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Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 80

[EPA–HQ–OAR–2016–0004; FRL–9946–90–OAR]

RIN 2060–AS72

Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018

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 would apply to all motor vehicle gasoline and diesel produced or imported in the year 2017. The EPA is proposing a cellulosic biofuel volume that is below the applicable volume specified in the Act. Relying on statutory waiver authorities, the EPA is also proposing to reduce the applicable volumes of advanced biofuel and total renewable fuel. The proposed standards are expected to continue driving the market to overcome constraints in renewable fuel distribution infrastructure, which in turn is expected to lead to substantial growth over time in the production and use of renewable fuels. In this action, we are also proposing the applicable volume of biomass-based diesel for 2018.

DATES: Comments must be received on or before July 11, 2016. 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–2016–0004, 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 *http://www2.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 final 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), resulting in 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, to increase the production of clean renewable fuels.'' Today, nearly all of the approximately 142 billion gallons of gasoline used for transportation purposes contains 10 percent ethanol (E10), and a substantial portion of diesel fuel contains biodiesel.

The fundamental objective of the RFS provisions under the CAA is clear: To increase the use of renewable fuels in the U.S. transportation system every year in order to reduce greenhouse gases (GHGs) and increase energy security. Renewable fuels represent an opportunity for the U.S. to move away from fossil fuels towards a set of lower lifecycle GHG transportation fuels, and a chance for a still-developing lower lifecycle GHG technology sector to grow. While renewable fuels include corn starch ethanol, which is the predominant renewable fuel in use to date, Congress envisioned the majority of growth over time to come from advanced biofuels, as the non-advanced (conventional) volumes remain constant in the statutory volume tables starting in 2015 while the advanced volumes continue to grow.[2]

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 refiners and importers must meet every year. In this action, we are proposing the annual percentage standards for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel that would apply to all gasoline and diesel produced or imported in 2017. We are also proposing the applicable volume of biomass-based diesel for 2018.

In this action, we are proposing standards that are designed to achieve the Congressional intent of increasing renewable fuel use over time in order to reduce lifecycle GHG emissions of transportation fuels and increase energy security, while at the same time accounting for the real-world challenges that have slowed progress toward such goals. Those challenges have made the volume targets established by Congress for 2017 beyond reach for all but the minimum 1.0 billion gallons for biomass-based diesel (BBD). We are proposing to use the waiver mechanisms provided by Congress to establish volume requirements that would be lower than the statutory targets for fuels other than biomass-based diesel, but set at a level that we believe would spur growth in renewable fuel use, consistent with Congressional intent.

Our proposed 2017 volume requirements are ambitious, with substantial growth in all categories relative to 2016. We are also proposing a volume requirement for BBD for 2018 that would continue the growth in that category of renewable fuel. The proposed volume requirements are shown in Table I–1 below.

TABLE I–1—PROPOSED VOLUME REQUIREMENTS [A]

	2017	2018
Cellulosic biofuel (million gallons)	312	n/a
Biomass-based diesel (billion gallons)	[b] 2.0	2.1
Advanced biofuel (billion gallons)	4.0	n/a
Renewable fuel (billion gallons)	18.8	n/a

[a] All values are ethanol-equivalent on an energy content basis, except for BBD which is biodiesel-equivalent.
[b] The 2017 BBD volume requirement was established in the 2014–2016 final rule (80 FR 77420, December 14, 2015). We are not reproposing or inviting comment on this volume requirement and any such comment we do receive will be considered beyond the scope of this rulemaking.

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

[2] In this document we follow the common practice of using the term ''conventional'' renewable fuel to mean any renewable fuel that is not an advanced biofuel.

Our decision to propose volumes for total renewable fuel that rely on using both the cellulosic waiver authority and the general waiver authority is based on the same fundamental reasoning we relied upon in the final rule ''Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017,'' which established the standards for 2014, 2015, and 2016 (hereinafter referred to as the ''2014–2016 final rule'').[3] Despite significant increases in renewable fuel use in the United States, real-world constraints, such as the slower than expected development of the cellulosic biofuel industry and constraints in the marketplace needed to supply certain biofuels to consumers, have made the timeline laid out by Congress impossible to achieve. These challenges remain, even as we recognize the success of the RFS program over the past decade in boosting renewable fuel use, and the recent signs of progress towards development of increasing volumes of advanced, low GHG-emitting fuels, including cellulosic biofuels.

We believe that the RFS program can and will drive renewable fuel use, and we have considered the ability of the market to respond to the standards we set when we assessed the amount of renewable fuel that can be supplied. Therefore, while this proposed rule applies the tools Congress provided to make adjustments to the statutory volume targets in recognition of the constraints that exist today, we believe the standards we are proposing will drive growth in renewable fuels, particularly advanced biofuels, which achieve the lowest lifecycle GHG emissions. In our view, while Congress recognized that supply challenges may exist as evidenced by the waiver provisions, it did not intend growth in the renewable fuels market to be stopped by those challenges, including those associated with the ''E10 blendwall.'' [4] The fact that Congress chose to mandate increasing and substantial amounts of renewable fuel clearly signals that it intended the RFS program to create incentives to increase renewable fuel supplies and overcome constraints in the market. The standards we are proposing would provide those incentives.

As for past rulemakings establishing the annual standards under the RFS program, the final standards that we set for 2017 and the final BBD volume requirement for 2018 will take into account comments received in response to this proposal and relevant new or updated information that becomes available prior to the final rule.[5] As a result, the final standards that we set for 2017 and the final BBD volume requirement for 2018 may differ from those we have proposed.

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 211(o)(2). The statutory volumes for 2017 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 2017 VOLUMES SPECIFIED IN THE CLEAN AIR ACT

[Billion gallons] [a]

Cellulosic biofuel	5.5
Biomass-based diesel	≥1.0
Advanced biofuel	9.0
Renewable fuel	24.0

[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 2017, and for BBD for 2018.[6] 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 [7]	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.

[3] 80 FR 77420, December 14, 2015.

[4] The ''E10 blendwall'' represents the volume of ethanol that can be consumed domestically if all gasoline contains 10% ethanol and there are no higher-level ethanol blends consumed such as E15 or E85.

[5] For example, we intend in the final rule to use updated EIA projections of gasoline and diesel fuel consumption, as well as updated information on expected production of cellulosic biofuels.

[6] The 2017 BBD volume requirement was established in the 2014–2016 final rule.

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

Applicable volumes	Clean Air Act reference	Criteria provided in statute for determination of applicable 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.
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 volume of production during the year. In Section III of this proposed rule, we present our analysis of cellulosic biofuel production and the proposed applicable volume for 2017. This analysis is based on an evaluation of producers' production plans and progress to date following discussions with cellulosic biofuel producers.

With regard to BBD, Congress chose to set aside a portion of the advanced biofuel standard for BBD and 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 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 2014–2016 final rule we established the BBD volume for 2017. In Section IV of this preamble we discuss our proposed assessment of statutory and other relevant factors and our proposed volume requirement for BBD for 2018, which has been developed in coordination with USDA and DOE.[8] We are proposing growth in the required volume of BBD so as to provide continued support to that important contributor to the pool of advanced biofuel while at the same time providing continued incentive for the development of other types of advanced biofuel.

Regarding advanced biofuel and total renewable fuel, Congress provided several mechanisms through which those volumes could be reduced if necessary. If we lower the applicable volume of cellulosic biofuel below the volume specified in CAA 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 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. Section II of this proposed rule describes our use of the cellulosic waiver authority to reduce volumes of advanced biofuel and total renewable fuel and the general waiver authority to further reduce volumes of total renewable fuel. Consistent with the views that we expressed in the 2014–2016 final rule, we continue to believe that the exercise of our waiver authorities is necessary to address important realities, including:

- Substantial limitations in the supply of cellulosic biofuel,
- Insufficient supply of other advanced biofuel to offset the shortfall in cellulosic biofuel, and
- Practical and legal constraints on the ability of the market to supply renewable fuels to the vehicles and engines that can use them.

We believe these realities continue to justify the exercise of the authorities Congress provided us to waive the statutory volumes. At the same time, we are mindful that the primary objective of the statute is to increase renewable fuel use over time. While available volumes of all categories of renewable fuel have been increasing in recent years, the statutory volume targets have been increasing as well. For the total renewable fuel requirement in this rule, we are proposing to use both the cellulosic biofuel and general waiver authorities only to the extent necessary to derive the applicable volume of total renewable fuel that reflects the

[7] 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.

[8] The 2017 BBD volume requirement was established in the December 14, 2015 final rule (80 FR 77420).

maximum supply that can reasonably be expected to be produced and consumed by a market that is responsive to the RFS standards (hereafter sometimes referred to as ''reasonably achievable supply''). This is a very challenging task not only in light of the myriad of complexities of the fuels market and how individual aspects of the industry might change in the future, but also because we cannot precisely predict how the market will respond to the volume-driving provisions of the RFS program. Thus the determination of the total renewable fuel volume requirement is one that we believe necessarily involves considerable exercise of judgment. However, the circumstances facing us for this proposal are not unlike those we faced in the 2014–2016 final rule, and thus the approach we have taken to determining reasonably achievable supply for 2017 is largely the same as that in the 2014–2016 final rule. Based on our assessment of reasonably achievable supply, we believe that an adjustment to the statutory target for total renewable fuel is warranted for 2017. Nevertheless, as discussed in subsequent sections of this rule, it is our intention that the proposed volume requirements will lead to growth in supply beyond the levels achieved in the past, based in part on the expectation that the market can and will respond to the standards we set.

For the advanced biofuel volume requirements, we are proposing to use the cellulosic waiver authority alone to derive the volume requirement for 2017 that is reasonably attainable and which to a significant extent would result in backfilling the shortfall in cellulosic biofuel volumes with other advanced biofuels that also provide substantial GHG emission reductions.

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 2017, as well as the percentage standard for BBD for 2017, and the applicable volume requirement for BBD for 2018.

1. Proposed Approach to Setting Volume Requirements

It is our intention that the volume requirements and associated percentage standards for 2017 will be issued on the statutory schedule, providing the market with the time allotted by Congress to react to the standards we set. For advanced biofuel and total renewable fuel, our proposed assessment of supply simultaneously reflects the statute's purpose to drive growth in renewable fuels, while also accounting for constraints in the market that make the volume targets specified in the statute beyond reach in the time set forth in the Act, as described more fully in Section II. As described in Section III, the proposed 2017 cellulosic biofuel volume requirement is based on a projection of production that reflects a neutral aim at accuracy. Our proposed determination regarding the 2018 BBD volume requirement reflects an analysis of a set of factors stipulated in CAA 211(o)(2)(B)(ii), as described in more detail in Section IV.

The approach we have taken in this proposal is essentially the same as that presented in the 2014–2016 final rule. We believe that the approach that we took in the 2014–2016 final rule to determining the 2016 volume requirements was successful in targeting levels that took into account constraints in the supply of renewable fuel while simultaneously accounting for the ability of the market to be responsive to the standards we set to overcome some of those constraints. As a result, we believe that it is appropriate to use the same approach in our proposal for the 2017 volume requirements, and the discussion of the derivation of the proposed volume requirements in this proposal makes frequent reference to the 2014–2016 final rule. Where data, analyses, or other information have changed since release of the 2014–2016 final rule, we have noted the impact of such changes on our assessment of achievable volumes for 2017.

2. Advanced Biofuel and Total Renewable Fuel

Since the EISA-amended RFS program began in 2010, we have reduced the applicable volume of cellulosic biofuel each year in the context of our annual RFS standards rulemakings to the projected production levels, and we have considered whether to also reduce the advanced biofuel and total renewable fuel statutory volumes pursuant to the waiver authority in section 211(o)(7)(D)(i). In the 2014–2016 final rule, we determined that the volume of ethanol in the form of E10 or higher ethanol blends such as E15 or E85 that could be supplied to vehicles in 2016, together with the volume of non-ethanol renewable fuels that could be supplied to vehicles, would be insufficient to attain the statutory targets for both total renewable fuel and advanced biofuel. As a result, we used the waiver authorities provided in CAA 211(o)(7)(D) to set lower volume requirements for these renewable fuel categories in 2016, and we also used the waiver authority in CAA 211(o)(7)(A) to provide an additional further increment of reduction for total renewable fuel.

We believe that the conditions compelling us to reduce the applicable 2016 volume requirements for advanced biofuel and total renewable fuel below the statutory targets remain relevant in 2017. Our proposed determination that the required volumes of advanced biofuel and total renewable fuel should be reduced from the statutory targets is based on a consideration of:

- The ability of the market to supply such fuels through domestic production or import.
- The ability of available renewable fuels to be used as transportation fuel, heating oil, or jet fuel.
- The ability of the standards to bring about market changes in the time available.
- The ability of reasonably attainable volumes of non-cellulosic advanced biofuels to backfill for unavailable volumes of cellulosic biofuel.

As described in more detail in Section II.A, we believe that the availability of qualifying renewable fuels and constraints on their supply to vehicles that can use them are valid considerations under both the cellulosic waiver authority under CAA section 211(o)(7)(D)(i) and the general waiver authority under CAA section 211(o)(7)(A). As for 2016, we are proposing to use the waiver authorities in a limited way that reflects our understanding of how to reconcile real marketplace constraints with Congress' intent to spur growth in renewable fuel use over time.

We are proposing applicable volumes for advanced biofuel and total renewable fuel for 2017 that would result in significant volume growth over the volume requirements for 2016. Moreover, the proposed volume requirements for total renewable fuel are, in our judgment, as ambitious as can reasonably be justified, and reflect the growth rates that can be attained under a program explicitly designed to compel the market to respond. We anticipate that the proposed advanced biofuel volume requirement would result in reasonably attainable volumes of advanced biofuel backfilling for missing cellulosic biofuel volumes.

3. Biomass-Based Diesel

In EISA, Congress chose to set aside a portion of the advanced biofuel standard for BBD, but only through 2012. Beyond 2012 Congress stipulated that EPA, in coordination with other

agencies, was to establish the BBD volume taking into account the intent of Congress to reduce GHG emissions and increase energy security, along with the history of the program 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 volumes at 1.9 and 2.0 billion gallons respectively.

Given current and recent market conditions, the advanced biofuel volume requirement is driving the biodiesel and renewable diesel volumes, and we expect this to continue. Nevertheless we believe that it is appropriate to set increasing BBD applicable volumes to provide a floor to support continued investment to enable increased production and use of BBD. In doing so we also believe in the importance of maintaining opportunities for other types of advanced biofuel, such as renewable diesel co-processed with petroleum, renewable gasoline blend stocks, and renewable heating oil, as well as others that are under development.

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 an increase of 100 million gallons in the applicable volume of BBD, to 2.1 billion gallons for 2018. We believe that this increase will support the overall goals of the program while also maintaining the incentive for development and growth in production of other advanced biofuels. Establishing the volumes at this level will encourage BBD producers to manufacture higher volumes of fuel that will contribute to the advanced biofuel and total renewable fuel requirements, while also leaving considerable opportunity within the advanced biofuel mandate for investment in and growth in production of other types of advanced biofuel with comparable or potentially superior environmental or other attributes.

4. Cellulosic Biofuel

In the past several years the cellulosic biofuel industry has continued to make progress towards significant commercial scale production. Cellulosic biofuel production reached record levels in 2015, 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 also produced consistently in 2015. In this rule we are proposing a cellulosic biofuel volume requirement of 312 million ethanol-equivalent gallons for 2017 based on the information we have received regarding individual facilities' capacities, production start dates and biofuel production plans, as well as input from other government agencies, and EPA's own engineering judgment.

As part of estimating the volume of cellulosic biofuel that will be made available in the U.S. in 2017, we considered all potential production sources by company and facility. This included sources still in the planning stages, facilities under construction, facilities in the commissioning or start-up phases, and facilities already producing some volume of cellulosic biofuel.[10] From this universe of potential cellulosic biofuel sources, we identified the subset that is expected to produce commercial volumes of qualifying cellulosic biofuel for use as transportation fuel, heating oil, or jet fuel by the end of 2017. 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 Renewable Identification Numbers (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 volumes from each group for each year. Further discussion of these factors and the way they were used to determine our final cellulosic biofuel projection for 2017 can be found in Section III.

5. 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 volume requirements used to derive the percentage standards, required on a nationwide basis.

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 final percentage standards was provided by the Energy Information Administration (EIA). The proposed percentage standards for 2017 are shown in Table I.B.5–1. Detailed calculations can be found in Section V, including the projected gasoline and diesel volumes used.

TABLE I.B.5–1—PROPOSED 2017 PERCENTAGE STANDARDS

Cellulosic biofuel	0.173
Biomass-based diesel	1.67
Advanced biofuel	2.22
Renewable fuel	10.44

C. Outlook for 2018 and Beyond

As in the past, we acknowledge that a number of challenges still need to be overcome in order to fully realize the potential for greater use of renewable fuels in the United States as envisioned by Congress in establishing the RFS requirements. The RFS program plays a central role in creating the incentives for realizing that potential. The standards being proposed reflect our understanding of the significant progress that is being made in overcoming those challenges. We expect future standards to both reflect and anticipate progress of the industry and market in providing for continued expansion in the supply of renewable fuels, and we intend to set standards in future years that continue to capitalize on the market's ability to respond to those standards with expansions in production and infrastructure.

We believe that the supply of renewable fuels can continue to increase in the coming years despite the

[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.

[10] 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.

constraints associated with production of cellulosic biofuels and other advanced biofuels, and constraints associated with supplying renewable fuels to the vehicles and engines that can use them. We believe that the market is capable of responding to ambitious standards by expanding all segments of the market needed to increase renewable fuel supply and to provide incentives for the production and use of renewable fuels.

In future years, we would expect to use the most up-to-date information available to project the growth that can realistically be achieved considering the ability of the RFS program to spur growth in the volume of ethanol, biodiesel, and other renewable fuels that can be supplied and consumed by vehicles as we have for the 2017 volumes in this proposal. In particular, we will focus on the emergence of advanced biofuels including cellulosic biofuel, consistent with the statute. Many companies are continuing to invest in efforts ranging from research and development, to the construction of commercial-scale facilities to increase the production potential of next generation biofuels. We will continue to evaluate new pathways especially for advanced biofuels and respond to petitions, expanding the availability of feedstocks, production technologies, and fuel types eligible under the RFS program.

In addition to ongoing efforts to evaluate new pathways for advanced biofuel production, we are aware that other actions can also play a role in overcoming challenges that limit the potential for supply of increased volumes of renewable fuels. We are currently considering and evaluating regulatory provisions that should enhance the ability of the market to increase not only the production of advanced and cellulosic biofuels but also the use of higher-level ethanol blends such as E15 and E85. DOE and USDA are continuing to provide funds for the development of new technologies and expansion of infrastructure. All of this, as well as actions not yet defined, is expected to continue to help clear hurdles to support the ongoing growth in the use of renewable fuels in future years.

II. Advanced Biofuel and Total Renewable Fuel Volumes for 2017

The national volume targets of advanced biofuel and total renewable fuel to be used under the RFS program each year through 2022 are specified in CAA section 211(o)(2). Congress set targets that envisioned growth at a pace that far exceeded historical growth and prioritized that growth as occurring principally in advanced biofuels (contrary to historical growth patterns). Congressional intent is evident in the fact that the non-advanced volumes remain at a constant 15 billion gallons in the statutory volume tables starting in 2015 while the advanced volumes continue to grow through 2022 to a total of 21 billion gallons, for a total of 36 billion gallons in 2022.

While Congress set ambitious volume targets as a mechanism to push renewable fuel volume growth under the RFS program, Congress also provided EPA with waiver authority, in part to address the situation where supply of renewable fuel does not match these ambitious target levels. EPA may reduce the volume targets to the extent that we reduce the applicable volume for cellulosic biofuel pursuant to CAA 211(o)(7)(D), or if the criteria are met for use of the general waiver authority under CAA 211(o)(7)(A). As described in this section, we believe that reductions in both the advanced biofuel and total renewable fuel volume targets are necessary for 2017.

While the statute and legislative history offer little guidance on the specific considerations underlying the statutory volume targets, we believe it is highly unlikely that Congress expected those volume targets to be reached only through the consumption of E10 and biomass-based diesel; while the statute does require the use of a minimum volume of BBD, it does not explicitly require the use of ethanol. Today we know that possible approaches to significantly expand renewable fuel use fall into a number of areas, such as:

- Increased use of E15 in model year 2001 and later vehicles,
- Increased use of E85 or other higher level ethanol blends in flex-fuel vehicles (FFVs),
- Increased production and/or importation of non-ethanol biofuels (*e.g.,* biodiesel, renewable diesel, renewable gasoline, and butanol) for use in conventional vehicles and engines,
- Increased use of biogas in CNG vehicles,
- Increased use of renewable jet fuel and heating oil,
- Increased use of cellulosic and other non-food based feedstocks, and
- Co-development of new technology vehicles and engines optimized for new fuels.

While we believe that developments in some of these areas have been and will continue to occur, and that such changes will contribute to growth in supply in 2017, we do not believe that those developments will be sufficient to reach the statutory volume targets in this year. Volume requirements over the longer term that are issued in a timely manner and which provide the certainty of a guaranteed and growing future market are necessary for the industry to have the incentive to invest in the development of new technology and expanded infrastructure for production, distribution, and dispensing capacity. We believe that over time use of both higher level ethanol blends and non-ethanol biofuels can and will increase, consistent with Congressional intent to increase total renewable fuel use through the enactment of EPAct and EISA. As stated above, while Congress provided waiver authority to account for supply and other challenges, we do not believe that Congress intended that the E10 blendwall or any other particular limitation would present a barrier to the expansion of renewable fuels. The fact that Congress set volume targets reflecting increasing and substantial amounts of renewable fuel use clearly signals that it intended the RFS program to create incentives to increase renewable fuel supplies and overcome supply limitations. Notwithstanding these facts, Congress also authorized EPA to adjust statutory volumes as necessary to reflect situations involving shortfalls in cellulosic biofuel production, inadequate domestic supply, or where EPA determines that severe economic or environmental harm would result from program implementation.

We have evaluated the capabilities of the market and have concluded that the volumes for advanced biofuel and total renewable fuel specified in the statute cannot be achieved in 2017. This is due in part to the expected continued shortfall in cellulosic biofuel; production of this fuel type has consistently fallen short of the statutory targets by 95% or more (about 4 billion gallons in 2016), and projected production volumes for 2017, while continuing to grow, are consistent with this trend. In addition, although in earlier years of the RFS program we determined that the available supply of advanced biofuel and other considerations justified our retaining the statutory advanced biofuel and total renewable fuel volumes notwithstanding the shortfall in cellulosic biofuel production, the more recent statutory targets and continued sluggish pace of cellulosic biofuel production precluded such a determination for 2014, 2015, and 2016. We project that the same circumstances will continue in 2017. As a result, we are proposing to exercise the statutory waiver authorities to reduce the

applicable volumes of advanced biofuel and total renewable fuel. Nevertheless, while we are proposing to use the waiver authorities available under the law to reduce applicable volumes from the statutory levels, we intend to set the total volume requirement at the maximum reasonably achievable level that will drive significant growth in renewable fuel use beyond what would occur in the absence of such a requirement, as Congress intended. The proposed volume requirements recognize the ability of the market to respond to the standards we set while staying within the limits of feasibility. The net impact of these proposed volume requirements would be that the necessary volumes of both advanced biofuel and conventional (non-advanced) renewable fuel would significantly increase over levels used in the past.

Our analytic approach is to first ascertain the maximum reasonably achievable volumes of all types of renewable fuel. Having done so, we next determine the extent to which a portion of those fuels should be required to be advanced. We then propose to use the cellulosic waiver authority to provide equal reductions in advanced and total renewable fuel volumes, and the general waiver authority to justify the additional incremental reduction in total volumes necessary to alleviate inadequacy of supply of total renewable fuels. Based on this approach, the volumes that we are proposing are shown below.

TABLE II–1—PROPOSED 2017 VOLUME REQUIREMENTS

[Billion gallons]

	Proposed	Statutory
Advanced biofuel	4.0	9.0
Total renewable fuel	18.8	24.0

A. Statutory Authorities for Reducing Volume Targets

In CAA 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 biomass-based diesel 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 circumstances may arise that necessitate deviation from the statutory volumes and thus provided waiver provisions in CAA 211(o)(7). We believe, as we did in setting the volumes from 2014–2016, that the circumstances justifying use of the waiver authorities and thus a reduction in statutory volumes are currently present, and we are proposing to again use our waiver authorities under both 211(o)(7)(D) and 211(o)(7)(A) to reduce volume requirements. Congress envisioned that there would be 5.5 billion gallons of cellulosic biofuel in 2017, while we estimate the potential for 312 million gallons. Under 211(o)(7)(D), EPA must lower the required cellulosic volume to the projected production volumes. Doing so also provides EPA with authority to lower advanced and total renewable fuel volumes by the same or a lesser amount. Additionally, we believe that even after reducing total renewable fuel volumes to the full extent possible under the cellulosic waiver authority in 211(o)(7)(D), there is an inadequate domestic supply of renewable fuel to achieve those volumes, both warranting and justifying a further reduction in the total renewable fuel volumes under the authority of 211(o)(7)(A). The inadequate domestic supply is due to a combination of projected limitations in the production and importation of qualifying renewable fuels, as well as factors limiting supplying those fuels to the vehicles that can consume them.

1. Cellulosic Waiver Authority

Section 211(o)(7)(D) of the CAA provides that if the projected volume of cellulosic biofuel production is less than the minimum applicable volume in the statute, EPA shall reduce the applicable volume of cellulosic biofuel required to the projected volume available. For 2017, we are proposing to reduce the applicable volume of cellulosic biofuel under this authority.

Section 211(o)(7)(D) 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 2017, 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 2014–2016 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); *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).

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 of total renewable fuel, after public notice and comment based on a determination that there is an inadequate domestic supply. In addition to proposing to use the cellulosic waiver authority to lower total renewable fuel volumes, we are also proposing to further reduce total renewable fuel volumes for 2017 using the general waiver authority.

EPA interpreted and applied this waiver provision in the 2014–2016 final rule, and concluded that it was appropriate to use this authority in combination with the cellulosic waiver authority to reduce total renewable volumes for those years. EPA, in consultation with DOE and USDA, continues to find that the circumstances justifying the use of the general waiver authority exist and support a finding of inadequate domestic supply. As discussed in the 2014–2016 final rule, we find that this undefined provision is reasonably and best interpreted to encompass the full range of constraints that could result in an inadequate supply of renewable fuel to the ultimate consumers, including fuel production, infrastructure and other constraints. This includes, for example, factors affecting the ability to produce or import biofuels as well as factors affecting the ability to distribute, blend, dispense, and consume those renewable fuels as transportation fuel, jet fuel or heating oil.

A full discussion of EPA's interpretation of this waiver authority can be found in the 2014–2016 final rule. A full discussion of EPA's proposed determination that there is an ''inadequate domestic supply'' of total

renewable fuel in 2017 can be found in Section II.B below.

3. Combining Authorities for Reductions in Total Renewable Fuel

We are again proposing to reduce the applicable volumes of total renewable fuel for 2017 using two distinct authorities. Proposed initial reductions in total renewable fuel correspond to the volume reduction in advanced biofuels, using the cellulosic waiver authority. We are proposing to reduce total renewable fuel further based on a determination of inadequate domestic supply. We are proposing to use the cellulosic waiver authority to reduce the statutory volume for total renewable fuel by an initial increment of 5.0 billion gallons for 2017. In addition, we are proposing to use the general waiver authority exclusively as the basis for further reducing the applicable volume of total renewable fuel by an additional 0.2 billion gallons in 2017.

B. Proposed Determination of Inadequate Domestic Supply

In order to use the general waiver authority in CAA 211(o)(7)(A) to reduce the applicable volumes of total renewable fuel, we must make a determination that there is either ''inadequate domestic supply'' or that implementation of the statutory volumes would severely harm the economy or environment of a State, a region or the United States. This section summarizes our proposed determination that there will be an inadequate domestic supply of total renewable fuel in 2017, and thus that the statutory volume targets are not achievable with volumes that can reasonably be supplied in this year. Additionally, this proposed determination that the statutory volume targets are not achievable with volumes supplied would also support our use of the cellulosic waiver authority under CAA 211(o)(7)(D) to reduce the applicable volumes of advanced and total renewable fuel.

The statute sets a target of 24.0 billion gallons of total renewable fuel for 2017. We believe that this volume cannot be achieved under even the most optimistic assumptions given current and near-future circumstances. To make this proposed determination, we began by assuming that every gallon of gasoline would contain 10% ethanol, and that the supply of conventional and advanced biodiesel and renewable diesel volumes would be equal to those supplied in 2015. These volumes are clearly attainable, based on readily available information and analysis. However, when these supplies of renewable fuel are taken into account, a significant additional volume of renewable fuel would be needed to meet the statutory volume target.

TABLE II.B–1—ADDITIONAL VOLUMES NEEDED TO MEET THE STATUTORY TARGET FOR TOTAL RENEWABLE FUEL IN 2017

[Million ethanol-equivalent gallons]

Statutory target for total renewable fuel	24,000
Maximum ethanol consumption as E10[a]	−14,205
Historical maximum supply of biodiesel and renewable diesel[b]	−2,930
Additional volumes needed	6,865

[a] Derived from projected gasoline energy demand from EIA's Short-Term Energy Outlook (STEO) from April, 2016. We intend to use updated EIA information for the final rule.

[b] Represents the 1.90 billion gallons of biodiesel and renewable diesel supplied in 2015.

Based on the current and near-future capabilities of the industry, we expect that only a relatively small portion of the additional volumes needed would come from non-ethanol cellulosic biofuel, non-ethanol advanced biofuels other than BBD, and non-ethanol conventional renewable fuels other than biodiesel and renewable diesel. In 2015, the total ethanol-equivalent volume for all of these sources was 163 million gallons, and we projected that 235 million gallons would be available in 2016 in our 2014–2016 final rule. In 2017 we believe that these sources could be 300 million gallons or more based on the expectation that the growth which is expected to occur between 2015 and 2016 will continue in 2017. Taking these sources into account, we estimate that the volume of additional renewable fuel needed in 2017 would be about 6,600 million gallons.

Aside from these relatively small sources, renewable fuel that could fulfill the need for the additional volumes needed to reach the statutory targets in 2017 would be additional ethanol in the form of E15 or E85, additional biodiesel and renewable diesel, or some combination of these sources. Table II.B–2 provides examples of the additional volumes that would be needed if the 2017 statutory target for total renewable fuel were not waived.

TABLE II.B–2—EXAMPLES OF FUEL TYPES NEEDED TO MEET THE STATUTORY TARGETS FOR TOTAL RENEWABLE FUEL IN 2017

[Million physical gallons of fuel unless otherwise noted]

Additional volumes needed (ethanol-equivalent)	6,600
Meeting the need for additional volumes using only E15	127,790
Meeting the need for additional volumes using only E85[a]	9,980
Meeting the need for additional volumes using only biodiesel[b]	4,400
Meeting the need for additional volumes using a combination of E15, E85, and biodiesel:	
E15	2,980
E85	2,980
Biodiesel	2,980

[a] Although E85 is assumed to contain 74% ethanol, the use of E85 also displaces some E10. Thus every gallon of ethanol use in excess of the E10 blendwall requires 1.51 gallons of E85.

[b] Each gallon of biodiesel represents 1.5 gallons of renewable fuel in the context of fulfilling the total renewable fuel volume requirement.

Although a combination of E15, E85, and biodiesel would in theory reduce the overall burden on the market to supply the additional volumes needed, the necessary volumes would nevertheless still be far beyond reach. E85 volumes in 2014 only reached about 150 million gallons, and in 2015 we estimate that it rose to about 166 million gallons.[11] [12] In deriving the 2016 volume requirements we estimated that E85 volumes would increase to 200 million gallons, though we also said that 400 million gallons was possible under highly favorable though unlikely conditions. More importantly, our assessment of the potential for growth in E85 that we discussed in the 2014–2016 final rule has changed little in the months since. While growth in E85 supply most certainly can increase in 2017, and programs such as USDA's Biofuel Infrastructure Partnership (BIP) can assist in this effort, there continue to be constraints associated with the weak response of flexible fuel vehicle (FFV) owners to E85 price reductions in comparison to E10 and the failure of RIN prices to be fully passed through to retail fuel prices. As a result, we do not believe that an E85 supply expansion to 2.98 billion gallons can occur in 2017.

Similarly, we do not believe that 2.98 billion gallons of E15 can be supplied in 2017. We projected that 320 million gallons of E15 could be supplied in 2016 based on new infrastructure paid for through USDA's BIP program, and this volume could double in 2017 after the BIP program is fully phased in. As described more fully in Section II.E below, under favorable conditions E15 volumes as high as 800 million gallons might be possible in 2017. However, achieving nearly 3 billion gallons of E15 would require significantly higher growth rates in the number of retail stations offering E15, and/or significantly more favorable pricing for E15 compared to E10. We have seen no evidence that the market is capable of such dramatic changes between today and the end of 2017.

Finally, the necessary volume of advanced and conventional biodiesel that would be needed to avoid a waiver of the statutory target for total renewable fuel, even if combined with substantial increases in E15 and E85 use, is also beyond reach in 2017. For instance, the 2.98 billion gallons of biodiesel shown in Table II.B–2 would be in addition to the 1.9 billion gallons already assumed in Table II.B–1, such that the total volume of conventional and advanced biodiesel needed would be about 5 billion gallons. A total of 5 billion gallons is far higher than the production capacity of all domestic biodiesel facilities, even if accounting for those facilities that are not currently registered under the RFS program. Imports of biodiesel and renewable diesel have historically been much lower than domestic production, reaching a maximum of 470 million gallons in 2015, and thus could not reasonably be expected to fill the gap left by the shortfall in domestic production capacity. The use of 5 billion gallons of biodiesel, equivalent to about 10% of the nationwide diesel pool, would also be constrained by distribution, blending, and dispensing infrastructure. Not only are some areas of the country beyond reasonable reach of biodiesel supply centers, as described in Section III.E.3.iv, but some retailers reduce or modify offerings of biodiesel blends in winter months to account for the higher propensity of biodiesel blends to gel in colder temperatures. Also, a significant portion of the in-use fleet is made up of highway and nonroad diesel engines that are warranted for no more than 5% biodiesel. These considerations are similar to those referenced in the 2014–2016 final rule since little has changed in the months since that could significantly change the potential supply in 2017. In the 2014–2016 final rule, we projected that total biodiesel and renewable diesel volumes could reach 2.5 billion gallons in 2016, which was a significant increase from the 2015 actual supply of 1.9 billion gallons. Even under the most optimistic circumstances, total biodiesel and renewable diesel supply cannot double within one year.

We are also proposing to use the cellulosic waiver authority to reduce volumes of advanced biofuel. Our proposed action is based in part on a determination that the statutory volume targets for advanced biofuel cannot be met in 2017. To make this proposed determination, we took a similar approach to that used for total renewable fuel in Table II.B–1: We first accounted for our proposed volume requirements for cellulosic biofuel and BBD, as well as an estimate of the volume of other non-ethanol advanced biofuel that may be possible in 2017 based on supply in previous years to yield an estimate of readily available volumes. When these supplies of advanced biofuel are taken into account, a significant additional volume of advanced biofuel would still be needed for the statutory volume targets to be met.[13]

TABLE II.B–3—ADDITIONAL VOLUMES NEEDED TO MEET STATUTORY TARGETS FOR ADVANCED BIOFUEL IN 2017

[Million ethanol-equivalent gallons]

Statutory target for advanced biofuel	9,000
Proposed requirement for cellulosic biofuel	312
Biomass-based diesel	[a] 3,000
Potential other non-ethanol advanced	[b] 50
Additional volumes needed	5,638

[a] Represents 2.0 billion gal of BBD that was established in the 2014–2016 final rule. Each gallon of biodiesel generates 1.5 RINs.

[b] Supply of non-ethanol advanced biofuel other than BBD and cellulosic biofuel was 53 million gal in 2014 and 33 million gal in 2015. Given the variability in this source over these two years, we have rounded to 50 mill gal for this assessment.

Based on historic patterns and our understanding of production capacity and feedstock availability, we believe that advanced biofuel that could fulfill the need for the additional volumes needed to reach the statutory target in 2017 would primarily be imported sugarcane ethanol or BBD in excess of the BBD standard. Table II.B–4 provides examples of the additional volumes that would be needed.

TABLE II.B–4—EXAMPLES OF FUEL TYPES NEEDED TO MEET THE STATUTORY TARGETS FOR ADVANCED BIOFUEL IN 2017

[Million physical gallons unless otherwise noted]

Additional volumes needed (ethanol-equivalent)	5,638
Meeting the need for additional volumes using only imported sugarcane ethanol	5,638
Meeting the need for additional volumes using only BBD [a]	3,759

[11] ''Estimating E85 Consumption in 2013 and 2014,'' Dallas Burkholder, Office of Transportation and Air Quality, US EPA. November 2015. EPA Docket EPA–HQ–OAR–2015–0111.

[12] ''Preliminary estimate of E85 consumption in 2015,'' David Korotney, Office of Transportation and Air Quality, US EPA. April 2016. EPA Docket EPA–HQ–OAR–2016–0004.

[13] The vast majority of these additional volumes needed are due to a shortfall in cellulosic biofuel in comparison to the statutory target of 5.5 billion gallons for 2017.

TABLE II.B–4—EXAMPLES OF FUEL TYPES NEEDED TO MEET THE STATUTORY TARGETS FOR ADVANCED BIOFUEL IN 2017—Continued

[Million physical gallons unless otherwise noted]

Meeting the need for additional volumes using a combination of imported sugarcane ethanol and BBD:	
Sugarcane ethanol	2,255
BBD	2,255

[a] Assumed to be biodiesel. Each gallon of biodiesel represents 1.5 gallons of renewable fuel in the context of fulfilling the advanced biofuel volume requirement.

Even if the additional volumes of advanced biofuel needed to avoid a waiver were shared between imported sugarcane ethanol and BBD, the necessary volumes of both would be far in excess of what we believe is reasonably achievable. For instance, imports of sugarcane ethanol have been highly variable in the past, and the highest volume of sugarcane ethanol that has ever been imported to the U.S. was 680 million gallons in 2006. Moreover, notwithstanding an estimate of 2 billion gallons of sugarcane ethanol supply from the Brazilian Sugarcane Industry Association (UNICA) submitted in response to the June 10, 2015 proposal for the 2016 standards, we do not believe that 2.26 billion gallons could be exported from Brazil to the U.S. in 2017. The 2016 standards that we established in the 2014–2016 final rule were based in part on a projection of 200 million gallons of imported sugarcane ethanol. Our current views of the potential supply of imported sugarcane ethanol for 2017 are largely the same as those discussed in the 2014–2016 final rule, and we refer readers to that rule for further discussion.[14]

Under a scenario wherein growth in sugarcane ethanol and BBD both contributed to providing the additional volumes needed to avoid a waiver of the advanced biofuel statutory target, the total volume of BBD required under the RFS program would also be far in excess of what is achievable in 2017. For instance, the 2.26 billion gallons of BBD shown in Table II.B–4 above would be in addition to the 2.0 billion gallon volume requirement for BBD, such that the total volume of BBD needed would be 4.26 billion gallons. For many of the same reasons discussed above in the context of the inability to meet the statutory targets for total renewable fuel, this level of BBD is not achievable in 2017.

In the 2014–2016 final rule, we discussed the fact that the market is not unlimited in its ability to respond to the standards EPA sets. We continue to believe that setting the volume requirements at the statutory targets would not compel the market to respond with sufficient changes in production levels, infrastructure, and fuel pricing at retail to result in the statutory volumes actually being consumed in 2017, but would instead lead to a complete draw-down in the bank of carryover RINs (which, as discussed in Section II.C, we do not believe to be in the best interest of the program), noncompliance, and/or additional petitions for a waiver of the standards.

C. Total Renewable Fuel Volume Requirement

We are proposing to exercise our authority to waive the volume of total renewable fuel under the general waiver authority for 2017, since reductions using the cellulosic authority alone would be insufficient to alleviate the inadequacy in supply. Our objective is to exercise the general waiver authority only to the extent necessary to address the inadequacy in supply. We are seeking to determine the ''maximum'' volumes of renewable fuel that are reasonably achievable in light of supply constraints. To clarify, we are not aiming to identify the absolute maximum domestic supply that could be available in an ideal or unrealistic situation, or a level that might be anticipated under conditions that are possible, but unlikely to occur. Rather, we are attempting to identify what we believe is the most likely maximum volume that can be made available under real world conditions, taking into account the ability of the standards we set to cause a market response and result in increases in the supply of renewable fuels. This is a very challenging task not only in light of the myriad complexities of the fuels market and how individual aspects of the industry might change in the future, but also because we cannot precisely predict how the market will respond to the volume-driving provisions of the RFS program. Thus, although the determination is founded on our analyses and evaluation of the available information, the determination is also one that we believe is not given to precise measurement and necessarily involves considerable exercise of judgment.

Our intention for 2017 is to establish a requirement for total renewable fuel that takes into account the ability of the market to respond to the standards we set, and is the maximum that is reasonably achievable given the various constraints on supply. In this context, we continue to believe that the constraints associated with the E10 blendwall do not represent a firm barrier that cannot or should not 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. To date we have seen no compelling evidence that the nationwide average ethanol concentration in gasoline cannot exceed 10.0%.

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 limit the growth in renewable fuel supply. Whether the primary constraint is in the technology development and commercialization stages, as has been the case with cellulosic biofuels, or is instead related to the development of distribution infrastructure, as is recently the case with ethanol and biodiesel in the United States, the end result is that these constraints limit the growth rate in the available supply of renewable fuel as transportation fuel, heating oil, or jet fuel. These constraints were discussed in detail in the 2014–2016 final rule, and we believe that the same constraints will operate to limit supply for 2017 as well.[15] Other factors outside the purview of the RFS program also impact

[14] See 80 FR 77476.

[15] See 80 FR 77450.

the supply 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 volumes of renewable fuel that can be supplied in the future.

While the constraints are real and must be taken into account when we determine maximum reasonably achievable volumes of total renewable fuel for 2017, none of those constraints represent insurmountable barriers to growth. Rather, they are challenges that can be overcome in a responsive marketplace given enough time and with appropriate investment. The speed with which the market can overcome these constraints is a function of whether and how effectively parties involved in the many diverse aspects of renewable fuel supply respond to the challenges associated with transitioning from fossil-based fuels to renewable fuels, the incentives provided by the RFS program, and other programs designed to incentivize renewable fuel use. As discussed in the following sections, we believe that the total renewable fuel volume requirements that we are proposing for 2017 reflect the extent to which market participants can reasonably be expected to respond within the time period in question to increase renewable fuel supplies.

Consistent with our approach in the 2014–2016 final rule, we have also considered the availability of carryover RINs in our proposed decision to exercise our waiver authorities in setting the volume requirements for 2017. Other than requiring a credit program, neither the statute nor EPA regulations specify how or whether EPA should consider the availability of carryover RINs in exercising its waiver authorities either in the standard-setting context or in response to petitions for a waiver during a compliance year. The availability of carryover RINs is important both to individual compliance flexibility and operability of the program as whole. We believe that carryover RINs are 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. As described in the 2007 rulemaking establishing the RFS regulatory program,[16] and further reiterated in the 2014–2016 final rule,[17] carryover RINs are intended to 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 affecting the supply of renewable fuel that is needed to meet the standards.

At the time of the 2014–2016 final rule, we estimated that there were at most 1.74 billion carryover RINs available and decided that carryover RINs should not be counted on to avoid or minimize the need to reduce the 2014, 2015, and 2016 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 2013 compliance year and we now estimate that there are now at most 1.72 billion carryover RINs available, a decrease of 20 million RINs from the previous estimate of 1.74 billion carryover RINs. Since we established the 2014 and the 2015 RFS volume standards at essentially the same level of renewable fuel supplied for those years, we do not expect there to be an appreciable change in the number of available carryover RINs after compliance demonstrations are made for the 2014 and 2015 compliance years.[18]

For 2016, we established standards that represented a significant increase in the renewable fuel volume targets from 2014 and 2015. In the 2014–2016 final rule, we stated that these standards may result in a drawdown in the carryover RIN bank, although an intentional drawdown was not assumed in setting the volume standards. However, we will likely not have data showing whether or not there has been an appreciable change in the size of the bank of carryover RINs until after the 2017 RFS standards have been established.[19] Therefore, there is considerable uncertainty regarding the total number of carryover RINs that may be available for compliance with the 2017 standards. Given this uncertainty, we believe that it would be prudent, and would advance the long-term objectives of the CAA, not to propose standards for 2017 so as to intentionally draw down the current bank of carryover RINs. Assuming the bank of carryover RINs either remains constant after 2016 compliance demonstrations are made or is reduced, we believe that the availability of the full volume of those carryover RINs will be important for both obligated parties and the efficient functioning of the RFS program itself in addressing significant future uncertainties and challenges, particularly since we would expect compliance with the proposed advanced and total renewable fuel standards to require significant progress in growing and sustaining increased production and use of renewable fuels. We believe it is highly unlikely that the bank of carryover RINs will be larger after 2016 compliance demonstrations are made; however, if this is the case, we will take that fact into consideration in setting future standards.

For the reasons noted above, and consistent with the approach we took in the 2014–2016 final rule, we believe that the collective bank of carryover RINs that we anticipate will be available in 2017 should be retained, and not intentionally drawn down, to 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 renewable fuel volume requirements at levels that would envision the drawdown in the bank of carryover RINs.

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 has decreased in recent years as the gasoline market has become saturated with E10, and efforts to expand the use of higher ethanol blends such as E15 and E85 have not been sufficient to maintain past growth rates in total ethanol supply. The low number of retail stations selling these higher-level ethanol blends, along with poor price advantages compared to E10, a limited number of FFVs, and limited marketing of these fuels, among others, represent challenges to the continued growth of the supply 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

[16] 72 FR 23900, May 1, 2007.

[17] See 80 FR 77482–77487.

[18] The compliance demonstration deadlines for the 2014 and 2015 RFS standards are August 1, 2016, and December 1, 2016, respectively.

[19] The compliance demonstration date for the 2016 RFS standards is March 31, 2017, while the statutory deadline for establishing the 2017 RFS standards is November 30, 2016.

constraints.[20] That discussion generally remains relevant for 2017, though we believe that the supply of ethanol can be somewhat higher in 2017 than it is expected to be in 2016.

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

- Overall gasoline demand and the volume of ethanol that can be blended into gasoline as E10 (the so-called 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 demand for 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 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 the number of retail stations that offer higher ethanol blends and the relative pricing of those higher ethanol blends in comparison to E10. The RFS program complements other efforts to increase the use of renewable fuels, such as USDA's Biofuel Infrastructure Partnership (BIP) program which has provided $100 million in grants for the expansion of renewable fuel infrastructure in 2016 (supported by additional State matching funds), and their Biorefinery Assistance Program which has provided loan guarantees for the development and construction of commercial-scale biorefineries with a number of the new projects focused on producing fuels other than ethanol.

However, as described in detail in the 2014–2016 final rule, the RFS program is not unlimited in its ability to compel changes in the market to accommodate greater supply of ethanol. For instance, while we do believe that the number of retail stations offering E85 will expand under the influence of the RFS program, an examination of efforts to expand E85 offerings at retail in the past suggests that there are limits in how quickly this can occur even under the most favorable market conditions. While the average rate of expansion has recently been about 120 new E85 stations per year, the growth in E85 stations was more substantial in late 2010 and early 2011—equivalent to about 400 new stations per year. The more recent experience in particular suggests that the growth in 2017 is unlikely to exceed several hundred additional stations each year.[21] [22] Similarly, RIN prices can continue to provide additional subsidies that help to reduce the price of E85 relative to E10 at retail, but the propensity for retail station owners and wholesalers to retain a substantial portion of the RIN value substantially reduces the effectiveness of this aspect of the RIN mechanism.[23] Finally, in the 2014–2016 final rule we based the 2016 volume requirements in part on the expectation that the RFS program would compel all but a tiny portion—estimated at 200 million gallons—of gasoline to contain ethanol. At this time we do not believe that the RFS program would provide incentives for this pool of E0 to shrink further, as the demand for E0 by recreational marine engine owners is often driven by concerns about potential water contamination when E10 is used. (For further discussion of how the Agency arrived at 200 mill gal E0, see 80 FR 77464. We will continue to investigate available sources to determine volumes of E0 in the gasoline market both historically and projected out into the future for establishing the standards under the RFS program, and we request comment on forecasting future volumes of E0.)

We have also found that greater E85 price discounts relative to gasoline have not been associated with the substantial increases in E85 sales volumes that some stakeholders believe have occurred, or could occur in the near future. Based on an analysis of E85 consumption in five states (including the frequently cited E85 consumption data from Minnesota) and the E85 price reductions relative to gasoline in those states, we estimate that increasing the national average E85 price reduction relative to E10 from 17.5% to 30% would have increased total 2014 E85 consumption from 150 million gallons to only 200 million gallons.[24] Importantly, an increase in the nationwide average E85 price reduction to 30% would be unprecedented. A paper published by Babcock and Pouliot estimated sales volumes of a similar magnitude for these price reductions, projecting that consumers would consume about 250 million gallons of E85 if it was priced at parity on a cost-per-mile basis with E10 (approximately 22% lower on a price-per gallon basis).[25] Based on our analysis of consumer response to E85 prices, as supported by the Babcock and Pouliot analysis, it would be inappropriate to estimate total potential E85 consumption based on the consumption capacity of all FFVs, or even just those FFVs with reasonable access to E85. It would be similarly inappropriate to assume that the E85 throughput at a given retail station could be the same as typical throughput rates for E10. Such estimates demonstrate what is physically possible, not what is likely to occur given the way that the market actually operates under the influence of high RIN prices.

Another significant factor in estimating the total volume of ethanol that can be supplied is the E10 blendwall, which is in turn a function of total gasoline demand. While the E10 blendwall does not represent a barrier to increasing ethanol supply, it does mark the point at which additional ethanol supply becomes more challenging to achieve. As the pool-wide ethanol concentration increases from 10% to higher levels of ethanol, the market transitions from mild resistance to obstacles that are more difficult to overcome, particularly with regard to infrastructure and relative pricing for higher ethanol blends such as E15 and E85. Because of this dynamic, it is helpful to identify the total volume of ethanol that could be supplied if all gasoline was E10 and there were no higher ethanol blends.

Based on the April 2016 Short-Term Energy Outlook (STEO) from the Energy Information Administration, total demand for gasoline energy in 2017 is projected to be 17.10 quadrillion Btu.[26] If all of this gasoline energy was consumed as E10, the total volume of gasoline would be 142.0 billion gallons,

[20] 80 FR 77456–77465.

[21] The impacts of the USDA BIP program were taken into consideration in the 2014–2016 final rule. This program will phase-in expanded retail offerings for E15 and E85 throughout 2016, and is expected to be fully phased-in by 2017.

[22] See discussion at 80 FR 77460.

[23] See discussion at 80 FR 77458.

[24] ''Correlating E85 consumption volumes with E85 price,'' memorandum from David Korotney to docket EPA–HQ–OAR–2015–0111.

[25] Babcock, Bruce and Sebastien Pouliot. *How Much Ethanol Can Be Consumed in E85?* Card Policy Briefs, September 2015. 15–BP 54. 200 and 250 mill gal of E85 are of similar magnitude when compared to the many billions of gallons of E85 that some parties have said is possible.

[26] Derived from Table 4a of the STEO, converting consumed gasoline and ethanol projected volumes into energy using conversion factors supplied by EIA. *http://www.eia.gov/forecasts/steo/archives/apr16.pdf.* Excludes gasoline consumption in Alaska. For further details, see ''Calculation of proposed % standards for 2017'' in docket EPA–HQ–OAR–2016–0004.

and the corresponding volume of ethanol consumed would be 14.2 billion gallons. If we took into account the small volume of E0 that we believe would continue to be supplied for use in recreational marine engines as discussed in the 2014–2016 final rule, the total volume of ethanol used as E10 would be slightly smaller at 14.18 billion gallons. By comparison, the ethanol volume we estimated in the 2014–2016 final rule to be associated with the E10 blendwall in 2016 was 14.0 billion gallons.[27]

It is difficult to identify the precise boundary between ethanol supply volumes that can be realistically achieved in 2017 and those that likely cannot realistically be achieved in that timeframe. Nevertheless, we believe that ongoing efforts to increase the availability of E15 and E85 at retail will create opportunities for greater supply of ethanol in 2017 in comparison to 2016.

In the 2014–2016 final rule, we projected that ethanol supply in 2016 could exceed that supplied in 2015 by about 170 million gallons based on changes in gasoline demand, the influence of programs such as USDA's BIP program, and our expectation for how the RFS standards we set would influence sales of E0, E15, and E85 between the two years. For 2017, we believe that slightly larger increases in ethanol supply are possible. For the purpose of assessing the supply of total renewable fuel to require in 2017, we are proposing to use an ethanol supply of 14.4 billion gallons for 2017. While 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 this ethanol volume represents a realistically achievable level that takes into account the ability of the market to respond to the standards we set. We request comment on whether 14.4 billion gallons of ethanol is an appropriate volume to use in the determination of the applicable total renewable fuel volume requirement for 2017. For the final rule, we will consider comments received in response to this proposal, additional data and information that has become available, and more up-to-date projections of gasoline demand in estimating the total volume of ethanol that can be supplied.

2. Biodiesel and Renewable Diesel

While the market constraints on ethanol supply are readily identifiable as being primarily in the areas of refueling infrastructure and ethanol consumption, it is more difficult to identify and assess the market components that may limit potential growth in the use of biodiesel in 2017. Nevertheless, as discussed in the final rule establishing the RFS standards for 2014–2016, there are several factors that may, to varying degrees and at different times limit the growth of biodiesel and renewable diesel in future years, including local feedstock availability, production and import capacity, and the capacity to distribute, sell, and consume increasing volumes of biodiesel and renewable diesel. We continue to believe that the supply of biodiesel and renewable diesel as transportation fuel in the United States, while growing, is not without limit in the near term.

In the 2014–2016 rule we discussed the current status of each of the factors that impacts the supply of biodiesel and renewable diesel used as transportation fuel in the United States. While the market for biodiesel and renewable diesel has continued to develop, little has changed that would significantly impact our assessment of these factors. Instead, we expect that the growth in the supply of biodiesel and renewable diesel will largely be driven by incremental developments across the marketplace in 2017 to steadily increase volumes. For the purpose of deriving our proposed volumes for advanced biofuel and total renewable fuel we have projected that 2.7 billion gallons of biodiesel and renewable diesel (including both advanced and conventional biofuel) can be supplied in 2017, up from the 2.5 billion gallons that was projected for 2016. This volume exceeds the previously established BBD volume requirement of 2.0 billion gallons in 2017, as we believe additional volumes of both conventional and advanced biodiesel and renewable diesel can be supplied to the United States in 2017 (see Section IV for further discussion of the BBD standard). The following sections discuss our expectations for developments in key areas affecting the supply of biodiesel and renewable diesel in 2017. For a more detailed discussion of each of these factors, see the discussion in the 2014–2016 final rule.[28] We request comment on the projected available supply of biodiesel and renewable diesel in 2017, as well as the degree to which each of the factors discussed below may impact the available supply.

i. Feedstock Availability

In previous years, the primary feedstocks used to produce biodiesel and renewable diesel in the United States have been vegetable oils (primarily soy, corn, and canola oils) and waste fats, oils, and greases. We anticipate that these feedstocks will continue to be the primary feedstocks used to produce biodiesel and renewable diesel in 2017. Supplies of these oils are expected to increase slowly over time, as oilseed crop yields increase and an increasing portion of waste oils are recovered. While some have suggested that industries that compete with the biodiesel and renewable diesel industry for vegetable oil feedstocks will turn to alternative feedstock sources, resulting in greater feedstock availability for biodiesel and renewable diesel producers, such a shift in renewable oil feedstock use would not result in an increase in the total available supply of renewable oil feedstocks, and would therefore not alter the fundamental feedstock supply dynamics for biodiesel and renewable diesel production.

We anticipate that there will be a modest increase in the available supply of feedstocks that can be used to produce biodiesel and renewable diesel in 2017. Oil crop yield increases over the next few years are expected to be modest, and significant increases in the planted acres of oil crops are expected to be limited by competition for arable land from other higher value crops. The recovery of corn oil from distillers grains and the recovery of waste oils are already widespread practices, limiting the potential for growth from these sectors. Based on currently available information, we do not believe that it is likely that the availability of feedstocks will significantly limit the supply of biodiesel and renewable diesel used for transportation fuel in the United States in 2017, as other factors that impact the available supply (discussed below) are likely to present greater challenges. However, it is possible that biodiesel production at some individual facilities, especially those built to take advantage of low-cost, locally available feedstocks, may be limited by their access to affordable feedstocks in 2017, rather than their facility capacity. Large increases in the available supply of biodiesel and renewable diesel in future years will likely depend on the development and use of new, high-yielding feedstocks, such as algal oils or alternative oilseed crops.

[27] See Table II.E.2.i–1, 80 FR 77458.

[28] 80 FR 77465.

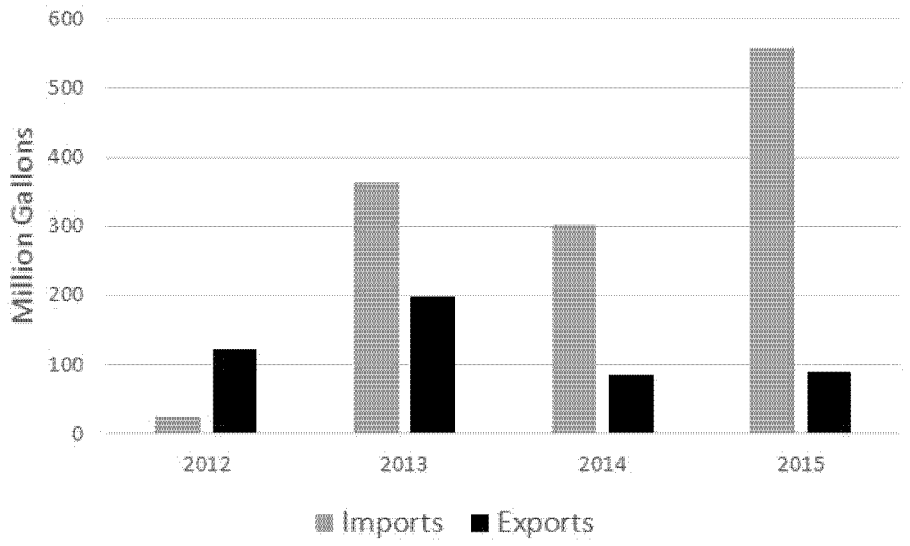
ii. Biodiesel and Renewable Diesel Production Capacity

The capacity for all registered biodiesel production facilities is currently at least 2.7 billion gallons. The capacity for all registered renewable diesel production facilities is more than 0.6 billion gallons. Active production capacity is lower, however, as many registered facilities were idle in 2015. Additionally, as discussed above, the availability of economically viable feedstocks may limit biodiesel production at any given facility to a volume lower than the facility capacity.[29] As with feedstock availability, we do not expect that production capacity at registered facilities will limit the supply of biodiesel for use as transportation fuel in the United States in 2017, however the supply of renewable diesel may be limited by the production capacity at registered facilities. Renewable diesel production facilities require significant investment and time to build, and it is not likely that the capacity of registered renewable diesel production facilities will increase sufficiently in time to have a significant impact on the supply of renewable diesel to the United States in 2017. It is likely that the addition of new production capacity will be required in future years if the supply of renewable diesel is to continue to increase.

iii. Biodiesel and Renewable Diesel Import Capacity

Another important market component in assessing biodiesel and renewable diesel supply is the potential for imported volumes and the diversion of biodiesel and renewable diesel exports to domestic uses. In addition to the approximately 560 million gallons imported into the U.S. in 2015, there were about 90 million gallons exported from the United States to overseas markets. Given the right incentives, it might be possible to redirect a portion of the biodiesel consumed in foreign countries to use in the U.S. in 2017. However, the amount of biodiesel and renewable diesel that can be imported into the United States is difficult to predict, as the incentives to import biodiesel and renewable diesel to the U.S. are a function not only of the RFS and other U.S. policies and economic drivers, but also those in the other countries around the world. These policies and economic drivers are not fixed, and change on a continuing basis. Over the years there has been significant variation in both the imports and exports of biodiesel and renewable diesel as a result of varying policies and relative economic policies (See Figure II.C.2.iii–1 below). Increasing net imports significantly would require a clear signal that increasing imports was economically advantageous, potential re-negotiations of existing contracts, and upgrades and expansions at U.S. import terminals. Because of demand for biodiesel and renewable diesel in other countries and potential biodiesel distribution constraints in the United States (discussed below), we do not expect a dramatic increase in the net imports of biodiesel and renewable diesel (total biodiesel and renewable diesel imports minus exports) in 2017, but rather a moderate increase, consistent with the general trend observed in previous years.

Figure II.C.2.iii-1
Biodiesel and Renewable Diesel Imports and Exports (2012-2015)[a]



[a] Import data reported through the EMTS system. Export data sourced from EIA (http://www.eia.gov/dnav/pet/pet_move_expc_a_EPOORDB_EEX_mbbl_a.htm)

iv. Biodiesel and Renewable Diesel Distribution Capacity

While biodiesel and renewable diesel are similar in that they are both diesel fuel replacements produced from the same types of feedstocks, there are significant differences in their fuel properties that result in differences in the way the two fuels are distributed and consumed. Biodiesel is an oxygenated fuel rather than a pure hydrocarbon. It cannot currently be

[29] Due to the relatively low capital cost of biodiesel production facilities, many facilities were built with excess production capacity that has never been used.

distributed through most pipelines due to contamination concerns with jet fuel, and often requires specialized storage facilities to prevent the fuel from gelling in cold temperatures. A number of studies have investigated the impacts of cold temperatures on storage, blending, distribution, and use of biodiesel, along with potential mitigation strategies.[30] [31] [32] Information provided by the National Biodiesel Board indicates that some retailers offer biodiesel blend levels that differ in the summer and winter to account for these cold temperature impacts.[33]

The infrastructure needed to store and distribute biodiesel has generally been built in line with the local demand for biodiesel. In most cases the infrastructure must be expanded to bring biodiesel to new markets, and additional infrastructure may also be needed to increase the supply of biodiesel in markets where it is already being sold. Renewable diesel, in contrast, is a pure hydrocarbon fuel that is nearly indistinguishable from petroleum-based diesel. As a result, there are fewer constraints on its growth with respect to distribution capacity.

Another factor potentially constraining the supply of biodiesel is the number of terminals and bulk plants that currently distribute biodiesel. At present there are about 600 distribution facilities reported as selling biodiesel either in pure form or blended form, the majority of which are bulk plants.[34] [35] These 600 facilities are still a relatively small subset of the 1400 terminals and thousands of additional bulk plants nationwide.[36] This small subset appears to be concentrated in the Midwest and most of the population centers of the country, resulting in relatively few biodiesel distribution points to provide biodiesel and biodiesel blends to a large portion of the diesel fuel retailers in the United States. As a result, for the market to continue to expand, it will likely require greater investment per volume of biodiesel supplied, as the new biodiesel distribution facilities will generally have access to smaller markets than the existing facilities, or will face competition as they seek to expand into areas already supplied by existing distribution facilities. Transportation of the biodiesel to and from the terminals and bulk plants must also be addressed, as biodiesel and biodiesel blends are precluded from being transported in common carrier pipelines. Instead, biodiesel must be transported by rail (where infrastructure permits) or truck. Either of these options results in high fuel transportation costs (relative to petroleum derived diesel, which is generally delivered to terminals via pipelines), which may impact the viability of adding biodiesel distribution capacity at a number of existing terminals or bulk plants.

The net result is that the expansion of terminals and bulk plants selling biodiesel and biodiesel blends, and the distribution infrastructure necessary to store and transport biodiesel to and from these facilities, is a significant challenge we believe will limit the potential for the rapid expansion of the biodiesel supply. This is an area in which the biodiesel industry has made steady progress over time, and we anticipate that this progress can and will continue into the future, particularly with the ongoing incentive for biodiesel growth provided by the RFS standards. Low oil prices, however, present a challenge to the expansion of biodiesel distribution infrastructure, since such projects generally have long payback timelines and parties may be hesitant to invest in new infrastructure to enable additional biodiesel distribution at a time when diesel prices are low. As with many of these potential supply constraints, increasing biodiesel storage and distribution capacity will require time and investment, limiting the potential growth in 2017.

v. Biodiesel and Renewable Diesel Retail Infrastructure Capacity

For renewable diesel, we do not expect that refueling infrastructure (*e.g.,* refueling stations selling biodiesel blends) will be a significant limiting factor in 2017 due to its similarity to petroleum-based diesel and the relatively small volumes expected to be supplied in the United States. The situation is different, however, for biodiesel. Biodiesel is typically distributed in blended form with diesel fuel as blends varying from B2 up to B20. Biodiesel blends up to and including B20 can be sold using existing retail infrastructure, and generally does not require any upgrades or modifications at the retail level. Retailers of diesel fuel, however, generally have only a single storage tank for diesel fuel. They can therefore generally only offer a single biodiesel blend. We expect that many of the retailers in this situation will be hesitant to offer biodiesel blends above B5, as doing so would mean only selling a fuel that would potentially void the warranty of many of their customers' engines if used (see following section for a further discussion of engine warranty issues). As discussed in the next section, biodiesel blends up to 5% may be legally sold as diesel fuel without the need for special labeling, and are approved for use in virtually all diesel engines. Because biodiesel blends up to B5 can be used in virtually all diesel engines and require no specialized infrastructure at refueling stations, expanding the number of refueling stations offering biodiesel blends is therefore constrained less by resistance from the retail facilities themselves, and more by the lack of nearby wholesale distribution networks that can provide the biodiesel blends to retail. As discussed in the previous section, we expect this expansion will continue at a steady pace in 2017.

vi. Biodiesel and Renewable Diesel Consumption Capacity

Virtually all diesel vehicles and engines now in the in-use fleet have been warranted for the use of B5 blends. Both the Federal Trade Commission (FTC) and ASTM International (ASTM) specification for diesel fuel (16 CFR part 306 and ASTM D975 respectively) allows for biodiesel concentrations of up to five volume percent (B5) to be sold as diesel fuel, with no separate labeling required at the pump. Biodiesel blends of up to 5% are therefore indistinguishable in this regard. Using biodiesel blends above B5 in diesel engines may, however, require changes in design, calibration, and/or maintenance practices.[37] According to NBB, approximately 80% of all diesel engine manufacturers now warrant at least one of their current offerings for use with B20 blends. This is a potentially significant factor in assessing the potential supply of biodiesel to vehicles in future years and has been a main focus of NBB's

[30] ''Biodiesel Cloud Point and Cold Weather Issues,'' NC State University & A&T State University Cooperative Extension, December 9, 2010.

[31] ''Biodiesel Cold Weather Blending Study,'' Cold Flow Blending Consortium.

[32] ''Petroleum Diesel Fuel and Biodiesel Technical Cold Weather Issues,'' Minnesota Department of Agriculture, Report to Legislature, February 15, 2009.

[33] *http://biodiesel.org/using-biodiesel/finding-biodiesel/retail-locations/biodiesel-retailer-listings.*

[34] List of biodiesel distributers from Biodiesel.org Web site (*http://biodiesel.org/using-biodiesel/finding-biodiesel/locate-distributors-in-the-us/distributors-map*). Accessed 10/8/15.

[35] Bulk plants are much smaller than major gasoline and diesel distribution terminals, and generally receive diesel and biodiesel shipped by trucks from major terminals.

[36] Number of terminals from the American Fuel and Petrochemical Manufacturer's (AFPM) Web site, ''AFPM Industry 101, Fuels Facts'', (*http://education.afpm.org/refining/fuels-facts/*). Accessed 10/28/15.

[37] The vast majority of diesel fuel in the U.S. is consumed by heavy-duty vehicles and nonroad diesel engines. Only a very minor portion is consumed by light-duty diesel passenger vehicles.

technical and outreach efforts for many years.

Given the long life of diesel engines and the number of new engines not warranted for biodiesel blends above B5, turning over a significant portion of the fleet to engines designed and warranted for B20 is still many years off into the future. As of 2015, EPA estimates that nearly one third of the heavy duty diesel vehicles on the road were at least 15 years old, and that approximately 7 percent were at least 25 years old. The relatively large number of older diesel engines in the fleet, the significant number of new engines that are not warranted to use biodiesel blends above B5, and the fact that most diesel fuel retailers sell only a single blend of biodiesel (discussed above), means that in the near term the opportunity to sell B20 exclusively to vehicles designed and warranted to run on these blends will likely be limited to centrally-fueled fleets or retailers large enough to offer multiple biodiesel blend levels.[38]

We believe it is likely that in 2017 it will become increasingly necessary to sell higher-level biodiesel blends, greater quantities of renewable diesel, or additional volumes of biodiesel in qualifying nonroad applications to increase the total supply of biodiesel and renewable diesel. If the diesel pool contained 5% biodiesel nationwide, consumption of biodiesel would reach approximately 2.9 billion gallons in 2017. Alternatively, assuming the availability of approximately 500 million gallons of renewable diesel in 2017 (approximately a 100 million gallon increase from 2015) and the use of 100 million gallons of biodiesel in qualifying nonroad uses, approximately 73% of the highway diesel pool in 2017 would have to be sold as a B5 blend to achieve the total projected supply of biodiesel and renewable diesel of 2.7 billion gallons in 2017. Alternatively, selling appreciable volumes of biodiesel blends above B5 would mean that a smaller percentage of the diesel pool would have to contain biodiesel to achieve the proposed standards. While we believe that achieving these blend levels nationwide is possible in 2017, it will require significant effort and investment in the distribution infrastructure for biodiesel. Biodiesel consumption capacity in areas that currently have access to biodiesel blends is one of the factors likely to slow the growth of the supply of biodiesel and renewable diesel in 2017 and in future years.

vii. Biodiesel and Renewable Diesel Consumer Response

Consumer response to the availability of renewable diesel and low-level biodiesel blends (B5 or less) has been generally positive, and this does not appear to be a significant impediment to growth in biodiesel and renewable diesel use. Because of its similarity to petroleum diesel, consumers who purchase renewable diesel are unlikely to notice any difference between renewable diesel and petroleum-derived diesel fuel. Similarly, biodiesel blends up to B5 are unlikely to be noticed by consumers, especially since, as mentioned above, they may be sold without specific labeling. Consumer response to biodiesel blends is also likely aided by the fact that despite biodiesel having roughly 10 percent less energy content than diesel fuel, when blended at 5 percent the fuel economy impact of B5 relative to petroleum-derived diesel is a decrease of only 0.5%, an imperceptible difference. Consumer response has been further aided by the lower prices that many wholesalers and retailers have been willing to provide to the consumers for the use of biodiesel blends. The economic incentives provided by the biodiesel blenders tax credit and the RIN have made it possible for some retailers to realize additional profits while selling biodiesel blends, while in many cases offering these blends at a lower price per gallon than diesel fuel that has not been blended with biodiesel. The ability for retailers to offer biodiesel blends at competitive prices relative to diesel that does not contain biodiesel, even at times when oil prices are low, is a key factor in the consumer acceptance of biodiesel and renewable diesel.

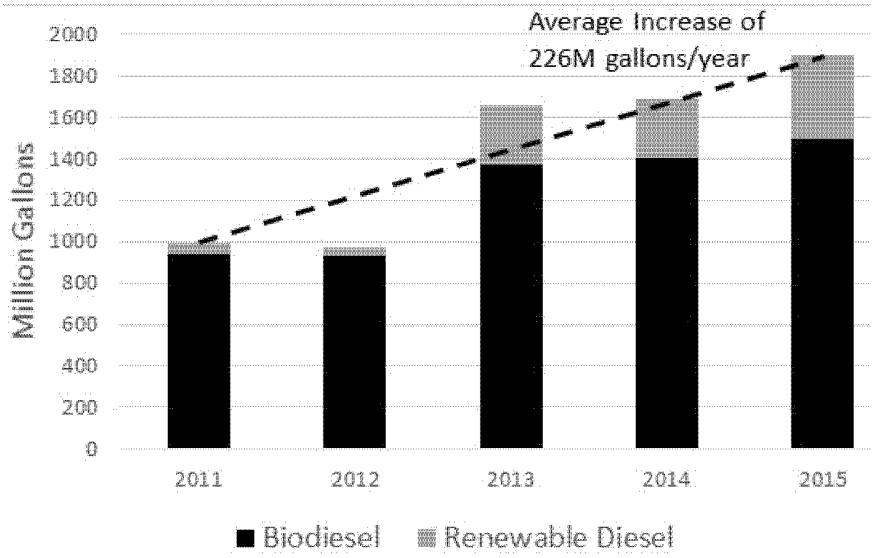
viii. Projected Supply of Biodiesel and Renewable Diesel in 2017

Due to the large number of market segments where actions and investments may be needed to support the continued growth of biodiesel blends, it is difficult to isolate the specific constraint or group of constraints that would be the limiting factor or factors to the supply of biodiesel and renewable diesel in the United States in 2017. Not only are many of the potential constraints inter-related, but they are likely to vary over time. The challenges in identifying a single factor limiting the growth in the supply of biodiesel and renewable diesel in 2017 does not mean, however, that there are no constraints to the growth in supply.

A starting point in developing a projection of the available supply of biodiesel and renewable diesel in 2017 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 both D4 and D6 biodiesel and renewable diesel) supplied each year from 2011 through 2015 are shown below.

[38] Although as stated above, some public retailers are choosing to sell only B11 or B20 blends and allowing the consumer the option of either going elsewhere or purchasing fuel for which their engines are not warranted.

Figure II.C.2.viii-1
Biodiesel and Renewable Supply by Year (2011-2015)[a]



[a] Values represent current estimates of the net supply of biodiesel and renewable diesel (including conventional, advanced, and BBD biodiesel and renewable diesel), accounting for the production, import, and export of biodiesel and renewable diesel. Future RIN retirements, required by enforcement actions of for other reasons, may impact the number of biodiesel and renewable diesel RINs available for compliance purposes..

To use the historical data to project the available supply of biodiesel and renewable diesel in 2017 we started with the volume expected to be supplied in 2016 (2.5 billion gallons), and then assessed how much the supply could be expected to increase in 2017 in light of the constraints discussed above. Using historic data is appropriate to the extent that growth in the year or years leading up to 2016 reflects the rate at which biodiesel and renewable diesel constraints can reasonably be expected to be addressed and alleviated in the future. In assessing the potential growth of biodiesel and renewable diesel in 2017 we believe this to be the case. There are many potential ways the historical data could be used to project the supply of biodiesel and renewable diesel in future years. Two relatively straight-forward methods would be to use either the largest observed annual supply increase (689 million gallons from 2012 to 2013) or the average supply increase (226 million gallons from 2011 to 2015) to project how much biodiesel and renewable diesel volumes could increase over 2016 levels in 2017. We appreciate that there 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 such cases where the future growth rate will be determined by the same variety of complex and inter-dependent factors that have factored into historical growth.

In projecting the available supply of biodiesel and renewable diesel in 2016 for the final rule establishing the 2014–2016 standards, we estimated that the supply of biodiesel and renewable diesel could increase from the level supplied in 2015 in line with the largest observed annual supply increase from the historic record. While RIN available generation data for 2016 is limited, we continue to believe this high year-over-year increase is possible in part due to the relatively small growth in the supply of biodiesel and renewable diesel in 2014 and 2015, during which no annual standards were in place to promote growth in the supply of biodiesel and renewable diesel and during which time the biodiesel blenders tax credit was only reinstated retroactively. During these years (2014–2015) we believe that the supply of biodiesel likely grew at a slower rate than the progress being made to expand the potential supply of biodiesel and renewable diesel used as transportation fuel in the United States due to the absence of standards in these years. We believe that the significant increase in the projected supply of biodiesel and renewable diesel from 2015 to 2016 will therefore be significantly enabled by the relatively slow growth in supply in 2014 and 2015. We do not believe that a similarly large supply increase in 2017 is possible after such a large increase from 2015 to 2016. Instead, we believe that an approximately 200 million gallon per year increase, more reflective of the average annual increased observed from 2011 to 2015 (the most recent year for which data is currently available), best reflects the maximum reasonably achievable growth rate for the supply of biodiesel and renewable diesel in 2017.

We recognize that these growth rates achieved in the past (the average annual growth rate and the largest annual supply increase) do not necessarily indicate the growth rate that can be achieved in the future. In the past, biodiesel was available in fewer markets, allowing new investments to be targeted to have a maximum impact on volume. However, as the market becomes more saturated and biodiesel becomes available in an increasing number of markets, additional investments may tend to have less of an impact on volume, limiting the potential large increases in supply year over year. Additionally, much of the increase in the volume of biodiesel and renewable diesel supplied from 2012 to 2013 was renewable diesel, which is faced with far fewer distribution and consumption challenges than biodiesel for blends above B5. Such an increase in the available supply of renewable diesel in 2017 is unlikely as we are currently unaware of any renewable diesel facilities under construction that are likely to supply significant volumes of

fuel to the United States in 2017, and the capital costs and construction timelines associated with constructing new renewable diesel facilities are significant. It will likely require greater investment to achieve the same levels of growth in the supply of biodiesel and renewable diesel in 2017 as compared to previous years. However, we must also consider the extent to which historic growth rates can be seen as representing the maximum reasonably achievable growth that is possible with the RFS standards and other incentives in place. The year with the historic maximum rate of growth was 2013—a year in which both tax incentives and RFS incentives were in place to incentivize growth, and the infrastructure constraints related to the distribution and use of biodiesel were not as significant as they are presently. We believe it is reasonable to assume the incentives provided by the standards in 2017 will be sufficient to enable the proposed supply increases in these years despite these challenges discussed above, but do not believe that a rate of growth equal to that seen in 2013 is possible in 2017.

The present constraints do not represent insurmountable barriers, but they will take time to overcome. The market has been making efforts to overcome these constraints in recent years, as demonstrated by the fact that biodiesel and renewable diesel consumption in the U.S. has been steadily increasing. We believe that opportunity for ongoing growth exists, but that the constraints listed above will continue to be a factor in the rate of growth in future years. We recognize that the market may not necessarily respond to the final total renewable standard by supplying exactly 2.7 billion gallons of biodiesel and renewable diesel to the transportation fuels market in the United States in 2017, but that the market may instead supply a slightly 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 achievability of the total volume requirement than there is concerning the projected 2.7 billion gallons of biodiesel and renewable diesel that we have used in deriving the proposed total renewable fuel volume requirement for 2017. We request comment on the projected supply of biodiesel and renewable diesel used as transportation fuel in the United States in 2017, as well as the factors that may enable or inhibit the growth in the supply of these fuels.

3. Total Renewable Fuel Supply

The total volume of renewable fuel that can be supplied in 2017 is driven primarily by the estimated supplies of ethanol and biodiesel/renewable diesel, as discussed in the previous sections. Cellulosic biogas can also contribute to the total volume of renewable fuel, as described more fully in Section III. While other renewable fuels such as naphtha, heating oil, butanol, and jet fuel can be expected to continue growing over the next year, collectively, we expect them to contribute considerably less to the total volume of renewable fuel that can be supplied in 2017.[39]

Most biofuel types can be produced as either advanced biofuel (with a D code of 3, 4, 5, or 7) or as conventional renewable fuel (with a D code of 6), depending on the feedstock and production process used. Our estimate of the supply of total renewable fuel shown in the table below includes contributions from both advanced biofuels and conventional renewable fuels.

TABLE II.C.3–1—VOLUMES USED TO DETERMINE THE PROPOSED TOTAL RENEWABLE FUEL VOLUME REQUIREMENTS IN 2017

[Million ethanol-equivalent gallons except as noted]

Ethanol	14,400
Biodiesel and renewable diesel (ethanol-equivalent volume/ physical volume)	4,050/2,700
Biogas	285
Other non-ethanol renewable fuels[a]	50
Total renewable fuel	18,785

[a] Includes naphtha, heating oil, butanol, and jet fuel.

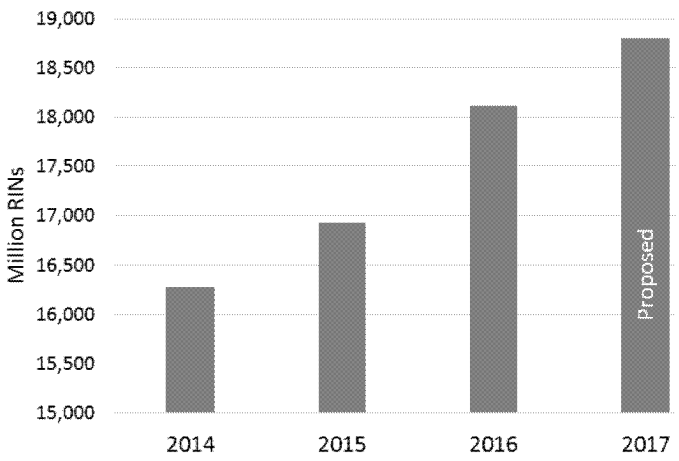
[39] Supply of these other types of renewable fuel reached 33 million gallons in 2015.

Based on this assessment, we are proposing a total renewable fuel volume requirement of 18.8 billion gallons for 2017. We request comment on this proposed volume requirement and the basis as shown in the table above, and whether a volume requirement higher or lower than we are proposing would be more appropriate taking into consideration more recent data and factors such as the ability of the volume requirements to lead to increases in supply of renewable fuels.

We note that the contributions from individual sources shown in Table II.C.3–1 were developed only for the purpose of determining the proposed volume requirements; they do not represent EPA's projection of precisely how the market would respond if we set the total renewable fuel volume requirement at 18.8 billion gallons for 2017. As we said in the 2014–2016 final rule, any supply estimate we make for particular fuel types may be uncertain, but there is greater certainty that the overall volume requirements can be met given the flexibility in the market that is inherent in the RFS program. The contributions from individual sources that we have used in the table above are illustrative of one way in which the volume requirements for total renewable fuel could be met. Actual market responses could vary widely, as described more fully in Section II.E.

The volume of total renewable fuel that we are proposing for 2017 reflects our assessment of the maximum volumes that can reasonably be achieved, taking into account both the constraints on supply discussed previously and our judgment regarding the ability of the standards we set to result in marketplace changes. As shown in Figure II.C.3–1, the proposed volume requirements would follow an upward trend consistent with that from previous years.

Figure II.C.3-1
Growth in Total Renewable Fuel



D. Advanced Biofuel Volume Requirement

As noted earlier, the CAA provides EPA with two waiver authorities. For the 2014–2016 final rule, we used the cellulosic waiver authority alone to reduce statutory volumes of advanced biofuel to levels we determined to be reasonably attainable; in doing so we did not reduce advanced biofuel by the full reduction in cellulosic biofuel. We reduced total renewable fuel by the same amount using that authority, and then by additional increment using the general waiver authority. As discussed in Section II.A, EPA has broad discretion in using the cellulosic waiver authority, since Congress did not specify the circumstances under which it may or should be used nor the factors to consider in determining appropriate volume reductions. We note that increases in the statutory volume targets after 2015 are only in advanced biofuel, and that advanced biofuel provides relatively large GHG reductions in comparison to conventional renewable fuel. In light of these facts, our approach in the 2014–2016 final rule was to set the 2016 advanced biofuel volume requirement at a level that was reasonably attainable taking into account uncertainties related to such factors as production, import, distribution, and consumption constraints associated with these fuels. The result of that approach is that reasonably attainable volumes of advanced biofuel will compensate for a portion of the shortfall in cellulosic biofuel in 2016, thereby promoting the larger RFS goals of reducing GHGs and enhancing energy security. We are proposing to take the same approach to determining the advanced biofuel volume requirement for 2017.

Our proposed approach to identifying ''reasonably attainable'' volumes of advanced biofuel using the cellulosic waiver authority is different than our proposed approach under the general waiver authority of identifying the ''maximum reasonably achievable supply.'' In proposing to exercise the cellulosic waiver authority in this rulemaking, we are not required, and do not intend, to necessarily identify the most likely ''maximum'' volumes of advanced biofuel that can be used in 2017. We believe that in exercising our discretion under the cellulosic waiver authority we can identify reasonably attainable volumes in a manner that is similar to, but may be less exacting than, a determination of inadequate domestic supply using the general waiver authority.[40]

Given that advanced biofuels are a subset of total renewable fuel, the proposed 2017 volume requirement for advanced biofuel reflects our proposed assessment of the portion of total renewable fuel that should be required to be advanced biofuel. We have made this assessment separately for ethanol, biodiesel/renewable diesel, and other renewable fuels.

With regard to ethanol, the primary source of advanced biofuel continues to be imported sugarcane ethanol. As described in the 2014–2016 final rule, the supply of imported sugarcane ethanol has been highly uncertain. Both total ethanol imports and imports of Brazilian sugarcane ethanol have varied significantly since 2004, and in 2014 and 2015 they reached only 64 and 89 million gallons, respectively. Much of this variability can be tied to the worldwide price of sugar: between 2005 and 2015, year-to-year Brazilian production of sugar has increased just as often as it has decreased.[41] Total gasoline consumption in Brazil also continues to climb, reducing the potential for substantial increases in exports of ethanol in 2017 as ethanol serves as a critical source of fuel supply in Brazil to meet increasing demand.[42] These considerations led us to determine that 200 million gallons of imported sugarcane ethanol was an appropriate volume to use in determining the 2016 volume requirement for advanced biofuel.

The information currently available to us does not suggest that the circumstances will be significantly different for 2017 than they are for 2016. For the purposes of deriving the proposed advanced biofuel volume requirements for 2017, then, we have assumed that imports of sugarcane ethanol will be 200 million gallons, the volume that we used in establishing the 2016 volume requirement for advanced biofuel. This volume is approximately equal to the average annual import volume between 2010 and 2015. Apart from this assumed level in the determination of the proposed advanced biofuel volume requirement for 2017, we note that actual imports of sugarcane ethanol could be higher or lower than

[40] See Monroe Energy v. EPA, 750 F.3d 909, 915 (affirming EPA's broad discretion in adjusting advanced biofuel and total renewable fuel volumes under the cellulosic waiver provision).

[41] ''UNICA—Updated Information on Brazils Sugarcane Production—Oct 2015,'' EPA docket EPA–HQ–OAR–2016–0004.

[42] ''Gasoline Demand in Brazil: An empirical analysis,'' Thaís Machado de Matos Vilela, Pontifical Catholic University of Rio de Janeiro, Figure 2.

200 million gallons as shown in the scenarios for how the market could respond in Section II.E below. For the purposes of determining the final applicable volume requirements, we may adjust this value upwards or downwards based on more recent data on actual imports of sugarcane ethanol that we obtain from commenters or that may otherwise become available prior to the time we issue the final rule.

With regard to biodiesel and renewable diesel, past experience suggests that a high percentage of the supply of these fuel types to the United States qualifies as advanced biofuel. In previous years biodiesel and renewable diesel produced in the United States has been almost exclusively advanced biofuel. It is also likely that some advanced biodiesel will be imported in 2017, as discussed in Section II.C.2.iii. Setting the 2017 advanced biofuel volume requirement so as to require that a high percentage of the projected total supply of biodiesel and renewable diesel would be in the form of advanced biofuel would not only reflect past experience, but would also enhance the GHG benefits of the RFS program.

However, we also acknowledge that imports of conventional (D6) biodiesel and renewable diesel have increased in recent years, and are likely to continue to contribute to the supply of renewable fuel in the United States in 2017.[43] Moreover, the potential constraints related to the distribution and use of biodiesel, discussed in Section II.C.2.iv through vi above, may lead to an increasing demand for renewable diesel, which faces fewer potential constraints related to distribution and use than biodiesel. Much of the renewable diesel produced globally would qualify as conventional, rather than advanced biofuel, and we therefore expect that conventional renewable diesel will continue to be an important source of renewable fuel used in the United States in 2017. At the same time, the future supply to the U.S. market of any imported renewable fuel is particularly difficult to assess given potential developments throughout the world that may influence actual import levels.

In the context of setting the 2016 volume requirements in the 2014–2016 final rule, we indicated that supply of conventional biodiesel and renewable diesel could increase significantly in comparison to 2015 supply. For 2017, we believe it would be prudent to assume the same level of supply until we can collect additional information on how the market is reacting to the 2016 volume requirements. Doing so also places an emphasis on growth in advanced forms of biodiesel and renewable diesel, furthering the GHG goals of the RFS program. Therefore, for the purposes of determining the proposed volume requirements in this rule, we believe it would be reasonable to assume that the increase in total biodiesel and renewable diesel in 2017 is attributed entirely to increases in the supply of advanced biodiesel and renewable diesel. The volumes that we propose using are shown below, along with the volumes that we used in setting the 2016 volume requirements.

TABLE II.D–1—ADVANCED AND TOTAL BIODIESEL + RENEWABLE DIESEL USED FOR DETERMINING THE PROPOSED VOLUME REQUIREMENTS FOR 2017

[Million physical gallons]

	2016	2017
Total	2,500	2,700
Advanced	2,100	2,300
Conventional	400	400

The 2016 volume requirements represented substantial increases in both advanced and conventional biodiesel and renewable diesel in comparison to 2015. The annual increase we are proposing to use for 2017, as shown in the table above, would be more moderate. We believe that this is reasonable because the circumstances we are facing in this action are different than those we were facing in the 2014–2016 final rule. The 2016 standards were designed to reflect the fact that the 2014 and 2015 standards had not been set by the statutory deadlines even though the market had continued to make progress during that time to expand supply. There will be comparatively less time available for the market to prepare to meet the applicable standards for 2017. Moreover, as the volumes of biodiesel and renewable diesel increase, the marketplace challenges associated with them also increase, generally making each increment more difficult to attain than the last. As the country becomes saturated with retail and distribution infrastructure in the major fuel consumption areas, we expect that it will be increasingly costly to expand biodiesel and renewable diesel into areas with less favorable returns on investments.

We note that the volumes shown in Table II.D–1 above cannot themselves be viewed as volume requirements. The volumes shown in Table II.D–1 are merely the basis on which we have determined the proposed volume requirements for advanced biofuel and total renewable fuel. As discussed in more detail in Section II.E below, there are many ways that the market could respond to the volume requirements we are proposing, including biodiesel and renewable diesel volumes higher or lower than those shown in Table II.D–1.

Due to the nested nature of the standards, all cellulosic biofuel qualifies toward meeting the advanced biofuel volume requirement. As shown in Table II.C.3–1, we also believe that the market can supply about 50 million gallons of advanced biofuel other than ethanol, biodiesel, and renewable diesel in 2017. The combination of all sources of advanced biofuel lead us to believe that 4.0 billion gallons of advanced biofuel in 2017 is reasonably attainable, and that it is not necessary to reduce the advanced biofuel statutory target by the full amount permitted under the cellulosic waiver authority (which would have resulted in an advanced biofuel volume requirement of 3.8 billion gallons). This is the volume requirement that we are proposing for advanced biofuel for 2017.

TABLE II.D–2—VOLUMES USED TO DETERMINE THE PROPOSED ADVANCED BIOFUEL VOLUME REQUIREMENTS IN 2017

[Million ethanol-equivalent gallons except as noted]

Cellulosic biofuel	312
Advanced biodiesel and renewable diesel (ethanol-equivalent volume/physical volume)	3,450/2,300
Imported sugarcane ethanol	200
Other non-ethanol advanced	50
Total advanced biofuel	4,012

We request comment on this proposed volume requirement for advanced biofuel and the basis as shown in the table above, and whether a volume requirement higher or lower than we are proposing would be more appropriate taking into consideration more recent data and factors such as the ability of the volume requirements to lead to increases in supply of renewable fuels.

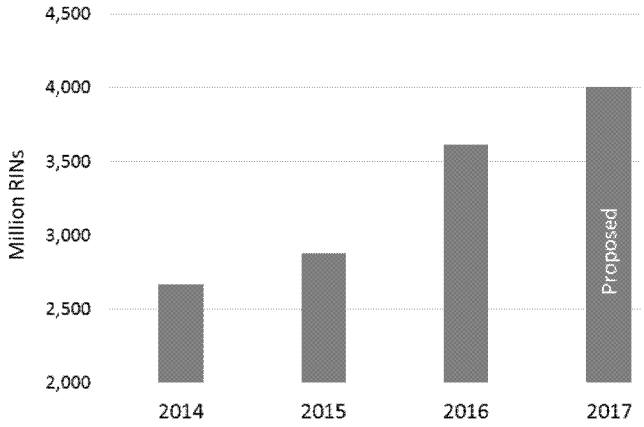
As noted before, the volumes actually used to satisfy the advanced biofuel volume requirements may be different than those shown in the table above. The volumes of individual types of renewable fuel that we have used in this analysis represent our current best estimate of volumes that are reasonably attainable by a market that is responsive

[43] For instance, imports of qualifying conventional biodiesel and renewable diesel were 53 mill gal in 2014 and 179 mill gal in 2015.

to the RFS standards. However, given the uncertainty in these estimates, the volumes of individual types of advanced biofuel may be higher or lower than those shown above.

The volume of advanced biofuel that we are proposing would require increases from current levels that are substantial yet reasonably attainable, taking into account the constraints on supply discussed previously, our judgment regarding the ability of the standards we set to result in marketplace changes, and the various uncertainties we have described. Figure II.D–1 shows that the proposed advanced biofuel volume requirement for 2017 would be significantly higher than the volume requirements for advanced biofuel in previous years.

Figure II.D-1
Growth in Advanced Biofuel



We believe the reduction we have proposed in the statutory target for advanced biofuel is justifiable in light of our assessment regarding the reasonable attainability of advanced biofuel volumes in this time period. Moreover, because the proposed reduction in advanced biofuel is less than the proposed reductions in cellulosic biofuel, the reduction can be accomplished using the cellulosic waiver authority alone. We propose to use the cellulosic waiver authority to provide an equal reduction in the total renewable fuel volume, and the general waiver authority to provide an additional increment of reduction necessary to lower the total renewable fuel volume requirement to the maximum level reasonably achievable as described in Section II.C.

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

The transportation fuel market is dynamic and complex, and the RFS program is only one of many factors that determine the relative types and amounts of renewable fuel that will be used. We know that to meet the proposed volume requirements, the market would need to respond by increasing domestic production and/or imports of those biofuels that have fewer marketplace constraints, by expanding the infrastructure for distributing and consuming renewable fuel, and by improving the relative pricing of renewable fuels and conventional transportation fuels at the retail level to ensure that they are attractive to consumers. However, we cannot precisely predict the mix of different fuel types that would result. Nevertheless, we can delineate a range of possibilities, and doing so provides a means of demonstrating that the proposed volume requirements can reasonably be satisfied through multiple possible paths.

We evaluated a number of scenarios with varying levels of E85/E15, E0, imported sugarcane ethanol, advanced biodiesel and renewable diesel, and conventional biodiesel and renewable diesel (likely to be made from palm oil). In doing so we sought to capture the range of possibilities for each individual source, based both on levels achieved in the past and how the market might respond to the proposed standards. Each of the rows in Table II.E–1 represents a scenario in which the proposed total renewable fuel and advanced biofuel volume requirements would be satisfied.

TABLE II.E–1—VOLUME SCENARIOS ILLUSTRATING POSSIBLE COMPLIANCE WITH THE PROPOSED 2017 VOLUME REQUIREMENTS

[Million gallons] [a] [b]

E85	E15	E0	Total ethanol [c]	Sugarcane ethanol	Total biodiesel [d]	Minimum volume of advanced biodiesel [e]
200	600	100	14,358	0	2,738	2,425
200	600	300	14,337	0	2,752	2,425
200	600	300	14,337	200	2,752	2,292
200	600	300	14,337	400	2,752	2,159
200	600	300	14,337	638	2,752	2,000

TABLE II.E–1—VOLUME SCENARIOS ILLUSTRATING POSSIBLE COMPLIANCE WITH THE PROPOSED 2017 VOLUME REQUIREMENTS—Continued

[Million gallons] [a] [b]

E85	E15	E0	Total ethanol [c]	Sugarcane ethanol	Total biodiesel [d]	Minimum volume of advanced biodiesel [e]
200	800	100	14,368	400	2,731	2,159
400	600	300	14,469	638	2,664	2,000
400	800	100	14,500	0	2,643	2,425
400	800	100	14,500	200	2,643	2,292
400	800	100	14,500	400	2,643	2,159
400	800	100	14,500	638	2,643	2,000
400	800	300	14,480	200	2,657	2,292

[a] Assumes for the purposes of these scenarios that supply of other advanced biofuel other than ethanol, BBD and renewable diesel (*e.g.* heating oil, naphtha, etc.) is 50 mill gal, and that the cellulosic biofuel final standard is 312 mill gal, of which 27 mill gal is ethanol and the remainder is primarily biogas.

[b] Biomass-based diesel, conventional biodiesel, and total biodiesel are given as biodiesel-equivalent volumes, though some portion may be renewable diesel. Other categories are given as ethanol-equivalent volumes. Biodiesel-equivalent volumes can be converted to ethanol-equivalent volumes by multiplying by 1.5.

[c] For the range of total ethanol shown in this table, the nationwide pool-wide average ethanol content would range from 10.09% to 10.20%.

[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 proposing. 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 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 proposing in this action can reasonably be satisfied.

We note that it would be inappropriate to construct a new scenario based on the highest volumes in each category that are shown in the tables above in order to argue for higher volume requirements than we are proposing in this action. Doing so would result in summing of values that we have determined are higher than the most likely maximum achievable volumes of the different fuel categories, resulting in a total volume that we believe would be extremely unlikely to be achievable. We have more confidence in the ability of the market to achieve 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. The probability that the upper limits of all sources shown in the tables above could be achieved simultaneously is very small.

We recognize that in some scenarios the volume of a particular category of renewable fuel exceeds the historical maximum or previously demonstrated production level. However, this does not mean that such levels are not achievable. The RFS program is intended to result in supply in any given year that is higher than in all previous years, and it is our proposed determination that for 2017 this is possible. We request comment on our proposed assessment of the levels of supply that are reasonably achievable in 2017.

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 400 million gallons could be reached. USDA's Biofuels Infrastructure Partnership grant program, an important program to expand ethanol retail infrastructure, is expected to help in this regard. This program will increase the number of retail stations that have blender pumps by nearly 1,500. While the program requires only that the blender pumps be certified to offer E15, it is likely that some will also be certified to offer E85. If all of them are certified to dispense both E15 and E85, the total number of retail stations offering E85 could increase from about 3,100 today to 4,500 by 2017, an increase of about 50%. Increases in the price of D6 RINs since the release of the 2014–2016 final rule can help to increase the E85 price discount relative to E10 if producers and marketers of E85 pass 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 E15. Efforts to increase the visibility of E85, including expanded marketing and education, can also help to increase E85 sales. As shown in a memorandum to the docket, 400 million gallons of E85, while unlikely, could be reached under these circumstances.[44] Sales volumes of E85 higher than 400 million gallons are very unlikely, but are possible if the market can overcome constraints associated with E85 pricing at retail and consumer responses to those prices.

Similarly, we believe that under favorable conditions, it is possible that E15 volumes as high as 800 million gallons could be reached in 2017. The nearly 1,500 additional blender pumps that are expected to be installed as a result of USDA's Biofuels Infrastructure Partnership grant program must be certified to offer E15. Combined with previously existing retail stations registered to offer E15 and ongoing efforts to expand E15 offerings at retail apart from USDA's program, it is possible that 1,700 stations could offer E15 by 2017. Since the average retail station will sell about 950 thousand gallons of gasoline in 2017, 800 million gallons of E15 could be sold if about half of the gasoline sold at each of these 1,700 stations was E15.[45] Under these conditions, the use of E15 instead of E10 would increase total ethanol use by about 40 million gallons. Given that the

[44] "Estimating achievable volumes of E85," memorandum from David Korotney to docket EPA–HQ–OAR–2016–0004.

[45] We recognize that retail stations vary significantly in size. However, we do not have sufficient information to determine the size of those stations that currently offer E15 or will in the future. In the absence of such information, we have assumed that stations offering E15 are of the average (mean) size.

vast majority of vehicles in the current fleet are legally permitted to use E15, we believe that this is possible with moderately favorable pricing of E15 compared to E10.

As the tables above illustrate, the proposed volume requirements could result in the consumption of more than 2.7 billion gallons of biodiesel and renewable diesel in 2017. While this level is approximately the same as our estimate of the production capacity of facilities that are currently registered under the RFS program (about 2.7 billion gallons for biodiesel, plus smaller amounts for renewable diesel at dedicated facilities), such facilities are not the only possible source. Not only is there more than several hundred million gallons of unregistered biodiesel production capacity, but there is also the potential for production of renewable diesel at existing crude oil refineries. Finally, imports of biodiesel and renewable diesel reached about 560 million gallons in 2015 and there is no reason to believe that such imports would be substantially less in 2017.

While renewable diesel is chemically indistinguishable from fossil-based diesel fuel, and thus is not subject to any constraints with regard to distribution, cold temperatures, or engine warranties, biodiesel is constrained to some degree in these areas. Out of the maximum of about 2.7 billion gallons of biodiesel and renewable diesel shown in Table II.E–1, more than 2.4 billion gallons could be advanced biodiesel. While this is higher than the 2.3 billion gallons that we used in determining the proposed advanced biofuel volume requirement, it could be supplied from current domestic production capacity which is at least 2.7 billion gallons. The existing fleet of diesel engines may be able to accommodate this volume of biodiesel despite the fact that many in-use diesel engines are only warranted for B5 or less.

F. Impacts of Proposed Standards on Costs

In this section we provide illustrative cost estimates for the proposed standards. By ''illustrative costs,'' EPA means the cost estimates provided are not meant to be precise measures, nor do they attempt to capture the full impacts of the 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. First, there are a number of different feedstocks that could be used to produce ethanol and biodiesel, and there is a significant amount of heterogeneity in the costs associated with these different feedstocks and fuels. Some 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.

Second, as discussed in the final rule establishing the 1.28 billion gallon requirement for BBD in 2013, the costs and benefits of the RFS program as a whole are best assessed when the program is fully mature in 2022 and beyond.[46] We continue to believe that this is the case, as the annual standard-setting process encourages consideration of the program on a piecemeal (*i.e.,* year-to-year) basis, which may not reflect the long-term economic effects of the program. Thus, EPA did not quantitatively assess other direct and indirect costs or benefits of increased renewable fuel volumes such as infrastructure costs, investment, GHG reduction benefits, air quality impacts, or energy security benefits, which all are to some degree affected by the proposed rule. While some of these impacts were analyzed in the 2010 final rulemaking which established the current RFS program, we have not fully analyzed these impacts for the 2017 volume requirements being proposed. We have framed the analyses we have performed for this proposed rule as ''illustrative'' so as not to give the impression of comprehensive estimates.

Third, at least two different scenarios could be considered the ''baseline'' for the assessment of the costs of this rule. One scenario would be the statutory volumes (*e.g.,* the volumes in the Clean Air Act 211(o)(2) for 2016) in which case this proposed rule would be reducing volumes, reducing costs as well as decreasing expected GHG benefits. For the purposes of showing illustrative overall costs of this rulemaking, we use the preceding year's standard as the baseline (*e.g.,* the baseline for the 2017 advanced standard is the proposed 2016 advanced standard), an approach consistent with past practices in previous annual RFS rules.

EPA is providing cost estimates for three illustrative scenarios—one, if the entire change in the proposed advanced standards is met with soybean oil BBD; two, if the entire change in the proposed advanced standards is met with sugarcane ethanol from Brazil; and three, if the entire proposed change in the total renewable fuel volume standards that can be satisfied with conventional biofuels (*i.e.,* non-advanced) is met with corn ethanol. While a variety of biofuels could help fulfill the advanced standard beyond soybean oil BBD and sugarcane ethanol from Brazil, these two biofuels have been most widely used in the past. The same is true for corn ethanol vis-a-vis the non-advanced component of the total renewable fuel standard. We believe these scenarios provide illustrative costs of meeting the proposed standards.

For this analysis, we estimate the per gallon costs of producing biodiesel, sugarcane ethanol, and corn ethanol relative to the petroleum fuel they replace at the wholesale level, then multiply these per gallon costs by the proposed applicable volumes in this rule for the advanced (for biodiesel and sugarcane ethanol) and non-advanced component of the total renewable fuel (for corn ethanol) categories. 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 submitted to the docket.[47]

Because we are focusing on the wholesale level in each of the three scenarios, these comparisons do not consider taxes, retail margins, and any other costs or transfers that occur at or after the point of blending (*i.e.,* transfers are payments within society and are not additional costs). Further, as mentioned above we do not attempt to estimate potential costs related to infrastructure expansion with increased renewable fuel volumes. In addition, because more ethanol gallons must be consumed to go the same distance as gasoline and more biomass-based diesel must be consumed to go the same distance as petroleum diesel due to each of the biofuels' lesser energy content, we consider the costs of ethanol and biomass-based diesel on an energy equivalent basis to their petroleum replacements (*i.e.,* per energy equivalent gallon).

For our first illustrative cost scenario, we estimate the costs of soybean-based biodiesel to meet the entire change in the advanced biofuel standards proposed for 2017.[48] Table II.F–1 below

[46] 77 FR 59477, September 27, 2012.

[47] ''Illustrative Costs Impact of the Proposed Annual RFS2 Standards, 2017'', Memorandum from Aaron Sobel and Michael Shelby to EPA Docket EPA–HQ–OAR–2016–0004.

[48] Soybean biodiesel could meet the pre-established 2017 biomass-based diesel volume, which itself is a nested volume within the proposed

Continued

presents the annual change in volumes proposed by this rule, a range of illustrative cost differences between biomass-based diesel and petroleum-based diesel by individual gallon on a diesel gallon equivalent (DGE) basis, and multiplies those per gallon cost estimates by the volume of fuel displaced by the advanced standard on an energy equivalent basis to obtain an overall cost estimate of meeting the proposed standard.

TABLE II.F–1—ILLUSTRATIVE COSTS OF SOYBEAN BIODIESEL TO MEET PROPOSED INCREASE IN ADVANCED BIOFUEL STANDARDS IN 2017

	2016	2017
Advanced Volume Required (Million Gallons)	3,610	4,000
Advanced Volume Required (Million Gallons as Biodiesel)	2,407	2,667
Annual Change in Volume Required (Million Gallons as Biodiesel) *(DGE*[49]*)*		260 *(238)*
Cost Difference Between Soybean Biodiesel and Petroleum Diesel per Gallon ($/DGE)		$1.91–2.88
Annual Increase in Overall Costs (Million $)		[50] $453–683

For our second illustrative cost scenario, we estimate the costs of Brazilian sugarcane ethanol to meet the entire change in the advanced biofuel standards proposed for 2017. Table II.F–2 below presents the annual change in volumes proposed by the rule, a range of illustrative cost differences between Brazilian sugarcane ethanol and wholesale gasoline on a per gasoline gallon equivalent (GGE) basis, and multiplies those per gallon cost estimates by the volume of fuel displaced by the advanced standard on an energy equivalent basis to obtain an overall cost estimate of meeting the proposed standard.

TABLE II.F–2—ILLUSTRATIVE COSTS OF BRAZILIAN SUGARCANE ETHANOL TO MEET PROPOSED INCREASE IN ADVANCED BIOFUEL STANDARDS IN 2017

	2016	2017
Advanced Volume Required (Million Gallons)	3,610	4,000
Annual Change in Volume Required (Million Gallons) *(GGE)*[51]		390 *(260)*
Cost Difference Between Sugarcane Ethanol and Gasoline per Gallon ($/GGE)		$1.12–2.25
Annual Increase in Overall Costs (Million $)		[52] $290–585

For our third illustrative cost scenario, we assess the difference in cost associated with a change in the implied volumes available for conventional (*i.e.,* non-advanced) biofuels for 2017. We provide estimates of what the potential costs might be if corn ethanol is used to meet the entire proposed change in implied conventional renewable fuel volumes. Table II.F–3 below presents the annual change in volumes proposed by the rule, a range of illustrative cost differences between corn ethanol and the wholesale gasoline on a per gasoline gallon equivalent (GGE) basis, and multiplies those per gallon cost estimates by the volume of petroleum displaced on an energy equivalent basis by the proposed change in implied conventional fuel volumes for an estimated overall cost in 2017.

TABLE II.F–3—ILLUSTRATIVE COSTS OF CORN ETHANOL TO MEET PROPOSED INCREASE IN THE CONVENTIONAL (*i.e.,* NON-ADVANCED) PORTION OF THE TOTAL RENEWABLE FUEL STANDARDS IN 2017

	2016	2017
Implied Conventional Volume Required (Million Gallons)	14,500	14,800
Annual Change in Implied Conventional Volume Required (Million Gallons) (GGE)[53]		300 *(200)*
Cost Difference Between Corn Ethanol and Gasoline Per Gallon ($/GGE)		$1.22—$1.44
Annual Increase in Overall Costs (Million $)		[54] $245—$288

2017 advanced biofuel RFS volume. Illustrative costs represent meeting all of the costs of the annual increase of the 2017 advanced standard using entirely soybean-based biodiesel as one scenario.

[49] 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; 260 million gallons of biodiesel is energy-equivalent to approximately 238 million gallons of diesel.

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

[51] 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; 390 million gallons of ethanol is energy-equivalent to approximately 260 million gallons of gasoline.

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

These illustrative cost estimates are not meant to be precise measures, nor do they attempt to capture the full impacts of the rule. These estimates are provided solely for the purpose of illustrating how the cost to produce renewable fuels could compare to the costs of producing petroleum fuels. There are several important caveats that must be considered when interpreting these costs estimates. First, there is a significant amount of heterogeneity in the costs associated with different feedstocks and fuels that could be used to produce renewable fuels; however, EPA did not attempt to capture this range of potential costs in these illustrative estimates. Second, EPA did not quantify other impacts such as infrastructure costs, job impacts, or investment impacts. If the illustrative costs from the Tables above, representing the range for combined advanced and non-advanced fuel volumes, were summed together they would range from $535—$971 million in 2017. It is important to note that these costs do not represent net benefits of the program.

For the purpose of this annual rulemaking, we have not quantified benefits for the 2017 proposed standards. We do not have a quantified estimate of the GHG impacts for a single year (*e.g.,* 2017), and there are a number of benefits that are difficult to quantify, such as rural economic development, job creation, and national security benefits from more diversified fuel sources. When the RFS program is fully phased in, the program will result in considerable volumes of renewable fuels that will reduce GHG emissions in comparison to the fossil fuels which they replace. EPA estimated GHG, energy security, and air quality impacts and benefits in the 2010 RFS2 final rule assuming full implementation of the statutory volumes in 2022.[55]

Through the RFS program, EPA is creating a sustained market signal to incentivize low greenhouse gas renewable fuels, especially for advanced biofuels. This should provide a way to reduce GHG emissions in future years as the market for renewable fuels develops further.

III. Cellulosic Biofuel Volume for 2017

In the past several years the cellulosic biofuel industry has continued to make progress towards significant commercial-scale production. Cellulosic biofuel production reached record levels in 2015, driven largely by compressed natural gas (CNG) and liquefied natural gas (LNG) derived from biogas.[56] Cellulosic ethanol, while produced in much smaller quantities than CNG/LNG derived from biogas, was also produced consistently in 2015. Plans for multiple commercial scale facilities capable of producing drop-in hydrocarbon fuels from cellulosic biomass were also announced. This section describes our proposed assessment of the volume of cellulosic biofuel that we project will be produced or imported into the United States in 2017, and some of the uncertainties associated with those volumes.

In order to project the volume of cellulosic biofuel production in 2017 we considered data reported to EPA through the EPA Moderated Transaction System (EMTS) and information we collected regarding individual facilities that have produced or have the potential to produce qualifying volumes for consumption as transportation fuel, heating oil, or jet fuel in the U.S. in 2017. At this time, EPA has not received projections of cellulosic biofuel production in 2017 from the EIA, however we anticipate considering 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 2017 for the final rule.

New cellulosic biofuel production facilities projected to be brought online in the United States over the next few years would significantly increase the production capacity of the cellulosic industry. Operational experience gained at the first few commercial scale cellulosic biofuel production facilities should also lead to increasing production of cellulosic biofuel from existing production facilities. The following section discusses the companies the EPA reviewed in the process of projecting qualifying cellulosic biofuel production in the United States in 2017. Information on these companies forms the basis for our production projections of cellulosic biofuel that will be produced for use as transportation fuel, heating oil, or jet fuel in the United States. We are proposing a cellulosic biofuel volume requirement of 312 million gallons for 2017. We request comment on this projected volume of cellulosic biofuel production, as well as the methodology used to project these volumes.

A. Statutory Requirements

The volumes of renewable fuel to be used 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 2017 is 5.5 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 is to reduce the applicable volume of cellulosic biofuel to the projected volume available during that calendar year.[57]

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. Our consideration of the 2017 volume requirements for advanced biofuel and total renewable fuel is presented in Section II.

B. Cellulosic Biofuel Industry Assessment

In order to project cellulosic biofuel production for 2017, 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 standards for 2017. 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

[53] 300 million gallons of ethanol is energy-equivalent to approximately 200 million gallons of gasoline.

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

[55] 75 FR 14670, March 26, 2010.

[56] 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.

[57] 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.''

demonstrating the technology, not producing commercial volumes, and RIN generation from R&D and pilot-scale facilities in previous years has not contributed significantly to the overall number of cellulosic RINs generated.

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 biofuel producers, to make a determination of which facilities are most likely to produce cellulosic biofuel and generate cellulosic biofuel RINs in 2017. 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 2017. Both in our discussions with representatives of individual companies [58] 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.

Our proposed approach for projecting the available volume of cellulosic biofuel in 2017 is discussed in more detail in Section III.C below. The proposed approach is very similar to the approach adopted in establishing the required volume of cellulosic biofuel in 2016.[59] The remainder of this Section discusses the companies and facilities EPA expects may be in a position to produce commercial-scale volumes of cellulosic biofuel by the end of 2017. This information, together with the reported cellulosic biofuel RIN generation in previous years in EMTS, forms the basis for our proposed volume requirement for cellulosic biofuel for 2017.

1. Potential Domestic Producers

There are a number of companies and facilities [60] 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 by the end of 2017. The financial incentive provided by cellulosic biofuel RINs, combined with the facts that to date nearly all cellulosic biofuel produced in the United States has been used domestically [61] 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. 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 have already successfully completed facility registration, and many have successfully generated RINs. 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 2017 can be found in a memorandum to the docket for this proposed rule.[62] These descriptions are based on a review of publicly available information and in many cases on information provided to EPA in conversations with company representatives. General information on each of these companies or group of companies considered in our projection of the potentially available volume of cellulosic biofuel in 2017 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 2017. 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. 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 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 companies who have registered foreign facilities under the RFS program to be potential sources of cellulosic biofuel in 2017. 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 facilities not currently registered to generate cellulosic biofuel RINs are highly unlikely in 2017. We have therefore only considered foreign cellulosic biofuel production from facilities that are currently registered in our projection of available volume of cellulosic biofuel in 2017. Two foreign facilities 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 2017. Two additional foreign facilities have registered as a cellulosic biofuel producer, but has not yet generated any cellulosic RINs. EPA contacted representatives from these facilities and to inquire about their intentions to export cellulosic biofuel to the United States in 2017. In cases where the companies indicated they intended to export cellulosic biofuel to the United States, EPA has included potential volumes from this facility in our 2017 volume production projection (see Table III.B.3–1 below).

3. Summary of Volume Projections for Individual Companies

The information we have gathered on cellulosic biofuel producers forms the basis for our projected volumes of cellulosic biofuel production for each facility in 2017. As discussed above, we have focused on commercial-scale cellulosic biofuel production facilities.

By 2017 there are a number of cellulosic biofuel production facilities

[58] In determining appropriate volumes for CNG/LNG producers we generally did not contact individual producers but rather relied primarily on discussions with industry associations, and information on likely production facilities that are already registered under the RFS program. In some cases where further information was needed we did speak with individual companies.

[59] See 80 FR 77420, 77499 (December 14, 2015).

[60] 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.

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

[62] ''Cellulosic Biofuel Producer Company Descriptions (April 2016)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

that have the potential to produce fuel at commercial scale. Each of these facilities is discussed further in a memorandum to the docket.[63]

TABLE III.B.3–1—PROJECTED PRODUCERS OF CELLULOSIC BIOFUEL BY 2017

Company name	Location	Feedstock	Fuel	Facility capacity (MGY) [64]	Construction start date	First production [65]
CNG/LNG Producers [66].	Various (US and Canada).	Biogas	CNG/LNG	Various	N/A	August 2014.
DuPont	Nevada, IA	Corn Stover	Ethanol	30	November 2012	Late 2016.
Edeniq	Various	Corn Kernel Fiber	Ethanol	Various	Various	Summer 2016.
Ensyn	Renfrew, ON, Canada.	Wood Waste	Heating Oil	3	N/A	2014.
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	2	Late 2013	October 2014.

C. Proposed Cellulosic Biofuel Volume for 2017

To project the volume of potentially available cellulosic biofuel in 2017 we are proposing to use the same methodology used to project the available volume of cellulosic biofuel in the final rule establishing the cellulosic biofuel volume standard for 2016.[67] To project cellulosic biofuel production in 2017 we separated the list of potential producers of cellulosic biofuel into four groups according to whether they are producing liquid cellulosic biofuel or CNG/LNG from biogas, and whether or not the facilities have achieved consistent commercial-scale production and cellulosic biofuel RIN generation (See Table III.C–1 through Table III.C–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. The low end of the range for companies that have not yet begun commercial-scale production (or in the case of CNG/LNG producers have not yet generated RINs for fuel sold as transportation fuel in the United States) is zero.

To calculate the high end of the projected production range for each group of companies we considered each company individually. To determine the high end of the range of expected production volumes for companies producing liquid cellulosic biofuel we considered a variety of factors, including the expected start-up date and ramp-up period, facility capacity, and fuel off-take agreements. As a starting point, EPA calculated a production volume for these facilities using the expected start-up date, facility capacity, and a benchmark of a six-month straight-line ramp-up period representing an optimistic ramp-up scenario.[68] Generally we used this calculated production volume as the high end of the potential production range for each company. The only exceptions were cases where companies provided us with production projections (or projections of the volume of fuel they expected to import into the United States in the case of foreign producers) that were lower than the volumes we calculated as the high end of the range for that particular company. In these cases, the projected production volume (or import volume) provided by the company was used as the high end of the potential production range rather than the volume calculated by EPA. For CNG/LNG producers, the high end of the range was generally equal to each company's projection for the number of RINs generated from each facility in 2017.[69] The high end of the ranges for all of the individual companies within each group were added together to calculate the high end of the projected production range for that group.

TABLE III.C–1—2017 PRODUCTION RANGES FOR LIQUID CELLULOSIC BIOFUEL PRODUCERS WITHOUT CONSISTENT COMMERCIAL SCALE PRODUCTION

[Million gallons]

	Low end of the range [a]	High end of the range [a]
DuPont	0	23
Edeniq	0	18

[63] ''Cellulosic Biofuel Producer Company Descriptions (April 2016)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

[64] 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 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).

[65] 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.

[66] For more information on these facilities see ''April 2016 Assessment of Cellulosic Biofuel Production from Biogas (2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

[67] See 80 FR 77499 for additional detail.

[68] We did not assume a six-month straight-line ramp-up period in determining the high end of the projected production range for CNG/LNG producers. This is because these facilities generally have a history of CNG/LNG production prior to producing RINs, and therefore do not face many of the start-up and scale-up challenges that impact new facilities. For further information on the methodology used to project cellulosic RIN generation from CNG/LNG producers see ''April 2016 Assessment of Cellulosic Biofuel Production from Biogas (2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

[69] For additional detail on the methods used to project cellulosic biofuel production for CNG/LNG producers see ''April 2016 Assessment of Cellulosic Biofuel Production from Biogas (2017)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

TABLE III.C–1—2017 PRODUCTION RANGES FOR LIQUID CELLULOSIC BIOFUEL PRODUCERS WITHOUT CONSISTENT COMMERCIAL SCALE PRODUCTION—Continued

[Million gallons]

	Low end of the range [a]	High end of the range [a]
GranBio	0	5
Aggregate Range	0	46

[a] Rounded to the nearest million gallons.

TABLE III.C–2—2017 PRODUCTION RANGES FOR LIQUID CELLULOSIC BIOFUEL PRODUCERS WITH CONSISTENT COMMERCIAL SCALE PRODUCTION

[Million gallons]

	Low end of the range [a]	High end of the range [a]
Ensyn	[b] X	3
Poet	[b] X	24
Quad County Corn Processors	[b] X	5
Aggregate Range	3	32

[a] Rounded to the nearest million gallons.
[b] 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.

TABLE III.C–3—2017 PRODUCTION RANGES FOR CNG/LNG PRODUCED FROM BIOGAS

[Million gallons]

	Low end of the range [a]	High end of the range [a]
CNG/LNG Producers (New Facilities)	0	167
CNG/LNG Producers (Currently generating RINs)	148	217

[a] Rounded to the nearest million gallons.

After defining likely production ranges for each group of companies we projected a likely production volume from each group of companies for 2017. We used the same percentile values to project a proposed production volume within the established ranges for 2017 as we did in the final rule for 2016; the 50th and 25th percentiles respectively for liquid cellulosic biofuel producers with and without a history of consistent cellulosic biofuel production and RIN generation, and the 75th and 50th percentiles respectively for producers of CNG/LNG from biogas with and without a history of consistent commercial-scale production and RIN generation. As discussed in the final rule establishing the 2016 cellulosic biofuel standard, we believe these percentages appropriately reflect the uncertainties associated with each of these groups of companies.[70] We will continue to monitor how closely these percentile values reflect actual production for each group of companies and may adjust these percentiles if a change is supported by the available information. After calculating a likely production volume for each group of companies in 2017, the volumes from each group are added together to determine the total projected production volume of cellulosic biofuel in 2017.

TABLE III.C–4—PROJECTED VOLUME OF CELLULOSIC BIOFUEL IN 2017

[Million gallons]

	Low end of the range [a]	High end of the range [a]	Percentile	Projected volume [a]
Liquid Cellulosic Biofuel Producers; New Facilities	0	46	25th	12
Liquid Cellulosic Biofuel Producer; Consistent Production	3	32	50th	18
CNG/LNG Producers; New Facilities	0	167	50th	84
CNG/LNG Producers; Consistent Production	148	217	75th	200
Total	N/A	N/A	N/A	[b] 312

[a] Volumes rounded to the nearest million gallons.
[b] The total is 2 million gallons lower than the sum of the four components due to rounding.

[70] For a further discussion of the percentile values used to projected likely production from each group of companies see 80 FR 77499.

We believe our range of projected production volumes for each company (or group of companies for cellulosic CNG/LNG producers) represents the range of what is likely to actually happen, and that projecting overall production in 2017 in the manner described above results in a neutral estimate (neither biased to produce a projection that is unreasonably high or low) of likely cellulosic biofuel production in 2017 (312 million gallons). A brief overview of individual companies we believe will produce cellulosic biofuel and make it commercially available in 2017 can be found in a memorandum to the docket.[71] In the case of cellulosic biofuel produced from CNG/LNG we have discussed the production potential from these facilities as a group rather than individually. EPA believes it is appropriate to discuss these facilities as a group since they are using a proven production technology and face many of the same challenges related to demonstrating that the fuel they produce is used as transportation fuel and therefore eligible to generate RINs under the RFS program.[72] We request comment on the methodology used to project cellulosic biofuel production in 2017, as well as on the group of companies listed as potential cellulosic biofuel producers and the volume of cellulosic biofuel projected to be produced in 2017.

IV. Biomass-Based Diesel Volume for 2018

In this section we discuss the proposed biomass-based diesel (BBD) applicable volumes for 2018. We are proposing this volume in advance of those for other renewable fuel categories in light of the statutory requirement in 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 proposing the BBD percentage standards that would apply to obligated parties in 2018 but intend to do so in the Fall of 2017, after receiving EIA's estimate of gasoline and diesel consumption for 2018. Although the BBD applicable volume would set 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 BBD volume can be used to satisfy both of these other applicable volume requirements. Therefore, these other standards can 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 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 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.

B. Determination of Applicable Volume of Biomass-Based Diesel

1. BBD Production and Compliance Through 2015

One of the primary considerations in determining the proposed biomass-based diesel volume for 2018 is a review of the implementation of the program to date, as it effects biomass-based diesel. 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 2011–2015 are shown in Table IV.B.1–1 below.

TABLE IV.B.1–1—BIOMASS-BASED (D4) RIN GENERATION AND STANDARDS IN 2013–2017

[Million gallons] [73]

	BBD RINs generated	Exported BBD (RINs)	BBD RINs retired, non-compliance reasons	Available BBD RINs [a]	BBD standard (gallons)	BBD standard (RINs) [74]
2011	1,692	110	98	1,483	800	1,200
2012	1,737	183	90	1,465	1,000	1,500
2013	2,739	298	101	2,341	1,280	1,920

[71] ''Cellulosic Biofuel Producer Company Descriptions (April 2016)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

[72] For individual company information see ''April 2016 Cellulosic Biofuel Individual Company Projections for 2017 (CBI)'', memorandum from Dallas Burkholder to EPA Air Docket EPA–HQ–OAR–2016–0004.

TABLE IV.B.1–1—BIOMASS-BASED (D4) RIN GENERATION AND STANDARDS IN 2013–2017—Continued

[Million gallons] [73]

	BBD RINs generated	Exported BBD (RINs)	BBD RINs retired, non-compliance reasons	Available BBD RINs [a]	BBD standard (gallons)	BBD standard (RINs) [74]
2014	2,710	126	92	2,492	1,630	[b] 2,490
2015	2,796	133	32	2,631	1,730	[b] 2,655
2016	N/A	N/A	N/A	N/A	1,900	2,850
2017	N/A	N/A	N/A	N/A	2,000	3,000

[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] Number is not exactly equal to 1.5 times the BBD volume standard as some of the volume used to meet the biomass-based diesel 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 and 2013. 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, and favorable blending economics. In 2012 the available BBD RINs were slightly less than the BBD standard. There are many reasons this may have been the case, including the temporary lapse of the biodiesel tax credit at the end of 2011.[75] The number of RINs available in 2014 and 2015 was approximately equal to the number required for compliance in those years. This is because the standards for these years were finalized at the end of November 2015 when RIN generation data were available for all of 2014 and much of 2015, and we exercised our authority to establish the required BBD volumes for these time periods to be approximately equal to the number of BBD RINs that were available (for past time periods) or were expected to be available (for the months of 2015 for which EPA did not yet have reliable data) in the absence of the influence of the RFS standards.

2. Interaction Between BBD and Advanced Biofuel Standards

The BBD standard is nested within the advanced biofuel and total renewable fuel standards. This means that when an obligated party retires a BBD RIN (D4) to satisfy their BBD obligation, this RIN also counts towards meeting their advanced biofuel and total renewable fuel obligations. It also means that obligated parties may use BBD RINs in excess of their BBD obligations to satisfy their advanced biofuel and total renewable fuel obligations. Higher advanced biofuel and total renewable fuel standards, therefore, create demand for BBD, especially if there is an insufficient supply of other advanced or conventional renewable fuels to satisfy the standards, or if BBD RINs can be acquired at or below the price of other advanced or conventional biofuel RINs.

In reviewing the implementation of the RFS program to date, it is apparent that the advanced and/or total renewable fuel requirements were in fact helping grow the market for volumes of biodiesel above the BBD standard. In 2013 the number of advanced RINs generated from fuels other than BBD was not large enough to satisfy the implied standard for ''other advanced'' biofuel (advanced biofuel needed to satisfy the advanced biofuel standard after the BBD and cellulosic biofuel standards are met), and additional volumes of BBD filled the gap (see Table IV.B.2–1 below). In fact, the amount by which the available BBD RINs exceeded the 1.28 billion gallon BBD volume requirement (421 million RINs) was larger than the amount of such excess BBD needed to satisfy the advanced biofuel standard (278 million RINs), suggesting that the additional increment was incentivized by the total renewable fuel standard. As discussed above, the 2014 and 2015 BBD standards were intended to reflect the full number of available BBD RINs in these years and were set in late 2015, at which point the number of available RINs in these years was largely known. We can therefore draw no conclusions about the ability for the advanced and total renewable fuel standards to incentivize BBD production from these years. While the available BBD RINs in 2012 were slightly less than the BBD standard despite the opportunity to contribute towards meeting the advanced and total renewable fuel standards, there are several factors beyond the RFS standards (2012 drought, expiration of the biodiesel tax credit, opportunities for increased ethanol blending as E10) that likely impacted BBD production in 2012. We continue to believe that the advanced biofuel and total renewable fuel standards can provide a strong incentive for increased BBD volume in the United States in excess of that required to satisfy the BBD standard (for further discussion on this issue see 80 FR 77492).

[73] Net BBD RINs Generated and BBD RINs Retired for Non-Compliance Reasons information from EMTS. Biodiesel Export information from EIA.*http://www.eia.gov/dnav/pet/pet_move_expc_a_EPOORDB_EEX_mbbl_a.htm.*

[74] 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.

[75] 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 once authorized and applied retro-actively for all of 2015 as well as through the end of 2016.

TABLE IV.B.2–1—BIOMASS-BASED DIESEL AND ADVANCED BIOFUEL RIN GENERATION AND STANDARDS

[Million RINs]

	Available BBD (RINs)	BBD Standard (RINs)	Available D5 RINs (advanced biofuels) [a]	Opportunity for "other advanced" biofuels [b]
2011	1,483	1,200	225	150
2012	1,465	1,500	597	500
2013	2,341	1,920	552	830
2014	2,492	2,490	143	147
2015	2,631	2,655	147	102

[a] Does not include BBD or cellulosic biofuel RINs, which may also be used towards an obligated party's advanced biofuel obligation

[b] Advanced biofuel that does not qualify as BBD or cellulosic biofuel; calculated by subtracting the number of required BBD RINs (BBD required volume × 1.5) and the number of required cellulosic biofuel RINs from the Advanced Biofuel Standard

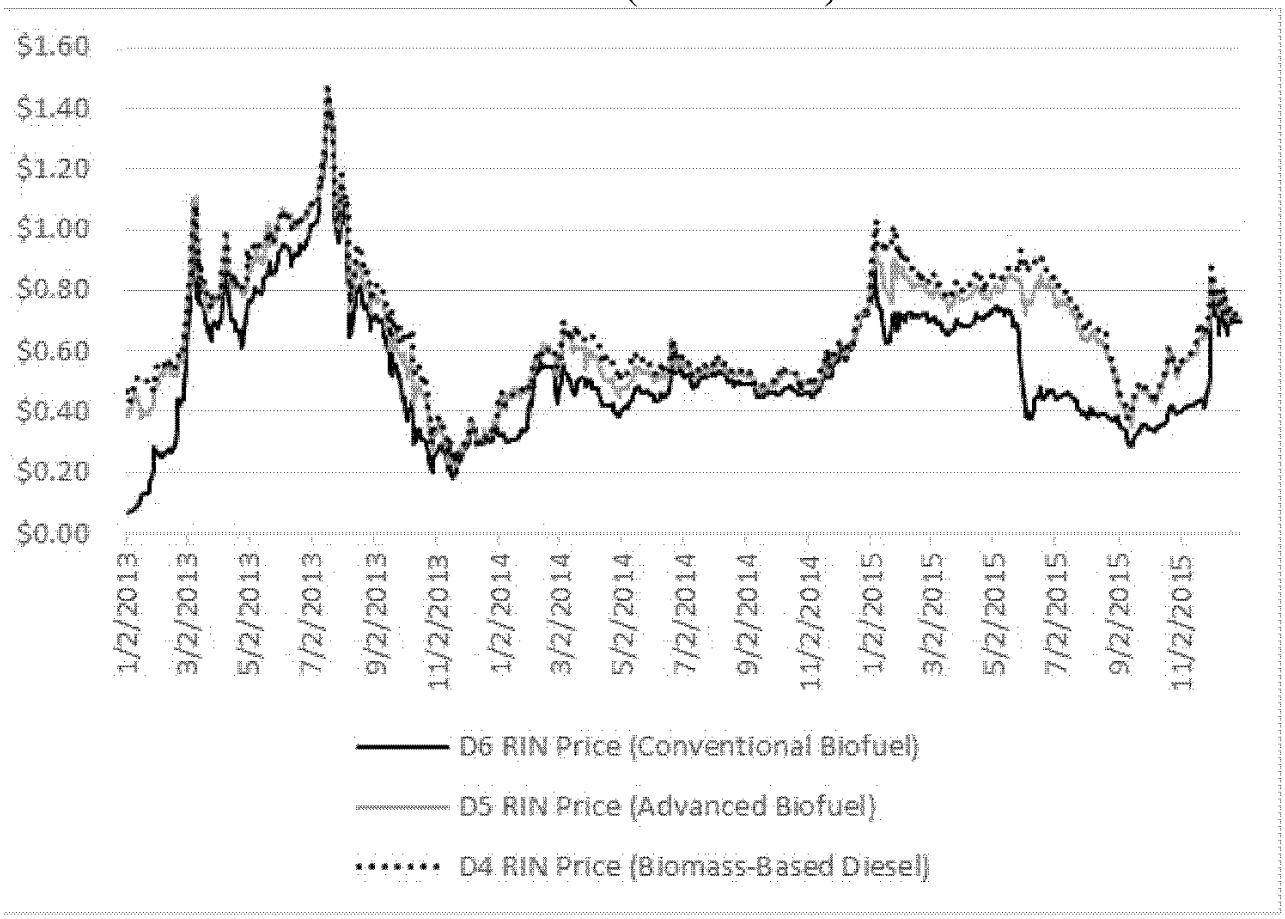
The prices paid for advanced biofuel and BBD RINs beginning in early 2013 through 2015 also support the conclusion that advanced biofuel and/or total renewable fuel standards provide a sufficient incentive for additional biodiesel volume beyond what is required by the BBD standard. Because the BBD standard is nested within the advanced biofuel and total renewable fuel standards, and therefore can help to satisfy three RVOs, we would expect the price of BBD RINs to exceed that of advanced and conventional renewable RINs.[76] If, however, BBD RINs are being used by obligated parties to satisfy their advanced biofuel and/or total renewable fuel obligations, above and beyond the BBD standard, we would expect the prices of conventional renewable fuel, advanced biofuel, and BBD RINs to converge to the price of the BBD RIN.[77] When examining RIN prices data from 2013 through 2015, shown in Figure IV.B.2–1 below, we see that throughout this entire time period the advanced RIN price and biomass-based diesel RIN prices were approximately equal. This suggests that the advanced biofuel standard and/or total renewable fuel standard was capable of incentivizing increased BBD volumes beyond the BBD standard in 2013.[78] While final standards were not in place throughout 2014 and most of 2015, EPA had issued proposed rules for both of these years. In each year, the market response was to supply volumes of BBD that exceeded the proposed BBD standard in order to satisfy the advanced biofuel standard. Additionally, the RIN prices in these years strongly suggests that obligated parties and other market participants anticipated the need for BBD RINs to meet their advanced biofuel obligations, and responded by purchasing advanced biofuel and BBD RINs at approximately equal prices.

[76] This is because when an obligated party retires a BBD RIN to help satisfy their BBD obligation, the nested nature of the BBD standard means that this RIN also counts towards satisfying their advanced and total renewable fuel obligations. Advanced RINs count towards both the advanced and total renewable fuel obligations, while conventional RINs (D6) count towards only the total renewable fuel obligation.

[77] We would still expect D4 RINs to be valued at a slight premium to D5 and D6 RINs in this case (and D5 RINs at a slight premium to D6 RINs) to reflect the greater flexibility of the D4 RINs to be used towards the BBD, advanced biofuel, and total renewable fuel standard. This pricing has been observed over the past several years.

[78] Although we did not issue a rule establishing the final 2013 standards until August of 2013, we believe that the market anticipated the final standards, based on EPA's July 2011 proposal and the volume targets for advanced and total renewable fuel established in the statute. (76 Fed Reg 38844, 38843.)

Figure IV.B.2-1
RIN Prices (2013-2015)[a]



[a] For a list of the eligible pathways for each D-code see Table 1 to §80.1426

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 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 in setting BBD volume requirements after 2012 the appropriate rate of participation of BBD within the advanced biofuel standard.

When viewed in a long-term perspective, BBD can be seen as competing for research and development dollars with other types of advanced biofuels for participation as advanced biofuels in the RFS program. We believe that preserving space within the advanced biofuel standard for advanced biofuels that do not qualify as BBD or cellulosic biofuel provides the appropriate incentives for the continued development of these types of fuels. In addition to the long-term impact of our action in establishing the BBD volume requirements, there is also the potential for short-term impacts during the compliance years in question. By proposing BBD volume requirements at levels lower than the advanced biofuel volume requirements (and lower than the expected production of BBD to satisfy the advanced biofuel requirement), we are proposing to continue to allow the potential for some competition between BBD and other advanced biofuels to satisfy the advanced biofuel volume standard. 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 and without reducing the incentive for additional volumes of BBD beyond the BBD standard in 2017. 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.[79]

[79] All types of advanced biofuel, including biomass-based diesel and cellulosic biofuel, must achieve lifecycle greenhouse gas reductions of at least 50%.

While a single-minded focus on the ability of the advanced and total renewable fuel standards to incentivize increasing production of the lowest cost qualifying biofuels, regardless of fuel type, would suggest that a flat or even decreasing BBD volume requirement may be the optimal solution, this is not the only consideration. Despite many of these same issues being present in previous years, we have consistently increased the BBD standard each year. Our decisions to establish increasing BBD volumes each year have been made in light of the fact that while cellulosic biofuel production has fallen far short of the statutory volumes, the available supply of BBD in the United States has grown each year. This growing supply of BBD allowed EPA to establish higher advanced biofuel standards, and to realize the GHG benefits associated with greater volumes of advanced biofuel, than would otherwise have been possible in light of the continued shortfall in the availability of cellulosic biofuel. It is in this context that we determined that steadily increasing the BBD requirements was appropriate to encourage continued investment and innovation in the BBD industry, providing necessary assurances to the industry to increase production, while also serving the long term goal of the RFS statute to increase volumes of advanced biofuels over time.

Although the BBD industry has performed well in recent years, we believe that continued appropriate increases in the BBD volume requirement will help provide stability to the BBD industry and encourage continued growth. This 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. Nevertheless, many factors that impact the viability of the BBD industry in the United States, such as commodity prices and the biodiesel tax credit, remain uncertain. Continuing to increase the BBD volume requirement should help to provide market conditions that allow these BBD production facilities to operate with greater certainty. This result is consistent with the goals of the Act to increase the production and use of advanced biofuels (for further discussion of these issues see 80 FR 77492).

3. Proposed BBD Volume for 2018

With the considerations discussed in Section IV.B.2 in mind, as well as our analysis of the factors specified in the statute, we are proposing the applicable volume of BBD at 2.1 billion gallons for 2018. This volume represents an annual increase of 100 million gallons over the applicable volume of BBD in 2017. We believe this is appropriate for the same reasons reflected in the December 14, 2015 final rule: To provide additional support for the BBD industry while allowing room within the advanced biofuel volume requirement for the participation of non-BBD advanced fuels. Although we are not proposing an advanced biofuel applicable volume for 2018 at this time, we anticipate that the 2018 advanced biofuel requirement will be larger than the proposed 2017 advanced biofuel volume requirement, and the proposed 2018 BBD volume requirement reflects this anticipated approach. Our assessment of the required statutory factors, summarized in the next section and in a memorandum to the docket, supports this proposal.[80]

We believe this proposal strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for growth in BBD volumes. Given the volumes for advanced biofuel we anticipate requiring in 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 types of qualifying advanced biofuels. We request comment on our proposal for increasing the BBD applicable volume in 2018 and whether a higher or lower volume requirement would be more appropriate.

C. Consideration of Statutory Factors for 2018

In this section we discuss our consideration of the statutory factors set forth in CAA section 211(o)(2)(B)(ii)(I)–(VI). As noted earlier in Section IV.B.2, 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.[81] For a given advanced biofuel standard, greater or lesser applicable volumes of BBD do not change the amount of advanced biofuel used to displace petroleum fuels; rather, increasing the BBD applicable volume may result in the displacement of other types of advanced biofuels that could have been used to meet the advanced biofuels volume requirement.

EPA's primary assessment of the statutory factors for the proposed 2018 BBD applicable volume is that because the proposed BBD requirement is nested within the advanced biofuel volume requirement, we expect that the 2018 advanced volume requirement will largely determine the level of BBD production and imports; the same volume of BBD would likely be supplied regardless of the BBD volume that we require for 2018. This assessment is based, in part, on our review of the RFS program implementation to date, as discussed in Section IV.B.1. While we are not proposing the 2018 advanced biofuel volume requirement in this action, our proposal for the BBD volume requirement for 2018 is nevertheless not expected to impact the volume of BBD that is actually produced and imported during this time period. Thus we do not expect our decision to result in a difference in the factors we are required to consider pursuant to CAA section 211(o)(2)(B)(ii)(I)–(VI). However, we note that our proposed approach of setting BBD volume requirements at a higher level in 2018, while still at a volume level lower than anticipated overall production and consumption of BBD, is consistent with our evaluation of statutory factors 211(o)(2)(B)(ii) (I), (II) and (III), since we believe that our decision on the BBD volume requirement can have a positive impact on the future development and marketing of other advanced biofuels and can also result in potential environmental and energy security benefits, while still sending a supportive signal to potential BBD investors, consistent with the objectives of the Act to support the continued growth in production and use of renewable fuels.

Even though we are proposing only the 2018 BBD volume requirement at this time and not the 2018 advanced biofuel requirement, we believe that our primary assessment with respect to the 2018 BBD volume requirement is appropriate, as is clear from the fact that

[80] ''Memorandum to docket: Draft Statutory Factors Assessment for the 2018 Biomass-Based Diesel (BBD) Applicable Volumes.''

[81] While excess BBD production could also displace conventional biofuel under the total renewable standard, as long as the BBD applicable volume is lower than the advanced biofuel applicable volume our proposed action in setting the BBD applicable volume is not expected to displace conventional biofuels under the total renewable standard, but rather other advanced biofuels. See Table II.E–1.

the reasoning and analysis would apply even if we did not increase the 2018 advanced biofuel requirement above 2017 levels.[82] Nevertheless, we anticipate that the 2018 advanced biofuel requirement will be set to reflect reasonably attainable volumes in the use of all advanced biofuels and that the advanced biofuel volume standard will be larger in 2018 than in 2017.

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 2018 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 2018 would only be expected to impact BBD volumes on the margin, protecting to a lesser or greater degree BBD from being outcompeted by other advanced biofuels. In this supplementary assessment we have considered all of the statutory factors found in CAA 211(2)(B)(ii), and as described in a memorandum to the docket,[83] 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.

In proposing the 2018 advanced biofuel volume requirement, we have assumed reasonably attainable volumes of BBD and other advanced biofuels. After determining that it is in the interest of the goals of the program to propose a BBD volume requirement at a level below anticipated BBD production and imports, so as to provide continued incentives for research and development of alternative advanced biofuels, it is apparent that excess BBD above the BBD volume requirement will compete with other advanced biofuels, rather than petroleum based diesel.[84] The only way for our proposed BBD volume requirement to result in a direct displacement of petroleum-based fuels, rather than other advanced biofuels, would be if the BBD volume requirement were set larger than the total renewable fuel requirement. However, since BBD is a type of advanced biofuel, and advanced biofuel is a type of renewable fuel, the BBD volume requirement could never be larger than the advanced requirement and the advanced biofuel requirement could never be larger than the total renewable fuel requirement. Thus, EPA continues to believe that it is appropriate to evaluate the impact of its action in setting the BBD volume requirements by evaluating the impact of using BBD as compared to other advanced biofuels in satisfying the increment of the advanced biofuel standard that is not guaranteed to BBD.

Overall and as described in our memorandum to the docket, 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 2018 does not provide significant support for setting the BBD standard at a level higher or lower than 2.1 billion gallons in 2018.

V. Percentage Standards for 2017

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, biomass-based diesel (BBD), and advanced biofuel used will meet the applicable volume requirements on a nationwide basis.

Sections II, III, and IV provide our rationale and basis for the proposed volume requirements for advanced biofuel and total renewable fuel, cellulosic biofuel, and BBD, respectively. The volumes used to determine the proposed percentage standards are shown in Table V–1.

TABLE V–1—PROPOSED VOLUMES FOR USE IN SETTING THE 2017 APPLICABLE PERCENTAGE STANDARDS

Cellulosic biofuel (million gallons)	312
Biomass-based diesel (billion gallons)[a]	2.0
Advanced biofuel (billion gallons)	4.0
Renewable fuel (billion gallons)	18.8

[a] Represents physical volume.

A. Calculation of Percentage Standards

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 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, 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. In order to ensure that demand for the required physical volume of BBD will be created in each year, the

[82] As explained in Section II, in deriving the proposed 2017 advanced biofuel applicable volume requirement, we assumed that 2.3 billion gallons of BBD (3.45 billion RINs) would be used to satisfy the proposed 4.00 bill gal advanced biofuel requirement. Thus the proposed 2018 BBD applicable volume is less than we anticipate will actually be used in 2017.

[83] ''Memorandum to docket: Draft Statutory Factors Assessment for the 2018 Biomass-Based Diesel (BBD) Applicable Volumes.''

[84] The possibility for competition between BBD and other types of advanced biofuels is not precluded by our setting the advanced biofuel requirement at a level that reflects reasonably attainable volumes of all advanced biofuel types, or by our setting the total renewable fuel applicable volume at a level that reflects that maximum reasonably achievable volume of all fuel types. Any of our estimates related to a particular fuel type could prove to be either an over or under estimate. We are confident that the sum of all individual estimates used in setting the applicable volumes are reasonable, and more accurate than our individual estimates for any particular fuel type. It is at the margin where our estimates regarding production and import of individual fuel types may be in error that competition between qualifying fuels can take place.

calculation of the BBD standard provides that the applicable physical volume be multiplied by 1.5. The net result is a BBD gallon being worth 1.0 gallon toward the BBD standard, but worth 1.5 gallons toward the other 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 [85] 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.[86] 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 some exemptions pursuant to this process in the past. However, at this time, no exemptions have been approved for 2017, and therefore we have calculated the proposed percentage standards for this year without an adjustment for exempted volumes. Any requests for exemptions for 2017 that are approved prior to the final rule will be reflected in the relevant standards in the final rule, as provided in the formulas described in the preceding section. As stated in the final rule establishing the 2011 standards, ''EPA believes the Act is best interpreted to require issuance of a single annual standard in November that is applicable in the following calendar year, thereby providing advance notice and certainty to obligated parties regarding their regulatory requirements. Periodic revisions to the standards to reflect waivers issued to small refineries or refiners would be inconsistent with the statutory text, and would introduce an undesirable level of uncertainty for obligated parties.'' [87] Thus, any exemptions for small refineries that are issued after the release of the final 2017 standards will not affect those standards.

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 proposal are shown in Table V.C–1.[88]

TABLE V.C–1—VALUES FOR TERMS IN CALCULATION OF THE PROPOSED 2017 STANDARDS [89]

[Billion gallons]

Term	Description	Value
RFV_{CB}	Required volume of cellulosic biofuel	0.312
RFV_{BBD}	Required volume of biomass-based diesel	2.0
RFV_{AB}	Required volume of advanced biofuel	4.0
RFV_{RF}	Required volume of renewable fuel	18.8
G	Projected volume of gasoline	142.05
D	Projected volume of diesel	54.58
RG	Projected volume of renewables in gasoline	14.21
RD	Projected volume of renewables in diesel	2.35
GS	Projected volume of gasoline for opt-in areas	0
RGS	Projected volume of renewables in gasoline for opt-in areas	0
DS	Projected volume of diesel for opt-in areas	0
RDS	Projected volume of renewables in diesel for opt-in areas	0
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 derived from the April, 2016 version of EIA's Short-Term Energy Outlook (STEO). These projections reflect EIA's judgment of future demand volumes in 2017, accounting for the low oil price environment in early 2016.

Using the volumes shown in Table V.C–1, we have calculated the proposed percentage standards for 2017 as shown in Table V.C–2.

TABLE V.C–2—PROPOSED PERCENTAGE STANDARDS FOR 2017

Cellulosic biofuel	0.173
Biomass-based diesel	1.67
Advanced biofuel	2.22
Renewable fuel	10.44

VI. 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

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

[86] For 2011 and 2012, 13 small refineries were granted an extension to the statutory exemption based on the findings of a Department of Energy investigation into the disproportionate economic hardship experienced by small refineries.

[87] See 75 FR 76804 (December 9, 2010).

[88] 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. The Alaska fractions are determined from the June 24, 2015 EIA State Energy Data System (SEDS), Energy Consumption Estimates.

[89] See ''Calculation of proposed % standards for 2017'' in docket EPA–HQ–OAR–2016–0004.

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 VI.B below.

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, Assessment and Standards Division, 2000 Traverwood Drive, Ann Arbor, MI, 48105, Attention Docket ID EPA–HQ–OAR–2016–0004. 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.

VII. Statutory and Executive Order Reviews

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

This proposed 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 II.F of this preamble.

B. Paperwork Reduction Act (PRA)

This proposed 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 proposed action would 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 proposal on small entities from two perspectives; as if the proposed 2017 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 proposed standards as if they were a standalone action separate and apart from the original rulemaking which established the RFS2 program, then the proposed standards could be viewed as increasing the volumes required of obligated parties between 2016 and 2017. To evaluate the proposed rule from this perspective, EPA has conducted a screening analysis [90] 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 suggests 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.[91] [92] This is true whether they acquire RINs by purchasing renewable fuels with attached RINs or purchase separated RINs. 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 II.F and the gasoline and diesel fuel volume projections and wholesale prices from the April 2016 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% of the value of their sales.

While the screening analysis described above supports a certification that this proposed rule would not have a significant economic impact on small refiners, we continue to believe that it is more appropriate to consider the proposed standards as a part of, and 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 a 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

[90] ''Screening Analysis for the Proposed Renewable Fuel Standard Program Renewable Volume Obligations for 2017'', memorandum from Dallas Burkholder and Tia Sutton to EPA Air Docket EPA–HQ–OAR–2016–0004.

[91] 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.

[92] 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.*

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. The analysis included a cost-to-sales ratio test, a ratio of the estimated annualized compliance costs to the value of sales per company, for gasoline and/or diesel small refiners subject to the standards. 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 of the program (75 FR 14862).

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. As shown above in Tables I–1 and I.A–1 (and discussed further in Sections II and III), this rule proposes the 2017 volume requirements for cellulosic biofuel, advanced biofuel, and total renewable fuel at levels significantly below the statutory volume targets. This exercise of EPA's waiver authorities 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 biomass-based diesel standard, we are proposing an increase in the volume requirement for 2018 over the statutory minimum value of 1 billion gallons. However, this is a nested standard within the advanced biofuel category, for which we are proposing significant reductions from the statutory volume targets. As discussed in Section IV, we are proposing to set the biomass-based diesel 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 would 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% RIN rollover allowance (up to 20% 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 experiences hardship beyond the level of assistance afforded by the program flexibilities, the program provides hardship relief provisions for small entities (small refiners), as well as for small refineries.[93] As required by the statute, the RFS regulations include a hardship relief provision (at 40 CFR 80.1441(e)(2)) which 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. A small refiner may petition for a small refiner exemption based on a similar showing that compliance with the requirements of the RFS program would result in the refiner experiencing a ''disproportionate economic hardship'' (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. For the 2013 RFS standards, EPA successfully implemented these provisions by evaluating 16 petitions for exemptions from small refineries (one was later withdrawn).

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, 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 proposed action contains a federal mandate under UMRA, 2 U.S.C. 1531–1538, that may result in expenditures of $100 million or more for state, local and tribal governments, in the aggregate, or the private sector in any one year. Accordingly, the EPA has prepared a written statement required under section 202 of UMRA. The statement is discussed above in Section II.F. 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.

This action is not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132: Federalism

This proposed action does not have federalism implications. It would 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 proposed 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.

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

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 proposed 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 the required renewable fuel content of the transportation fuel supply for 2017, 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 greenhouse gas emissions of transportation fuel.

I. National Technology Transfer and Advancement Act (NTTAA)

This proposed 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 proposed action would not have potential disproportionately high and adverse human health or environmental effects on minority, low-income, or indigenous populations. 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.

VIII. Statutory Authority

Statutory authority for this proposed 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 final 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: May 18, 2016.

Gina McCarthy,

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—[Amended]

■ 2. Section 80.1405 is amended by adding paragraph (a)(8) to read as follows:

§ 80.1405 What are the Renewable Fuel Standards?

(a) * * *

(8) *Renewable Fuel Standards for 2017.*

(i) The value of the cellulosic biofuel standard for 2017 shall be 0.173 percent.

(ii) The value of the biomass-based diesel standard for 2017 shall be 1.67 percent.

(iii) The value of the advanced biofuel standard for 2017 shall be 2.22 percent.

(iv) The value of the renewable fuel standard for 2017 shall be 10.44 percent.

* * * * *

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