group these companies based on production history and to select a value within the aggregated projected production ranges that we believe best represents the most likely production volume from each group of companies in 2018.

For 2018, EPA is proposing to use an industry wide, rather than a facility-by-facility approach to project the production of CNG/LNG derived from biogas. We believe this approach is appropriate due to the mature state of this technology and the large number of facilities that are registered to produce cellulosic biofuel RINs for these fuels. Further discussion on our projection of cellulosic biofuel production in 2018, including the factors considered and the way these factors were used to determine our proposed cellulosic biofuel projection, can be found in Section III.

3. Advanced Biofuel

The conditions that compelled us to reduce the 2017 volume requirement for advanced biofuel below the statutory target remain relevant in 2018. As for 2017, we investigated the ability of volumes of non-cellulosic advanced biofuels to backfill unavailable volumes of cellulosic biofuel in 2018, through domestic production or import. We took into account the various constraints on the ability of the market to make advanced biofuels available, the ability of the standards we set to bring about market changes in the time available, the potential impacts associated with diverting biofuels and/or biofuel feedstocks from current use to the production of advanced biofuel used in the United States, and the potential impact of the expiration of the biodiesel tax credit. Based on these considerations, along with consideration of the estimated cost of the non-cellulosic advanced biofuels most likely to be used to backfill for the shortfall in cellulosic biofuel, we are proposing to make a determination that it would not be appropriate to set an advanced biofuel standard that would require the market to backfill a portion of the shortfall in cellulosic biofuel.

We are proposing to exercise our cellulosic waiver authority to reduce the statutory applicable volume of advanced biofuel to a proposed volume requirement of 4.24 billion gallons for 2018. This proposed applicable volume for 2018 is 40 million gallons lower than the applicable volume for advanced biofuel for 2017.

4. Total Renewable Fuel

Following our proposed determination of the appropriate volume reduction for advanced biofuel for 2018 using the cellulosic waiver authority, we calculated what the total renewable fuel volume would be if we provide the same level of reduction using the cellulosic waiver authority. The resulting volume would be 19.24 billion gallons. We then evaluated this total renewable fuel volume to determine if it is reasonably attainable given assessments of individual fuel types, including biodiesel, renewable diesel, ethanol (in the form of E10 or higher ethanol blends such as E15 or E85), and other renewable fuels.[8] Our proposed assessment indicates that a total renewable fuel volume of 19.24 billion gallons is reasonably attainable in 2018. We do not propose, therefore, to use the general waiver authority to further reduce the total renewable fuel volume requirement due to a finding of inadequate domestic supply.

We note that this proposal includes an assessment of E0 (ethanol-free gasoline) use that marks a change in how we have addressed this issue in past standard-setting rulemaking actions. In previous years, stakeholders have provided comment to EPA concerning the amount of E0 that is used in the United States each year for transportation fuel, and how such information should be used in development of the annual volume requirements. EPA has reassessed this issue, and we have found that use of E0 in 2016 was higher than we had assumed in setting the 2016 standards. Our proposal for 2018 includes consideration of this fact (see Section V.B.1).

5. Biomass-Based Diesel

In EISA, Congress specified increasing applicable volumes of BBD through 2012. Beyond 2012 Congress stipulated that EPA, in coordination with DOE and USDA, was to establish the BBD volume taking into consideration implementation of the program to date and various specified factors, providing that the required volume for BBD could not be less than 1.0 billion gallons. For 2013, EPA established an applicable volume of 1.28 billion gallons. For 2014 and 2015 we established the BBD volume requirement to reflect the actual volume for each of these years of 1.63 and 1.73 billion gallons.[9] For 2016 and 2017, we set the BBD volume requirements at 1.9 and 2.0 billion gallons respectively. Finally, for 2018 the BBD volume requirement was set a 2.1 billion gallons.

Given current and recent market conditions, the advanced biofuel volume requirement is driving the production and use of biodiesel and renewable diesel volumes over and above volumes required through the separate BBD standard, and we expect this to continue. For 2019, EPA continues to believe that it would still be appropriate to provide a floor above the statutory minimum of 1 billion gallons to provide a guaranteed level of support for the continued production and use of BBD. However, we also believe that the volume of biomass-based diesel supplied in previous years demonstrates that the advanced biofuel standard is capable of incentivizing additional supply of these fuels above the volume required by the biomass-based diesel standard.

Thus, based on a review of the implementation of the program to date and all the factors required under the statute, and in coordination with USDA and DOE, we are proposing to maintain the applicable volume of BBD for 2019 at the same level finalized for 2018, 2.1

[7] Facilities primarily focused on research and development (R&D) were not the focus of our assessment, as production from these facilities represents very small volumes of cellulosic biofuel, and these facilities typically have not generated RINs for the fuel they have produced.

[8] As described further in Section V.B, EPA's total renewable fuel volume assessment is intended to identify whether domestic supply concerns are present that would require a more exacting analysis of the maximum reasonably achievable volumes, as EPA has previously done when using the general waiver authority based on a finding of inadequate domestic supply. Since EPA's proposed assessment indicates that the volumes associated with this proposed rule are reasonably attainable, we do not believe that supply concerns exist that would necessitate the more exacting analysis needed to identify the maximum reasonably achievable volumes.

[9] The 2015 BBD standard was based on actual data for the first 9 months of 2015 and on projections for the latter part of the year for which data on actual use was not available at the time.

billion gallons. Maintaining the volume at this level will provide a guaranteed level of support to BBD producers, who will also be incentivized under the advanced and total standards to manufacture higher volumes of fuel. This approach leaves opportunity within the advanced biofuel mandate for investment in and growth in production of other, potentially less costly, types of advanced biofuel with comparable or potentially superior environmental or other attributes.

6. Annual Percentage Standards

The renewable fuel standards are expressed as a volume percentage and are used by each producer and importer of fossil-based gasoline or diesel to determine their renewable fuel volume obligations. The percentage standards are set so that if each obligated party meets the standards, and if EIA projections of gasoline and diesel use for the coming year prove to be accurate, then the amount of renewable fuel, cellulosic biofuel, BBD, and advanced biofuel actually used will meet the applicable volumes used to derive the percentage standards.

Four separate percentage standards are required under the RFS program, corresponding to the four separate renewable fuel categories shown in Table I.A–1. The specific formulas we use in calculating the renewable fuel percentage standards are contained in the regulations at 40 CFR 80.1405. The percentage standards represent the ratio of renewable fuel volume to projected non-renewable gasoline and diesel volume. The volume of transportation gasoline and diesel used to calculate the proposed percentage standards was derived from reports published by the EIA, and we intend to update this information for the final rule. The proposed percentage standards for 2018 are shown in Table I.B.6–1. Detailed calculations can be found in Section VII, including the projected gasoline and diesel volumes used.

TABLE I.B.6–1—PROPOSED 2018 PERCENTAGE STANDARDS

Cellulosic biofuel	0.131
Biomass-based diesel	1.74
Advanced biofuel	2.34
Renewable fuel	10.62

C. Statutory Requirement To Reset Volumes

The Clean Air Act requires EPA to ''reset'' the statutory volume targets for future years through 2022 if annual volume requirements are waived (reduced) beyond one of two specified thresholds:

(1) At least 20 percent of the statutory volume target for 2 consecutive years; or

(2) At least 50 percent of the statutory volume target for a single year.[10]

If either of these thresholds is reached, EPA is required to promulgate a rule within one year of the triggering waiver action that modifies the applicable volume targets for future years for the affected standard. However, the statute also indicates that 2016 is the first year to which any reset volume would apply.

In light of these requirements, the Administrator has directed EPA staff to initiate the required technical analysis to inform a reset rule.

When resetting the statutory targets, the EPA must comply with the processes, criteria, and standards set forth in CAA section 211(o)(2)(B)(ii). In addition to reviewing the implementation of the program during previous years and coordinating with the Secretary of Energy and the Secretary of Agriculture, the EPA must also analyze a number of factors:

- The impact of the production and use of renewable fuels on the environment, including on air quality, climate change, conversion of wetlands, ecosystems, wildlife habitat, water quality, and water supply;
- The impact of renewable fuels on the energy security of the United States;
- The expected annual rate of future commercial production of renewable fuels, including advanced biofuels in each category (cellulosic biofuel and BBD);
- The impact of renewable fuels on the infrastructure of the United States, including deliverability of materials, goods, and products other than renewable fuel, and the sufficiency of infrastructure to deliver and use renewable fuel;
- The impact of the use of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods; and
- The impact of the use of renewable fuels on other factors, including job creation, the price and supply of agricultural commodities, rural economic development, and food prices.

EPA is not undertaking the analysis of these factors in this rulemaking. We are not soliciting comments on the reset rulemaking process at this time, but we are including mention of it in this Executive Summary in recognition of the importance of, and widespread interest in, a potential ''reset rule.'' Any comments received related to a possible future reset rule will be deemed beyond the scope of this rulemaking.

D. RIN Market Operation

Some stakeholders have expressed concerns the current provisions related to RIN trading render the RFS program vulnerable to market manipulation. EPA takes such issues seriously. The RIN system was originally designed with an open trading market in order to maximize its liquidity and ensure a robust marketplace for RINs. However, EPA is interested in further assessing whether and how the current trading structure provides an opportunity for market manipulation. To that effect, EPA seeks comment and input on potential changes to the RIN trading system that might help address these concerns. EPA is not soliciting comment on any aspect of the current RFS regulatory program other than those specifically related to RIN trading, as mentioned above, and the proposed annual standards for 2018 and biomass-based diesel applicable volume for 2019. In particular, EPA is not re-opening for public comment in this rulemaking the current definition of ''obligated party.'' [11]

Separate from evaluating the RIN trading options in the RFS program, the EPA is working with appropriate market regulators to analyze targeted concerns of some stakeholders. For example, the EPA has executed a memorandum of understanding with the Commodity Futures Trading Commission (CFTC) and welcomes CFTC involvement in evaluating RIN market concerns.

In the meantime, EPA has continued to explore additional ways to increase program transparency in order to support the program and share data with all stakeholders. EPA already publishes RFS program data on our Web site, including data related to RIN generation, sales and holdings, and annual compliance. We are interested in providing more information, to the extent consistent with our obligations to protect confidential business information. EPA seeks comment on specific data elements and posting frequency that stakeholders believe would be useful to help with market transparency and liquidity.

E. Biofuel Imports

In establishing the RFS program, Congress sought to bolster energy security and independence by boosting the amount of renewable fuels used in

[10] CAA section 211(o)(7)(F).

[11] Separately, EPA has received a number of petitions seeking reconsideration of the definition of ''obligated party,'' and solicited public comment on its proposed resolution of those petitions. See 81 FR 83776 (November 22, 2016).

the domestic transportation fuel pool. Indeed, EISA's stated goals include moving the United States toward ''greater energy independence and security [and] to increase the production of clean renewable fuels.'' [12] This is not simply a general goal, but is embedded in statutory provisions, as well: for example, one of the factors EPA is directed to consider in the context of establishing the biomass-based diesel standard for 2019 under CAA section 211(o)(2)(B)(ii) is the impact of renewable fuels on the energy security of the United States.

In recent years increasing volumes of renewable fuels have been imported and used by obligated parties to comply with their RFS obligations. For example, data from EPA's EMTS system show that in 2016, 46 million gallons of ethanol and 731 million gallons of advanced biodiesel and renewable diesel were imported into the United States.[13] Due to their origin outside the United States, imported renewable fuels may not have the same impact on energy independence as those produced domestically. Industry stakeholders have observed the trend of increasing imports, too. The United States Department of Commerce, in response to a petition filed by U.S. biodiesel interests, has instituted countervailing duty and antidumping duty investigations regarding alleged subsidized and dumped imports of biodiesel.[14]

EPA is interested in stakeholder views on this topic and on what steps EPA might take to ensure energy independence and security. Furthermore, and in light of these considerations, EPA requests comment on whether or not to reduce the biomass-based diesel required volume below the level specified in this proposed rule for 2019. Finally, we request comment on whether and to what degree these considerations could support the use of the general waiver authority, inherent authority or other basis consistent with general construction of authority in the statute to reduce the required volume of advanced biofuel (with a corresponding reduction to the total renewable fuel requirement) below the level proposed for 2018.

II. Authority and Need for Waiver of Statutory Applicable Volumes

The statute provides the EPA with the authority to reduce volume requirements below the applicable volume targets specified in the statute under specific circumstances. This section discusses those authorities and our use of the cellulosic waiver authority alone to set 2018 volume requirements for cellulosic biofuel, advanced biofuel, and total renewable fuel that are below the statutory volume targets.

Within this rulemaking action under CAA section 211(o)(3)(i), EPA is using its authority under CAA section 211(o)(7) to take an administrative action to reduce the required volumes of cellulosic biofuel, advanced biofuel, and total renewable fuel below the statutory volume targets.

A. Statutory Authorities for Reducing Volume Targets

In CAA section 211(o)(2), Congress specified increasing annual volume targets for total renewable fuel, advanced biofuel, and cellulosic biofuel for each year through 2022, and for BBD through 2012, and authorized EPA to set volume requirements for subsequent years in coordination with USDA and DOE, and after consideration of specified factors. However, Congress also recognized that under certain circumstances it would be appropriate for EPA to set volume requirements at a lower level than reflected in the statutory volume targets, and thus provided waiver provisions in CAA section 211(o)(7).

1. Cellulosic Waiver Authority

Section 211(o)(7)(D)(i) of the CAA provides that if EPA determines that the projected volume of cellulosic biofuel production for a given year is less than the applicable volume specified in the statute, that EPA must reduce the applicable volume of cellulosic biofuel required to the projected production volume for that calendar year. In making this projection, EPA must take a ''neutral aim at accuracy.'' *API* v. *EPA,* 706 F.3d 474 (D.C. Cir. 2013). Pursuant to this provision, EPA has set the cellulosic biofuel requirement lower than the statutory volumes for each year since 2010. As described in Section III.D, the projected volume of cellulosic biofuel production for 2018 is less than the 7.0 billion gallon volume target in the statute. Therefore, for 2018, we are proposing to set the cellulosic biofuel volume requirement at a level lower than the statutory applicable volume, in accordance with this provision.

CAA section 211(o)(7)(D)(i) also provides EPA with the authority to reduce the applicable volume of total renewable fuel and advanced biofuel in years where it reduces the applicable volume of cellulosic biofuel. The reduction must be less than or equal to the reduction in cellulosic biofuel. For 2018, we are also proposing to reduce applicable volumes of advanced biofuel and total renewable fuel under this authority.

The cellulosic waiver authority is discussed in detail in the preamble to the 2017 final rule. See also, *API* v. *EPA,* 706 F.3d 474 (D.C. Cir. 2013) (requiring that EPA's cellulosic biofuel projections reflect a neutral aim at accuracy) and *Monroe Energy* v. *EPA,* 750 F.3d 909 (D.C. Cir. 2014) (affirming EPA's broad discretion under the cellulosic waiver authority to reduce volumes of advanced biofuel and total renewable fuel).

EPA is proposing an equal reduction from the statutory volume targets for advanced biofuels and total renewable fuel, as was our approach in using the cellulosic waiver authority for the 2014–2017 standards. EPA's reasoning for an equal reduction is explained in the 2017 final rule.[15] We are proposing, as described in Section IV, that the applicable volume for advanced biofuels specified in the statute for 2018 cannot be achieved and we are proposing to exercise our cellulosic waiver authority to lower the applicable volume of advanced biofuel to a level that is both reasonably attainable and appropriate, and to provide an equal reduction in the applicable volume of total renewable fuel. In addition, we have determined that there is likely to be adequate supply to satisfy the total renewable fuel volume derived through applying an equal volume reduction as for advanced biofuel. Therefore, we are proposing that no further reductions of the total renewable fuel volume requirement are necessary to address supply concerns. The resulting volume requirements provide for an implied volume requirement for conventional biofuel

[12] Energy Independence and Security Act of 2007.

[13] 66 and 95 million gallons of ethanol were imported in 2014 and 2015 respectively. Of the 731 million gallons of advanced biodiesel and renewable diesel imported into the United States in 2016, 561 million gallons (which generated 842 million RINs) were advanced biodiesel and 170 million gallons (which generated 289 million RINs) were advanced renewable diesel. 259 and 382 million gallons of advanced biodiesel and renewable diesel were imported in 2014 and 2015 respectively. An additional 113 million gallons of conventional biodiesel (generating 170 million RINs) and 43 million gallons of conventional renewable diesel (generating 73 million RINs) were also imported in 2016. 52 and 180 million gallons of conventional biodiesel and renewable diesel were imported in 2014 and 2015 respectively. Imported biofuel represented a significant percentage of the RINs available for compliance with the total renewable fuel volume requirement (8%), and especially the advanced biofuel (29%) and BBD (29%) volume requirements in 2016.

[14] See 82 FR 22155 (May 12, 2017).

[15] 81 FR 89752–89753, December 12, 2016.

equal to that envisioned by Congress for 2018.

2. General Waiver Authority

Section 211(o)(7)(A) of the CAA provides that EPA, in consultation with the Secretary of Agriculture and the Secretary of Energy, may waive the applicable volumes specified in the Act in whole or in part based on a petition by one or more States, by any person subject to the requirements of the Act, or by the EPA Administrator on his own motion. Such a waiver must be based on a determination by the Administrator, after public notice and opportunity for comment that (1) implementation of the requirement would severely harm the economy or the environment of a State, a region or the United States, or (2) there is an inadequate domestic supply.

Based on a preliminary evaluation of the availability of renewable fuel in the market, regarding which we seek public comment, EPA is not proposing to use the general waiver authority to further reduce volumes for 2018. However, EPA solicits comments on whether it is appropriate to exercise the general waiver authority and will evaluate comments and updated data in considering whether such an approach is warranted.

B. Treatment of Carryover RINs

Consistent with our approach in the 2013, 2014–16, and 2017 final rules, we have also considered the availability and role of carryover RINs in evaluating whether we should exercise our discretion to use the cellulosic waiver authority in setting the cellulosic, advanced, and total volume requirements for 2018. Neither the statute nor EPA regulations specify how or whether EPA should consider the availability of carryover RINs in exercising its cellulosic waiver authority.[16] As noted in the context of the rules establishing the 2014–16 and 2017 RFS standards, we believe that a bank of carryover RINs is extremely important in providing obligated parties compliance flexibility in the face of substantial uncertainties in the transportation fuel marketplace, and in providing a liquid and well-functioning RIN market upon which success of the entire program depends.[17] Carryover RINs provide flexibility in the face of a variety of circumstances that could limit the availability of RINs, including weather-related damage to renewable fuel feedstocks and other circumstances potentially affecting the production and distribution of renewable fuel.[18] On the other hand, carryover RINs can be used for compliance purposes, and in the context of the 2013 RFS rulemaking we noted that an abundance of carryover RINs available in that year, together with possible increases in renewable fuel production and import, justified maintaining the advanced and total renewable fuel volume requirements for that year at the levels specified in the statute.[19]

An adequate RIN bank serves to make the RIN market liquid. Just as the economy as a whole functions best when individuals and businesses prudently plan for unforeseen events by maintaining inventories and reserve money accounts, we believe that the RFS program functions best when sufficient carryover RINs are held in reserve for potential use by the RIN holders themselves, or for possible sale to others that may not have established their own carryover RIN reserves. Were there to be no RINs in reserve, then even minor disruptions causing shortfalls in renewable fuel production or distribution, or higher than expected transportation fuel demand (requiring greater volumes of renewable fuel to comply with the percentage standards that apply to all volumes of transportation fuel, including the unexpected volumes) could lead to the need for a new waiver of the standards, undermining the market certainty so critical to the RFS program. However, a significant drawdown of the carryover RIN bank leading to a scarcity of RINs may stop the market from functioning in an efficient manner, even where the market overall could satisfy the standards. For all of these reasons, the collective carryover RIN bank provides a needed programmatic buffer that both facilitates individual compliance and provides for smooth overall functioning of the program.[20]

At the time of the 2017 final rule, we estimated that there would be at most 1.54 billion carryover RINs available for compliance with the 2017 standards and decided that carryover RINs should not be counted on to avoid or minimize the need to reduce the 2017 statutory volume targets. We also stated that we may or may not take a similar approach in future years, and that we would evaluate the issue on a case-by-case basis considering the facts present in future years. Since that time, obligated parties have submitted their compliance demonstrations for the 2015 and 2016 compliance years and we now estimate that there are now at most 2.06 billion carryover RINs available,[21] an increase of 520 million RINs from the previous estimate of 1.54 billion carryover RINs in the 2017 final rule.[22] The volume of carryover RINs currently available is approximately 11 percent of the proposed 2018 total renewable fuel volume standard, which is less than the 20 percent limit permitted by the regulations to be carried over for use in complying with the 2018 standards.[23] However, there remains considerable uncertainty surrounding this number since compliance demonstrations still need to be made for the 2017 RFS standards, and it is unclear at this time whether some portion of the currently available carryover RINs will be used for compliance prior to 2018. In addition, we note that there have been enforcement actions in past years that have resulted in the retirement of RINs to true up past compliance demonstrations. These enforcement actions have involved the generation and use of invalid RINs and the failure to retire RINs for exported renewable fuel. Future enforcement actions could have similar results, and require that obligated parties and/or renewable fuel exporters settle past enforcement-related

[16] CAA section 211(o)(5) requires that EPA establish a credit program as part of its RFS regulations, and that the credits be valid to show compliance for 12 months as of the date of generation. EPA implemented this requirement though the use of RINs, which can be used to demonstrate compliance for the year in which they are generated or the subsequent compliance year. Obligated parties can obtain more RINs than they need in a given compliance year, allowing them to ''carry over'' these excess RINs for use in the subsequent compliance year, although use of these carryover RINs is limited to 20% of the obligated party's renewable volume obligation. For the bank of carryover RINs to be preserved from one year to the next, individual carryover RINs are used for compliance before they expire and are essentially replaced with newer vintage RINs that are then held for use in the next year. For example, if the volume of the collective carryover RIN bank is to remain unchanged from 2016 to 2017, then all of the vintage 2016 carryover RINs must be used for compliance in 2017, or they will expire. However, the same volume of 2017 RINs can then be ''banked'' for use in the next year.

[17] See 80 FR 77482–87 (December 14, 2015) and 81 FR 89754–55 (December 12, 2016).

[18] See id., and 72 FR 23900 (May 1, 2007).

[19] See 79 FR 49794 (August 15, 2013).

[20] Here we use the term ''buffer'' as shorthand reference to all of the benefits that are provided by a sufficient bank of carryover RINs.

[21] The calculations performed to estimate the number of carryover RINs currently available can be found in the memorandum, ''Carryover RIN Bank Calculations for 2018 NPRM,'' available in the docket.

[22] This increase in the carryover RIN bank compared to that projected in the 2017 final rule is not due to an underestimate by EPA in the amount of gasoline, diesel fuel, or ethanol that was consumed in 2016, but rather is driven almost entirely by a combination of over-compliance by biodiesel producers facing an expiring biodiesel tax credit at the end of 2016 and approximately 390 million RINs that small refineries granted a hardship exemption for 2016 were not required to retire.

[23] See § 80.1427(a)(5).

obligations in addition to the annual standards, thereby potentially creating demand for RINs greater than can be accommodated through actual renewable fuel blending in 2018. Collectively, the result of satisfying RFS obligations in 2017 and settling enforcement-related accounts could be an effective reduction in the size of the collective bank of carryover RINs. Thus, we believe there is considerable uncertainty that a RIN bank as large as 11 percent of the proposed 2018 total renewable fuel standard will be available in 2018.

Therefore, for the reasons noted above, and consistent with the approach we took in the 2014–2016 and 2017 final rules, we are proposing that, under current circumstances, an intentional drawdown of the carryover RIN bank should not be assumed in establishing the 2018 volume requirements. The current bank of carryover RINs will provide an important and necessary programmatic buffer that will both facilitate individual compliance and provide for smooth overall functioning of the program. Therefore, we are not proposing to set the renewable fuel volume requirements at levels that would envision a drawdown in the bank of carryover RINs.

III. Cellulosic Biofuel Volume for 2018

In the past several years the cellulosic biofuel industry has continued to make progress towards increased commercial-scale production. Cellulosic biofuel production reached record levels in 2016, driven largely by CNG and LNG derived from biogas.[24] While multiple large cellulosic ethanol facilities struggled to achieve consistent commercial scale production, several facilities consistently produced cellulosic ethanol from corn kernel fiber at a smaller scale during 2016 and the first few months of 2017. This section describes our assessment of the volume of cellulosic biofuel that we project will be produced or imported into the United States in 2018, and some of the uncertainties associated with those volumes.

In order to project the volume of cellulosic biofuel production in 2018 we considered data reported to EPA through EMTS along with information we collected through meetings with representatives of facilities that have produced or have the potential to produce qualifying volumes of cellulosic biofuel for consumption as transportation fuel, heating oil, or jet fuel in the U.S. in 2018. Upon receipt of EIA's projection of cellulosic biofuel production for 2018, EPA will consider these estimates, together with updated information regarding the potential for contributions from individual facilities and groups of facilities, in determining the projected volume of cellulosic biofuel production in 2018 for the final rule.

In this proposed rule we use the same general methodology as in the 2017 final rule to project the range of potential production volumes of liquid cellulosic biofuel, however we have adjusted the percentile values used to select a point estimate within a projected production range for each group of companies based on recent information, and with the objective of improving the accuracy of the projections. We use a new methodology to project the production of cellulosic biofuel RINs for CNG/LNG derived from biogas that reflects the mature status of this industry and the large number of facilities registered to generate cellulosic biofuel RINs from these fuels. These methodologies are described in more detail in Section III.C below.

New cellulosic biofuel production facilities projected to be brought online in the United States over the next few years could increase the production capacity of the cellulosic industry. Operational experience gained at the first few commercial scale cellulosic biofuel production facilities could also lead to increased production of cellulosic biofuel from existing production facilities. Section B, below, discusses the companies the EPA reviewed in the process of projecting qualifying cellulosic biofuel production in the United States in 2018. Information on these companies forms the basis for our projection of 238 million ethanol-equivalent gallons of cellulosic biofuel produced for use as transportation fuel, heating oil, or jet fuel in the United States in 2018.

A. Statutory Requirements

The volumes of renewable fuel to be produced and used as transportation fuel under the RFS program each year (absent an adjustment or waiver by EPA) are specified in CAA section 211(o)(2). The volume of cellulosic biofuel specified in the statute for 2018 is 7 billion gallons. The statute provides that if EPA determines, based on EIA's estimate, that the projected volume of cellulosic biofuel production in a given year is less than the statutory volume, then EPA shall reduce the applicable volume of cellulosic biofuel to the projected volume available during that calendar year.[25]

In addition, if EPA reduces the required volume of cellulosic biofuel below the level specified in the statute, the Act also indicates that we may reduce the applicable volumes of advanced biofuels and total renewable fuel by the same or a lesser volume, and we are required to make cellulosic waiver credits available.[26] Our consideration of the 2018 volume requirements for advanced biofuel and total renewable fuel is presented in Sections IV and V of this rule.

B. Cellulosic Biofuel Industry Assessment

In order to project cellulosic biofuel production for 2018, we have tracked the progress of several dozen potential cellulosic biofuel production facilities. As we have done in previous years, we have focused on facilities with the potential to produce commercial-scale volumes of cellulosic biofuel rather than small R&D or pilot-scale facilities. Larger commercial-scale facilities are much more likely to generate RINs for the fuel they produce and the volumes they produce will have a far greater impact on the cellulosic biofuel standard for 2018. The volume of cellulosic biofuel produced from R&D and pilot-scale facilities is quite small in relation to that expected from the commercial-scale facilities. R&D and demonstration-scale facilities have also generally not generated RINs for the fuel they have produced in the past. Their focus is on developing and demonstrating the technology, not producing commercial volumes. RIN generation from R&D and pilot-scale facilities in previous years has not contributed significantly to the overall number of cellulosic RINs generated.[27]

From this list of commercial-scale facilities we used information from EMTS, publically available information (including press releases and news reports), and information provided by representatives of potential cellulosic

[24] The majority of the cellulosic RINs generated for CNG/LNG are sourced from biogas from landfills, however the biogas may come from a variety of sources including municipal wastewater treatment facility digesters, agricultural digesters, separated MSW digesters, and the cellulosic components of biomass processed in other waste digesters.

[25] The United States Court of Appeals for the District of Columbia Circuit evaluated this requirement in *API* v. *EPA* 706 F.3d 474, 479–480 (D.C. Cir. 2013), in the context of a challenge to the 2012 cellulosic biofuel standard. The Court stated that in projecting potentially available volumes of cellulosic biofuel EPA must apply an ''outcome-neutral methodology'' aimed at providing a prediction of ''what will actually happen.''

[26] See § 80.1456.

[27] While a few small R&D and pilot scale facilities have registered as cellulosic RIN generators, total production from each of these facilities from 2010 through March 2017 has been less than 100,000 RINs.

biofuel producers, to make a determination of which facilities are most likely to produce cellulosic biofuel and generate cellulosic biofuel RINs in 2018. Each of these companies was investigated further in order to determine the current status of its facilities and its likely cellulosic biofuel production and RIN generation volumes for 2018. Both in our discussions with representatives of individual companies and as part of our internal evaluation process we gathered and analyzed information including, but not limited to, the funding status of these facilities, current status of the production technologies, anticipated construction and production ramp-up periods, facility registration status, and annual fuel production and RIN generation targets.

The methodology used by EPA to project cellulosic biofuel production in 2015–2017 has resulted in a total cellulosic biofuel production projection that was lower than the actual number of cellulosic RINs made available in 2015,[28] and higher than the actual number of RINs generated in 2016.[29] This methodology is most recently described in the 2017 final rule.[30] The fact that the projections in both years proved somewhat inaccurate, under-estimating the actual number of RINs made available one year and over-estimating the next, reflects the inherent difficulty with projecting cellulosic biofuel production.

EPA's projections of liquid cellulosic biofuel, however, were higher than the actual volume of liquid cellulosic biofuel produced in both 2015 and 2016. We believe that new data warrants a change to the methodology for projecting liquid cellulosic biofuel in an effort to make the projections more accurate. We are therefore proposing to adjust the percentile values used to project liquid cellulosic biofuel production based on actual liquid cellulosic biofuel production in 2016. We believe that the use of this methodology, with the adjusted approach to developing the percentile values used to project production volumes for liquid cellulosic biofuels, results in a projection that reflects a neutral aim at accuracy since it accounts for expected growth in the near future, and does so in a way that directly reflects the accuracy of EPA's projections in the most recent year (2016) for which complete data is available.

In previous years we used the same methodology for CNG/LNG derived from biogas as for liquid cellulosic biofuel, but with different percentile values reflecting the more established nature of the CNG/LNG industry relative to liquid cellulosic biofuel production. For 2018, EPA is proposing to use an industry wide approach, rather than an approach that projects volumes for individual companies or facilities, to project the production of CNG/LNG derived from biogas. This updated approach reflects the fact that this industry is far more mature than the liquid cellulosic biofuel industry, and that there are a large number of facilities registered to generate cellulosic biofuel RINs from biogas, rendering a facility-by-facility analysis difficult and of questionable need for purposes of accuracy. As described in Section V.C.2 below, EPA is instead proposing to use the rate of growth in the renewable CNG/LNG industry observed between the first five months of 2016 and the first five months of 2017,[31] together with actual data on total RINs generated for CNG/LNG in 2016, to estimate the production of CNG/LNG derived from biogas in 2018.

For the final rule we intend to review all available data with respect to cellulosic biofuel production in 2017 for the months for which data will be available. We will consider that information, together with comments received and updated information on the status of potential production facilities, to make any appropriate adjustments to the methodology and/or projected production volume in the final rule. The remainder of this Section discusses the companies and facilities EPA expects to be in a position to produce commercial-scale volumes of cellulosic biofuel by the end of 2018 and describes in more detail the methodology EPA is proposing to use to project cellulosic biofuel production in 2018 (including a review of cellulosic biofuel production and the accuracy of the projection methodology in previous years). This information forms the basis for the proposed applicable volume for cellulosic biofuel for 2018.

1. Potential Domestic Producers

There are a number of companies and facilities [32] located in the United States that have either already begun producing cellulosic biofuel for use as transportation fuel, heating oil, or jet fuel at a commercial scale, or are anticipated to be in a position to do so at some time during 2018. The financial incentive provided by cellulosic biofuel RINs,[33] combined with the facts that to date nearly all cellulosic biofuel produced in the United States has been used domestically [34] and all the domestic facilities we have contacted in deriving our projections intend to produce fuel on a commercial scale for domestic consumption using approved pathways, gives us a high degree of confidence that cellulosic biofuel RINs will be generated for any fuel produced by commercial scale facilities. In order to generate RINs, each of these facilities must be registered under the RFS program and comply with all the regulatory requirements. This includes using an approved RIN-generating pathway and verifying that their feedstocks meet the definition of renewable biomass. Most of the companies and facilities considered in our assessment of potential cellulosic biofuel producers in 2018 have already successfully completed facility registration, and many have successfully generated RINs.[35] A brief description of each of the companies (or group of companies for cellulosic CNG/LNG producers) that EPA believes may produce commercial-scale volumes of RIN generating cellulosic biofuel by the end of 2018 can be found in a memorandum to the docket for this

[28] EPA only projected cellulosic biofuel production for the final three months of 2015, since data on the availability of cellulosic biofuel RINs (D3+D7) for the first nine months of the year were available at the time the analyses were completed for the final rule.

[29] EPA projected that 123 million and 230 million cellulosic RINs would be generated in 2015 and 2016, respectively. The number of available cellulosic RINs in these years (RINs generated minus RINs retired for non-compliance reasons) was 140 and 190 million RINs. See ''Assessment of the Accuracy of Cellulosic Biofuel Production Projections in 2015 and 2016 (June 2016 Update)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091 for more detail.

[30] For a full description of this approach, see 81 FR 89746, 89755 (December 12, 2016).

[31] At the time of this proposal, EPA has RIN generation data for the first five months of 2017 (January–May).

[32] The volume projection from CNG/LNG producers does not represent production from a single company or facility, but rather a group of facilities utilizing the same production technology.

[33] According to data from Argus, the price for 2017 cellulosic biofuel RINs averaged $2.67 in 2017 (through March 2017). Alternatively, obligated parties can obtain a RIN value equivalent to a cellulosic biofuel RIN by purchasing an advanced (or biomass-based diesel) RIN and a cellulosic waiver credit. The price for 2017 advanced biofuel RINs averaged $0.94 in 2017 (through March 2017) while the price for a 2017 cellulosic waiver credit is $2.00.

[34] The only known exception was a small volume of fuel produced at a demonstration scale facility exported to be used for promotional purposes.

[35] All of the facilities listed in Table III.B.3–1 are registered to produced cellulosic (D3 or D7) RINs with the exception of several of the producers of CNG/LNG derived from biogas, many of the facilities projected to produce cellulosic ethanol using Edeniq's technology, and Ensyn's Port-Cartier, Quebec facility.

proposed rule.[36] General information on each of these companies or group of companies considered in our projection of the potentially available volume of cellulosic biofuel in 2018 is summarized in Table III.B.3–1 below.

2. Potential Foreign Sources of Cellulosic Biofuel

In addition to the potential sources of cellulosic biofuel located in the United States, there are several foreign cellulosic biofuel companies that may produce cellulosic biofuel in 2018. These include facilities owned and operated by Beta Renewables, Enerkem, Ensyn, GranBio, and Raizen. All of these facilities use fuel production pathways that have been approved by EPA for cellulosic RIN generation provided eligible sources of renewable feedstock are used and other regulatory requirements are satisfied. These companies would therefore be eligible to register these facilities under the RFS program and generate RINs for any qualifying fuel imported into the United States. While these facilities may be able to generate RINs for any volumes of cellulosic biofuel they import into the United States, demand for the cellulosic biofuels they produce is expected to be high in their own local markets.

EPA is charged with projecting the volume of cellulosic biofuel that will be produced or imported into the United States. For the purposes of this proposed rule we have considered all of the registered foreign facilities under the RFS program to be potential sources of cellulosic biofuel in 2018. We believe that due to the strong demand for cellulosic biofuel in local markets, the significant technical challenges associated with the operation of cellulosic biofuel facilities, and the time necessary for potential foreign cellulosic biofuel producers to register under the RFS program and arrange for the importation of cellulosic biofuel to the United States, cellulosic biofuel imports from foreign facilities not currently registered to generate cellulosic biofuel RINs are generally highly unlikely in 2018. For purposes of our 2018 cellulosic biofuel projection we have, with only one exception (described below) excluded from our proposal potential volumes from foreign cellulosic biofuel production facilities that are not currently registered under the RFS program. Two foreign facilities (Ensyn's Renfrew facility and the CNG/LNG facility Complexe Enviro Progressive Ltee) that have registered as cellulosic biofuel producers have already generated cellulosic biofuel RINs for fuel exported to the United States; projected volumes from each of these facilities are included in our projection of available volumes for 2018. Three additional foreign facilities (Gran Bio's Bioflex Agroindustrial S/A, Saint-Thomas Biomethane Plant, and Raizen's Costa Pinto) have registered as cellulosic biofuel producers, but have not yet generated any cellulosic RINs. EPA attempted to contact representatives from these facilities to inquire about their intentions to export cellulosic biofuel to the United States in 2018. In two cases (Gran Bio's Bioflex Agroindustrial S/A and Saint-Thomas Biomethane Plant), company representatives indicated they intended to export cellulosic biofuel to the United States, and EPA believes that there is sufficient reason to believe imports of cellulosic biofuel from these companies are likely. Finally, EPA has included projected volume from one foreign facility (Ensyn's Port-Cartier, Quebec facility) that is not currently registered to generate cellulosic biofuel RINs under the RFS program. We believe that it is appropriate to include volume from this facility in light of the facility's proximity to the United States, the proven technology used by the facility, the volumes of cellulosic biofuel exported to the United States by the company in previous years, and the company's stated intention to market all of the fuel produced at this facility to qualifying markets in the United States. All of the facilities included in EPA's cellulosic biofuel projection for 2018 are listed in Table III.B.3–1 below.

3. Summary of Volume Projections for Individual Companies

General information on each of the cellulosic biofuel producers (or group of producers in the case of producers of CNG/LNG derived from biogas and facilities using Edeniq's technology) that factored into our projection of cellulosic biofuel production for 2018 is shown in Table III.B.3–1. This table includes both facilities that have already generated cellulosic RINs, as well as those that have not yet generated cellulosic RINs, but are projected to do so by the end of 2018. As discussed above, we have focused on commercial-scale cellulosic biofuel production facilities. Each of these facilities (or group of facilities) is discussed further in a memorandum to the docket.[37] In addition to the facilities (or groups of facilities) discussed in Table III.B.3–1 below, EPA is aware of two additional technologies that may be used to produce qualifying cellulosic biofuel in 2018. Multiple companies, in addition to Edeniq and Quad County Corn Processors, are working to commercialize technology to convert corn kernel fiber to cellulosic ethanol at existing corn ethanol facilities. At this point, however, none of these companies have successfully registered a facility to generate cellulosic RINs using their technology.[38] Several other companies are seeking to register to generate cellulosic biofuel RINs for anaerobic digesters that produce CNG/LNG from a variety of waste feedstocks.[39] If the outstanding technical issues related to these processes are resolved prior to the final rule, EPA anticipates including production projections from these technologies in our projection of cellulosic biofuel production for 2018.

TABLE III.B.3–1—PROJECTED PRODUCERS OF CELLULOSIC BIOFUEL BY 2018

Company name	Location	Feedstock	Fuel	Facility capacity (million gallons per year)[40]	Construction start date	First production[41]
CNG/LNG Producers[42]	Various (US and Canada)	Biogas	CNG/LNG	Various	N/A	August 2014.
DuPont	Nevada, IA	Corn Stover	Ethanol	30	November 2012	1Q 2017.

[36] ''Cellulosic Biofuel Producer Company Descriptions (May 2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

[37] ''Cellulosic Biofuel Producer Company Descriptions (May 2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

[38] A significant issue that must be resolved to register a facility to produce cellulosic biofuel from corn kernel fiber at an existing ethanol production facility is the quantification of the volume of ethanol produced from cellulosic feedstocks rather than non-cellulosic feedstocks such as starch. Until these companies develop a methodology for quantifying cellulosic biofuel production that is approved by EPA we do not believe it is appropriate to include an estimate of cellulosic biofuel production from these facilities in our projection of cellulosic biofuel production in 2018.

[39] These facilities must be able to quantify the volume of CNG/LNG produced from cellulosic feedstocks and the volume of CNG/LNG produced from non-cellulosic feedstocks. To date none of the quantification methodologies proposed by the companies interested in registering as cellulosic biofuel producers has been approved by EPA. While these companies may be able to register to generate advanced biofuel (D5) RINs, they cannot generate cellulosic (D3) RINs until this issue is resolved.

TABLE III.B.3–1—PROJECTED PRODUCERS OF CELLULOSIC BIOFUEL BY 2018—Continued

Company name	Location	Feedstock	Fuel	Facility capacity (million gallons per year) [40]	Construction start date	First production [41]
Edeniq	Various	Corn Kernel Fiber	Ethanol	Various	Various	October 2016.
Ensyn	Renfrew, ON, Canada	Wood Waste	Heating Oil	3	N/A	2014.
Ensyn	Port-Cartier, QC, Canada	Wood Waste	Heating Oil	10.5	June 2016	April 2018.
GranBio	São Miguel dos Campos, Brazil.	Sugarcane bagasse	Ethanol	21	Mid 2012	September 2014.
Poet	Emmetsburg, IA	Corn Stover	Ethanol	24	March 2012	4Q 2015.
QCCP	Galva, IA	Corn Kernel Fiber	Ethanol	4	Late 2013	October 2014.

C. Cellulosic Biofuel Volume for 2018

1. Liquid Cellulosic Biofuel

For our 2018 liquid cellulosic biofuel projection, we use a modified version the same general methodology we used in establishing the cellulosic biofuel volume standards for 2015 (the final three months for which data were not available), 2016, and 2017. This methodology is briefly described here, and is described in detail in the 2017 annual rule.[43] We are proposing to use the same methodology to come up with the range of potential volumes for the different categories of facilities. However, we are proposing to adjust the percentile values used to project liquid cellulosic biofuel production from within the range of projected production values, based on an analysis of actual liquid cellulosic biofuel production in 2016. We believe an adjustment to our methodology is warranted, as EPA's estimates for liquid cellulosic biofuel exceeded actual production of liquid cellulosic biofuel in both 2015 and 2016,[44] and that this adjusted methodology will continue to improve the accuracy of the production projection that will further EPA's objective to project volumes with a ''neutral aim at accuracy.''

The projected ranges for liquid cellulosic biofuel production in 2016, along with the percentile values used to project a production volume within the calculated ranges and the actual number of cellulosic RINs generated in 2016 that are available for compliance, are shown in Table III.C.1–1 below.

TABLE III.C.1–1—PROJECTED AND ACTUAL LIQUID CELLULOSIC BIOFUEL PRODUCTION IN 2016

[Million gallons]

	Low end of the range	High end of the range	Percentile	Projected production	Actual production [45]
New Facilities	0	76	25th	19	1.06
Consistent Producers [46]	2	5	50th	4	3.28

Since the actual production in 2016 was lower than projected production for both new facilities and consistent producers, it seems appropriate to adjust the percentiles downward for the purposes of making projections for 2018. To this end, EPA calculated the percentile values that would have resulted in accurate production projections in 2016 based on the actual number of cellulosic biofuel RINs generated for liquid cellulosic biofuels and available for compliance in 2016. These calculated percentile values are the 1st percentile for new facilities (replacing the 25th percentile used for 2016 and 2017) and the 43rd percentile for consistent producers (replacing the 50th percentile used for 2016 and 2017). In this rule EPA is proposing to use these updated percentile values to project the production of liquid cellulosic biofuel in 2018. We believe it is appropriate to use 2016 production data to calculate these percentile values as EPA first adopted the methodology for calculating expected production ranges used in this rule in the 2014–2016 final rule. While EPA also has projected production ranges for the final three months of 2015 as well as all of 2017, we do not have sufficient data to compare our projected volumes to actual production volumes over a full year for either of these years. For purposes of this proposal, therefore, we have selected 2016 data as the most representative source of data currently available for purposes of projecting what may occur in 2018. We anticipate that we will review these percentile values as additional data from 2017 become available, and update them as appropriate for the final rule. We request comment on methods that EPA could use to take into account available 2017 data for the final rule,

[40] The Facility Capacity is generally equal to the nameplate capacity provided to EPA by company representatives or found in publicly available information. If the facility has completed registration and the total permitted capacity is lower than the nameplate capacity then this lower volume is used as the facility capacity. For companies generating RINs for CNG/LNG derived from biogas the Facility Capacity is equal to the lower of the annualized rate of production of CNG/LNG from the facility at the time of facility registration or the sum of the volume of contracts in place for the sale of CNG/LNG for use as transportation fuel (reported as the actual peak capacity for these producers).

[41] Where a quarter is listed for the first production date EPA has assumed production begins in the middle month of the quarter (*i.e.,* August for the 3rd quarter) for the purposes of projecting volumes.

[42] For more information on these facilities see ''June 2017 Assessment of Cellulosic Biofuel Production from Biogas (2018)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

[43] See 81 FR 89755 (December 12, 2016) for additional detail.

[44] EPA notes that once standards are set based on these projections, cellulosic biofuel RINs can be generated for either type of cellulosic biofuel. Cellulosic biofuel RINs generated for liquid biofuels and CNG/LNG derived from biogas can be used to satisfy an obligated party's cellulosic biofuel obligation. There are no separate standards for liquid and gaseous cellulosic biofuels.

[45] Actual production is calculated by subtracting RINs retired for any reason other than compliance with the RFS standards from the total number of cellulosic RINs generated.

[46] In the 2014–2016 Annual Rule EPA categorized Ensyn and Quad County Corn Processors as consistent cellulosic biofuel producers for 2016. All other companies were categorized as new facilities. This is in contrast to 2018, for which EPA has categorized additional facilities as consistent cellulosic biofuel producers. See below.

notwithstanding the expected lack of data for the last few months of 2017.

EPA also considered whether it would be appropriate to modify other individual components of the past methodology for liquid cellulosic biofuel based on a narrow consideration of each factor, but we do not believe there is currently sufficient information to support these changes. Making the single proposed adjustment to the percentile values used in the methodology should, we believe, provide an appropriate adjustment to the methodology that reflects recent past experience. We acknowledge, however, that using the calculated percentile values from previous years to project liquid cellulosic biofuel production in future years does not eliminate the possibility that actual production will differ from our projections. This is especially true for the liquid cellulosic biofuel industry, which is currently in the early stages of commercialization. We will continue to evaluate the success of this methodology, including a consideration of the data on cellulosic biofuel production in 2017 available at the time of the final rule, and will consider adjusting the methodology if it appears warranted. If the methodology appears to be projecting volumes that are significantly higher or lower than actual production volumes for months in 2017 for which data is available (after taking into account the seasonality of RIN generation and the expected ramp-up of production volumes in the latter half of 2017) we may consider adjustments to the methodology used in the final rule, such as further adjusting the percentile values used to project liquid cellulosic biofuel production within the projected range for a group of companies, or creating new groupings of companies with similar types and levels of risk associated with cellulosic biofuel production. We request comment on our methodology and adjustments that could be made to increase the accuracy of the projection.

Consistent with our approach for 2016 and 2017, to project liquid cellulosic biofuel production in 2018 we separated the list of potential producers of cellulosic biofuel into two groups according to whether or not the facilities have achieved consistent commercial-scale production and cellulosic biofuel RIN generation (See Table III.C.1–2 through Table III.C–.1–3). We next defined a range of likely production volumes for each group of potential cellulosic biofuel producers. The low end of the range for each group of producers reflects actual RIN generation data over the last 12 months for which data are available at the time our technical assessment was completed (April 2016–March 2017). For potential producers that have not yet generated any cellulosic RINs, the low end of the range is zero. For the high end of the range of production volumes for companies expected to produce liquid cellulosic biofuel we considered a variety of factors, including the expected start-up date and ramp-up period,[47] facility capacity, and fuel off-take agreements. The projected ranges for each of the companies considered in our 2018 cellulosic biofuel projection are shown in Tables III.C.1–2 and III.C.1–3 below.[48]

TABLE III.C.1–2—2018 PRODUCTION RANGES FOR LIQUID CELLULOSIC BIOFUEL PRODUCERS WITHOUT CONSISTENT COMMERCIAL SCALE PRODUCTION

[Million gallons]

	Low end of the range	High end of the range
DuPont	0	15
Edeniq (New Producers)	0	80
GranBio	0	5
Ensyn (Port-Cartier)	0	5
Aggregate Range	0	105

TABLE III.C.1–3—2018 PRODUCTION RANGES FOR LIQUID CELLULOSIC BIOFUEL PRODUCERS WITH CONSISTENT COMMERCIAL SCALE PRODUCTION

[Million gallons]

	Low end of the range	High end of the range
Edeniq (Active Facilities)	[a] X	5
Ensyn	[a] X	3
Poet	[a] X	20
Quad County Corn Processors	[a] X	3
Aggregate Range	3.9	31

[a] The low end of the range for each individual company is based on actual production volumes and is therefore withheld to protect information claimed to be confidential business information.

After defining likely production ranges for each group of companies we used the percentile values described earlier in this section to project a production volume within the production ranges. We used the 1st and 43rd percentiles, respectively, for liquid cellulosic biofuel producers without and with a history of consistent cellulosic biofuel production and RIN generation. The resulting projections for liquid cellulosic biofuel in 2018 are shown in Table III.C.1–4 below.

TABLE III.C.1–4—PROJECTED VOLUME OF LIQUID CELLULOSIC BIOFUEL IN 2018

[Million gallons]

	Low end of the range [a]	High end of the range [a]	Percentile	Projected volume [a]
Liquid Cellulosic Biofuel Producers; Producers without Consistent Commercial Scale Production	0	105	1st	1
Liquid Cellulosic Biofuel Producers; Producers with Consistent Commercial Scale Production	3.9	31	43rd	16

[47] As in our 2015–2017 projections, EPA calculated a high end of the range for each facility (or group of facilities) based on the expected start-up date and a six-month straight line ramp-up period. The high end of the range for each facility (or group of facilities) is equal to the value calculated by EPA using this methodology, or the number of RINs the producer expects to generate in 2018, whichever is lower.

[48] More information on the data and methods EPA used to calculate each of the ranges in these tables can be found in ''May 2017 Cellulosic Biofuel Individual Company Projections for 2018 (CBI)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

TABLE III.C.1–4—PROJECTED VOLUME OF LIQUID CELLULOSIC BIOFUEL IN 2018—Continued

[Million gallons]

	Low end of the range [a]	High end of the range [a]	Percentile	Projected volume [a]
Total	N/A	N/A	N/A	17

[a] Volumes rounded to the nearest million gallons.

We believe our range of projected production volumes for each company (or group of companies for those using the Edeniq technology) reasonably represents the range of potential production volumes for each company, and that projecting overall production in 2018 in the manner described above results in a neutral estimate (neither biased to produce a projection that is either too high or too low) of likely liquid cellulosic biofuel production in 2018 (17 million gallons).

2. CNG/LNG Derived From Biogas

For 2018, EPA is proposing to use a new methodology to project production of CNG/LNG derived from biogas used as transportation fuel. We believe a new methodology is warranted for purposes of this rule for two primary reasons: The over-projection of CNG/LNG derived from biogas in 2016 and, the relative maturity of the CNG/LNG industry relative to the liquid cellulosic biofuel industry. EPA's projection of the production of CNG/LNG derived from biogas in 2016 was 207 million ethanol-equivalent gallons. Actual production of cellulosic biofuel RINs for CNG/LNG derived from biogas that were available for compliance in 2016 was 185 million gallons, suggesting that the approach we took to projecting CNG/LNG derived from biogas in 2016 resulted in an overestimate by 22 million ethanol-equivalent gallons. More importantly, we believe that the technology and market for CNG/LNG derived from biogas used as transportation fuel is sufficiently mature that a facility-by-facility assessment of potential production is unnecessary, and is not the most appropriate method for projecting the production of these fuels in 2018 across the entire industry.

EPA is proposing to use an industry-wide approach, rather than a projecting production from each specific facility or company, to project the 2018 production of CNG/LNG derived from biogas. EPA has calculated the observed year-over-year growth in the number of RINs generated for CNG/LNG derived from biogas based on data from the first five months of both 2016 and 2017.[49] These production volumes are shown in Table III.C.2–1 below.

TABLE III.C.2–1—GENERATION OF CELLULOSIC BIOFUEL RINS FOR CNG/LNG DERIVED FROM BIOGAS

[Million gallons]

RIN generation (January 2016–May 2016)	RIN generation (January 2017–May 2017)	Year-over-year increase (Jan.–May 2016 to Jan.–May 2017)
62.91	68.75	9.3%

Under the assumption that this growth rate based on five months of data is representative of the annual growth rate, EPA then applied this 9.3% growth rate to the total number of 2016 cellulosic RINs generated for CNG/LNG that were available for compliance (185.14 million) to project the production of cellulosic RINs from these fuels in 2017, and then repeated the calculation to arrive at a projection for 2018. This methodology results in a projection of 221.2 million gallons of CNG/LNG derived from biogas in 2018.[50] We believe that projecting the production of CNG/LNG derived from biogas in this manner appropriately takes into consideration the actual recent rate of growth of this industry, and that this growth rate accounts for both the potential for future growth and the challenges associated with increasing RIN generation from these fuels in future years. While this methodology may not be appropriate to use once the projected volume of CNG/LNG derived from biogas approaches the total volume of CNG/LNG that is used as transportation fuel, our projection for 2018 is well below the total volume of CNG/LNG that is currently used as transportation fuel.[51] For the final rule we intend to review the year-over-year increase with additional data and modify the year-over-year increase from 2016 to 2017 and the resulting projection of CNG/LNG derived from biogas in 2018 as appropriate. We request comment on the use of an industry-wide, rather than a facility-by-facility projection of the production of CNG/LNG derived from biogas, as well as possible adjustments to the methodology used in this proposed rule or alternative methodologies that could be used for this purpose.

3. Total Cellulosic Biofuel in 2018

After projecting production of cellulosic biofuel from liquid cellulosic biofuel production facilities and producers of CNG/LNG derived from biogas, EPA combined these projections to project total cellulosic biofuel production for 2018. These projections are shown in Table III.C.3–1. Using the methodologies described in this section,

[49] At the time of this proposal, EPA has RIN generation data for the first five months of 2017 (January–May).

[50] To calculate this value, EPA multiplied the total number of 2016 RINs generated for CNG/LNG derived from biogas and available for compliance by 1.093 (representing a 9.3% year-over-year increase), and then multiplied the product by 1.093 a second time (to project the annual production volume in 2018, rather than 2017). The number 2016 of RINs generated for CNG/LNG derived from biogas and available for compliance (185.14) is based on EMTS data.

[51] EPA projects that 580 million ethanol-equivalent gallons of CNG/LNG will be used as transportation fuel in 2018 based on EIA's April 2017 Short Term Energy Outlook (STEO). To calculate this estimate, EPA used the Natural Gas Vehicle Use from the STEO Custom Table Builder (0.12 billion cubic feet/day in 2018). This projection includes all CNG/LNG used as transportation fuel from both renewable and non-renewable sources. EIA does not project the amount of CNG/LNG from biogas used as transportation fuel. To convert billion cubic feet/day to ethanol-equivalent gallons EPA used conversion factors of 1020 BTU per cubic foot of natural gas and 77,000 BTU of natural gas per ethanol-equivalent gallon.

we project that 238 million ethanol-equivalent gallons of cellulosic biofuel will be produced in 2018. We believe that projecting overall production in 2018 in the manner described above results in a neutral estimate (neither biased to produce a projection that is too high nor too low) of likely cellulosic biofuel production in 2018.

TABLE III.C.3–1—PROJECTED VOLUME OF CELLULOSIC BIOFUEL IN 2018

[Million gallons]

	Projected volume [a]
Liquid Cellulosic Biofuel Producers; Producers without Consistent Commercial Scale Production	1
Liquid Cellulosic Biofuel Producers; Producers with Consistent Commercial Scale Production	16
CNG/LNG Derived from Biogas	221
Total	238

[a] Volumes rounded to the nearest million gallons.

A brief overview of individual companies we believe will produce cellulosic biofuel and make it commercially available in 2018 can be found in a memorandum to the docket.[52] In the case of cellulosic biofuel produced from CNG/LNG and facilities using Edeniq's technology we have discussed the production potential from these facilities as a group rather than individually.[53] We request comment on the methodology used to project cellulosic biofuel production in 2018 [54] potential adjustments to the methodology that may result in more accurate projections, the companies listed as potential cellulosic biofuel producers and the volume of cellulosic biofuel projected to be produced in 2018 (including potential volumes from additional produces of cellulosic biofuel from corn kernel fiber and anaerobic waste digesters as discussed in Section III.B.3).

IV. Advanced Biofuel Volume for 2018

The national volume targets for advanced biofuel to be used under the RFS program each year through 2022 are specified in CAA section 211(o)(2)(B)(i)(II). Congress set annual renewable fuel volume targets that envisioned growth at a pace that far exceeded historical growth and, for years after 2011, prioritized that growth as occurring principally in advanced biofuels (contrary to previous growth patterns where most growth was in conventional renewable fuel, principally corn-ethanol). Congressional intent is evident in the fact that the portion of the total renewable fuel volume target in the statutory volume tables that is not required to be advanced biofuel is 15 billion gallons for all years after 2014, while the advanced volumes, driven by growth in cellulosic volumes, continue to grow through 2022 to a total of 21 billion gallons.

We have evaluated the capabilities of the market and are proposing to find that the 11.0 billion gallons specified in the statute for advanced biofuel cannot be reached in 2018. This is primarily due to the expected continued shortfall in cellulosic biofuel; production of this fuel type has consistently fallen short of the statutory targets by 95 percent or more, and as described in Section III, it will fall far short of the statutory target of 7.0 billion gallons again in 2018. In addition, although for the 2016 and 2017 standards we determined that the projected reasonably attainable supply of non-cellulosic advanced biofuel and other considerations justified establishing standards that include a partial backfill of the shortfall in cellulosic biofuel, for reasons described in this section we are not proposing such partial backfilling for 2018.

In previous years when exercising the cellulosic waiver authority to determine the required volume of advanced biofuel, we have taken into account the availability of advanced biofuels, their energy security and GHG benefits, and the apparent intent of Congress as reflected in the statutory volumes tables to substantially increase the use of advanced biofuels over time, as well as factors such as increased costs associated with the use of advanced biofuels and the environmental and food competition concerns raised by some commenters. In considering these factors, in those years, we have concluded that it was appropriate to set the advanced biofuel standard in a manner that would allow the partial backfilling of missing cellulosic volumes with non-cellulosic advanced biofuels. For purposes of this NPRM we are focusing primarily on the availability of advanced biofuels, their GHG and energy security benefits, and the costs associated with increased advanced biofuel mandates to propose no such backfilling with non-cellulosic advanced biofuel volumes in 2018. In other words, we propose to reduce the statutory volume target for advanced biofuel by the same amount as our proposed reduction in cellulosic biofuel. This action takes into account the fact that the substantial growth in advanced biofuel volumes after 2015 that was anticipated by Congress, and reflected in the statutory tables, was to be driven primarily by increases in cellulosic biofuel as opposed to non-cellulosic advanced biofuels. In addition, we recognize that the proposed approach involves placing a greater reliance on cost considerations than we have in past rulemakings. We believe this proposed new approach to balancing relevant considerations and exercising our discretion under the cellulosic waiver authority is permissible under the statute, and consistent with the principles articulated in *FCC* v. *Fox TV Stations,* 556 U.S. 502, 514–15 (2009), regarding circumstances when an agency may appropriately depart from prior policy. We will, as in past years, consider comments on these factors, their appropriate balancing, and any other factors identified by commenters that are relevant to the exercise of our cellulosic waiver authority in finalizing this rule, and will consider making appropriate adjustments for the final rule.

We note that the predominant non-cellulosic advanced biofuels available in the near term are advanced biodiesel and renewable diesel. We expect a decreasing rate of growth in the availability of feedstocks used to

[52] ''Cellulosic Biofuel Producer Company Descriptions (May 2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

[53] For individual company information see ''May 2017 Cellulosic Biofuel Individual Company Projections for 2018 (CBI)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2017–0091.

[54] For a more complete description of the methodology used to calculate the likely production ranges for the liquid cellulosic biofuel producers see 81 FR 89758, December 12, 2016.

produce these fuel types. To the extent that higher advanced biofuel requirements cannot be satisfied through growth in the production of advanced biofuel feedstocks, they would instead be satisfied through a re-direction of advanced feedstocks from competing uses, leading to lower overall GHG emission benefits. There would also likely be market disruptions and increased burden associated with shifting feedstocks among the wide range of companies that are relying on them today and which have optimized their processes to accommodate them. Furthermore, the fact that the tax credit for biodiesel has not been renewed, and if renewed could be in the form of a producer's tax credit rather than a blender's tax credit, has resulted in added uncertainty regarding the potential for volumes to be made available to the United States at levels above the proposed volume.

We believe that the factors and considerations noted above are all appropriately considered in our exercise of the broad discretion provided under the cellulosic waiver authority, and that a comprehensive consideration of these factors supports our proposed approach.[55] Some of the considerations discussed in this proposal are clearly related to the availability of non-cellulosic biofuels (*e.g.,* historic data on supply, expiration of the biodiesel blenders' tax credit, and anticipated decreasing growth in production of advanced feedstocks), while others clearly focus on the potential benefits and costs of requiring use of available volumes (*e.g.,* relative cost of advanced biofuels to the petroleum fuels they displace, GHG reduction benefits and energy security benefits). One important consideration does not fall neatly in these two categories—the likelihood that higher advanced biofuel standards would be satisfied by diversion of advanced feedstocks from other uses or diversion of foreign advanced biofuel from foreign markets, and the diminished benefits associated with such diversions. We believe, in the exercise of our discretion under the cellulosic waiver authority, and as discussed in more detail below, that it would not be appropriate to set the advanced biofuel volume requirement at a level that would lead to such diversions. Accordingly, we have factored this consideration into our assessment of available supplies. In other words, we first identify below volumes that we believe would be reasonably attainable in 2018 without these diversions, and then discuss whether or not other considerations, such as cost and GHG benefits, indicate that it would be appropriate to set the advanced biofuel volume requirement so as to require use of such reasonably attainable volumes to partially backfill for missing cellulosic volumes.

If finalized, the net impact of today's proposal would be that the volume requirement for advanced biofuel for 2018 would be 40 million gallons less than the applicable volume used to derive the 2017 percentage standard.

A. Volumetric Limitation on Use of the Cellulosic Waiver Authority

As described in Section II.A, when making reductions in advanced biofuel and total renewable fuel under the cellulosic waiver authority, the statute limits those reductions to no more than the reduction in cellulosic biofuel. As described in Section III.D, we are proposing a 2018 applicable volume for cellulosic biofuel of 238 million gallons, representing a reduction of 6,762 million gallons from the statutory target of 7,000 million gallons. As a result, 6,762 million gallons is the maximum volume reduction for advanced biofuel and total renewable fuel that is permissible using the cellulosic waiver authority.[56] If we were to use the cellulosic waiver authority to this maximum extent, the resulting 2018 volumes would be 4.24 and 19.24 billion gallons for advanced biofuel and total renewable fuel, respectively, following standard rounding methods applied to the applicable volumes expressed in billion gallons with two decimal places, as done in previous annual standard-setting rulemakings.

TABLE IV.A–1—LOWEST PERMISSIBLE VOLUME REQUIREMENTS USING ONLY THE CELLULOSIC WAIVER AUTHORITY

[Million gallons]

	Advanced biofuel	Total renewable fuel
Statutory target	11,000	26,000
Maximum reduction permitted under the cellulosic waiver authority	6,762	6,762
Lowest 2018 volume requirement permitted using only the cellulosic waiver authority	4,238	19,238

We are authorized under the cellulosic waiver authority to reduce the advanced biofuel and total renewable fuel volumes ''by the same or a lesser'' amount as the reduction in the cellulosic biofuel volume. Thus, we are not required to use the authority to its maximum extent. Indeed, in exercising the cellulosic waiver authority in setting standards for 2014–2017, we did not use the full extent of the authority. As discussed in Section II.A, EPA has broad discretion in using the cellulosic waiver authority in instances where its use is authorized under the statute, since Congress did not specify factors that EPA must consider in determining whether to use the authority or what appropriate volume reductions (within the range permitted by statute) should be. Thus, EPA could potentially set the 2018 advanced biofuel standard at a level that is designed to partially backfill for the shortfall in cellulosic biofuel. However, based on our consideration of the factors described in more detail below, we are proposing to use the full extent of the cellulosic waiver authority. The proposed advanced biofuel applicable volume is, therefore, 4.24 billion gallons.[57]

B. Reasonably Attainable Volumes of Advanced Biofuel

After use of the cellulosic waiver authority to reduce volumes of cellulosic biofuel, the statute does not specify conditions or any criteria or factors that EPA should consider in determining whether, and to what extent, to use the authority to reduce advanced biofuel and total renewable

[56] If we determined it necessary to provide further reductions to address inadequate domestic supply or severe economic or environmental harm, such further reductions would only be possible using the general waiver authority.

[57] We specify the volume requirements as billion gallons with two decimal places to be consistent with the volume targets as given in the statute. The only exception is for cellulosic biofuel which we specify in million gallons due to the substantial reduction from the statutory target. However, calculations are typically shown in million gallons for all four standards for clarity.

fuel. Thus, under the cellulosic waiver authority, Congress provided EPA with broad discretion to lower advanced biofuel and total renewable fuel applicable volumes in instances where it lowers the cellulosic biofuel requirement, as we are proposing to do in today's rule. In exercising this broad discretion, we need not require use of the maximum achievable volumes as would be the case if we were using the general waiver authority based on a finding of inadequate domestic supply, as we did for total renewable fuels in the 2014–2016 RFS standards rule.

As noted above, a higher advanced biofuel volume requirement has a greater potential to increase the incentive for switching advanced biofuel feedstocks from existing uses to biofuel production. Such market reactions could cause disruptions and/or price increases in the non-biofuel markets that currently use these feedstocks. Increasing the required volumes of advanced biofuels without giving the market adequate time to adjust by increasing supplies could also result in diversion of advanced biofuels from foreign countries to the U.S. without increasing total global supply. Increasing the supply of advanced biofuels in this way (by shifting the end use of advanced feedstocks to biofuel production and satisfying the current markets for these advanced feedstocks with non-qualifying or petroleum based feedstocks or simply shifting advanced biodiesel or renewable diesel from foreign to domestic use) would likely not produce the additional GHG benefits that might otherwise be expected. We are proposing that we not set the advanced volume requirement at a level that would require such diversions. Our individual assessments of reasonably attainable volumes reflect this approach. That is, while we refer to them as ''reasonably attainable'' volumes for convenience, they represent those volumes that are not likely to lead to feedstock diversions. Greater volumes could likely be made available if feedstock diversions were not of concern.

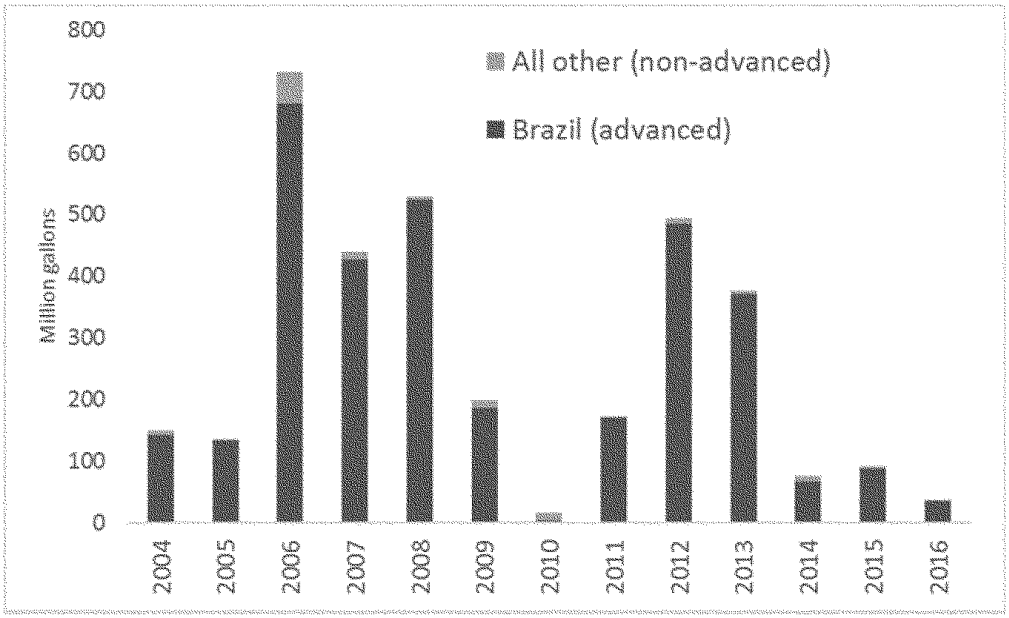
1. Imported Sugarcane Ethanol

The predominant available source of advanced biofuel other than cellulosic biofuel and BBD is imported sugarcane ethanol. For both the 2016 and 2017 standards, we used a volume of 200 million gallons of imported sugarcane ethanol for purposes of determining the reasonably attainable volume of advanced biofuel. In using this volume of sugarcane ethanol, we attempted to balance indications of lower potential imports from recent data with indications that higher volumes were possible based on older data. We also pointed to the high variability in ethanol import volumes in the past (including of Brazilian sugarcane ethanol, the predominant form of imported ethanol, and the only significant source of imported advanced ethanol), increasing gasoline consumption in Brazil, and variability in Brazilian production of sugar as reasons that it would be inappropriate to assume that sugarcane ethanol imports would reach the much higher levels suggested by some stakeholders.

The data currently available on 2016 ethanol imports suggests that we overestimated the volume of sugarcane ethanol imports for that year. Despite the fact that the applicable standards for 2016 were set prior to the beginning of 2016, and despite suggestions from UNICA [58] that 2016 imports could reach as high as 2 billion gallons, total ethanol imports only reached 34 million gallons. The low observed 2016 volume indicates that an increase in the advanced biofuel standard does not necessarily result in an increase in imports of sugarcane ethanol, and also implies that even California's Low Carbon Fuel Standard (LCFS), which applies in addition to the RFS program, has not resulted in the large volumes of advanced ethanol imports that some stakeholders believed would occur.

[58] UNICA is the Brazilian Sugarcane Industry Association.

Figure IV.B.1-1
Historical Ethanol Imports[a]



Source: "US Imports of Fuel Ethanol from EIA," docket EPA-HQ-OAR-2017-0091.
[a] Imports from Brazil include those that are transmitted through the Caribbean Basin Initiative (CBI) and Central America Free Trade Agreement (CAFTA), and are produced from sugarcane. Imports from other countries are typically not produced from sugarcane and do not qualify as advanced biofuel.

While the low import levels of sugarcane ethanol in 2014 and 2015 could, at least in part, be attributed to the fact that the applicable RFS standards had not been set prior to the beginning of the compliance period, this was not true for 2016. The experience in 2016 suggests that 200 million gallons may be too high for the purposes of projecting reasonably attainable volumes of advanced biofuel for 2018. At the same time, higher import volumes than those which occurred in 2016 are clearly possible, and could potentially be achieved under the influence of a higher RFS standard. Taking all of these considerations into account, we propose to use 100 million gallons of imported sugarcane ethanol for the purposes of projecting reasonably attainable volumes of advanced biofuel for 2018. This level takes into account the lower than expected import volumes that occurred in 2016, but also the fact that higher volumes have occurred in past years.

We recognize that there are factors that could result in lower import volumes of sugarcane ethanol in 2018 than 100 million gallons. These include weather and harvests in Brazil, world ethanol demand and prices, and constraints associated with the E10 blendwall in the U.S. Also, global sugar consumption has continued to increase steadily, while production has decreased. If the trend continues, Brazilian production of sugar could increase, with a concurrent reduction in production of ethanol.[59] On the other hand, the world average price of sugar is projected to remain relatively flat between 2016 and 2018, suggesting little change in sugar production and implying that ethanol production in Brazil might likewise remain unchanged.[60] In light of these and other considerations discussed above, we request comment on whether it would be appropriate to use a volume of imported sugarcane ethanol different than 100 million gallons in the final determination of the advanced biofuel volume requirement for 2018.

2. Biodiesel and Renewable Diesel

With regard to biodiesel and renewable diesel, there are many different factors that could potentially influence the *total* reasonably attainable volume of these fuels (including both advanced and non-advanced forms) used as transportation fuel or heating oil in the United States.[61] These factors could include the availability of qualifying biodiesel and renewable diesel feedstocks, the production capacity of biodiesel and renewable diesel facilities (both in the United States and internationally), the market's ability to distribute biodiesel, and diesel engine manufacturers' recommendations for biodiesel use in the engines they produce. The degree to which these and other factors may affect the total supply of biodiesel and renewable diesel in 2018, is discussed in Section V.B.2.

However, the primary considerations in our determination of the reasonably attainable volumes of *advanced* biodiesel and renewable diesel for 2018 are a review of the supply of advanced biodiesel and renewable diesel in previous years, the uncertain impact of the expiration of the biodiesel tax credit

[59] ''Sugar—World Markets and Trade,'' USDA, November 2016.

[60] ''Commodity Markets Outlook,'' World Bank Group, January 2017.

[61] For a further discussion of the factors that influence the availability of biodiesel and renewable diesel see Section V.B.2 of the preamble and a further discussion of these factors from the 2017 final rule (81 FR 89781—89789, December 12, 2016).

on biodiesel production and importation, the projected growth in production of advanced biodiesel and renewable diesel feedstocks in 2018, and consideration of the extent to which our decision in setting advanced biofuel requirements could influence the market.[62] A review of the volumes of advanced biodiesel and renewable diesel made available in previous years is especially useful in projecting the potential for growth in such fuels, since for these fuels there are a number of complex and inter-related factors (including the expiration of the biodiesel tax credit) that are likely to affect the total supply. We also believe the likely growth in production of feedstocks used to produce these fuels is an important factor to consider. This is because the maximum energy security and GHG reduction value associated with the growth in the use of advanced biofuels is obtained when that growth is associated with an increase in advanced feedstock production, rather than a switching of existing advanced feedstocks from other uses. Such feedstock switching could result in unintended negative consequences, such as market disruption in the renewable oils market, which could offset some of the anticipated benefits of the production and use of advanced biofuels.

The volume of advanced biodiesel and renewable diesel projected to be available based on a consideration of these factors is less than the total volume of biodiesel and renewable diesel we believe could be produced (based solely on an assessment of the available production capacity) or consumed (based on an assessment of the ability of the market to distribute and use biodiesel and renewable diesel). Production capacity and the ability for the market to distribute and use biodiesel and renewable diesel are therefore not constraining factors in our assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel in 2018.

Before considering the projected growth in the production of qualifying feedstocks that could be used to produce advanced biodiesel and renewable diesel, it is helpful to review the supply of biodiesel and renewable diesel to the United States in recent years. While historic data and trends alone are insufficient to project the volumes of biodiesel and renewable diesel that could be provided in future years, historic data can serve as a useful frame of reference in considering future volumes. Past experience suggests that a high percentage of the biodiesel and renewable diesel used in the United States (from both domestic production and imports) qualifies as advanced biofuel.[63] In previous years, biodiesel and renewable diesel produced in the United States has been almost exclusively advanced biofuel.[64] Imports of advanced biodiesel have increased in recent years, however, as seen in Table IV.B.2–1. Volumes of imported advanced biodiesel and renewable diesel have varied significantly from year to year, as they are impacted both by domestic and foreign policies, as well as economic factors.

TABLE IV.B.2–1—ADVANCED (D4 AND D5) BIODIESEL AND RENEWABLE DIESEL FROM 2011 TO 2016

[Million gallons] [a]

	2011	2012	2013	2014 [b]	2015 [b]	2016
Domestic Biodiesel (Annual Change)	967 (N/A)	1,014 (+47)	1,376 (+362)	1,303 (−73)	1,253 (−50)	1,633 (+380)
Domestic Renewable Diesel (Annual Change)	58 (N/A)	11 (−47)	92 (+81)	155 (+63)	175 (+20)	221 (+46)
Imported Biodiesel (Annual Change)	44 (N/A)	40 (−4)	156 (+116)	130 (−26)	261 (+131)	561 (+300)
Imported Renewable Diesel (Annual Change)	0 (N/A)	28 (+28)	145 (+117)	129 (−16)	121 (−8)	170 (+49)
Exported Biodiesel and Renewable Diesel (Annual Change)	48 (N/A)	102 (+54)	125 (+23)	134 (+9)	133 (−1)	129 (−4)
Total (Annual Change)	1,021 (N/A)	991 (−30)	1,644 (+653)	1,583 (−61)	1,677 (+94)	2,456 (+779)

[a] All data for 2011–2016 from EMTS. EPA reviewed all advanced biodiesel and renewable diesel RINs retired for reasons other than demonstrating compliance with the RFS standards and subtracted these RINs from the RIN generation totals for each category in the table above to calculate the supply in each year.

[b] RFS required volumes for these years were not established until December 2015.

TABLE IV.B.2–2—CONVENTIONAL (D6) BIODIESEL AND RENEWABLE DIESEL FROM 2011 TO 2016

[Million gallons] [a]

	2011	2012	2013	2014 [b]	2015 [b]	2016
Domestic Biodiesel (Annual Change)	0 (N/A)	0 (+0)	6 (+6)	1 (−5)	0 (+0)	0 (+0)
Domestic Renewable Diesel (Annual Change)	0 (N/A)	0 (+0)	0 (+0)	0 (+0)	0 (+0)	0 (+0)
Imported Biodiesel (Annual Change)	0 (N/A)	0 (+0)	31 (+31)	52 (+21)	74 (+22)	113 (+39)
Imported Renewable Diesel (Annual Change)	0 (N/A)	0 (+0)	53 (+53)	0 (−53)	106 (+106)	43 (−63)

[62] Throughout this section we refer to advanced biodiesel and renewable diesel as well as advanced biodiesel and renewable diesel feedstocks. In this context, advanced biodiesel and renewable diesel refer to any biodiesel or renewable diesel for which RINs can be generated that satisfy an obligated party's advanced biofuel obligation (*i.e.,* D4 or D5 RINs). An advanced biodiesel or renewable feedstock refers to any of the biodiesel, renewable diesel, jet fuel, and heating oil feedstocks listed in Table 1 to § 80.1426 that can be used to produce fuel that qualifies for D4 or D5 RINs. These feedstocks include soy bean oil; oil from annual cover crops; oil from algae grown photosynthetically; biogenic waste oils/fats/greases; non-food grade corn oil; camelina sativa oil; and canola/rapeseed oil (See pathways F, G, and H of Table 1 to § 80.1426).

[63] From 2011 through 2016 over 95% of all biodiesel and renewable diesel supplied to the United States (including domestically-produced and imported biodiesel and renewable diesel) qualified as advanced biodiesel and renewable diesel (9,372 million gallons of the 9,850 million gallons) according to EMTS data.

[64] From 2011 through 2016 over 99.9% of all the domestically produced biodiesel and renewable diesel supplied to the United States qualified as advanced biodiesel and renewable diesel (8,258 million gallons of the 8,265 million gallons) according to EMTS data.

TABLE IV.B.2–2—CONVENTIONAL (D6) BIODIESEL AND RENEWABLE DIESEL FROM 2011 TO 2016—Continued

[Million gallons] [a]

	2011	2012	2013	2014 [b]	2015 [b]	2016
Exported Biodiesel and Renewable Diesel (Annual Change)	0 (N/A)	0 (+0)	0 (+0)	0 (+0)	0 (+0)	1 (+1)
Total (Annual Change)	0 (N/A)	0 (+0)	90 (+90)	53 (−37)	180 (+127)	155 (−25)

[a] All data for 2011–2016 from EMTS. EPA reviewed all conventional biodiesel and renewable diesel RINs retired for reasons other than demonstrating compliance with the RFS standards and subtracted these RINs from the RIN generation totals for each category in the table above to calculate the supply in each year.

[b] RFS required volumes for these years were not established until December 2015.

Since 2011 the year-over-year changes in the volume of advanced biodiesel and renewable diesel in the United States have varied greatly, from a low of negative 61 million gallons from 2011 to 2012 to a high of 779 million gallons from 2015 to 2016. These changes were likely influenced by a number of factors such as the cost of biodiesel feedstocks and petroleum diesel, the status of the biodiesel blenders tax credit, growth in marketing of biodiesel at high volume truck stops and centrally fueled fleet locations, demand for biodiesel and renewable diesel in other countries, biofuel policies in both the United States and foreign countries, and the volumes of renewable fuels (particularly advanced biofuels) required by the RFS. This historical information does not indicate that the maximum previously observed increase of 779 million gallons of advanced biodiesel and renewable diesel would be reasonable to expect from 2017 to 2018, nor does it indicate that the low growth rates observed in other years represent the limit of potential growth in 2018. Rather, these data illustrate both the magnitude of the increases in advanced biodiesel and renewable diesel in previous years and the significant variability in these increases.

The historic data indicates that the biodiesel tax policy in the United States can have a significant impact on the supply of biodiesel and renewable diesel in any given year. While the biodiesel blenders tax credit has applied in each year from 2010–2016, it has only been in effect during the calendar year in 2011, 2013 and 2016, while other years it has been applied retroactively. The biodiesel blenders tax credit expired at the end of 2009 and was re-instated to apply retroactively in 2010 and extend through the end of 2011 in December 2010. Similarly, after expiring at the end of 2011, 2013, and 2014 the tax credit was re-instated in January 2013 (for 2012 and 2013), December 2014 (for 2014), and December 2015 (for 2015 and 2016). Each of the years in which the biodiesel blenders tax credit was in effect during the calendar year (2013 and 2016) resulted in significant increases in the supply of advanced biodiesel and renewable diesel over the previous year (653 million gallons and 779 million gallons respectively). However, following this large increase in 2013, the supply of advanced biodiesel and renewable diesel in 2014 and 2015 was minimal, only 33 million gallons from 2013 to 2015. This pattern is likely the result of both accelerated production and/or importation of biodiesel and renewable diesel in the final few months of 2013 to take advantage of the expiring tax credit as well as relatively lower volumes of biodiesel and renewable diesel production and import in 2014 and 2015 than would have occurred if the tax credit had been in place.[65]

We believe it is reasonable to anticipate a similar production pattern in 2016 through 2018 as observed in 2013 through 2015; that increases in the volumes of advanced biodiesel and renewable diesel will be modest in 2017–2018, following a significant increase in 2016. Available RIN generation data further supports this pattern. Very high volumes of advanced biodiesel and renewable diesel were supplied in the last quarter of 2016, likely driven by a desire to capture the expiring tax credit, while significantly smaller volumes of these fuels were supplied in the first quarter of 2017.[66] We request comment on the likely impact of the expiration of the blenders tax credit on supplies of biodiesel and renewable diesel in 2018.

In addition to a review of the historical supply of advanced biodiesel and renewable diesel and consideration of the possible impact of the expiration of the biodiesel tax credit (discussed above) EPA has also focused on the expected increase in the availability of advanced biodiesel and renewable diesel feedstocks in 2018 in projecting the reasonably attainable volume of biodiesel and renewable diesel in the context of the 2018 advanced biofuel standard. We acknowledge that the availability of advanced biodiesel and renewable diesel in 2018 is not strictly tied to the increase in the availability of the feedstocks used to produce these fuels, and that it may be possible to realize higher volumes of advanced biodiesel and renewable diesel in 2018 through a diversion of advanced feedstocks from other uses, or a diversion of advanced biodiesel and renewable diesel from existing markets in other countries. We perceive the net benefits associated with such increased advanced biofuel and renewable fuel supply to be significantly less than the net benefits associated with the production of additional advanced biodiesel and renewable diesel with the use of newly-available advanced feedstocks. This is both because of the potential disruption and associated cost impacts to other industries resulting from feedstock switching, as well as reduced GHG reduction benefit related to use of feedstocks for biofuel production that would have been used for other purposes, and must now be backfilled with other feedstocks with potentially lesser environmental benefits. By focusing our assessment of the reasonably attainable volume of biodiesel and renewable diesel on the expected growth in the production of advanced feedstocks (rather than the total supply of these feedstocks in 2018, which would include feedstocks currently being used for non-biofuel purposes), we are attempting to minimize the incentives for the RFS program to increase the supply of advanced biodiesel and renewable diesel through feedstock switching.

Advanced biodiesel and renewable diesel feedstocks include both waste oils, fats and greases and oils from planted crops. While we believe a small

[65] We also acknowledge that the fact that EPA did not finalize the required volumes of renewable fuel under the RFS program for 2014 and 2015 until December 2015 likely had an impact on the volume of advanced biodiesel and renewable diesel supplied in these years.

[66] According to data on EPA's public Web site, RINs were generated for 823 million gallons of biomass-based diesel in the last quarter of 2016 while RINs were generated for 444 million gallons of biomass-based diesel in the first quarter of 2017. The vast majority of advanced biodiesel and renewable diesel qualifies as biomass-based diesel.

increase in supply of waste oils, fats, and greases may be possible in 2018, we believe this increase is limited as much of these oils, fats, and greases are already being recovered and used in biodiesel and renewable diesel production or for other purposes. Many of the planted crops that supply vegetable oil for advanced biodiesel and renewable diesel production are primarily grown as livestock feed with the oil as a co-product or by-product, rather than specifically as biodiesel and renewable diesel feedstocks.[67] This is true for soy beans and corn, which are the two largest sources of feedstock from planted crops used for biodiesel production in the United States.[68] This means that the planted acres of these crops are likely to be made based on the projected demand for livestock feed, rather than for vegetable oil to produce biofuels or for other markets, as the vegetable oils produced are not the primary source of revenue for these crops.

Increasing the demand for advanced biodiesel and renewable diesel beyond the projected increase in the feedstocks used to produce these fuels would likely require diverting volumes of advanced biodiesel and renewable diesel (or the feedstocks used to produce these fuels) from existing markets to be used to produce biofuels supplied to the United States. Increasing the short-term supply of advanced biodiesel and renewable diesel to the United States in this manner (simply shifting the end use of advanced feedstocks to biodiesel and renewable diesel production and meeting non-biofuel demand for these feedstocks with conventional renewable and/or petroleum based feedstocks) may not advance the full GHG or energy security goals of the RFS program. In a worst case scenario, higher standards could cause supply disruptions to a number of markets as biodiesel and renewable diesel producers seek additional supplies of advanced feedstocks and the parties that previously used these feedstocks, both within and outside of the fuels marketplace, seek out alternative feedstocks. This could result in significant cost increases, for both biodiesel and renewable diesel as well as other products produced from renewable oils.

We believe the most reliable source for projecting the expected increase in vegetable oils in the United States is USDA's World Agricultural Supply and Demand Estimates (WASDE). At this time the most current version of the WASDE report only projects domestic vegetable oil production through 2017. Based on domestic vegetable oil production from 2011–2016 as reported by WASDE, the average annual increase in vegetable oil production in the United States was 0.288 million metric tons per year.[69] Assuming a similar increase in domestic vegetable oil production from 2017 to 2018, this quantity of vegetable oils could be used to produce approximately 65 million gallons of advanced biodiesel or renewable diesel.[70]

In addition to virgin vegetable oils, we also expect increasing volumes of distillers corn oil to be available for use in 2018. The WASDE report does not project distillers corn oil production, so EPA must use an alternative source to project the growth in the production of this feedstock. EPA is proposing to use the results of the World Agricultural Economic and Environmental Services (WAEES) model to project the growth in the production of distillers corn oil.[71] In assessing the likely increase in the availability of distillers corn oil from 2017 to 2018, the authors of the WAEES model considered the impacts of an increasing adoption rate of distillers corn oil extraction technologies at domestic ethanol production facilities, as well as increased corn oil extraction rates enabled by advances in this technology. The projected increase in the production of distillers corn oil, if devoted entirely to biofuel production, could be used to produce approximately 42 million gallons of biodiesel or renewable diesel in 2018.[72] We believe that this is a reasonable projection. While the vast majority of the increase in advanced biodiesel and renewable diesel feedstocks produced in the United States from 2016 to 2017 is expected to come from virgin vegetable oils and distillers corn oil, increases in the supply of other sources of advanced biodiesel and renewable diesel feedstocks, such as biogenic waste oils, fats, and greases, may also occur. These increases, however, are expected to be modest, as many of these feedstocks that can be recovered economically are already being used for the production of biodiesel or renewable diesel, or in other markets. In total, we expect that increases in feedstocks produced in the United States are sufficient to produce approximately 100 million more gallons of advanced biodiesel and renewable diesel in 2018 relative to 2017.

We have also considered the expected increase in the imports of advanced biodiesel and renewable diesel produced in other countries. In previous years, significant volumes of foreign produced advanced biodiesel and renewable diesel have been supplied to markets in the United States (see Table IV.B.2–1 above). These significant imports were likely the result of a strong U.S. demand for advanced biodiesel and renewable diesel, supported by both the RFS standards, the LCFS in California, and the biodiesel blenders tax credit. At this time the impacts of the expiration of the biodiesel blenders tax credit on the volumes of foreign-produced biodiesel and renewable diesel imported into the United States, is highly uncertain. In light of this uncertainty, we do not believe it is reasonable at this point to project increasing volumes of imported advanced biodiesel and renewable diesel in 2018, and for the purposes of projecting the reasonably attainable volume of advanced biodiesel and renewable diesel in 2018 we have assumed that imported volumes of biodiesel and renewable diesel will not increase from the volumes imported in 2017.[73] This approach also seeks to minimize the incentives to increase the

[67] For example, corn oil is a co-product of corn grown primarily for feed or ethanol production, while soy and canola oil are primarily grown as livestock feed.

[68] According to EIA data 6,096 million pounds of soy bean oil and 1,306 million pounds of corn oil were used to produce biodiesel in the United States in 2016. Other significant sources of feedstock were yellow grease (1,389 million pounds), canola oil (1,130 million pounds), white grease (578 million pounds), tallow (332 million pounds), and poultry fat (220 million pounds). Numbers from EIA's February 2017 Monthly Biodiesel Production Report. Available at *https://www.eia.gov/biofuels/biodiesel/production/archive/2016/2016_12/biodiesel.pdf*.

[69] According to the April 2017 WASDE report, US vegetable oil production in the 2015/2016 agricultural marketing year is estimated to be 11.20 million metric tons. According to the January 2013 WASDE report, US vegetable oil production in the 2010/2011 agricultural marketing year was 9.76 million metric tons.

[70] To calculate this volume we have used a conversion of 7.7 pounds of feedstock per gallon of biodiesel. This is based on the expected conversion of soy oil (*http://extension.missouri.edu/p/G1990*), which is the largest source of feedstock used to produce advanced biodiesel and renewable diesel. We believe that it is also a reasonable conversion factor to use for all virgin vegetable oils.

[71] For the purposes of this proposed rule, EPA relied on WAEES modeling results submitted as comments on the 2017 final rule (Kruse, J., ''Implications of Higher Biodiesel Volume Obligations for Global Agriculture and Biofuels'', 2016, World Agricultural Economic and Environmental Services (WAEES), EPA–HQ–OAR–2016–0004–2904 (Attachment 13)).

[72] Kruse, J., ''Implications of Higher Biodiesel Volume Obligations for Global Agriculture and Biofuels'', 2016, World Agricultural Economic and Environmental Services (WAEES), EPA–HQ–OAR–2016–0004–2904 (Attachment 13).

[73] We further note that there have been recent efforts to reinstate the biodiesel tax credit as a producers tax credit, rather than a blenders tax credit. If the biodiesel tax credit were reinstated as a producers tax credit it would not apply to foreign biodiesel producers, further impacting the likely supply of imported advanced biodiesel and renewable diesel.

supply of advanced biodiesel and renewable diesel by diverting fuels that would otherwise be used in foreign countries to the United States. We believe the historic volumes of imported advanced biodiesel and renewable diesel support this projection, with a slight decrease in the total volume of imported biodiesel and renewable diesel in 2014 after the expiration of the biodiesel blenders tax credit, followed by a slight increase in 2015 after the tax credit was reinstated in December 2015 (see Table IV.B.2–1).

After a careful consideration of the historic supply of advanced biodiesel and renewable diesel to the United States in previous years, the likely impact of the expiration of the biodiesel tax credit, and an assessment of the availability of feedstocks used to produced advanced biodiesel and renewable diesel in 2018, EPA has determined, for the purposes of our proposal, that approximately 2.5 billion gallons of advanced biodiesel and renewable diesel is reasonably attainable for use in our determination of the advanced biofuel standard for 2018. This volume is 100 million gallons higher than the volume of advanced biodiesel and renewable diesel determined to be reasonably attainable and appropriate for the purposes of deriving the advanced biofuel standard in 2017.

The 100 million gallon increase in advanced biodiesel and renewable diesel that we project will be reasonably attainable for 2018 represents a smaller annual increase in advanced biodiesel and renewable diesel than we assumed in deriving the 2017 advanced biofuel standard (approximately 300 million gallons). We believe that this is reasonable because the circumstances we are facing in this action are different from those we were facing in the 2017 final rule. The primary differences are a smaller projected increase in advanced feedstock production in the United States and the expiration of the biodiesel tax credit. While the biodiesel blenders tax credit was still in effect at the end of 2016 when EPA completed the 2017 final rule, this tax credit has since expired. It is uncertain whether the tax credit will be renewed for 2017 and 2018 as it has in the past.

3. Other Advanced Biofuel

In addition to cellulosic biofuel, imported sugarcane ethanol, and advanced biodiesel and renewable diesel, there are other advanced biofuels that can be counted in the determination of reasonably attainable volumes of advanced biofuel for 2018. These other advanced biofuels include biogas, naphtha, heating oil, butanol, jet fuel, and domestically-produced advanced ethanol. However, the supply of these fuels has been relatively low in the last several years.

TABLE IV.B.3–1—HISTORICAL SUPPLY OF OTHER ADVANCED BIOFUELS

[Million ethanol-equivalent gallons]

	CNG	Heating oil	Naphtha	Renewable diesel [a]	Domestic ethanol	Total
2013	26	0	3	64	23	116
2014	20	0	18	15	26	79
2015	0	1	24	8	25	58
2016	0	2	26	8	27	63

[a] Some renewable diesel generates D5 rather than D4 RINs as a result of being produced through co-processing with petroleum or being produced from the non-cellulosic portions of separated food waste or annual cover crops.

The downward trend over time in biogas as advanced biofuel with a D code of 5 is due to the re-categorization in 2014 of landfill biogas from advanced (D code 5) to cellulosic (D code 3).[74] Apart from biogas, total supply of advanced biofuel other than imported sugarcane ethanol has been relatively constant during 2014–2016. Based on this historical record, we propose to find that 60 million gallons would be reasonably attainable in 2018.[75]

We recognize that the potential exists for additional volumes of advanced biofuel from sources such as jet fuel, liquefied petroleum gas (LPG), and liquefied natural gas (as distinct from compressed natural gas), as well as non-cellulosic biogas such as from digesters. However, since they have been produced in only de minimis amounts in the past, we do not have a basis for projecting substantial volumes from these sources in 2018. For the final rule, we may modify our projection of 60 million gallons for other advanced biofuel as information becomes available.

4. Total Advanced Biofuel

The total volume of advanced biofuel that we believe is reasonably attainable in 2018 is the combination of cellulosic biofuel and the sources described above: Imported sugarcane ethanol, biodiesel and renewable diesel which qualifies as BBD, and other advanced biofuels such as advanced biogas that does not qualify as cellulosic biofuel, heating oil, naphtha, domestic advanced ethanol, and advanced renewable diesel that does not qualify as BBD. Our assessment of the reasonably attainable volumes of these sources, discussed in the preceding sections, is summarized below. We note that the reasonably attainable volumes of each of these advanced biofuels cannot themselves be viewed as volume requirements. These volumes are merely one part of the analysis used to determine the volume requirement for advanced biofuel. As discussed in more detail in Section V.C below, there are many ways that the market could respond to the percentage standards we establish, including use of higher or lower volumes of these fuel types than discussed in this section. In addition, as discussed below, we do not believe it would be appropriate to require use of all volumes we have determined to be reasonably attainable.

TABLE IV.B.4–1—POTENTIAL VOLUMES OF ADVANCED BIOFUEL IN 2018

[Million ethanol-equivalent gallons except as noted]

Cellulosic biofuel	238
Advanced biodiesel and renewable diesel (ethanol-equivalent volume/physical volume)	3,875/2,500
Imported sugarcane ethanol	100
Other advanced	60
Total advanced biofuel	4,273

[74] 79 FR 42128, July 18, 2014.

[75] For the purposes of determining the availability of total renewable fuel, we propose to use a volume of 40 million gallons of non-ethanol other advanced biofuel and 20 million gallons of advanced domestic ethanol (see discussion in Section V.B.2).

C. Proposed Advanced Biofuel Volume Requirement for 2018

Based on the information presented above, we believe that 4.27 billion gallons of advanced biofuel would be reasonably attainable in 2018. This volume is 30 million gallons higher than the 4.24 billion gallons that would result from reducing the applicable volume of advanced biofuel by the same amount as the proposed reduction to the statutory applicable volume of cellulosic biofuel (see Section III for a discussion of the proposed cellulosic biofuel standard for 2018). Requiring use of the additional 30 million gallons to partially backfill for missing cellulosic volumes would be expected to result in GHG reduction and energy security benefits. In exercising the cellulosic waiver authority in past years, we sought to capture such benefits by requiring a partial backfilling of missing cellulosic volumes with volumes of non-cellulosic biofuel we determined to be reasonably attainable and appropriate. We did so, notwithstanding consideration of the increase in costs associated with our actions.[76] However, this year we are proposing to balance these considerations in a different manner in setting the 2018 standards, placing a greater emphasis on cost considerations.[77]

In Section V.D we present illustrative cost projections for sugarcane ethanol and soybean biodiesel in 2018, the two advanced biofuels that have been most widely supplied in previous years and that would be most likely to provide the marginal volume of advanced biofuel in 2018. Our projected costs for sugarcane ethanol range from $0.58–$1.53 per ethanol-equivalent gallon of gasoline displaced ($0.87–$2.29 for every gallon of gasoline displaced) and the costs for soybean biodiesel range from $0.83–$1.13 per ethanol-equivalent gallon of diesel displaced ($1.36–$1.85 for every gallon of diesel replaced).[78] These costs are high on a per gallon basis compared to the petroleum fuels they displace. In light of these comparative costs, we believe it is reasonable to forgo the marginal benefit that might be achieved by establishing the advanced biofuel standard to require an additional 30 million gallons. See Section V.D for a further discussion of the projected cost of this proposed rule.

Based on consideration of the volumes that may be reasonably attainable in 2018, along with a balancing of the costs and benefits associated with the option of setting the advanced biofuel standard at a level that would require use of all volumes that we have estimated could be reasonably attainable, we are proposing an advanced biofuel volume requirement of 4.24 billion gallons for 2018. This proposed reasonably attainable and appropriate volume requirement for advanced biofuel for 2018 would represent a decrease of 40 million gallons from the 2017 advanced biofuel volume requirement of 4.28 billion gallons. As discussed in Section I.E, we request comment on use of the general waiver authority to further reduce the required volume of advanced biofuel (with a corresponding reduction to the total renewable fuel requirement) in an effort to increase the energy independence impacts of the RFS program.

We propose to use the cellulosic waiver authority to provide an equivalent reduction in the applicable volume of total renewable fuel as the reduction we are proposing for advanced biofuel. That step is described in more detail in Section V.A, together with our proposed assessment that no further increment of reduction is required for total renewable fuel in 2018.

V. Total Renewable Fuel Volume for 2018

The national volume targets of total renewable fuel to be used under the RFS program each year through 2022 are specified in CAA section 211(o)(2)(B)(i)(I). For 2018 the statute stipulates a volume target of 26 billion gallons. Since we are proposing to reduce the statutory volume target for cellulosic biofuel to reflect the projected production volume of that fuel type in 2018, we are authorized under CAA section 211(o)(7)(D)(i) to reduce the advanced biofuel and total renewable fuel targets by the same or a lesser amount. We also have the authority to reduce any volume target pursuant to the general waiver authority in CAA section 211(o)(7)(A) under specific conditions as described in Section II.A.2, including based on a finding of ''inadequate domestic supply.'' Our proposed assessment indicates that there will be adequate supply of total renewable fuel in 2018 to meet a total renewable fuel volume requirement of 19.24 billion gallons that would result from the use of the cellulosic waiver authority alone. The use of the general waiver authority for 2018 to further reduce the total renewable fuel standard on the basis of supply considerations would therefore not be necessary. As a result, the implied volume for conventional renewable fuel (calculated by subtracting the advanced volume from the total volume) would be 15.0 billion gallons, consistent with the statutory targets provided in the statute for 2018.

A. Volumetric Limitation on Use of the Cellulosic Waiver Authority

In Section IV.B we explained our proposed use of the cellulosic waiver authority to reduce the 11 billion gallon 2018 statutory volume target for advanced biofuel to 4.24 billion gallons for purposes of setting the 2018 advanced biofuel volume standard. This represents a reduction of 6.76 billion gallons.

As discussed in Section II.A.1, we believe that the cellulosic waiver provision is best interpreted to require equal reductions in advanced biofuel and total renewable fuel. We have consistently articulated this interpretation.[79] We also believe this interpretation is consistent with statutory language and best effectuates the objectives of the statue. If EPA were to reduce the total renewable fuel volume requirement by a lesser amount than the advanced biofuel volume requirement, we would effectively increase the opportunity for conventional biofuels to participate in the RFS program beyond the implied statutory cap of 15 billion gallons.[80]

[76] See, *e.g.,* Response to Comments Document for the 2014–16 Rule, pages 628–631, available at *https://www.epa.gov/sites/production/files/2015-12/documents/420r15024.pdf.*

[77] EPA notes that while the factors considered under the cellulosic waiver authority to reduce volumes could apply to volumes beyond the reduction in cellulosic biofuel, EPA is limited in the exercise of its cellulosic waiver authority to reductions up to the amount of the reduction in cellulosic biofuel. Any further reductions would require a determination under the general waiver authority that the volumes would result in severe economic or environmental harm, or that there is an inadequate domestic supply.

[78] These ethanol-equivalent gallon costs are calculated by dividing the total projected cost for soybean biodiesel ($33–$45 million) and sugarcane ethanol ($23–$61 million) by the proposed decrease in the required volume advanced biofuel for 2018 (40 million ethanol-equivalent gallons). All costs comparisons are on an energy-equivalent, rather than a volumetric, basis.

[79] For instance, see discussion in the final rules setting the 2013, 2014–2016, and 2017 standards: 78 FR 49809–49810, August 15, 2013; 80 FR 77434, December 14, 2015; 81 FR 89752–89753, December 12, 2016.

[80] Since the advanced biofuel volume requirement is nested within the total renewable fuel volume requirement, the statutory implied volume for conventional renewable fuel in the statutory tables can be discerned by subtracting the applicable volume of advanced biofuel from that of total renewable fuel. Performing this calculation with respect to the tables in CAA section 211(o)(2)(B) indicates a Congressional expectation that in the time period 2015–2022, advanced biofuel volumes would grow from 5.5 to 21 billion gallons, while the implied volume for conventional

Applying an equal reduction of 6.76 billion gallons to both the statutory target for advanced biofuel and the statutory target for total renewable fuel results in a total renewable fuel volume of 19.24 billion gallons as shown in Table IV.A–1. If we were to determine that there is a basis to exercise the general waiver authority, described in Section II.A.2, we could provide further reductions. However, as described below in Section V.B, we believe that there will be adequate supply to meet a total renewable fuel volume requirement of 19.24 billion gallons in 2018. This means that we believe that 15.0 billion gallons of conventional renewable fuel is reasonably attainable, and that further reductions in the total renewable fuel applicable volume using the general waiver authority are not necessary to address supply issues. We note that EPA has received numerous comments in previous annual standard rulemakings asserting that there are negative environmental impacts that may be associated with the RFS program.[81] A significant portion of these concerns center on feedstock production, particularly feedstocks used to produce conventional biofuels. Although we are authorized to reduce the statutory volume targets on the basis of a finding of ''severe environmental harm,'' we are not proposing any reductions on this basis. Similarly, although EPA is authorized to reduce volumes on the basis of a finding of ''severe economic harm,'' we are not proposing any reductions on that basis.

B. Assessing Attainable Volumes

As noted above, the proposed volume requirement for total renewable fuel was derived by applying the same volume reduction to the statutory volume target for total renewable fuel as we are proposing for advanced biofuel, using the cellulosic waiver authority. This section describes our proposed determination that there will be adequate renewable fuel to meet an applicable volume requirement of 19.24 billion gallons in 2018. We have evaluated available sources of renewable fuel to determine if in the aggregate it appears that a total renewable fuel volume of 19.24 billion gallons is reasonably attainable. Since we believe that this volume is indeed reasonably attainable, as discussed below, we propose that it is unnecessary to consider further reductions through use of the general waiver authority on the basis of an inadequate domestic supply. Therefore, in this assessment, we have not attempted to identify the maximum reasonably achievable volume of total renewable fuel based on the sum of estimates of each type of renewable fuel, such as total ethanol, biodiesel and renewable diesel, biogas, and other non-ethanol renewable fuels, as we would do if we were proposing to use the general waiver authority based on a finding of inadequate domestic supply. However, as noted previously, we are soliciting comment on whether it would be appropriate to exercise the general waiver authority.

As for previous annual standard-setting rulemakings, we note that it is a very challenging task to estimate the available volumes in light of the myriad complexities of the fuels market and how individual aspects of the industry might change in the future, and also because we cannot precisely predict how the market will respond to the standards we set. This is the type of assessment that is not given to precise measurement and necessarily involves considerable exercise of judgment.

Our investigation into whether the total renewable fuel volume shown in Table V.A–1 is reasonably attainable in 2018 was driven primarily by a consideration of the reasonable availability of ethanol, biodiesel, and renewable diesel. We also considered smaller contributions from non-ethanol cellulosic and other types of renewable fuels (*i.e.,* naphtha, heating oil, butanol, and jet fuel). After estimating what we consider to be the reasonably attainable supply of ethanol in 2018, and taking into account the estimates of non-ethanol cellulosic biofuel supply discussed in Section III.D above and estimates of the supply of other non-ethanol renewable fuels discussed in Section IV.B.3, we considered whether the reasonably attainable supply of total biodiesel and renewable diesel would be adequate to satisfy a requirement of 19.24 billion gallons.[82] The following sections provide our preliminary assessment of ethanol and biodiesel/renewable diesel volumes.

The proposed volume requirements are based on the data available to EPA at the time of this proposal. However, we recognize that there is uncertainty related to some of this data with respect to the volume of renewable fuels that can be supplied in the United States in 2018 and the economic and environmental impacts associated with requiring renewable fuel use. We request comment on the data presented in this proposed rule, and invite commenters to submit additional data relevant to these issues. Additional data could also indicate that it would be appropriate to finalize volume requirements lower than indicated in this proposed rule, through use of either the general waiver authority in CAA section 211(o)(7)(A) or as a result of a lower projection of cellulosic biofuel production, combined with corresponding increased waivers of advanced and total renewable fuel using the cellulosic waiver authority in CAA section 211(o)(7)(D).

We note that in prior annual RFS rulemaking actions, some stakeholders have commented to EPA that the Agency should exercise its discretion to use the general waiver authority to reduce volumes to avoid severe harm to the economy or environment of a state, region, or the United States. For example, some commenters suggested that standards that would result in ethanol use beyond the blendwall would cause severe economic harm, justifying use of the general waiver authority. Additionally, as discussed in Section I.E, we also request comment on use of the general waiver authority to reduce the required volume of renewable fuel in an effort to increase the energy independence impacts of the RFS program. EPA invites comment and data on these issues, including data and analysis that would support different use of the waiver authorities than we are proposing in today's action, such as use of the general waiver authority to achieve greater reductions than proposed.

1. Ethanol

Ethanol is the most widely produced and consumed biofuel, both domestically and globally. Since the beginning of the RFS program, the total volume of renewable fuel produced and consumed in the United States has grown substantially each year, primarily due to the increased production and use of corn ethanol. However, the rate of growth in the supply of ethanol to the U.S. market has decreased in recent years as the gasoline market has become saturated with gasoline that contains 10 volume percent ethanol (E10), favorable blending economics have diminished, and efforts to expand the use of higher ethanol blends such as E15 and E85

renewable fuel would remain constant at 15 billion gallons.

[81] For instance, see public comments provided in response to the proposed 2017 standards in docket EPA–HQ–OAR–2016–0004.

[82] As noted earlier, ''reasonably attainable'' volumes may be less than the ''maximum achievable'' volumes we would seek to identify when using the general waiver authority based on a finding of inadequate domestic supply. It follows that if there are sufficient reasonably attainable volumes of renewable fuel to satisfy a total renewable fuel requirement of 19.24 billion gallons, then there is no basis for a finding that there is an inadequate domestic supply to satisfy a 19.24 billion gallon requirement.

have not been sufficient to maintain past growth rates in total ethanol supply. Although we believe that use of higher ethanol blends is growing and can continue to grow, the low number of retail stations selling these higher-level ethanol blends, along with poor price advantages compared to E10, and a limited number of flexible fuel vehicles (FFVs), among other considerations, represent challenges to the rate of growth of ethanol as a transportation fuel in the United States.

In the 2014–2016 final rule, we discussed in detail the factors that constrain growth in ethanol supply and the opportunities that exist for pushing the market to overcome those constraints.[83] That discussion generally remains relevant for 2018 just as it was relevant for 2017, though we believe that the supply of ethanol can be somewhat higher in 2018 than in 2017.

Ethanol supply is not currently limited by production and import capacity, which is in excess of 15 billion gallons.[84] Instead, the amount of ethanol supplied is constrained by the following:

- Overall gasoline use and the volume of ethanol that can be blended into gasoline as E10 (typically referred to as the E10 blendwall).
- The number of retail stations that offer higher ethanol blends such as E15 and E85.
- The number of vehicles that can both legally and practically consume E15 and/or E85.
- Relative pricing of E15 and E85 versus E10 and the ability of RINs to affect this relative pricing.
- The supply of gasoline without ethanol (E0).

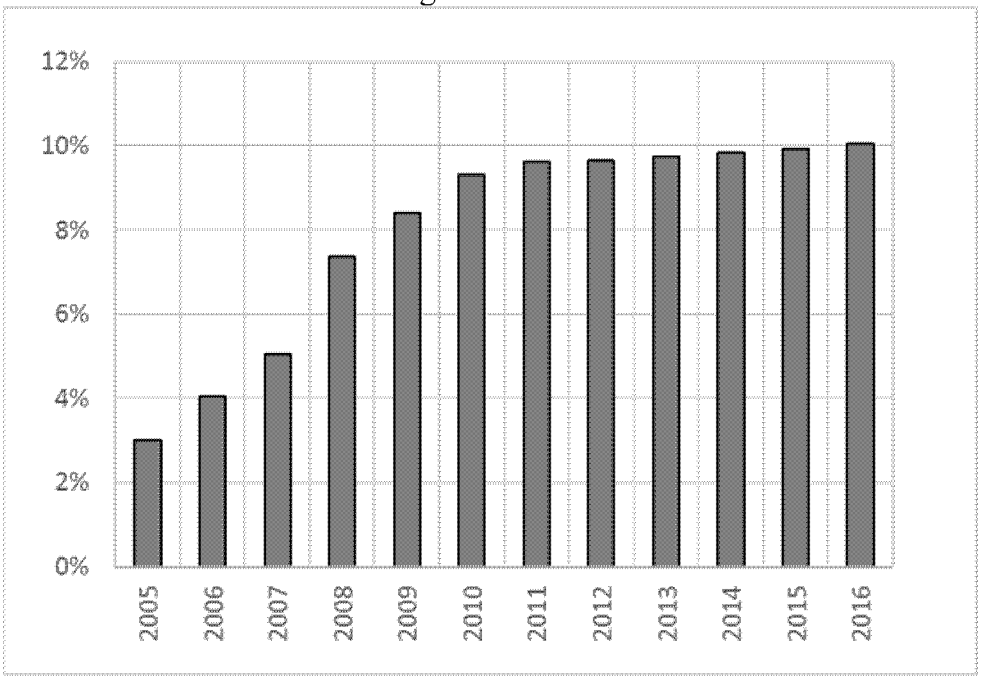
The applicable standards that we set under the RFS program provide incentives for the market to overcome many of these ethanol-related constraints.

While in the short term the RFS program is unlikely to have a direct effect on overall gasoline demand or the number of vehicles designed to use higher ethanol blends, it can provide incentives for changes in some other market factors, such as the number of retail stations that offer higher ethanol blends and the relative pricing of those higher ethanol blends in comparison to E10.

a. Ethanol Concentration in the Gasoline Pool

As stated in the 2014–2016 final rule and in the 2017 final rule, we continue to believe that there are real constraints on the ability of the market to exceed an average nationwide ethanol content of 10 percent. However, these constraints do not have the same significance at all ethanol concentrations above 10 percent. Instead, for the state of infrastructure that can be available in 2018, the constraints represent a continuum of mild resistance to growth at the first increments above 10 percent ethanol and evolve to significant obstacles at higher levels of ethanol. In short, the E10 blendwall is not the barrier that some stakeholders believe it to be, but neither are increases in poolwide ethanol concentrations above 10 percent unlimited in the 2018 timeframe. These views are demonstrated by the fact that the poolwide ethanol concentration of all gasoline increased dramatically until about 2010, after which growth has been much slower and has remained very close to 10.0 percent. In 2016, the average ethanol concentration reached 10.05 percent.[85]

Figure V.B.1-1
Historical Poolwide Average Ethanol Concentration of Gasoline



Source: EIA's Short-Term Energy Outlook

[83] 80 FR 77456–77465, December 14, 2015.

[84] ''RFA 2016 Annual Industry Outlook,'' docket EPA–HQ–OAR–2016–0004.

[85] According to the March, 2017 version of EIA's Short-Term Energy Outlook, total ethanol consumption in 2016 was 14,406 mill gal, while total gasoline consumption was 143,367 mill gal.

We continue to believe that the constraints associated with the E10 blendwall do not represent a firm barrier that cannot be crossed. Rather, the E10 blendwall marks the transition from relatively straightforward and easily achievable increases in ethanol consumption as E10 to those increases in ethanol consumption as E15 and E85 that are more challenging to achieve.

However, we also recognize that the market is not unlimited in its ability to respond to the standards we set. This is true both for expanded use of ethanol and for non-ethanol renewable fuels. The fuels marketplace in the United States is large, diverse, and complex, made up of many different players with different, and often competing, interests. Substantial growth in the renewable fuel volumes beyond current levels will require action by many different parts of the fuel market, and a constraint in any one part of the market can act to limit the growth in renewable fuel supply. Whether notable constraints are in the technology development and commercialization stages, as has been the case with cellulosic biofuels, the development of distribution infrastructure as is the case with ethanol, or in the accessibility of feedstocks as with biodiesel, the end result is that these constraints limit the annual growth rate in the availability of renewable fuel as transportation fuel, heating oil, or jet fuel. These constraints were discussed in detail in the 2014–2016 final rule and summarized in the 2017 final rule, and while the market continues to grow, we believe that the same constraints will operate to limit growth in the availability of renewable fuel in 2018 as well, both for ethanol and non-ethanol renewable fuels.[86] Other factors outside the purview of the RFS program also impact the availability of renewable fuel, including the price of crude oil and global supply and demand of both renewable fuels and their feedstocks. These factors add uncertainty to the task of estimating the attainability of renewable fuel requirements in the future.

The total volume of ethanol that can be supplied is a function of total volume of gasoline that is used, as well as the potential for sales of different ethanol fuel blends (*i.e.,* E0, E15, and E85). According to the April, 2017 version of EIA's Short-Term Energy Outlook (STEO), the Department of Energy projects that total use of gasoline energy in 2018 will be 17.198 Quadrillion Btu.[87] This is somewhat lower than the total projected gasoline energy use that we used in setting the 2017 standards. As a result, the projected volume of ethanol that can be sold as E10 in 2018 is also somewhat lower.

TABLE V.B.1.iii–1—PROJECTED GASOLINE ENERGY USE AND E10 BLENDWALL

	2017	2018
STEO edition	October, 2016	April, 2017.
Quad Btu	17.288	17.198.
Equivalent volume of E10 if there were no E0, E15, or E85	14,362	14,287.

The volumes of E15 and E85 used in the near term will continue to be primarily a function of the number of retail service stations that offer it since the number of vehicles that are legally permitted to use E15 (2001 model year and later) and E85 (flexible fuel vehicles, or FFVs) currently exceeds the retail dispensing capacity by a substantial margin. We acknowledge that a larger percentage of FFVs in the fleet could increase the volume of E85 consumed, but in the short term we believe that it is the relatively very small number of retail stations offering E85 that is operating as the primary constraint on the volumes of E85 sold, and to a lesser extent the relative price of higher ethanol blends and E10.

Growth in the number of retail stations offering E15 and/or E85 has been relatively slow, but accelerated in 2016 as a result of USDA's Biofuels Infrastructure Partnership (BIP) program and the ethanol industry's Prime the Pump program. While these grant programs have increased E15 and E85 offerings at retail, we expect the programs to be fully phased in by the end of 2017 and thus have no influence on further growth in the number of retail stations offering E15 and E85 in 2018. In the 2017 final rule, we noted that while the BIP program was intended to be fully phased in by the end of 2016, it was not expected to meet this deadline. The BIP program permits states to extend implementation by up to two additional years. Currently, we have no reason to believe that the BIP program will not be fully implemented by the end of 2017; indeed, this was our assumption in projecting attainable volumes in the context of the 2017 final rule. Similarly, the Prime the Pump program was expected to complete all projects by the end of 2017.

b. Assessment of E0 in the Gasoline Pool

For the 2016 and 2017 standards, we based the total renewable fuel volume requirement in part on the expectation that the RFS program would result in all but a tiny portion—estimated at 200 million gallons—of gasoline to contain at least 10 percent ethanol. We based this determination on the fact that higher volume requirements would provide an incentive for the market to transition from E0 to E10 and other higher level ethanol blends through the RIN mechanism, but that recreational marine engines represented a market segment that we believed would be particularly difficult to completely transition from E0 since they are used in a water environment where there is a greater potential for water contamination of the fuel.

While we continue to believe that the market is capable of reaching a point wherein all but about 200 million gallons contains some amount of ethanol, we note that this did not occur in 2016 despite the fact that the 2016 standards were based in part on the expectation that it would occur. As described in a memorandum to the docket, we now estimate that the volume of E0 used in 2016 was about 500 million gallons.[88] While this is considerably less than the historical volumes of E0 cited by some stakeholders in response to the proposed 2016 standards, it does suggest that the market chose to respond to the 2016 standards by increasing the use of non-ethanol renewable fuels such as biodiesel rather than by reducing E0 use down to 200 million gallons. We do

[86] See 80 FR 77450 (December 14, 2015) and 81 FR 89774 (December 12, 2016).

[87] Derived from Table 4a of the STEO, converting consumed gasoline and ethanol projected volumes into energy using conversion factors supplied by EIA. Excludes gasoline consumption in Alaska. For further details, see ''Calculation of proposed % standards for 2018'' in docket EPA–HQ–OAR–2017–0091.

[88] ''Estimate of E0 use in 2016,'' memorandum from David Korotney to docket EPA–HQ–OAR–2017–0091.

not yet have adequate information about the use of E0 in 2017, but we believe it is reasonable to adjust our approach to estimating the volume of ethanol that is reasonably attainable in 2018 to account for the likely market response to the applicable standards in terms of E0 volumes.

c. Ethanol Supply Volume for Assessment of Total Renewable Fuel

Given that the BIP and Prime the Pump grant programs are expected to be fully phased in by the end of 2017, we expect less growth in E15 and E85 supply in 2018 than in 2017. Moreover, any growth in ethanol use due to higher volumes of E15 and E85 may be offset by a higher volume of E0 as discussed above in terms of total ethanol supply. For example, a 40 million gallon increase in the volume of E85 supplied in 2018 could be offset by a 250 million gallon increase in the volume of E0 supplied.[89] Therefore, for the purposes of determining whether 19.24 billion gallons of renewable fuel is reasonably attainable in 2018, we believe that it would be appropriate to assume that the poolwide ethanol concentration would be the same in 2018 as the level used in the determination of the final 2017 standards. This level was 10.13 percent.[90] Based on the projected 2018 gasoline energy use shown in Table V.B.1.iii–1, this ethanol concentration would correspond to 14,479 million gallons of ethanol in 2018.[91]

The market will ultimately determine the extent to which compliance with the annual standards is achieved through the use of greater volumes of ethanol versus other, non-ethanol renewable fuels. We nevertheless believe that while the market could supply a volume of ethanol greater than 14,479 million gallons, this volume represents a reasonably attainable level of ethanol supply in 2018 that takes into account the constraints to fuel supply that we have noted. For the final rule, we intend to use an updated version of the STEO as well as a more detailed assessment of the volumes of E15 and E85 that may be reasonably attainable in 2018.

As described in the 2017 final rule, we do not believe that setting the applicable standards at levels exceeding those we believe to be reasonably attainable would result in dramatic increases in the number of additional retail stations offering E15 or E85 in 2018 beyond those that may be upgraded through independent efforts.[92] We do not believe, for instance, that the core concerns retailers have with liability over equipment compatibility and misfueling for E15 would change if the RFS volume requirements were increased significantly. Similarly, while higher RFS volume requirements could make it incrementally more attractive for retailers to upgrade infrastructure to offer E15, the concerns they have expressed in the past about high capital costs and opportunities for return on their investment would remain. With regard to E85, we continue to believe that the full value of the RIN is not passed through to retail fuel prices, diluting the influence that the RFS program would otherwise have on E85 sales.[93] Moreover, in light of these constraints on RIN pass-through and the unpredictability of crude oil prices, many retailers are concerned about the return on investment for the substantial capital costs required for retail stations to offer E85. Notably, as pointed out in the 2017 final rule, some retail station owners who had offered E85 have stopped doing so as a result of poor sales, despite the annual increases in the RFS standards in previous years.[94]

2. Biodiesel and Renewable Diesel

While the market constraints on ethanol supply are relatively well understood, it is more difficult to identify and assess the market components that may limit potential growth in the use of all qualifying forms of biodiesel and renewable diesel in 2018. Therefore, as discussed in the introduction to Section V.B, after estimating the supply of ethanol in 2018, and taking into account the estimates of non-ethanol cellulosic biofuel supply discussed in Section III.D and estimates of other non-ethanol renewable fuel supply discussed in Section IV.B.3, we considered whether the supply of total biodiesel and renewable diesel would be adequate to satisfy the remainder of the volume needed to achieve a requirement of 19.24 billion gallons.

In Section V.A we described how use of the cellulosic waiver authority to provide a volume reduction for total renewable fuel that equals that provided for advanced biofuels yields a volume of 19.24 billion gallons. In addition to the ethanol volume discussed in Section V.B.1.iv above, cellulosic biogas can also contribute to this total volume of renewable fuel, as described more fully in Section III.C. While other renewable fuels such as naphtha, heating oil, butanol, and jet fuel can be expected to continue growing in 2018, collectively, we expect them to contribute considerably less than ethanol and biodiesel/renewable diesel to the total volume of renewable fuel supplied in 2018. These fuels were discussed in Section IV.B.3. Based on these estimates, about 2.9 billion gallons of biodiesel and renewable diesel, including both advanced and conventional biodiesel and renewable diesel, would be needed in order to meet a total renewable fuel volume requirement of 19.24 billion gallons (see Table V.B.2–1 below).

TABLE V.B.2–1—DETERMINATION OF VOLUME OF BIODIESEL AND RENEWABLE DIESEL NEEDED IN 2018 TO ACHIEVE 19.24 BILLION GALLONS OF TOTAL RENEWABLE FUEL

[Million ethanol-equivalent gallons except as noted]

Total renewable fuel volume	19,238
Ethanol	14,479
Non-ethanol cellulosic biofuel	223
Other non-ethanol renewable fuels[a]	40
Biodiesel and renewable diesel needed (ethanol-equivalent volume/physical volume)	4,496/2,901

[a] Includes naphtha, heating oil, butanol, and jet fuel. See further discussion in Section IV.B.3.

A starting point in developing a projection of the attainable supply of biodiesel and renewable diesel in 2018 is a review of the volumes of these fuels supplied for RFS compliance in previous years. In examining the data, both the absolute volumes of the supply of biodiesel and renewable diesel in previous years, as well as the rates of growth between years are relevant considerations. The volumes of biodiesel and renewable diesel (including D4, D5, and D6 biodiesel and renewable diesel) supplied each year from 2011 through 2016 are shown below, along with the volume of these fuels projected for 2017 in the 2017 final rule.

[89] Alternatively, a 250 million gallon increase in the volume of E0 supplied could be offset by a 500 million gallon increase in the volume of E15 supplied or an increase of 17 million gallons of biodiesel supplied.

[90] 14,561 million gallons of ethanol in 143,683 million gallons of gasoline. See Table V.B.1.iv–1, 81 FR 89780.

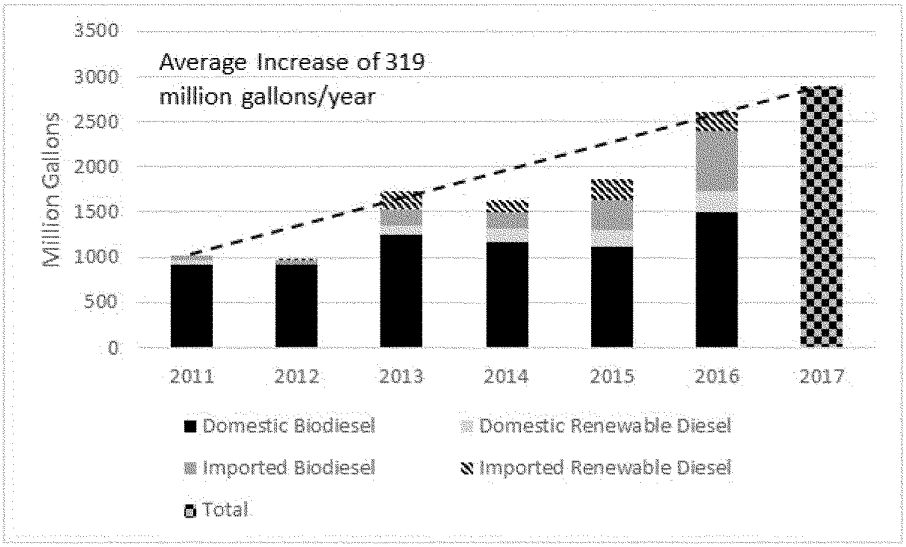
[91] We note that the purpose of our analysis here is to establish an amount of ethanol that is reasonably attainable to be supplied as transportation fuel. To the extent stakeholders believe higher amounts can be supplied, that would simply confirm our decision not to exercise the general waiver authority on the ground of inadequate domestic supply.

[92] For instance, see 81 FR 89779, December 12, 2016.

[93] See more detailed discussion in Section 2.3.8 of the Response to Comments document for the 2017 final rule (EPA–HQ–OAR–2016–0004).

[94] See 81 FR 89778, December 12, 2016.

Figure V.B.2-1
Biodiesel and Renewable Supply by Year (2011-2017)[a]



[a] Values represent current estimates of the net supply of biodiesel and renewable diesel (including conventional, advanced, and BBD biodiesel and renewable diesel) from EMTS, accounting for the production, import, and export of biodiesel and renewable diesel. 2017 supply is based on the projections for 2017 in the 2017 final rule

After examining the historical data (shown in the figure above) we believe it is very likely that there will be a sufficient supply of biodiesel and renewable diesel (volumes at least as high as 2.9 billion gallons) in 2018 to meet the total renewable fuel volume requirement after exercising the cellulosic waiver authority. Indeed, there would be sufficient supply of biodiesel and renewable diesel to meet the 2018 total renewable fuel volume requirement after using the cellulosic waiver authority even if there was no increase in the supply of these fuels from 2017 to 2018. Alternatively, even if the supply of biodiesel and renewable diesel in 2017 falls short of the projected supply from the 2017 final rule, an increase in supply from 2016 to 2018 equal to the average annual supply increase observed from 2011–2016 would be sufficient to meet the total renewable fuel requirement for 2018 after using the cellulosic waiver authority.

In assessing the probative value of historical data on the supply of biodiesel and renewable diesel, we must also consider the extent to which historic supply and growth rates can be seen as representing what is possible with the RFS standards and other incentives in place. The years with the highest historic growth rates (2013 and 2016) were years in which both tax incentives and RFS incentives were in place to incentivize growth through the entire year.[95] While the biodiesel blenders tax credit expired at the end of 2016, we believe it is reasonable to assume the incentives provided by the RFS standards in 2017 and 2018 will be sufficient to enable the supply of biodiesel and renewable diesel to reach 2.9 billion gallons in 2018 despite the current absence of the tax credit. The absence of the tax credit would be expected to have two primary potential impacts on the supply of biodiesel and renewable diesel in 2018; lower imported volumes of biodiesel and renewable diesel and a lesser economic incentive for blenders and retailers to offer fuel blends containing biodiesel and renewable diesel (which could potentially impact both domestic and foreign biodiesel and renewable diesel producers). Imported volumes of these fuels could be impacted if the loss of the economic incentive previously provided by the tax credit results in other markets offering higher value to potential importers of biodiesel and renewable diesel than the United States.[96] Similarly, the loss of the tax credit could impact the ability for blenders and retailers of biodiesel and renewable diesel blends to offer these fuels at prices that are competitive with petroleum diesel. We note, however, that these potential impacts of the loss of the tax credit could be offset, in whole or in part, by rising RIN values associated with biodiesel and renewable diesel. We believe the most likely impact of the absence of the tax credit will be a decrease in the rate of growth of the supply of biodiesel and renewable diesel to the United States in 2017 and 2018, rather than an absolute decrease in the supply of these fuels.[97]

Ultimately, we believe the historic data provides a reasonable guide for assessing the potential growth of advanced biodiesel and renewable diesel in 2018. We recognize that there

[95] While the rule finalizing the 2013 RFS RVOs was not finalized until August 2013, EPA announced the proposed volume requirements for 2013 in January 2013. EPA did not propose to use our waiver authorities to reduce the statutory advanced or total renewable fuel volume requirements. We believe the market anticipated the final RVOs in 2013 and responded accordingly.

[96] While this could also impact domestic producers, leading some to consider exporting the biodiesel or renewable diesel they produce to foreign markets. Domestic producers, however, would have to amend their current distribution systems to enable them to supply fuel to foreign markets, while parties that are currently importing biodiesel and renewable diesel to the United States must simply divert the deliveries to new destinations.

[97] The most recent years in which the biodiesel tax credit was not available during the year in which it applied were 2014 and 2015. The total supply of biodiesel and renewable diesel decreased by 98 million gallons from 2013 to 2014 and then increased by 221 million gallons from 2014 to 2015, averaging an increase of approximately 100 million gallons over these two years. We also note that the RVOs for 2014 and 2015 were not finalized until December 2015. We believe that it is reasonable to project that the supply of biodiesel and renewable diesel could increase by at least this amount (100 million gallons per year) from 2017 to 2018 without the biodiesel tax credit, but with the 2018 RFS requirements in place to incentivize the necessary supply.

are limitations in the probative value of past growth rates to assess what can be done in the future, however we believe there is significant value in considering historical data, especially in cases where the future growth rate is expected to be largely determined by the same variety of complex and interdependent factors that have factored into historical growth, as is the case for 2018.

In the 2017 final rule EPA assessed a number of factors that could potentially constrain the supply of biodiesel and renewable diesel to the United States. The list of factors considered included feedstock availability, the capacity of the market to produce, import, and distribute biodiesel and renewable diesel, the retail infrastructure capacity, the ability for the market to consume biodiesel and renewable diesel in approved engines, and consumer response. We noted that in each of these areas there are challenges that will need to be overcome to enable the continued growth in the supply of biodiesel and renewable diesel in the United States, but nevertheless concluded that the market was capable of supplying 2.9 billion gallons of biodiesel and renewable diesel (including both advanced and conventional biodiesel and renewable diesel) to the United States in 2017.[98] The global supply of feedstocks projected to be available for biodiesel and renewable diesel production significantly exceeds the quantity necessary to produce 2.9 billion gallons of biodiesel and renewable diesel.[99] Similarly, an assessment of the production capacity of registered biodiesel and renewable diesel production facilities conducted for the 2017 final rule demonstrates that there is sufficient production capacity to produce 2.9 billion gallons of biodiesel and renewable diesel in 2018.[100] Finally, we believe that there will be sufficient infrastructure in place to enable the distribution, sale, and use of 2.9 billion gallons of biodiesel and renewable diesel in 2018. Comments received from the National Biodiesel Board, as well as from the National Association of Truck Stop Owners (which represents parties with significant experience and investment in the distribution and sales of biodiesel) on our 2017 proposed rule support this projection, suggesting that parties have already begun making the necessary investments to distribute and sell the volumes of biodiesel and renewable diesel necessary to meet the required volume of total renewable fuel in 2017 (and thus 2018), after exercising the cellulosic waiver authority.[101]

Since finalizing the 2017 rule, EPA has continued to monitor the development of the biodiesel and renewable diesel industry, including the ability for the market to produce/import, distribute, and consume these fuels. Based on the data available to EPA at this time, including data considered in the 2017 final rule, we believe that the market is capable of producing, distributing, and using 2.9 billion gallons of biodiesel and renewable diesel in 2018. EPA is unaware of any information that would lead us to conclude that our assessment that the biodiesel and renewable diesel market is capable of supplying 2.9 billion gallons to the United States in 2017 is no longer reasonable, nor are we aware of any factors (other than the absence of the biodiesel blenders tax credit) that will likely negatively impact the ability for the market to supply biodiesel and renewable diesel in 2018 relative to 2017. We therefore do not see any significant marketplace impediments that are likely to prevent the supply of 2.9 billion gallons of biodiesel and renewable diesel in 2018 and believe that despite the loss of the biodiesel blenders tax credit the 2.9 billion gallon supply of biodiesel and renewable diesel projected to be available in 2017 can also be supplied in 2018.

We recognize that the market may not necessarily respond to the proposed total renewable standard by supplying exactly 2.9 billion gallons of biodiesel and renewable diesel to the transportation fuels market in the United States in 2018, but that the market may instead supply a lower or higher volume of biodiesel and renewable diesel with corresponding changes in the supply of other types of renewable fuel. As a result, we believe there is less uncertainty with respect to the attainability of the total volume requirement of 19.24 billion gallons than there is concerning the projected 2.9 billion gallons of biodiesel and renewable diesel that we have used in determining the adequacy of supply of total renewable fuel for 2018.

3. Total Renewable Fuel Supply

In Section V.A we described how use of the cellulosic waiver authority to provide a volume reduction for total renewable fuel that equals that provided for advanced biofuels yields a volume of 19.24 billion gallons. Based on our assessment of supply of ethanol and biodiesel/renewable diesel, along with smaller amounts of non-ethanol cellulosic biofuel and other non-ethanol renewable fuels, we believe that a total of 19.24 billion gallons of renewable fuel is reasonably attainable in 2018. As a result, we do not propose any further reductions on the basis of an ''inadequate domestic supply'' using the general waiver authority.

Our use of the cellulosic waiver authority alone to set the advanced biofuel and total renewable fuel volume requirements would result in an implied volume for non-advanced (*i.e.,* conventional) renewable fuel of 15.0 billion gallons. This would be equal to the statutory implied volume for 2018. We anticipate that this volume would be comprised primarily of corn-ethanol with lesser amounts of conventional biodiesel and renewable diesel. As shown in Table V.B.1.iii–1, the volume of ethanol that can be consumed as E10 in 2018 is projected to be 14.29 billion gallons. Thus, the implied volume for

[98] 81 FR 89781, December 12, 2016.

[99] A study conducted by LMC International in 2016 projected the global availability of feedstocks for use in advanced biodiesel and renewable diesel production would be sufficient to produce approximately 9.2 billion gallons of these fuels in 2018. The OECD–FAO Agricultural Outlook 2016–2025 estimated global biodiesel production at approximately 8.8 billion gallons in 2016, rising to 9.3 billion gallons in 2018. This suggests that the 2.6 billion gallons of biodiesel and renewable diesel consumed in the U.S. in 2016 (according to EMTS data) was approximately 30% of the global supply of these fuels. 30% of the 9.3 billion gallons of biodiesel and renewable diesel projected to be produced in 2018 (or the 9.2 billion gallons based on projected available feedstocks from the LMC international projection) is approximately 2.8 billion gallons. We believe the RFS program is capable of the marginal increase in U.S. consumption of the global biodiesel supply necessary to supply 2.9 billion gallons of biodiesel to the United States in 2018. While we believe some of the assumptions made by LMC International in this study were overly optimistic and the study did not project the quantity of these feedstocks available to supply the U.S. biodiesel and renewable diesel markets, we nevertheless believe this study, along with other information reviewed in preparing the 2017 final rule, demonstrate that sufficient feedstocks will be available in 2018 to supply 2.9 billion gallons of biodiesel and renewable diesel to the United States (See 81 FR 89767–89769, December 12, 2016, for a further discussion of the availability of biodiesel and renewable diesel feedstocks).

[100] ''Biodiesel and Renewable Diesel Registered Capacity (October 2016)'', Memorandum from Dallas Burkholder to EPA Docket EPA–HQ–OAR–2016–0004. In this assessment we determined that biodiesel and renewable diesel production capacity at registered facilities in the United States was approximately 4.2 billion gallons. Registered production capacity of biodiesel and renewable diesel facilities in the United States that generated RINs in 2015 or 2016 was approximately 3.1 billion gallons, and actual supply of biodiesel and renewable diesel from these facilities in 2016 was approximately 1.72 billion gallons. Significant additional production capacity also exists at registered biodiesel and renewable diesel production facilities outside of the United States.

[101] See testimony of Michael Whitney, Musket Corporation, June 9, 2016 (Chicago Room), comments from NATSO (EPA–HQ–OAR–2016–0004–1830), comments from NBB (EPA–HQ–OAR–2016–0004–2904), and comments from REG (EPA–HQ–OAR–2016–0004–3477). A fuller discussion of these comments is contained in the 2017 final rule (81 FR 89746, December 12, 2016).

conventional renewable fuel would exceed this value by 0.71 billion gallons.[102]

C. Market Responses to the Advanced Biofuel and Total Renewable Fuel Volume Requirements

Because the transportation fuel market is dynamic and complex, and the RFS standards that we set can be satisfied through use of a wide variety of renewable fuels, we cannot precisely predict the mix of different fuel types that will result from the standards we are proposing. In this section we describe a range of possible outcomes, and doing so provides a means of demonstrating that the proposed standards can reasonably be satisfied through multiple possible paths.

We evaluated a number of scenarios with varying levels of E0, E15, E85, imported sugarcane ethanol, advanced biodiesel and renewable diesel, and conventional biodiesel and renewable diesel. In doing so we sought to capture a reasonable range of possibilities for each individual source, based both on levels achieved in the past and how the market might respond to the applicable standards. Each of the rows in Table V.C–1 represents a scenario in which the proposed total renewable fuel and advanced biofuel standards would be satisfied.

TABLE V.C–1—VOLUME SCENARIOS ILLUSTRATING POSSIBLE COMPLIANCE WITH THE PROPOSED 2018 VOLUME REQUIREMENTS

[Million gallons] [a] [b]

E85	E15	E0	Total ethanol [c]	Sugarcane ethanol	Total biodiesel and renewable diesel [d]	Minimum volume of advanced biodiesel and renewable diesel [d]
200	600	200	14,430	0	2,934	2,543
200	600	500	14,399	0	2,954	2,543
200	600	500	14,399	100	2,954	2,479
200	600	500	14,399	300	2,954	2,350
200	600	500	14,399	500	2,954	2,221
200	1,200	200	14,461	300	2,914	2,350
350	600	500	14,498	500	2,890	2,221
350	1,200	200	14,560	0	2,850	2,543
350	1,200	200	14,560	100	2,850	2,479
350	1,200	200	14,560	300	2,850	2,350
350	1,200	200	14,560	500	2,850	2,221
350	1,200	500	14,529	100	2,870	2,479

[a] Assumes for the purposes of these scenarios that supply of other advanced biofuel other than imported sugarcane ethanol, BBD, and renewable diesel (*e.g.,* domestic ethanol, heating oil, naphtha, etc.) is 60 mill gal, and that the cellulosic biofuel proposed volume requirement is 238 mill gal, of which 15 mill gal is ethanol and the remainder is primarily biogas.

[b] Biodiesel + renewable diesel is given in physical gallons, and can be converted into ethanol-equivalent gallons by multiplying by 1.55. Other categories are given as ethanol-equivalent volumes.

[c] For the range of total ethanol shown in this table, the poolwide average ethanol content would range from 10.08% to 10.18%.

[d] Includes supply from both domestic producers as well as imports.

The scenarios in the tables above are not the only ways that the market could choose to meet the total renewable fuel and advanced biofuel volume requirements that we are establishing in this action. Indeed, other combinations are possible, with volumes higher than the highest levels we have shown above or, in some cases, lower than the lowest levels we have shown. The scenarios above cannot be treated as EPA's views on the only, or even most likely, ways that the market may respond to the proposed 2018 volume requirements. Instead, the scenarios are merely illustrative of the various ways that it could play out. Our purpose in generating the list of scenarios above is only to illustrate a range of possibilities which demonstrate that the standards we are establishing in this action can reasonably be met.

We continue to believe, as we stated in previous rulemakings, that it would be inappropriate to construct a new scenario based on the highest or lowest volumes in each category that are shown in the table above. Thus, for instance, while every scenario in Table V.C–1 represents 4.24 billion gallons of advanced biofuel and 19.24 billion gallons of total renewable fuel, combining the lowest volume of E0 shown in the table with the highest volumes of E15, E85, sugarcane ethanol, total biodiesel and renewable diesel, and advanced biodiesel and renewable diesel shown in the table, would result in 4.74 billion gallons of advanced biofuel and 19.40 billion gallons of total renewable fuel. We do not believe that such volumes would be reasonably attainable for 2018. Conversely, combining the highest volume of E0 shown in the table with the lowest volumes of E15, E85, sugarcane ethanol, total biodiesel and renewable diesel, and advanced biodiesel and renewable diesel shown in the table, would result in 3.74 billion gallons of advanced biofuel and 19.08 billion gallons of total renewable fuel. Such volumes would be below the levels that we believe are reasonably attainable to require in 2018. We have more confidence in the ability of the market to attain the proposed volume requirements for advanced biofuel and total renewable fuel than we have in the ability of the market to achieve a specific level of, say, biodiesel, or E85.

With regard to E85, under highly favorable conditions related to growth in the number of E85 retail stations, retail pricing, and consumer response to that pricing, it is possible that E85 volumes as high as 350 million gallons could be reached. For instance, growth

[102] We note, however, that some volume of advanced ethanol is expected to be used in 2018. This additional volume of implied conventional biofuel above the volume of ethanol that can be supplied as E10 (less any advanced ethanol used in 2018) could be met with any combination of E15, E85, biodiesel, and renewable diesel.

in the number of retail stations offering E85 may increase more rapidly than historical rates following the completion of USDA's BIP grant program and the ethanol industry's Prime the Pump program (both of which we have assumed will be fully phased in by the end of 2017). If so, the total number of retail stations offering E85 could perhaps increase from about 3,100 today to more than 5,000 in 2018. Also, it is possible that increases in the price of D6 RINs since the release of the 2017 final rule can help to increase the E85 price discount relative to E10 if producers and marketers of E85 pass on more of the value of the RIN to the prices offered to customers at retail, providing greater incentive to FFV owners to refuel with E85 instead of E10. Under such circumstances, an E85 price discount as high as 30 percent might be possible. Indeed, E85 price discounts this high have been reached in the past in some locales.[103] Efforts to increase the visibility of E85, including expanded marketing and education, can also help to increase E85 sales. Sales volumes of E85 higher than 400 million gallons are very unlikely, but are possible if pump installations increase significantly and the market can overcome constraints associated with E85 pricing at retail and consumer responses to those prices.

Similarly, under favorable conditions, it is possible that E15 volumes as high as 1,200 million gallons could be reached in 2018 as shown in Table V.D–1. This volume could be reached through some combination of different changes such as the following:

- Following the conclusion of the BIP program and Prime the Pump program, it is possible that the growth rate for retail stations offering E15 could be higher than historical rates, potentially reaching as high as 2,700 in 2018 (average for the year).
- Sales of E15 could be as high as 50 percent of all gasoline sales at stations selling both E10 and E15 under favorable pricing conditions rather than the 15 percent we assumed in the 2017 final rule, based on limited data from Iowa.
- Additional terminals could produce E15 in 2018 beyond those that are expected to do so in 2017.[104]

As the table above illustrates, the volume requirements could result in the consumption of 2.95 billion gallons of biodiesel and renewable diesel in 2018. This level is less than our estimate of the production capacity for all registered domestic biodiesel and renewable diesel production facilities, though slightly higher than the 2.9 billion gallons that we used in the context of determining whether a total renewable fuel volume requirement of 19.24 billion gallons in 2018 would be reasonably attainable. Given the necessarily imprecise nature of our estimate of the ability of the market to supply about 2.9 billion gallons of biodiesel and renewable diesel for purposes of meeting a total renewable fuel volume requirement of 19.24 billion gallons in 2018, volumes as high as 2.95 billion gallons and potentially higher are possible.

Finally, out of the maximum of about 2.9 billion gallons of biodiesel and renewable diesel shown in Table V.C–1, 2.54 billion gallons could be advanced biodiesel. While this is slightly higher than the 2.5 billion gallons that we used in determining the advanced biofuel volume requirement, it could be supplied from current biodiesel and renewable diesel domestic production capacity,[105] though this would possibly involve additional feedstock switching as discussed in Section IV.

D. Impacts of 2018 Standards on Costs

1. Illustrative Cost Savings Associated With Reducing Statutory Cellulosic Volumes

To provide an illustrative estimate of the cost of the proposed 2018 RFS volume requirements, EPA has compared the proposed 2018 volume requirements to the statutory volume that would be required absent the exercise of our cellulosic waiver authority under CAA section 211(o)(7)(D)(i) to reduce the applicable volume of cellulosic biofuel.[106] As described in other sections of this proposed rule, we believe that the additional 6.76 billion gallons of cellulosic biofuel envisioned by the statute will not be produced in 2018. Therefore, estimating costs of this volume reduction is inherently challenging. However, we have taken the relatively straightforward methodology of multiplying the per-gallon costs associated with the volumes that would be required under this proposal by the amount of cellulosic renewable fuel proposed to be waived. This comparison results in a cost savings estimated to be at least $6.2–$11.8 billion.

To estimate the overall cost savings from waiving the cellulosic renewable fuel volumes, EPA has taken the following steps. First, EPA determined the magnitude of the volume reduction of cellulosic biofuel we are proposing in this rule, relative to the statutory volume. In this rule we are proposing to reduce the required volume of cellulosic biofuel by approximately 6.76 billion gallons, with corresponding reductions in the advanced biofuel and total renewable fuel standards. Second, we estimated the per gallon costs of producing cellulosic ethanol derived from corn kernel fiber that would be expected in complying with the proposed standards. Third, the per gallon costs of cellulosic biofuel from corn fiber were multiplied by the volume of cellulosic renewable fuels being waived from the statutory levels to the proposed cellulosic renewable fuel volumes.[107]

While there may be growth in other cellulosic sources, for this exercise we believe it is appropriate to use corn kernel fiber as the representative cellulosic renewable fuel since the majority of liquid cellulosic biofuel in 2018 is expected to be produced using this technology. The application of this technology in the future could result in significant incremental volumes of cellulosic biofuel. In addition, as explained in Section III, we believe that production of the major alternative cellulosic biofuel—CNG/LNG derived from biogas—is likely to plateau eventually due to a limitation in the number of vehicles capable of using this form of fuel. To estimate the per gallon costs of corn kernel fiber ethanol, we focus on wholesale level costs. These cost estimates do not consider taxes, retail margins, or other costs or transfers that occur at or after the point of blending (transfers are payments within

[103] For instance, data from the Fuels Institute indicates that 3% of E85 price discounts were above 30% at surveyed retail stations in 2015.

[104] HWRT Oil Company intends to eventually offer E15 from 17 additional terminals in addition to the four announced on July 19, 2016. ''HWRT & RFA Announce First-Ever Offering of Pre-blended E15,'' docket EPA–HQ–OAR–2016–0004.

[105] ''Biodiesel and Renewable Diesel Registered Capacity (October 2016)'', Memorandum from Dallas Burkholder to EPA Docket EPA–HQ–OAR–2016–0004. In this assessment we determined that biodiesel and renewable diesel production capacity at registered facilities in the United States was approximately 4.2 billion gallons. Registered production capacity of biodiesel and renewable diesel facilities in the United States that generated RINs in 2015 or 2016 was approximately 3.1 billion gallons, and actual supply of biodiesel and renewable diesel from these facilities in 2016 was approximately 1.72 billion gallons. Significant additional production capacity also exists at registered biodiesel and renewable diesel production facilities outside of the United States.

[106] EPA is also using its discretion to reduce the advanced biofuel and total renewable fuel requirements using the cellulosic waiver authority. This discretionary action is based partially on the costs of advanced biofuels and provides additional cost savings.

[107] The cost estimates for cellulosic biofuel provided in this section are primarily intended to provide a cost estimate for this rule. The proposed cellulosic biofuel standard is based on EPA's projection of cellulosic biofuel production in 2018.

society and are not additional costs). We do not attempt to estimate potential cost savings related to avoided infrastructure costs (*e.g.,* the cost savings of not having to provide pumps and storage tanks associated with higher-level ethanol blends). When estimating per gallon costs, we consider the costs of ethanol on an energy equivalent basis to gasoline (*i.e.,* per energy equivalent gallon), since more ethanol gallons must be consumed to go the same distance as gasoline due to the ethanol's lower energy content.

Table V.D–1 below presents the cost savings associated with this proposed rule.[108] The statutory cellulosic volume set in EISA for 2018 is seven billion gallons (ethanol equivalent). The proposed cellulosic volume requirement for this annual rule is 238 million gallons (ethanol equivalent). The amount of cellulosic renewable fuels being waived is approximately 6.76 billion gallons (ethanol equivalent), or approximately 4.51 billion gallons on a gasoline equivalent basis. The per-gallon cost difference estimates for cellulosic ethanol ranges $1.37–$2.62 gallon on a gasoline equivalent basis, compared to gasoline.[109] Multiplying those per-gallon cost differences by the amount of cellulosic biofuel waived in this proposed rule, 4,510 million gallons of gasoline equivalent, results in approximately $6.2–$11.8 billion in cost savings.

TABLE V.D–1—IMPACTS OF THE DIFFERENCE BETWEEN EISA VOLUMES FOR THE CELLULOSIC BIOFUEL STANDARD AND PROPOSED CELLULOSIC VOLUME IN 2018

	2018 EISA cellulosic volume standard	2018 Proposed cellulosic volume
Cellulosic Volume Required (Million Ethanol-Equivalent Gallons)[110]	7,000	238
Change in Required Cellulosic Biofuels (Million Gallons as Ethanol)		(6,762)
GGE[111]		*(4,510)*
Cost Difference Between Cellulosic Corn Fiber-Derived Ethanol and Gasoline Per Gallon ($/GGE)[112]		$1.37–$2.62
Estimated Cost Difference in Meeting Cellulosic Biofuel Volume (Billion $)[113]		$(6.2)–$(11.8)

2. Illustrative Cost Analysis Using the 2017 Baseline

We recognize that for the purpose of estimating the cost of the proposed 2018 RFS volume requirements that a number of different scenarios using different ''baselines'' would be of interest to stakeholders. Therefore, in this section we are also providing an illustrative cost analysis that shows the costs as compared to those associated with the preceding year's standard, which as discussed in section IV.C. is a reduction of 40 million gallons of advanced biofuel in comparison to 2017.[114]

It is important to note that these ''illustrative costs'' do not attempt to capture the full impacts of this proposed rule. These estimates are provided solely for the purpose of showing how the cost to produce a gallon of a ''representative'' renewable fuel compares to the cost of petroleum fuel. There are a significant number of caveats that must be considered when interpreting these cost estimates. There are a number of different feedstocks that could be used to produce biofuels, and there is a significant amount of heterogeneity in the costs associated with these different feedstocks and fuels. Some renewable fuels may be cost competitive with the petroleum fuel they replace; however, we do not have cost data on every type of feedstock and every type of fuel. Therefore, we do not attempt to capture this range of potential costs in our illustrative estimates.

The annual standard-setting process encourages consideration of the RFS program on a piecemeal (*i.e.,* year-to-year) basis, which may not reflect the full, long-term costs and benefits of the program. For the purposes of this proposed rule, EPA did not quantitatively assess other direct and indirect costs or benefits of changes in renewable fuel volumes such as infrastructure costs, investment, GHG emissions and air quality impacts, or energy security benefits, which all are to some degree affected by the annual standards. While some of these impacts were analyzed in the 2010 final rulemaking that established the current RFS program, we have not analyzed these impacts for the 2018 volume requirements. We framed the analyses we have performed for this proposed rule as ''illustrative'' so as not to give the impression of comprehensive estimates.

EPA is providing an illustrative cost analysis for the proposed reduction in the overall advanced biofuel volume of 40 million ethanol equivalent gallons using four different scenarios, assuming this reduction in advanced biofuel volumes is comprised of (1) cellulosic biofuel from CNG/LNG, (2) cellulosic biofuel from corn kernel fiber, (3) soybean oil BBD, or (4) sugarcane ethanol from Brazil. Showing the illustrative costs of soybean oil BBD and sugarcane ethanol is consistent with the methodology EPA developed for previous rulemakings. Since EPA has also developed per gallon cost estimates for corn kernel fiber ethanol and cellulosic biofuel from CNG/LNG, we are also including costs for these hypothetical scenarios for informational purposes. However, this discussion should not be interpreted as suggesting that the various renewable fuel types discussed are necessarily available in the marketplace. The availability of different types of renewable fuel is discussed in other sections of this preamble; in this section we assess costs

[108] Details of the data and assumptions used can be found in a Memorandum available in the docket entitled ''Cost Impacts of the Proposed 2018 Annual Renewable Fuel Standards'', Memorandum from Michael Shelby, Dallas Burkholder, and Aaron Sobel to EPA Docket EPA–HQ–OAR–2017–0091.

[109] For the purposes of the cost estimates in this Section EPA has not attempted to adjust the price of the petroleum fuels to account for the impact of the RFS program. Rather, we have simply used the wholesale price projections for gasoline and diesel as reported in EIA's STEO.

[110] Overall fuel volumes may not match due to rounding.

[111] Gasoline gallon equivalent; due to the difference in energy content between ethanol and gasoline, one gallon of ethanol is energy-equivalent to approximately 67% of a gallon of gasoline; 6,762 million gallons of ethanol is energy-equivalent to approximately 4,510 million gallons of gasoline.

[112] Approximate costs are rounded to the cents place.

[113] Approximate costs are rounded to the first decimal place.

[114] There is also a reduction of 40 million gallons in the proposed 2018 applicable volume of total renewable fuel as compared to the 2017 volume. However, in light of the nested standards, that reduction is entirely attributable to the reduction in the advanced volume.

as if the different fuel types are available, without intending to suggest that they are.

In previous annual RFS rules, EPA provided an illustrative cost estimate for the entire change in the total renewable fuel volume standard assuming it was satisfied with conventional (*i.e.,* non-advanced) corn ethanol. As there is no proposed change in the 2018 conventional volume relative to the 2017 volume, all of the changes in both the advanced and total renewable fuel volumes are properly attributed to advanced biofuel.

As described earlier, we are focusing on the wholesale level in our cost scenarios, and do not consider taxes, retail margins, additional infrastructure, or other costs or transfers that occur at or after the point of blending. More background information on this section, including details of the data sources used and assumptions made for each of the scenarios, can be found in a Memorandum available in the docket.[115]

Table V.D–2 below presents estimates of per energy-equivalent gallon costs for producing soybean biodiesel, Brazilian sugarcane ethanol, CNG/LNG derived from landfill biogas, and cellulosic ethanol derived from corn fiber relative to the petroleum fuels they replace at the wholesale level. For each of the four scenarios, these per gallon costs are then multiplied by the 40 million ethanol-equivalent gallon reduction in the proposed 2018 advanced standard relative to the previous 2017 standard to obtain an overall cost estimate.

TABLE V.D–2—ILLUSTRATIVE COSTS OF THE PROPOSED 40 MILLION GALLON REDUCTION TO THE ADVANCED BIOFUEL VOLUME REQUIREMENTS IN 2018 RELATIVE TO THE 2017 VOLUME REQUIREMENTS

Soybean Biodiesel Scenario	
Cost Difference Between Soybean Biodiesel and Petroleum Diesel Per Gallon ($/DGE)[116]	$1.36–$1.85
Annual Change in Overall Costs (Million $)[117]	$(45)–$(33)
Brazilian Sugarcane Ethanol Scenario	
Cost Difference Between Sugarcane Ethanol and Gasoline Per Gallon ($/GGE)[118]	$0.87–$2.29
Annual Change in Overall Costs (Million $)	$(61)–$(23)
CNG/LNG Derived from Landfill Biogas Scenario	
Cost Difference Between CNG/LNG Derived from Biogas and Natural Gas ($/EGE)	$(0.06)–$0.05
Annual Change in Overall Costs (Million $)	$(2)–$2
Corn Fiber-Derived Ethanol Scenario	
Cost Difference Between Cellulosic Corn Fiber-Derived Ethanol and Gasoline Per Gallon ($/GGE)	$1.37–$2.62
Annual Change in Overall Costs (Million $)	$(70)–$(36)

Based on this illustrative analysis of four separate hypothetical scenarios, EPA estimates that the costs for changes in the advanced fuel volumes compared to 2017 could range from $(70)–$2 million in 2018. It is important to note that these illustrative costs do not take into consideration the benefits of the program. For the purpose of this annual rulemaking, we have not quantified benefits for the proposed 2018 standards. We do not have a quantified estimate of the GHG or energy security impacts for a single year (*e.g.,* 2018), and there are a number of benefits that are difficult to quantify, such as rural economic development and employment impacts from more diversified fuel sources.

VI. Biomass-Based Diesel Volume for 2019

In this section we discuss the proposed BBD applicable volume for 2019. We are establishing this volume in advance of those for other renewable fuel categories in light of the statutory requirement in CAA section 211(o)(2)(B)(ii) to establish the applicable volume of BBD for years after 2012 no later than 14 months before the applicable volume will apply. We are not at this time establishing the BBD percentage standards that would apply to obligated parties in 2019 but intend to do so in the Fall of 2018, after receiving EIA's estimate of gasoline and diesel consumption for 2019. Although the BBD applicable volume sets a floor for required BBD use, because the BBD volume requirement is nested within both the advanced biofuel and the total renewable fuel volume requirements, any ''excess'' BBD produced beyond the mandated 2019 BBD volume can be used to satisfy both of these other applicable volume requirements. Therefore, these other standards also influence BBD production and use.

A. Statutory Requirements

The statute establishes applicable volume targets for years through 2022 for cellulosic biofuel, advanced biofuel, and total renewable fuel. For BBD, applicable volume targets are specified in the statute only through 2012. For years after those for which volumes are specified in the statute, EPA is required under CAA section 211(o)(2)(B)(ii) to determine the applicable volume of BBD, in coordination with the Secretary of Energy and the Secretary of Agriculture, based on a review of the implementation of the program during calendar years for which the statute

[115] ''Cost Impacts of the Proposed 2018 Annual Renewable Fuel Standards'', Memorandum from Michael Shelby, Dallas Burkholder, and Aaron Sobel to EPA Docket EPA–HQ–OAR–2017–0091.

[116] 40 million gallons on an ethanol gallon equivalent (EGE) basis is approximately 27 million gallons of biodiesel on an energy equivalent basis, assuming 1.5 RINs per gallon of biodiesel for the purposes of this illustrative costs example. Due to the difference in energy content between biodiesel and diesel, one gallon of biodiesel is energy-equivalent to approximately 91% of a gallon of diesel; 27 million gallons of biodiesel (or 40 million ethanol-equivalent gallons) is energy-equivalent to approximately 24 million gallons of diesel.

[117] Overall costs may not match per gallon costs times volumes due to rounding.

[118] Due to the difference in energy content between ethanol and gasoline, one gallon of ethanol is energy-equivalent to approximately 67% of a gallon of gasoline; 40 million gallons of ethanol is energy-equivalent to approximately 27 million gallons on a gasoline gallon equivalent (GGE) basis.

specifies the volumes and an analysis of the following factors:

1. The impact of the production and use of renewable fuels on the environment, including on air quality, climate change, conversion of wetlands, ecosystems, wildlife habitat, water quality, and water supply;
2. The impact of renewable fuels on the energy security of the United States;
3. The expected annual rate of future commercial production of renewable fuels, including advanced biofuels in each category (cellulosic biofuel and BBD);
4. The impact of renewable fuels on the infrastructure of the United States, including deliverability of materials, goods, and products other than renewable fuel, and the sufficiency of infrastructure to deliver and use renewable fuel;
5. The impact of the use of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods; and
6. The impact of the use of renewable fuels on other factors, including job creation, the price and supply of agricultural commodities, rural economic development, and food prices.

The statute also specifies that the volume requirement for BBD cannot be less than the applicable volume specified in the statute for calendar year 2012, which is 1.0 billion gallons. The statute does not, however, establish any other numeric criteria, or provide any guidance on how the EPA should weigh the importance of the often competing factors, and the overarching goals of the statute when the EPA sets the applicable volumes of BBD in years after those for which the statute specifies such volumes. In the period 2013–2022, the statute specifies increasing applicable volumes of cellulosic biofuel, advanced biofuel, and total renewable fuel, but provides no guidance, beyond the 1.0 billion gallon minimum, on the level at which BBD volumes should be set. As shown in Table VI.B.1–1 below, we have raised the BBD standard above the statutory minimum each year beginning in 2013.

B. Determination of Applicable Volume of Biomass-Based Diesel

One of the primary considerations in determining the BBD volume for 2019 is a review of the implementation of the program to date, as it affects BBD. This review is required by the CAA, and also provides insight into the capabilities of the industry to produce, import, export, and distribute BBD. It also helps us to understand what factors, beyond the BBD standard, may incentivize the production and import of BBD. The number of BBD RINs generated, along with the number of RINs retired due to export or for reasons other than compliance with the annual BBD standards from 2011–2018 are shown in Table VI.B.1–1 below.

TABLE VI.B.1–1—BIOMASS-BASED (D4) RIN GENERATION AND STANDARDS IN 2011–2018

[million gallons] [119]

	BBD RINs generated	Exported BBD (RINs)	BBD RINs retired, non-compliance reasons	Available BBD RINs [a]	BBD standard (gallons)	BBD standard (RINs)
2011	1,692	72	98	1,522	800	1,200
2012	1,737	102	90	1,545	1,000	1,500
2013	2,739	124	101	2,514	1,280	1,920
2014	2,710	134	92	2,484	1,630	[b] 2,490
2015	2,796	145	32	2,619	1,730	[b] 2,655
2016	4,008	203	52	3,753	1,900	2,850
2017	N/A	N/A	N/A	N/A	2,000	3,000
2018	N/A	N/A	N/A	N/A	2,100	3,150

[a] Available BBD RINs may not be exactly equal to BBD RINs Generated minus Exported RINs and BBD RINs Retired, Non-Compliance Reasons, due to rounding.

[b] Each gallon of biodiesel qualifies for 1.5 RINs due to its higher energy content per gallon than ethanol. Renewable diesel qualifies for between 1.5 and 1.7 RINs per gallon. In 2014 and 2015 the number of RINs in the BBD Standard column is not exactly equal to 1.5 times the BBD volume standard as these standards were established based on actual RIN generation data for 2014 and a combination of actual data and a projection of RIN generation for the last three months of the year for 2015. Some of the volume used to meet the BBD standard was renewable diesel, which generally has an equivalence value of 1.7.

In reviewing historical BBD RIN generation and use, we see that the number of RINs available for compliance purposes exceeded the volume required to meet the BBD standard in 2011, 2012, 2013, and 2016. Additional production and use of biodiesel was likely driven by a number of factors, including demand to satisfy the advanced biofuel and total renewable fuels standards, the biodiesel tax credit,[120] and favorable blending economics. The number of RINs available in 2014 and 2015 was approximately equal to the number required for compliance in those years, as the standards for these years were finalized at the end of November 2015. In 2016, with RFS standards established prior to the beginning of the year and the blenders tax credit in place, BBD RIN generation exceeded the volume required by the BBD standard by more than one billion RINs. This strongly suggests that there is demand for BBD RINs to satisfy the advanced biofuel and/or total renewable fuel requirements beyond the required volume of BBD.[121]

In establishing the BBD and cellulosic standards as nested within the advanced biofuel standard, Congress clearly intended to support development of BBD and cellulosic biofuels, while also providing an incentive for the growth of other non-specified types of advanced biofuels. That is, the advanced biofuel standard provides an opportunity for other advanced biofuels (advanced

[119] Net BBD RINs Generated, Exported BBD RINs, and BBD RINs Retired for Non-Compliance Reasons information from EMTS.

[120] The biodiesel tax credit was reauthorized in January 2013. It applied retroactively for 2012 and for the remainder of 2013. It was once again extended in December 2014 and applied retroactively to all of 2014 as well as to the remaining weeks of 2014. In December 2015 the biodiesel tax credit was authorized and applied retro-actively for all of 2015 as well as through the end of 2016.

[121] For a further discussion of the ability for the advanced biofuel and total renewable fuel volume requirements to provide a demand for BBD beyond the BBD required volume see ''Memorandum to docket: Draft Statutory Factors Assessment for the 2019 Biomass-Based Diesel (BBD) Applicable Volumes'' and the 2017 final rule (81 FR 89795–89798, December 12, 2016).

biofuels that do not qualify as cellulosic biofuel or BBD) to be used to satisfy the advanced biofuel standard after the cellulosic biofuel and BBD standards have been met. Indeed, since Congress specifically directed growth in BBD only through 2012, leaving development of volume targets for BBD to EPA for later years while also specifying substantial growth in the cellulosic biofuel and advanced biofuel categories, we believe that Congress clearly intended for EPA to evaluate the appropriate rate of participation of BBD within the advanced biofuel standard.

The BBD industry is currently the single largest contributor to the advanced biofuel pool, one that to date has been largely responsible for providing the growth in advanced biofuels envisioned by Congress. We continue to believe that preserving space under the advanced biofuel standard for non-BBD advanced biofuels, as well as BBD volumes in excess of the BBD standard, will help to encourage the development and production of a variety of advanced biofuels over the long term without reducing the incentive for additional volumes of BBD beyond the BBD standard in 2019. A variety of different types of advanced biofuels, rather than a single type such as BBD, would positively impact energy security (*e.g.,* by increasing the diversity of feedstock sources used to make biofuels, thereby reducing the impacts associated with a shortfall in a particular type of feedstock) and increase the likelihood of the development of lower cost advanced biofuels that meet the same GHG reduction threshold as BBD.[122]

With the considerations discussed above and in Section IV.B.2 in mind, as well as our analysis of the factors specified in the statute, we are proposing to maintain the applicable volume of BBD at 2.1 billion gallons for 2019. We believe it is appropriate to continue to support the BBD industry through a guaranteed volume requirement, while allowing room within the advanced biofuel volume requirement for the participation of non-BBD advanced fuels. While in recent years we have annually increased this BBD guarantee, we note that there has been a very substantial cumulative increase since 2012, and that the 2018 guarantee is over twice the minimum BBD volume specified in the statute. While we believe it is important to provide continued support to the BBD industry, we do not believe it is necessary to increase the BBD set-aside in 2019 in order to do so. Our assessment of the required statutory factors, summarized in the next section and in a memorandum to the docket (the ''2019 BBD docket memorandum''), supports our proposal.[123] We request comment on the biomass-based diesel volume requirement for 2019.

We believe this approach strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. This means that setting a marginally lower or higher BBD standard would not change the volume of BBD used in 2019. Given the success of the industry in the past few years, as well as the substantial increases in the BBD volume requirement since 2012, we are proposing that a higher volume requirement for BBD in 2019 is not necessary to provide support for the industry, and are proposing to maintain the volume requirement at the level specified for 2018. Setting the BBD standard in this manner would continue to allow a considerable portion of the advanced biofuel volume to be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced biofuels. As discussed in Section I.E., EPA also requests comment on decreasing the required volume of BBD for 2019 in an effort to increase the energy independence impacts of the RFS program.

C. Consideration of Statutory Factors Set Forth in CAA Section 211(o)(2)(B)(ii)(I)–(VI) for 2019

As noted earlier in Section IV.B., the BBD volume requirement is nested within the advanced biofuel requirement and the advanced biofuel requirement is, in turn, nested within the total renewable fuel volume requirement. This means that any BBD produced beyond the mandated BBD volume can be used to satisfy both these other applicable volume requirements. The result is that in considering the statutory factors we must consider the potential impacts of increasing BBD in comparison to other advanced biofuels.[124] For a given advanced biofuel standard, greater or lesser BBD volume requirements do not change the amount of advanced biofuel used to displace petroleum fuels; rather, increasing the BBD requirement may result in the displacement of other types of advanced biofuels that could have been used to meet the advanced biofuels volume requirement.

Consistent with our 2018 approach in setting the final BBD volume requirement, EPA's primary assessment of the statutory factors for the proposed 2019 BBD applicable volume is that because the BBD requirement is nested within the advanced biofuel volume requirement, we expect that the 2019 advanced volume requirement, when set next year, will determine the level of BBD production and imports that occur in 2019.[125] Therefore, EPA continues to believe that the same overall volume of BBD would likely be supplied in 2019 regardless of the BBD volume we mandate for 2019 in this proposed rule. This assessment is based, in part, on our review of the RFS program implementation to date, as discussed above in Section VI.B. and in the 2019 BBD docket memorandum. Thus, we do not expect our proposed 2019 BBD volume requirement to result in a difference in the factors we consider pursuant to CAA section 211(o)(2)(B)(ii)(I)–(VI).

As an additional supplementary assessment, we have considered the potential impacts of selecting an applicable volume of BBD other than 2.1 billion gallons in 2019 based on the assumption that in guaranteeing the BBD volume at any given level there could be greater use of BBD and a corresponding decrease in the use of other types of advanced biofuels. However, setting a BBD volume requirement higher or lower than 2.1 billion gallons in 2019 would only be expected to impact BBD volumes on the margin, protecting to a lesser or greater degree BBD from being outcompeted by

[122] All types of advanced biofuel, including BBD, must achieve lifecycle GHG reductions of at least 50%.

[123] ''Memorandum to docket: Draft Statutory Factors Assessment for the 2019 Biomass-Based Diesel (BBD) Applicable Volumes.'' See Docket EPA–HQ–OAR–2017–0091.

[124] While excess BBD production could also displace conventional renewable fuel under the total renewable standard, as long as the BBD applicable volume is significantly lower than the advanced biofuel applicable volume our action in setting the BBD applicable volume is not expected to displace conventional renewable fuel under the total renewable standard, but rather other advanced biofuels.

[125] Even though we are not proposing to set the 2019 advanced biofuel volume requirement as part of this rulemaking, we expect that the 2019 advanced volume requirement will be considerably higher than the 2019 BBD requirement, consistent with past practice and, therefore, that the BBD volume requirement for 2019 would not be expected to impact the volume of BBD that is actually produced and imported during the 2019-time period.

other advanced biofuels. In this supplementary assessment we have considered all of the statutory factors found in CAA section 211(2)(B)(ii), and as described in the 2019 BBD docket memorandum, our assessment does not appear, based on available information, to provide a reasonable basis for setting a higher or lower volume requirement for BBD than 2.1 billion gallons for 2018.

Overall and as described in the 2019 BBD docket memorandum, we have determined that both the primary assessment and the supplemental assessment of the statutory factors specified in CAA section 211(o)(2)(B)(ii)(I)–(VI) for the year 2019 does not provide significant support for setting the BBD standard at a level higher or lower than 2.1 billion gallons in 2019.

VII. Percentage Standards for 2018

The renewable fuel standards are expressed as volume percentages and are used by each obligated party to determine their Renewable Volume Obligations (RVOs). Since there are four separate standards under the RFS program, there are likewise four separate RVOs applicable to each obligated party. Each standard applies to the sum of all non-renewable gasoline and diesel produced or imported. The percentage standards are set so that if every obligated party meets the percentages by acquiring and retiring an appropriate number of RINs, then the amount of renewable fuel, cellulosic biofuel, BBD, and advanced biofuel used will meet the applicable volume requirements on a nationwide basis.

Sections III through V provide our rationale and basis for the proposed volume requirements for 2018.[126] The volumes used to determine the proposed percentage standards are shown in Table VII–1.

TABLE VII–1—VOLUMES FOR USE IN SETTING THE 2018 APPLICABLE PERCENTAGE STANDARDS

[Billion gallons]

Cellulosic biofuel	0.238
Biomass-based diesel[a]	2.10
Advanced biofuel	4.24
Renewable fuel	19.24

[a] Represents physical volume.

For the purposes of converting these volumes into percentage standards, we generally use two decimal places to be consistent with the volume targets as given in the statute, and similarly two decimal places in the percentage standards. However, for cellulosic biofuel we use three decimal places in both the volume requirement and percentage standards to more precisely capture the smaller volume projections and the unique methodology that in some cases results in estimates of only a few million gallons for a single producer.

A. Calculation of Percentage Standards

To calculate the proposed percentage standards, we are following the same methodology for 2018 as we have in all prior years. The formulas used to calculate the percentage standards applicable to producers and importers of gasoline and diesel are provided in § 80.1405. The formulas rely on estimates of the volumes of gasoline and diesel fuel, for both highway and nonroad uses, which are projected to be used in the year in which the standards will apply. The projected gasoline and diesel volumes are provided by EIA, and include projections of ethanol and biodiesel used in transportation fuel. Since the percentage standards apply only to the non-renewable gasoline and diesel produced or imported, the volumes of ethanol and biodiesel are subtracted out of the EIA projections of gasoline and diesel.

Transportation fuels other than gasoline or diesel, such as natural gas, propane, and electricity from fossil fuels, are not currently subject to the standards, and volumes of such fuels are not used in calculating the annual percentage standards. Since under the regulations the standards apply only to producers and importers of gasoline and diesel, these are the transportation fuels used to set the percentage standards, as well as to determine the annual volume obligations of an individual gasoline or diesel producer or importer.

As specified in the March 26, 2010 RFS2 final rule,[127] the percentage standards are based on energy-equivalent gallons of renewable fuel, with the cellulosic biofuel, advanced biofuel, and total renewable fuel standards based on ethanol equivalence and the BBD standard based on biodiesel equivalence. However, all RIN generation is based on ethanol-equivalence. For example, the RFS regulations provide that production or import of a gallon of qualifying biodiesel will lead to the generation of 1.5 RINs. The formula specified in the regulations for calculation of the BBD percentage standard is based on biodiesel-equivalence, and thus assumes that all BBD used to satisfy the BBD standard is biodiesel and requires that the applicable volume requirement be multiplied by 1.5. However, BBD often contains some renewable diesel, and a gallon of renewable diesel typically generates 1.7 RINs.[128] In addition, there is often some renewable diesel in the conventional renewable fuel pool. As a result, the actual number of RINs generated by biodiesel and renewable diesel is used in the context of our assessing reasonably attainable volumes for purposes of deriving the applicable volume requirements and associated percentage standards for advanced biofuel and total renewable fuel, and likewise in obligated parties' determination of compliance with any of the applicable standards. While there is a difference in the treatment of biodiesel + renewable diesel in the context of determining the percentage standard for BBD versus determining the percentage standard for advanced biofuel and total renewable fuel, it is not a significant one given our approach to determining the BBD volume requirement. Our intent in setting the BBD applicable volume is to provide a level of guaranteed volume for BBD, but as described in Section VI.B, we do not expect the BBD standard to be binding. That is, we expect that actual supply of BBD, as well as supply of conventional biodiesel + renewable diesel, will be driven by the advanced biofuel and total renewable fuel standards.

B. Small Refineries and Small Refiners

In CAA section 211(o)(9), enacted as part of the Energy Policy Act of 2005, and amended by the Energy Independence and Security Act of 2007, Congress provided a temporary exemption to small refineries[129] through December 31, 2010. Congress provided that small refineries could receive a temporary extension of the exemption beyond 2010 based either on the results of a required DOE study, or based on an EPA determination of ''disproportionate economic hardship'' on a case-by-case basis in response to small refinery petitions. In reviewing petitions, EPA, in consultation with the Department of Energy, evaluates the impacts petitioning refineries would likely face in achieving compliance with the RFS requirements and how compliance would affect their ability to remain competitive and profitable.

EPA has granted exemptions pursuant to this process in the past. In the Consolidated Appropriations Act of

[126] The 2018 volume requirement for BBD was established in the 2017 final rule.

[127] 75 FR 14670, March 26, 2010.

[128] Although in some cases a gallon of renewable diesel generates either 1.5 or 1.6 RINs.

[129] A small refiner that meets the requirements of 40 CFR 80.1442 may also be eligible for an exemption.

2017, an explanatory statement directed EPA ''to follow DOE's recommendations which are based on the original 2011 Small Refinery Exemption study prepared for Congress and the conference report to division D of the Consolidated Appropriations Act of 2016.'' [130] This directive could impact how EPA evaluates small refinery hardship petitions and the number and magnitude of exemptions granted. As a result, EPA seeks comment on how we should account for exemptions in setting the annual percentage standards for 2018 under CAA section 211(o)(3) and 40 CFR 80.1405.

C. Proposed Standards

The formulas in § 80.1405 for the calculation of the percentage standards require the specification of a total of 14 variables covering factors such as the renewable fuel volume requirements, projected gasoline and diesel demand for all states and territories where the RFS program applies, renewable fuels projected by EIA to be included in the gasoline and diesel demand, and exemptions for small refineries. The values of all the variables used for this proposed rule are shown in Table VII.C–1.[131]

TABLE VII.C–1—VALUES FOR TERMS IN CALCULATION OF THE 2018 STANDARDS [132]

[Billion gallons]

Term	Description	Value
RFV_{CB}	Required volume of cellulosic biofuel	0.238
RFV_{BBD}	Required volume of biomass-based diesel	2.10
RFV_{AB}	Required volume of advanced biofuel	4.24
RFV_{RF}	Required volume of renewable fuel	19.24
G	Projected volume of gasoline	142.90
D	Projected volume of diesel	55.23
RG	Projected volume of renewables in gasoline	14.38
RD	Projected volume of renewables in diesel	2.58
GS	Projected volume of gasoline for opt-in areas	0.00
RGS	Projected volume of renewables in gasoline for opt-in areas	0.00
DS	Projected volume of diesel for opt-in areas	0.00
RDS	Projected volume of renewables in diesel for opt-in areas	0.00
GE	Projected volume of gasoline for exempt small refineries	0.00
DE	Projected volume of diesel for exempt small refineries	0.00

Projected volumes of gasoline and diesel, and the renewable fuels contained within them, were taken from the April, 2017 version of EIA's STEO. For the final rule, we intend to use volume projections provided by EIA as required in the statute at CAA section 211(o)(3)(A), which are typically consistent with those available in the STEO.

Using the volumes shown in Table VII.C–1, we have calculated the percentage standards for 2018 as shown in Table VII.C–2.

TABLE VII.C–2—PROPOSED PERCENTAGE STANDARDS FOR 2018

Cellulosic biofuel	0.131
Biomass-based diesel	1.74
Advanced biofuel	2.34
Renewable fuel	10.62

VIII. Public Participation

We request comment on all aspects of this proposal. This section describes how you can participate in this process.

A. How do I submit comments?

We are opening a formal comment period by publishing this document. We will accept comments during the period indicated under the **DATES** section above. If you have an interest in the proposed standards, we encourage you to comment on any aspect of this rulemaking. We also request comment on specific topics identified throughout this proposal.

Your comments will be most useful if you include appropriate and detailed supporting rationale, data, and analysis. Commenters are especially encouraged to provide specific suggestions for any changes that they believe need to be made. You should send all comments, except those containing proprietary information, to our Docket (see **ADDRESSES** section above) by the end of the comment period.

You may submit comments electronically through the electronic public docket, *www.regulations.gov,* by mail to the address shown in **ADDRESSES**, or through hand delivery/courier. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your comment. Please ensure that your comments are submitted within the specified comment period. Comments received after the close of the comment period will be marked ''late.'' EPA is not required to consider these late comments. If you wish to submit Confidential Business Information (CBI) or information that is otherwise protected by statute, please follow the instructions in Section VIII.B below.

EPA will also hold a public hearing on this proposed rule. We will announce the public hearing date and location for this proposal in a supplemental **Federal Register** document.

B. How should I submit CBI to the agency?

Do not submit information that you consider to be CBI electronically through the electronic public docket, *www.regulations.gov,* or by email. Send or deliver information identified as CBI only to the following address: U.S. Environmental Protection Agency,

[130] Consolidated Appropriations Act, 2017, Public Law 115–31. The Explanatory Statement is available at: *https://rules.house.gov/sites/republicans.rules.house.gov/files/115/OMNI/DIVISION%20G%20-%20INT%20SOM%20FY17%20OCR.pdf,* and reads ''The agreement includes the directive contained in Senate Report 114–281 related to small refinery relief.'' Senate Report 114–281 includes the quoted language above directing EPA to follow DOE's recommendation and is available at: *https://www.congress.gov/114/crpt/srpt281/CRPT-114srpt281.pdf.*

[131] To determine the 49-state values for gasoline and diesel, the amounts of these fuels used in Alaska is subtracted from the totals provided by DOE because petroleum based fuels used in Alaska do not incur RFS obligations. The Alaska fractions are determined from the June 29, 2016 EIA State Energy Data System (SEDS), Energy Consumption Estimates.

[132] See ''Calculation of proposed % standards for 2018'' in docket EPA–HQ–OAR–2017–0091.

Assessment and Standards Division, 2000 Traverwood Drive, Ann Arbor, MI 48105, Attention Docket ID EPA–HQ–OAR–2017–0091. You may claim information that you submit to EPA as CBI by marking any part or all of that information as CBI (if you submit CBI on disk or CD ROM, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is CBI). Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

In addition to one complete version of the comments that include any information claimed as CBI, a copy of the comments that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. This non-CBI version of your comments may be submitted electronically, by mail, or through hand delivery/courier. If you submit the copy that does not contain CBI on disk or CD ROM, mark the outside of the disk or CD ROM clearly that it does not contain CBI. Information not marked as CBI will be included in the public docket without prior notice. If you have any questions about CBI or the procedures for claiming CBI, please consult the person identified in the **FOR FURTHER INFORMATION CONTACT** section.

IX. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is an economically significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket. The EPA prepared an analysis of illustrative costs associated with this action. This analysis is presented in Section V.D of this preamble.

B. Paperwork Reduction Act (PRA)

This action does not impose any new information collection burden under the PRA. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control numbers 2060–0637 and 2060–0640. The proposed standards would not impose new or different reporting requirements on regulated parties than already exist for the RFS program.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden, or otherwise has a positive economic effect on the small entities subject to the rule.

The small entities directly regulated by the RFS program are small refiners, which are defined at 13 CFR 121.201. We have evaluated the impacts of this proposed rule on small entities from two perspectives: as if the 2018 standards were a standalone action or if they are a part of the overall impacts of the RFS program as a whole.

When evaluating the standards as if they were a standalone action separate and apart from the original rulemaking which established the RFS2 program, then the standards could be viewed as decreasing the advanced and total renewable fuel volumes required of obligated parties by 40 million gallons between 2017 and 2018. To evaluate the impacts of the proposed volumes on small entities relative to 2017, EPA has conducted a screening analysis [133] to assess whether it should make a finding that this action would not have a significant economic impact on a substantial number of small entities. Currently available information shows that the impact on small entities from implementation of this rule would not be significant. EPA has reviewed and assessed the available information, which shows that obligated parties, including small entities, are generally able to recover the cost of acquiring the RINs necessary for compliance with the RFS standards through higher sales prices of the petroleum products they sell than would be expected in the absence of the RFS program.[134] [135] This is true whether they acquire RINs by purchasing renewable fuels with attached RINs or purchase separated RINs. The costs of the RFS program are thus generally being passed on to consumers in the highly competitive marketplace. Even if we were to assume that the cost of acquiring RINs were not recovered by obligated parties, and we used the maximum values of the illustrative costs discussed in Section V.D of this preamble and the gasoline and diesel fuel volume projections and wholesale prices from the April 2017 version of EIA's Short-Term Energy Outlook, and current wholesale fuel prices, a cost-to-sales ratio test shows that the costs to small entities of the RFS standards are far less than 1 percent of the value of their sales.

While the screening analysis described above supports a certification that this rule would not have a significant economic impact on small refiners, we continue to believe that it is more appropriate to consider the standards as a part of ongoing implementation of the overall RFS program. When considered this way, the impacts of the RFS program as a whole on small entities were addressed in the RFS2 final rule (75 FR 14670, March 26, 2010), which was the rule that implemented the entire program required by the Energy Independence and Security Act of 2007 (EISA 2007). As such, the Small Business Regulatory Enforcement Fairness Act (SBREFA) panel process that took place prior to the 2010 rule was also for the entire RFS program and looked at impacts on small refiners through 2022.

For the SBREFA process for the RFS2 final rule, EPA conducted outreach, fact-finding, and analysis of the potential impacts of the program on small refiners, which are all described in the Final Regulatory Flexibility Analysis, located in the rulemaking docket (EPA–HQ–OAR–2005–0161). This analysis looked at impacts to all refiners, including small refiners, through the year 2022 and found that the program would not have a significant economic impact on a substantial number of small entities, and that this impact was expected to decrease over time, even as the standards increased. For gasoline and/or diesel small refiners subject to the standards, the analysis included a cost-to-sales ratio test, a ratio of the estimated annualized compliance costs to the value of sales per company. From this test, it was estimated that all directly regulated small entities would have compliance costs that are less than one percent of their sales over the life

[133] ''Draft Screening Analysis for the Proposed Renewable Fuel Standard Program Renewable Volume Obligations for 2018'', memorandum from Dallas Burkholder, Nick Parsons, and Tia Sutton to EPA Air Docket EPA–HQ–OAR–2017–0091.

[134] For a further discussion of the ability of obligated parties to recover the cost of RINs see ''A Preliminary Assessment of RIN Market Dynamics, RIN Prices, and Their Effects,'' Dallas Burkholder, Office of Transportation and Air Quality, US EPA. May 14, 2015, EPA Air Docket EPA–HQ–OAR–2015–0111.

[135] Knittel, Christopher R., Ben S. Meiselman, and James H. Stock. ''The Pass-Through of RIN Prices to Wholesale and Retail Fuels under the Renewable Fuel Standard.'' Working Paper 21343. NBER Working Paper Series. Available online *http://www.nber.org/papers/w21343.pdf.*

of the program (75 FR 14862, March 26, 2010).

We have determined that this proposed rule would not impose any additional requirements on small entities beyond those already analyzed, since the impacts of this proposed rule are not greater or fundamentally different than those already considered in the analysis for the RFS2 final rule assuming full implementation of the RFS program. This rule proposes the 2018 advanced and total renewable fuel volume requirements at levels 40 million gallons lower than the 2017 volume requirements, and significantly below the statutory volume targets. This exercise of EPA's waiver authority reduces burdens on small entities, as compared to the burdens that would be imposed under the volumes specified in the Clean Air Act in the absence of waivers—which are the volumes that we assessed in the screening analysis that we prepared for implementation of the full program. Regarding the BBD standard, we are proposing to maintain the volume requirement for 2019 at the same level as 2018. While this volume is an increase over the statutory minimum value of 1 billion gallons, the BBD standard is a nested standard within the advanced biofuel category, which we are significantly reducing from the statutory volume targets. As discussed in Section VI, we are proposing to set the 2019 BBD volume requirement at a level below what is anticipated will be produced and used to satisfy the reduced advanced biofuel requirement. The net result of the standards being proposed in this action is a reduction in burden as compared to implementation of the statutory volume targets, as was assumed in the RFS2 final rule analysis.

While the rule will not have a significant economic impact on a substantial number of small entities, there are compliance flexibilities in the program that can help to reduce impacts on small entities. These flexibilities include being able to comply through RIN trading rather than renewable fuel blending, 20 percent RIN rollover allowance (up to 20 percent of an obligated party's RVO can be met using previous-year RINs), and deficit carry-forward (the ability to carry over a deficit from a given year into the following year, providing that the deficit is satisfied together with the next year's RVO). In the RFS2 final rule, we discussed other potential small entity flexibilities that had been suggested by the SBREFA panel or through comments, but we did not adopt them, in part because we had serious concerns regarding our authority to do so.

Additionally, as we realize that there may be cases in which a small entity may be in a difficult financial situation and the level of assistance afforded by the program flexibilities is insufficient. For such circumstances, the program provides hardship relief provisions for small entities (small refiners), as well as for small refineries.[136] As required by the statute, the RFS regulations include a hardship relief provision (at 40 CFR 80.1441(e)(2)) that allows for a small refinery to petition for an extension of its small refinery exemption at any time based on a showing that compliance with the requirements of the RFS program would result in the refinery experiencing a ''disproportionate economic hardship.'' EPA regulations provide similar relief to small refiners that are not eligible for small refinery relief (see 40 CFR 80.1442(h)). EPA evaluates these petitions on a case-by-case basis and may approve such petitions if it finds that a disproportionate economic hardship exists. In evaluating such petitions, EPA consults with the U.S. Department of Energy, and takes the findings of DOE's 2011 Small Refinery Study and other economic factors into consideration. EPA successfully implemented these provisions by evaluating petitions for exemption from 12 small refineries for the 2016 RFS standards.

Given that this proposed rule would not impose additional requirements on small entities, would decrease burden via a reduction in required volumes as compared to statutory volume targets and as compared to the 2017 volume requirements, would not change the compliance flexibilities currently offered to small entities under the RFS program (including the small refinery hardship provisions we continue to successfully implement), and available information shows that the impact on small entities from implementation of this rule would not be significant viewed either from the perspective of it being a standalone action or a part of the overall RFS program, we have therefore concluded that this action would have no net regulatory burden for directly regulated small entities.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action implements mandates specifically and explicitly set forth in CAA section 211(o) and we believe that this action represents the least costly, most cost-effective approach to achieve the statutory requirements of the rule.

[136] See CAA section 211(o)(9)(B).

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. This proposed rule would be implemented at the Federal level and affects transportation fuel refiners, blenders, marketers, distributors, importers, exporters, and renewable fuel producers and importers. Tribal governments would be affected only to the extent they produce, purchase, and use regulated fuels. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it implements specific standards established by Congress in statutes (CAA section 211(o)) and does not concern an environmental health risk or safety risk.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This action proposes to establish the required renewable fuel content of the transportation fuel supply for 2018, consistent with the CAA and waiver authorities provided therein. The RFS program and this rule are designed to achieve positive effects on the nation's transportation fuel supply, by increasing energy independence and lowering lifecycle GHG emissions of transportation fuel.

I. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations, and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). This proposed rule does not affect the level of protection provided to human health or the environment by applicable air quality standards. This action does not relax the control measures on sources regulated by the RFS regulations and therefore would not cause emissions increases from these sources.

X. Statutory Authority

Statutory authority for this action comes from section 211 of the Clean Air Act, 42 U.S.C. 7545. Additional support for the procedural and compliance related aspects of this proposed rule come from sections 114, 208, and 301(a) of the Clean Air Act, 42 U.S.C. 7414, 7542, and 7601(a).

List of Subjects in 40 CFR Part 80

Environmental protection, Administrative practice and procedure, Air pollution control, Diesel fuel, Fuel additives, Gasoline, Imports, Oil imports, Petroleum, Renewable fuel.

Dated: July 5, 2017.

E. Scott Pruitt,

Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR part 80 as follows:

PART 80—REGULATION OF FUELS AND FUEL ADDITIVES

■ 1. The authority citation for part 80 continues to read as follows:

Authority: 42 U.S.C. 7414, 7521, 7542, 7545, and 7601(a).

Subpart M—Renewable Fuel Standard

■ 2. Section 80.1405 is amended by adding new paragraph (a)(9) to read as follows:

§ 80.1405 What are the Renewable Fuel Standards?

(a) * * *

(9) *Renewable Fuel Standards for 2018.*

(i) The value of the cellulosic biofuel standard for 2018 shall be 0.131 percent.

(ii) The value of the biomass-based diesel standard for 2018 shall be 1.74 percent.

(iii) The value of the advanced biofuel standard for 2018 shall be 2.34 percent.

(iv) The value of the renewable fuel standard for 2018 shall be 10.62 percent.

* * * * *

[FR Doc. 2017–14632 Filed 7–20–17; 8:45 am]

BILLING CODE 6560–50–P