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

## Response to Comments

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

## Response to Comments

Assessment and Standards Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

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## List of Acronyms and Abbreviations

Numerous acronyms and abbreviations are included in this document. While this may not be an exhaustive list, to ease the reading of this document and for reference purposes, the following acronyms and abbreviations are defined here:

<i>ACE</i>	<i>Americans for Clean Energy v. EPA</i> , 864 F.3d 691 (D.C. Cir. 2017)
AEO	Annual Energy Outlook
BBD	Biomass-Based Diesel
BIP	Biofuels Infrastructure Partnership
CAA	Clean Air Act
CFTC	U.S. Commodity Futures Trading Commission
CNG	Compressed Natural Gas
EIA	U.S. Energy Information Administration
EISA	Energy Independence and Security Act of 2007
EMTS	EPA Moderated Transaction System
EPA	U.S. Environmental Protection Agency
FTC	U.S. Federal Trade Commission
GHG	Greenhouse Gas
GREET	Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model
LCFS	Low Carbon Fuel Standard
LNG	Liquified Natural Gas
LPG	Liquified Petroleum Gas
NPRM	Notice of Proposed Rulemaking
RFS	Renewable Fuel Standard
RIN	Renewable Identification Number
RVO	Renewable Volume Obligation
SBREFA	Small Business Regulatory Enforcement Fairness Act
STEO	Short-Term Energy Outlook
USDA	U.S. Department of Agriculture

## List of Organizations Submitting Comments

<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
25x'25 Alliance	0446, 0447, 4415
60 Plus Association	Comment is testimony
9 <sup>th</sup> District, Ohio, United States House of Representatives	4882
Ace Ethanol	0197
ActionAid USA	3575
ActionAid USA, Clean Air Task Force, Earthjustice, National Wildlife Federation, Oxfam America, and Sierra Club	3306
Advanced Biofuels Association (ABFA)	2542, 4501
Advanced Biofuels Business Council	3242
Advanced Economic Solutions	1500, 4856
AER Biofuels	1502
AG Processing Inc.	1777
Ag Valley Cooperative	4719
Air Liquide	3327
America Center for Democracy	Comment is testimony
American Biogas Council	0849, 1136, 1137, 1138, 1139, 1168, 1333, 1341, 1348, 1501, 1755, 3179, 3186, 3239, 3243, 3303, 3305, 3326, 3577, 3654, 3926, 3927, 3651
American Cleaning Institute	3578
American Coalition for Ethanol	3178, 4495
American Farm Bureau Federation	3155, 4629
American Fuel and Petrochemical Manufacturers (AFPM)	3646, 4703
American Fuel & Petrochemical Manufacturers (AFPM) and American Petroleum Institute (API)	3645
American Gas Association	Comment is testimony
American Motorcyclist Association	0122
American Petroleum Institute (API)	3647, 4676
American Soybean Association (ASA)	1775, 3432, 4653
American Trucking Associations (ATA)	4636
AMP Americas LLC	Comment is testimony
Anchor Bank	0809
Andersons Inc., The	0370
APC, Inc.	4493
Archer Daniels Midland (ADM)	1638, 3319, 4662

Aria Energy	Comment is testimony
Association of Equipment Manufacturers	3304
Aurora Cooperative	3952
Baker Commodities, Inc.	1640, 3430, 4860
Bakst, Daren	Comment is testimony
Battle Creek Farmer's Cooperative, N/S	4862
Big Ox Energy	3325, 4858
Big River Resources, LLC	0517, 0518, 0519, 0520
Biomass Power Association	3324
Biotechnology Innovation Organization (BIO)	3680
Birmingham Hide & Tallow Company, Inc.	4857
Boat Owners Association of The United States (BoatU.S.)	2546
Boeing Company, The	3317
BP Products North America Inc.	3953, 4505
Brazilian Sugarcane Industry Association (UNICA)	3110, 3960
Bridge To Renewables ("BTR")	3956, 4887
Business Council for Sustainable Energy	3929
California Association of Sanitation Agencies	1773
California Biodiesel Alliance	2540, 3107
California Department of Resources Recycling and Recovery (CalRecycle)	3873
California Energy Commission (Energy Commission), California Air Resources Board (CARB), and California Department of Resources Recycling and Recovery (CalRecycle)	3658, 4497
California Natural Gas Vehicle Coalition	Comment is testimony
Campaign for Liberty	Comment is testimony
Capital Research Center	Comment is testimony
Cargill, Inc.	3377
Chevron	3478
Citizens for the Republic	Comment is testimony
City of Roseville, California	3931
Clean Air Task Force	2539, 4689
Clean Air Task Force, National Wildlife Federation, ActionAid USA, Rainforest Action Network, Friends of the Earth, Sierra Club, and Mighty Earth	4498
Clean Energy	4129
Clean Energy Consultants	4399, 4477
Clean Energy Fuels	Comment is testimony
Coalition for Renewable Natural Gas	3650, 4705
Coalition for Renewable Natural Gas, Natural Gas Vehicles for America, National Waste & Recycling Association, Solid Waste Association of North America, and Energy Vision	3650

Coffeyville Resources Refining and Marketing LLC and Wynnewood Refining Company LLC.	3106, 4888
Commercial Energy Working Group, The	3653
Commonwealth Agri-Energy, LLC	3251
Competitive Enterprise Institute	4506
Cooperative Farmers Elevator	4720
Corn Producers Association of Texas (CPAT)	3237, 4494
CountryMark Cooperative	3177, 4674
Crimson Renewable Energy, LP	3108, 3879, 4859
Dabney, Austin	0131
Darling Ingredients Inc.	1643, 4671, 3930
DC Water	3494
Deere & Company	4721
Delaware Nature Society	0236, 0259
DMT Clear Gas Solutions	Comment is testimony
DriveGreen, LLC	1132
DTE Biomass Energy	3594
Dupont	3878
Earle Company	3916
Earthstar Builders	Comment is testimony
East Bay Municipal Utility District	1760
Edeniq, Inc.	3955, 4699
Element Markets LLC	Comment is testimony
Enerdyne Power Systems	Comment is testimony
Energy Vision	Comment is testimony
Energem	1177, 1704, 4492
Environmental Advocates of New York	1759
Erie Lackawanna Company	Comment is testimony
Exxon Mobil Corporation	3678
Farmers Cooperative	4724
Farmers Cooperative Elevator Co.	4723
Five Energies Resources, LLC	3935
Florida Fish and Wildlife Conservation Commission (FWC)	1336
FreedomWorks Foundation	3659
Frontiers of Freedom	Comment is testimony
Furey, Denise	Comment is testimony
Georgia Oilmen's Association	4398
Global Alternative Fuels and Rio Valley Biofuels	Comment is testimony
Global Renewable Strategies and Consulting, LLC	3684
Gottbrath, David	Comment is testimony
Governor Kim Reynolds	Comment is testimony

Governor Pete Ricketts	3936
Governors of Iowa, Missouri, Kansas, and South Dakota	4690
Grain Processing Corporation	3914
Greater Washington Region Clean Cities	Comment is testimony
Green Plains Inc.	3957
Growth Energy	3681, 3683, 3684, 3963
Growth Energy, Archer Daniels Midland Company, and Biotechnology Innovation Organization	4886
Guay, Peter	1335
Gundersen Health System Envision	1210
Heartland Institute	Comment is testimony
HollyFrontier Corporation	0221, 2547, 4713
Honeywell UOP	3493, 4673
Honstein Oil & Distributing, LLC	1011
Hurt, Eric S.	4396
Illinois Farm Bureau	4883
Independent Fuel Terminal Operators Association (IFTOA)	3241, 4696
Indiana Corn Growers Association (ICGA)	4667
Indiana House of Representatives, Rep. Greg Beumer	2899
Indiana House of Representatives, Rep. Melanie Wright	3928
Indiana Soybean Alliance	4700
Institute for Energy Research	4502, 4688
International Council on Clean Transportation (ICCT)	3934, 4490
Iogen Corporation	1778
Iowa Biodiesel Board	3877, 4704
Iowa Biotechnology Association	0205
Iowa Corn Growers Association	3174, 4642
Iowa Farm Bureau	1641, 4634
Iowa Renewable Fuels Association	3497, 4496, 4701, 4706
Iowa Soybean Association	2282, 4851
Iowa Soybean Association and Iowa Biodiesel Board	1646
Jacobs, John	Comment is testimony
Johns, Michael R.	0369
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Kansas Corn Growers Association	3944, 4707
Kentucky Corn Growers Association	1131
Kentucky Farm Bureau Federation	1329
Kiefer, Todd	4397
Kinetrex Energy	Comment is testimony
King County Department of Natural Resources and Parks, King County, WA	3244
King County Metro Transit (Metro)	3875

Klickitat Public Utility District	Comment is testimony
Kolmar Americas, Inc.	4891
Kolmar Americas and American GreenFuels	1648
KPMG	Comment is testimony
Krupp, Matt	Comment is testimony
Lakeview Biodiesel	3496, 4801
Lakeview Energy	Comment is testimony
LanzaTech	3954
Little Sioux Corn Processors (Board of Directors)	1175
Little Sioux Corn Processors (Employees)	0235
Loris, Nick	Comment is testimony
Louisiana Farm Bureau Federation	4647
Louisiana House of Representatives. Rep. Clay Schexnayder	3912, 3923
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Mahoney Environmental	0371, 4811
MAPCO	4638
Marathon Petroleum Corporation	3175
MARC IV	1649
Martens Farm Ltd.	4028
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Mass Comment Campaign sponsored by ActionAid (web) - 1232	3575
Mass Comment Campaign sponsored by American Soybean Association (web) - 58	0252
Mass Comment Campaign sponsored by American Soybean Association 2 (web) - 14	4458
Mass Comment Campaign sponsored by Anonymous (email) - 405	2212
Mass Comment Campaign sponsored by Anonymous 1 (email) - 359	2213
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Mass Comment Campaign sponsored by Anonymous 23 (web) - 75	0250
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Mass Comment Campaign sponsored by Anonymous 26 (web) - 12	1632
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Mass Comment Campaign sponsored by Anonymous 28 (web) - 1,734	4139
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Mass Comment Campaign sponsored by National Wildlife Federation Action Fund (web) - 19,265	3573
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Minnesota Bio-Fuels Association	3652
Minnesota Corn Growers Association	3199, 4637
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Minnesota Soybean Processors, Owensboro Grain Company, Western Dubuque Biodiesel, LLC, Community Fuels, Biodico, Iowa Renewable Energy, BIOX USA Limited, Rio Valley Biofuels, AltAir Fuels, AMERIGreen Energy, Franco Environmental Law, and Playmaker Strategies, LLC	4504
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Missouri Farmers Union	1692
Missouri Soybean Association	4416
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Montauk Energy	1135
Morrow Renewables	Comment is testimony

Moving Parts, LLC	2380
Murphy Oil USA, Inc.	3874
Musket Corporation	Comment is testimony
N1 Energy	Comment is testimony
National Association of Clean Water Agencies (NACWA)	2999
National Association of Convenience Stores (NACS) and Society of Independent Gasoline Marketers of America (SIGMA)	2545, 4503
National Association of Truck Stop Operators (NATSO)	3248, 4101
National Biodiesel Board (NBB)	1633, 1645, 1650, 1651, 3880, 4697
National Chicken Council (NCC)	1754, 4631
National Corn Growers Association (NCGA)	1756, 4651
National Corn to Ethanol Research Center	4089
National Council of Chain Restaurants (NCCR)	4663
National Farmers Union	3184, 4491
National Marine Manufacturers Association (NMMA)	1301
National Oilseed Processors Association (NOPA)	4658
National Renderers Association (NRA)	3959, 4508
National Renderers Association, the California Biodiesel Association, and Baker Commodities	Comment is testimony
National Taxpayers Union	Comment is testimony
National Waste and Recycling Association	Comment is testimony
National Wildlife Federation	Comment is testimony
Nebraska Corn Growers Association	3937
Nebraska Farm Bureau Federation (NEFB)	3376, 4712
Neste US, Inc.	4635
New Energy Investors	Comment is testimony
New England Fuel Institute	4711
New Leaf Biofuel	3870
New Mexico Wildlife Federation	0792
Newport Biodiesel	1652
NGVAmerica	Comment is testimony
North Carolina Petroleum & Convenience Marketers (NCPCM)	3318
North Dakota Ethanol Council (NDEC)	1344, 4455
North Dakota Farmers Union (NDFU)	3431
North Dakota Petroleum Marketers Association	Comment is testimony
Northeast Biodiesel Company, LLC	4489, 4602, 4616, 4657
Northwest Gas Association (NWGA)	0731
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NYC Department of Citywide Administrative Services	4628
Ohio Com & Wheat Growers Association, Ohio Ethanol Producers Association, and Ohio Farmers Union	4725

Ohio Corn & Wheat Growers Association (OCWGA)	4670
Ohio House of Representatives, Rep. Michael Ashford	3911
Ohio House of Representatives, Rep. Michael P. Sheehy	3913
Ohio Soybean Association	0787, 4485
Oklahoma Office of the Secretary of Energy & Environment	4487, 4861
Outdoor Power Equipment Institute (OPEI)	1349
Pacific Ethanol	3475
PBF Energy	Comment is testimony
PBF Energy, Inc.	3429, 3924, 4702
Petroleum Marketers Association of America (PMAA)	3962
Philadelphia Energy Solutions Refining and Marketing, LLC (PES)	3887, 4884
Phillips 66 Company	3249, 4682
Playmaker Strategies	Comment is testimony
POET-DSM Advanced Biofuels	3236
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Preferred Oil	4486
Process Combustion Corporation	Comment is testimony
Progressive Rail Inc., and Iowa Traction Railway	3129, 3131, 3132, 3136
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R. W. Beckett Corporation	4855
R&S Block Partnership	3287
Reaching America	Comment is testimony
REG Grays Harbor	3932
Remsen Farmers Coop	4722
Renew Kansas	1223, 4394
Renewable Biofuels, LLC	3250, 3593, 4693
Renewable Energy Group (REG)	0382, 1644, 3961, 4500
Renewable Fuels Association (RFA)	1776, 3109, 3711, 4499
Republic Services, Inc.	3655
Ribic, Robert	Comment is testimony
Rio Valley Biofuels	3245
River Birch	Comment is testimony
Roeslein Alternative Energy	1642
RPMG, Inc.	3240
Schutte, Jay	Comment is testimony
Secure America Alliance	Comment is testimony
Sensenig, Andrea	Comment is testimony
SeSequential	1133
Shell Oil Products	3142, 3933, 4451
Sinclair Oil Corp.	3657

Small Retailers Coalition	1134, 1169, 1170, 1337, 1345, 1350, 1351, 3105, 3156, 3710, 3572, 3648, 4687, 4709
South Dakota Corn Growers Association	4639
South Dakota, Michigan, Tennessee, and Missouri Soybean Associations	3181, 3182, 3183, 3872
Syngenta	3247
Taxpayers for Common Sense	3322
Trillium Transportation	Comment is testimony
Tyburn Railroad, LLC	3135
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U.S. Gain	Comment is testimony
U.S. House of Representatives, Congressman David Young	3433
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Washington Suburban Sanitary Commission	2386
Waste Management	1503
Water Environment Federation	3950
Western Dubuque Biodiesel	3254
Western Dubuque Biodiesel and Western Iowa Energy	Comment is testimony
Western Iowa Energy	1647, 3255

Western Plains Energy, LLC	0378
Willis, John	3656
Wisconsin BioFuels Association (WBFA)	1758, 4510
Wisconsin Corn Growers Association	1757, 4691
Wonderful Company LLC, The	0173
World Energy	3876, 4509

<sup>a</sup> Individual comments from the public (and attachments submitted with comments) submitted to Docket No. EPA-HQ-OAR-2017-0091 are assigned a unique 4-digit docket number that follows the base docket number (i.e., XXXX, where “XXXX” represents the unique 4-digit document docket number). For example, Docket Item No. EPA-HQ-OAR-2017-0091-1500 is presented as 1500 in this table and within the text of this document.

# **1. Policy Objectives of the RFS Program**

## **1.1 Broad Policy Issues Including Congressional Intent and Program Goals**

Commenters that provided comment on this topic include, but are not limited to: 0446, 1223, 1692, 2539, 2540, 2542, 2545, 2547, 3108, 3242, 3430, 3496, 3497, 3593, 3679, 3680, 3876, 3878, 3880, and 3961.

### **Comment:**

Some commenters stated that EPA must increase the 2018 standards relative to 2017 to comply with Congressional intent to increase production of clean renewable fuels, and that EPA has a statutory duty to drive growth. Other commenters stated that EPA should set higher standards to increase production and use of renewable fuel, as this would promote the goals of the program. Several commenters also stated that the proposed rule was inconsistent with Congress' intent to provide consumers with greater access to renewable fuels.

### **Response:**

EPA notes that the total renewable fuel and advanced biofuel final 2018 standards are higher than the final 2017 standards. EPA is required to set the cellulosic biofuel standard at projected production under CAA section 211(o)(7)(D), and therefore disagrees with commenters who suggested that EPA must increase the 2018 cellulosic standard relative to 2017. EPA believes that the volumes it is finalizing in this action fulfill the goals of the RFS program, including promotion of renewable fuels. This comment is further addressed in the context of the cellulosic waiver authority in Section 2.2 of this document.

### **Comment:**

Several commenters stated that the standards should not result in increased demand for vegetable oils for biodiesel or corn ethanol.

### **Response:**

The RFS program allows for use of renewable fuels that meet the definitions articulated in the statute. Additionally, in this action EPA is not requiring additional volumes of advanced biofuel or total renewable fuel beyond what is required using the full extent of the cellulosic waiver authority and has concluded that the use of other waiver authorities is not appropriate for 2018 (see Section V of the final rule).

### **Comment:**

One commenter suggested that, in the context of defining "domestic" under the general waiver authority's "inadequate domestic supply" finding, EISA's stated goal is to increase domestic production of biofuel and to promote energy independence and security. This commenter also suggested that the directive that EPA consider energy security in setting volumes for years

beyond those specified in the statute in CAA section 211(o)(2)(B)(ii) is evidence of Congress' intent to base the annual volumes on domestic production.

**Response:**

EISA's stated goals include "to move the United States toward greater energy independence and security, [and] to increase the production of clean renewable fuels." Thus, the language does not specify whether the production of clean renewable fuels is to come from domestic or foreign production. EPA agrees with the commenter that "energy independence and security" is a stated goal of the Act. While the statute does direct EPA to consider "energy security" in CAA section 211(o)(2)(B)(ii), that section applies when EPA is setting volumes for other calendar years. EPA does not find any reason to conclude that consideration of "energy security" in CAA section 211(o)(2)(B)(ii) should be read to require EPA to interpret "domestic supply" to include only domestic production.

**Comment:**

One commenter stated that low oil prices and uncertainty over the policy direction for the RFS has hurt development of advanced fuels. The commenter also stated that higher standards provide benefits to farmers and livestock producers, and provide jobs.

**Response:**

EPA believes that the finalized volumes, promulgated in accordance with the statutory deadline, continue to support the goals of the program, as reflected in the statute.

**Comment:**

One commenter stated that Congress set statutory volumes so that cost would not inhibit their use.

**Response:**

While Congress did set renewable fuel targets in the statute for each year, it also created flexibility for EPA to modify those targets in specific circumstances through waiver provisions. EPA believes the reductions of cellulosic biofuel in this final rule are required, in light of EPA's projection of cellulosic biofuel production, and that it is also appropriate for EPA to use the cellulosic waiver authority to lower the target volumes for advanced biofuel and total renewable fuel below those in the statute.

**Comment:**

Several commenters stated that the proposed volumes will decrease the market for domestically produced BBD, which is at odds with congressional intent to grow renewable fuel industry on an annual basis.

**Response:**

EPA does not believe that the volumes it is finalizing will decrease the market for domestic BBD, as described in Section IV and VI of the final rule.

**Comment:**

One commenter suggested that the proposed rule did not fulfill EPA's statutory obligations for advanced biofuels.

**Response:**

While the statutory target of "advanced biofuels" for 2018 is 11.0 billion gallons, nested within that target is a statutory target of 7.0 billion gallons for cellulosic biofuel leaving 4.0 billion gallons for non-cellulosic advanced biofuel. EPA was required to adjust the volume of cellulosic biofuel and exercised its discretion to make corresponding reductions in the volume of advanced biofuel. The resulting advanced biofuel standard is set at a level which represents 4.0 billion gallons for non-cellulosic advanced biofuel.

**Comment:**

Several commenters stated that Congress did not intend for the RFS program to require ethanol use beyond the blendwall.

**Response:**

Some comments cite EIA gasoline consumption projections at the time of EISA's enactment, together with the conventional biofuel allowance reflected in the statutory volumes tables (discerned by subtracting advanced biofuel volumes from total renewable fuel volume targets), as indicative that Congress did not intend for the RFS program to exceed the E10 blendwall. We note that Congress did not structure the program to achieve a certain percentage of ethanol in gasoline or provide EPA with waiver authority based on that metric. Furthermore, we note that there is no ethanol-specific standard for the RFS. Ethanol can be in either advanced (e.g. sugarcane ethanol) or conventional (e.g., corn ethanol) forms, and conventional fuel can be ethanol or not (e.g., conventional biodiesel). Therefore, the size of the conventional biofuel allowance does not necessarily reflect Congressional assumptions regarding ethanol use.

## 1.2 Biofuel Imports and Impacts on Energy Security

Commenters that provided comment on this topic include, but are not limited to: 1756, 1776, 2542, 2547, 3105, 3106, 3142, 3175, 3241, 3248, 3251, 3319, 3320, 3377, 3497, 3593, 3645, 3679, 3680, 3880, 3887, 3953, and 3961.

### **Comment:**

One commenter stated that if EPA were to exclude imports in the determination of the 2018 volume requirements while continuing to allow qualifying imported renewable fuel to generate RINs, the lower volume requirements would, result in lower RIN prices and thus decreased demand for renewable fuel, which in turn would reduce the energy security benefits that the RFS program was intended to achieve.

### **Response:**

In the notice of availability of supplemental information<sup>1</sup> we sought comment on making a threshold determination that inadequate domestic supply might exist when considering only domestic production, but noted that even if that condition was satisfied, EPA would still need to make a determination of the appropriateness of a reduction to the applicable volume requirements taking into consideration the fact that qualifying imports of renewable fuel could still generate RINs:

“Having made the threshold finding that there was an inadequate domestic supply, EPA could consider the availability of imports as one factor among others in determining whether to exercise its discretion to use the waiver authority.”

As described in Section V of the final rule, EPA would not choose to exercise its authority to grant a waiver on the basis of inadequate domestic supply for 2018 even if it interpreted the term “domestic supply” to exclude imports, and thus need not determine whether and to what degree imports should be considered in the calculation of the reduction(s). As a result, EPA need not consider what the impacts on renewable fuel demand or energy security would be in that situation.

### **Comment:**

Multiple commenters stated that including imported biofuels in EPA’s projection of the available supply of biofuel would force obligated parties to rely on imported biofuels and would undermine the statute’s purpose of promoting energy security and/or independence. These commenters generally requested that EPA still allow imported biofuels to generate RINs, with some commenters suggesting that the statutory language explicitly contemplates imports of renewable fuel being used for compliance with the RFS. One commenter stated that setting standards in such a way as to promote imports of renewable fuel runs counter to the objectives of the statute to promote domestic energy supplies. Other commenters stated that biodiesel imports

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<sup>1</sup> 82 FR 46174 (October 4, 2017).

increase energy security, which is one of the goals of the RFS program. One commenter stated that EPA should focus on increasing energy security rather than increasing the U.S. trade balance.

**Response:**

Under the RFS program, imports of renewable fuel qualify to generate RINs for compliance with the applicable RFS standards. The statutory language suggests that imports can play a role in meeting the volume targets that Congress set. For instance, CAA section 211(o)(5)(A) directs EPA to issue regulations implementing the RFS program and specifies that

“The regulations ... shall provide ... for the generation of an appropriate amount of credits by any person that refines, blends, or *imports* gasoline that contains a quantity of renewable fuel ...” (Emphasis added.)

See also CAA section 211(o)(5)(E) (providing for credits for persons who import additional renewable fuel).

That said, it is within EPA’s purview to consider all relevant factors that could affect supply, both those related to domestically-produced renewable fuels and those related to imports. Regarding imports of renewable fuels, there are a variety of factors that make the level of potential supply considerably less certain than for domestically-produced renewable fuels. These factors include but are not limited to:

- High variability of imports into the U.S. in the past
- Growing international demand for renewable fuel
- Unpredictable policies in other nations regarding production, trade, taxes, and tariffs for renewable fuels
- Fluctuating demand for alternative uses of the feedstocks used to make renewable fuels, such as sugar from sugarcane.

Thus while we did consider potential supply from imports in both the 2018 NPRM and the 2018 final rule, our estimates of their contributions to total supply have been tempered by the uncertainty associated with them.

While energy independence was one of the goals of the RFS program, and imported biofuels do not increase energy independence, the RFS program was also intended to increase energy security and decrease GHG emissions from transportation fuel. EPA’s lifecycle assessments indicate that biofuels produced using qualifying pathways, whether produced domestically or imported from foreign countries, result in GHG reductions relative to the petroleum based fuels they displace. Imported biofuels also diversify the sources of transportation fuel in the U.S. and can therefore increase energy security. Energy security is not limited to a consideration of domestic energy sources to the exclusion of imports. Instead, energy security includes a measure of the diversity of fuel sources as well as the geopolitical condition of the sources. Increasing diversity (such as through use of biofuels from a variety of countries) reduces risks associated with a potential disruption of supply. See also discussion of energy security vs energy

independence in Section 7 of this document. We further note that while EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it would be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (see Section V of the final rule for a further discussion of this topic). The final volume requirements that we have established for 2018 do take into account potential imports subject to the uncertainty described above.

**Comment:**

Multiple commenters stated that any consideration of imports in the determination of applicable volume requirements comes at the expense of domestic energy security, and thus runs counter to the goals of the RFS program.

**Response:**

Energy security is not limited to a consideration of domestic energy sources to the exclusion of imports. Instead, energy security includes a measure of the diversity of fuel sources as well as the geopolitical condition of the sources. Increasing diversity (such as through use of biofuels from a variety of countries) reduces risks associated with a potential disruption of supply. Thus, biofuel imports contribute to energy security in the United States. This issue was discussed in the original 2007 rulemaking establishing the RFS program. See also discussion of energy security and energy independence in Section 7 of this document.

**Comment:**

Several commenters stated that EPA should not exclude imported volumes from our consideration of available supply resulting in lower standards than if imported biofuels had been considered. These commenters generally claimed that doing so would hurt domestic producers, as imported biofuel would still be allowed to contribute towards the RFS obligations. Many commenters stated that foreign produced biofuel can be cheaper than domestically produced biofuels. Some commenters mentioned lower labor costs and/or production subsidies available in some foreign countries as the reason that foreign produced biofuels could be cheaper than domestically produced biofuels. These commenters generally requested that EPA increase the advanced biofuel volume for 2018 to support the domestic biodiesel industry.

**Response:**

In this final rule EPA has not used our general waiver authority to further reduce the volumes for advanced and/or total renewable fuel (after the reductions using the cellulosic waiver authority) on the basis of an inadequate domestic supply of biofuel. EPA recognizes that lower volumes would not necessarily result in decreased biofuel imports, especially if imported biofuels are cheaper than domestically produced biofuels. The advanced biofuel volume for 2018 in this final rule is slightly higher than the advanced biofuel volume for 2017, and is the result of reducing the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes from the statutory

targets for 2018 by the same amount using the cellulosic waiver authority. See Section IV of the final rule for a further discussion of the advanced biofuel volume.

**Comment:**

One commenter stated that EPA should let the Department of Commerce handle trade issues, and should not seek to address imported biofuels through the RFS program.

**Response:**

EPA does not intend to address trade issues through the RFS program. Our discussion of imported biofuels pertained to the impact of imported biofuels on energy independence and security and whether imported biofuels should be considered as part of the available supply of biofuel under the general waiver authority on the basis of inadequate domestic supply. See Section V of the final rule for further discussion of EPA's general waiver authority.

**Comment:**

One commenter stated that significant volumes of BBD must be imported to reach the 2.9 billion gallons EPA projected would be used to meet the total renewable fuel standards in 2018. The commenter claimed that the domestic biodiesel and renewable industry cannot produce these volumes, or could only produce these volumes at very high cost.

**Response:**

EPA notes that imported volumes qualify to be used for compliance with the standards. Moreover, EPA has concluded that if there is sufficient demand for domestically produced biofuels, the domestic biodiesel and renewable diesel industry may be capable of producing 2.9 billion gallons of these fuels in 2018. Production capacity and feedstock availability would not appear to prevent the domestic biodiesel and renewable diesel industry from producing at this level. Producing 2.9 billion gallons of biodiesel and renewable diesel domestically would require significant increases in the production rate of existing biodiesel and renewable diesel production facilities, however these increases may be possible in 2018. Increasing the production of domestically produced biodiesel and renewable diesel to 2.9 billion gallons in 2018 may result in higher costs for these fuels. EPA has determined that these potentially higher costs would not be sufficient basis for further reductions to the advanced biofuel volume using the general waiver authority on the basis of severe economic harm.

**Comment:**

One commenter stated that EPA cannot predict with precision the import of foreign biofuels. Including imported biofuels would result in additional uncertainty in the program. The commenter noted that year over year import volumes have varied significantly in past years.

**Response:**

Projecting the supply of imported biofuels is inherently difficult, as the supply of imported biofuels can be impacted by a variety of different factors both economic and political. While EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it could still be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (see Section V of the final rule for a further discussion of this topic).

**Comment:**

One commenter stated that without the biodiesel tax credit (or if the biodiesel blenders tax credit is changed to a producers' tax credit available only to domestic biodiesel and renewable diesel producers) imported biodiesel is more likely to be replaced with petroleum diesel than domestically produced biodiesel or renewable diesel.

**Response:**

The absence of the biodiesel blenders tax credit (or the change to a producers' tax credit available only to domestic biofuel producers) may result in lower volumes of imported biofuel in 2018 than in previous years. If biofuel imports decrease, however, we do not believe that these fuels will most likely be replaced with petroleum diesel. While EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it could still be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (see Section V of the final rule for a further discussion of this topic).

**Comment:**

Multiple commenters stated that imported biofuel reduces GHG emissions and reduces petroleum imports from unstable regions. One commenter noted that imported biofuels are usually from stable, friendly countries.

**Response:**

EPA's lifecycle assessments indicate that biofuels produced using qualifying pathways, whether produced domestically or imported from foreign countries, result in GHG reductions relative to the petroleum based fuels they displace. Imported biofuels also diversify the sources of transportation fuel in the U.S. and can therefore increase energy security.

**Comment:**

Several commenters stated that imported biodiesel is cheaper than domestically produced biodiesel, and that not allowing imported biodiesel to generate RINs would increase the cost of

the RFS program. Another commenter claimed that competition from imported biofuels makes domestic biofuel cheaper.

**Response:**

EPA did not propose to restrict the potential for imported biofuels to be used in the U.S. and qualify towards meeting the RFS standards. EPA's current regulations allow the use of imported and domestic biofuel for compliance. Competition among biofuel producers, including both domestic and foreign biofuel producers, generally results in lower biofuel prices.

**Comment:**

One commenter stated that EPA does not have inherent authority to reduce the standards on the basis of imported biofuels, and that any reductions must be based on EPA's statutory waiver authorities.

**Response:**

The CAA provides EPA with a number of waiver authorities, including the cellulosic waiver authority, general waiver authority, and biomass based diesel waiver authority to reduce the statutory targets if certain conditions are met. See CAA section 211(o)(7). For a discussion of EPA's waiver authorities, including the consideration of biofuel imports in deciding whether and to what degree to exercise these waiver authorities, see Sections II, IV, and V of the final rule.

**Comment:**

One commenter stated that if EPA desires to reduce imported biofuel they should repeal the CARBIO approval. Another commenter stated that EPA should require that foreign producers of biofuels meet the applicable feedstock requirements.

**Response:**

EPA currently requires that all foreign producers of RIN generating biofuels meet the applicable feedstock requirements, including all producers that are satisfying these requirements using the methods requested by CARBIO and approved by EPA. It would not be appropriate for EPA to repeal the CARBIO approval in an effort to reduce biofuel imports since EPA has determined that CARBIO's proposal satisfies the requirements of the RFS program.

**Comment:**

One commenter stated that in light of the high level of imports EPA should set increasing volumes to encourage domestic production.

**Response:**

In deciding to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets, EPA considered a number of factors, including the production potential of the domestic biodiesel and renewable diesel industry, the potential for imported volumes of these fuels, a desire to avoid feedstock switching and diverting biofuels from foreign countries, and a recognition of the relatively high cost of advanced biofuels (see Section IV of the final rule for a further discussion of this issue). In light of these considerations, EPA has determined that it would not be appropriate to further increase the advanced biofuel volume.

**Comment:**

One commenter stated that EPA must account for the expected level of biofuel imports in our standards. The commenter stated that they estimate that biofuel imports in 2017 will be lower than imported biofuel volumes in 2016, and that potential tariffs and countervailing duties on biodiesel from Argentina and Indonesia will likely further reduce imported volumes of biodiesel in 2018.

**Response:**

Projecting the supply of imported biofuels is inherently difficult, as the supply of imported biofuels can be impacted by a variety of different factors both economic and political. It is possible that biofuel imports could decrease in 2018, either as a result of the absence of the biodiesel tax credit, tariffs and countervailing duties on biodiesel produced in Argentina or Indonesia, or a number of other factors. For example, any reductions in imports from Argentina or Indonesia could be made up with imports from other countries or through growth in domestic production. While EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it would be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (see Section V of the final rule for a further discussion of this topic).

**Comment:**

One commenter claimed that it was inappropriate for EPA to try to curb biodiesel imports by freezing or reducing BBD volumes. The commenter encouraged EPA to simply follow the law and include imported biodiesel as either an advanced or conventional biofuel. The commenter further stated that EPA should not be trying to put its finger on the scale to control the level of imports by limiting growth in the RFS.

**Response:**

EPA did not propose to restrict the potential for imported biofuels to be used in the U.S. and qualify towards meeting the RFS standards. EPA's current regulations allow the use of imported and domestic biofuel for compliance. EPA considered a number of factors in the decision to use

our cellulosic waiver authority to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets, including the production potential of the domestic biodiesel and renewable diesel industry, the potential for imported volumes of these fuels, a desire to avoid feedstock switching and diverting biofuels from foreign countries, and a recognition of the relatively high cost of advanced biofuels (see Section IV of the final rule for a further discussion of this issue).

**Comment:**

One commenter stated EPA should not take any action that discriminates against imported biofuels, as such actions would violate international laws. Another commenter similarly stated that EPA should not try to restrict the market for biofuel imports. If the U.S. tries to restrict imports this could isolate the U.S. market and hurt U.S. consumers. One commenter stated that EPA should not presume that imports will automatically be available to the U.S. since they are driven by market factors.

**Response:**

EPA did not propose to discriminate against imported biofuels by restricting the potential for imported biofuels to be used in the U.S. or for qualifying biofuels to contribute towards meeting the RFS standards. While EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it would be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (See Section V of the final rule for a further discussion of this topic).

**Comment:**

One commenter stated that EPA must consider exported volumes of biofuels, not just imported volumes, in setting the RFS standards. This commenter stated that EPA has provided no legal case for severe economic harm to support reducing the RFS standards by the volume equal to the volume of imported biofuels.

**Response:**

EPA has used our statutory authority to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets. As discussed in Section V of the final rule, we have not made further reductions using the general waiver authority (on the basis of severe economic harm or any other reason). We believe that the advanced biofuel and total renewable fuel volumes that result from the full use of the cellulosic waiver authority can be met. In making this decision EPA considered a number of factors, including the production potential of the domestic biodiesel and renewable diesel industry (including biodiesel and renewable diesel that is currently exported), the potential for imported volumes of these fuels, a desire to avoid feedstock switching and diverting biofuels from foreign countries, and a recognition of the relatively high cost of advanced biofuels (see Section IV of the final rule for a further discussion of this issue).

**Comment:**

Multiple commenters stated that even if EPA continues to include imported biofuels in our consideration of the available supply we should still project no imported biodiesel in 2018 due to the recent proposed tariffs and countervailing duties on biodiesel from Argentina and Indonesia.

**Response:**

EPA does not utilize any explicit assumption of volumes from Argentina and Indonesia in our volume projections. EPA notes that the preliminary tariff determinations on biodiesel imported from Argentina and Indonesia have not yet been finalized, and that even if these tariffs are finalized the impact of these tariffs is uncertain. It is possible, for example, that other countries unaffected by these tariffs could respond by increasing biodiesel imports to the U.S. It is also possible that the U.S. could respond by increasing domestic production of biodiesel or renewable diesel, or by decreasing exports of biodiesel and renewable diesel. While EPA currently projects that imported biofuels will continue to contribute towards meeting the RFS standards in 2018, we believe it would be possible for domestic biofuel producers to produce sufficient volumes of biofuels to meet the volume standards in this final rule for 2018, without considering any imported biofuels (see Section V of the final rule for a further discussion of this topic).

**Comment:**

One commenter stated that other countries are already sending additional volumes of biodiesel to the U.S. to compensate for lower volumes of imported biodiesel from Argentina and Indonesia.

**Response:**

EPA anticipates that the tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia, if finalized, will not necessarily result in lower supplies of biodiesel to the U.S. as other countries may increase biodiesel exports to the U.S., as this commenter has indicated is already taking place. Alternatively, domestic production of biodiesel and renewable diesel could increase or exports of biodiesel from the U.S to other countries could decrease.

### 1.3 RFS Program Changes, RIN Trading, and Market Oversight

Commenters that provided comment on this topic include, but are not limited to: 2545, 3105, 3106, 3142, 3242, 3248, 3319, 3429, 3497, 3645, 3649, 3653, 3677, 3679, 3680, 3681, 3684, 3887, 3953, 3961, and 3962.

#### **Comment:**

Numerous commenters suggested a number of changes to the RFS program structure, the RIN trading system and strengthening oversight of the RIN market.

Comments received on RFS program changes included moving the point of obligation to position holders at the rack, and suggested changes to how RINs are issued, held, reported, and traded. These suggested changes include: mandating accurate reporting of prices and volumes of RINs to EPA; limit RIN purchasing to obligated parties and in relative proportions to their obligations; impose position limits, trading limits, and require position and trading disclosures; set limitations on holding carry-over RINs by unobligated parties and RIN-long parties; set a target RIN price and provide EPA-issued RINs when that target is exceeded; report daily the aggregated number of RINs sold in each category as reported in EMTS, simplification of RIN classifications to K1, K2, and RIN separations; limit trades to no more than three; divulge the market positions of all non-obligated participants in the market; and require all non-obligated parties to report the benefits from RIN trading.

Comments received on strengthening RIN market oversight include encouragement of CFTC to actively monitor the RIN market; engage FTC to take enforcement actions against uneconomic trading; and change the RIN market structure to comply with the Commodity Exchange Act.

#### **Response:**

Comments on changes to the point of obligation and other changes to the structure of the RFS program (such as the ability to carryover RINs, and to the process for issuing RINs) are beyond the scope of this rulemaking, which establishes the annual volume requirements and percentage standards. EPA notes that it recently considered petitions to alter the point of obligation in a separate proceeding, and explained its rationale for denying the petitions.<sup>2</sup>

EPA did solicit comment on potential changes to the RIN trading system in light of the concern expressed by some commenters that the current regulatory provisions related to RIN trading render the RFS program vulnerable to market manipulation. EPA takes such issues seriously. The RIN system was originally designed with an open trading market in order to maximize its liquidity and ensure a robust marketplace for RINs. However, EPA is interested in assessing whether and how the current trading structure provides an opportunity for market manipulation. To that effect, EPA sought comment and input on this issue, including on potential changes to the RIN trading system that might help address these concerns. While EPA received many comments that are helpful to highlight opportunities for improvement to the RIN system, we did

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<sup>2</sup> See 82 FR 56779 (November 30, 2017).

not propose and are not in a position to finalize any significant changes to the RIN system at this time, particularly in light of the statutory deadline for issuing the annual standards. However, we intend to explore these suggested changes and are open to suggestions for making changes in the future that are within our authority if they would help to improve the function and liquidity of the RIN system.

Separate from evaluating the RIN trading options in the RFS program, EPA is working with appropriate market regulators to analyze targeted concerns of some commenters. EPA is not a commodity market regulatory agency, and thus we do not have expertise in this field. Claims of market manipulation prompted EPA to execute a memorandum of understanding (MOU) with CFTC, which has the authority and expertise to investigate such claims. EPA intends to continue to collaborate with CFTC under the MOU with respect claims of manipulation in the RIN market.

In the meantime, EPA has continued to explore additional ways to increase program transparency in order to support the program and share data with all stakeholders. EPA already publishes RFS program data on our website, including data related to RIN generation, sales and holdings, and annual compliance.<sup>3</sup> We are interested in providing more information, to the extent consistent with our obligations to protect confidential business information (CBI). EPA sought comment on specific data elements and posting frequency that stakeholders believe would be useful to help with market transparency and liquidity. Commenters suggested a number of different types of data that commenters suggested would be useful to the industry and public. EPA will need to further evaluate each of these suggestions to determine which information we can be post and, if so, whether we can post it at the frequency that was suggested by the commenters. Our decisions with respect to these suggestions must necessarily strike a balance between achieving the greatest transparency possible, while working within the limitations of our authority and resources (including technology systems), and protecting information that is claimed as CBI.

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<sup>3</sup> For public data on the RFS and other EPA fuel programs, refer to: <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/public-data-and-registration-lists-fuel-programs>

## **2. Waiver Authorities**

### **2.1 General Waiver Authority**

Commenters that provided comment on this topic include, but are not limited to: 4394, 4410, 4415, 4451, 4481, 4489, 4491, 4495, 4497, 4499, 4500, 4501, 4504, 4505, 4508, 4509, 4633, 4635, 4641, 4651, 4653, 4662, 4671, 4673, 4693, 4697, 4699, 4701, 4704, 4858, 4859, 4886, and 4891.

#### **Comment:**

Many commenters stated that there is no justification for the use of the general waiver authority, as the RFS is not creating severe economic or environmental harm, nor is there an inadequate domestic supply of renewable fuel. Commenters generally stated that EPA has established a high bar for determining that implementation of the RFS would result in severe economic or environmental harm and there is currently no data to support that determination. Numerous commenters also stated that it is inappropriate to interpret inadequate domestic supply to refer to only fuel that is produced domestically. Other commenters stated that even if this were the case and imports were ignored, there is adequate domestic production of biodiesel to achieve the BBD volumes.

#### **Response:**

EPA is not using the general waiver authority to set the 2018 standards, as described. in Section V of the final rule, a docket memo titled “Assessment of Waivers for Severe Economic Harm or BBD Prices for 2018,” and this section.

#### **Comment:**

Several commenters stated that EPA should use the general waiver authority to further reduce the total renewable fuel volume so that the implied conventional volume would be lower, in accordance with the goals of the statute. These comments also suggested that 19.24 billion gallons, the proposed 2018 RVO for renewable fuel, was not “reasonably attainable.”

#### **Response:**

The goals of the RFS program are discussed in Section 1 of this document. The final rule includes an implied conventional volume of 15 billion gallons, which is consistent with the implied volume that may be discerned from the table of applicable volumes in the statute. Thus, EPA believes that the implied conventional volume in the final rule is in fact consistent with the goals of the statute. EPA does not believe it would be appropriate at this time to lower the total renewable fuel applicable volume to achieve a lower implied conventional volume since, as noted elsewhere, there does not appear to be sufficient justification for use of an additional waiver authority (beyond the cellulosic waiver authority) to achieve such a reduction. EPA also believes that 19.29 billion, the total renewable fuel requirement that EPA is finalizing for 2018, is reasonably attainable.

**Comment:**

One commenter suggested that EPA should use its waiver authority to adjust the RVOs to prevent damages caused by higher level ethanol blends.

**Response:**

EPA notes that the RFS program does not require higher level ethanol blends, and that the standards it is finalizing for 2018 do not rely on the use of higher level ethanol blends to achieve the standards promulgated.

## 2.1.1 Inadequate Domestic Supply

Commenters that provided comment on this topic include, but are not limited to: 1692, 1756, 1776, 3105, 3177, 3178, 3497, 3645, 3677, 3679, 3680, 3878, 3961, 2547, 4503, 4631, 4645, 4674, 4682, 4696, 4702, 4703, 4713, 4885, and 4888.

### **Comment:**

Many commenters suggested that EPA should interpret the undefined term “domestic” within the phrase “inadequate domestic supply” to mean renewable fuel produced domestically. These commenters suggested that this interpretation would “give meaning” to the use of the word “domestic” and is the best reading of the statute. EPA sought further comment on this interpretation in its notice of availability of supplemental information.<sup>4</sup> Commenters suggested that this interpretation is not precluded by the *ACE* decision, because the Court in *ACE* was evaluating the interpretation presented by EPA in the 2014-2016 rule, and the issue of the meaning of “domestic” was not before the Court. Most commenters suggested that imported biofuels should only be excluded in determining the volume under a waiver due to inadequate domestic supply, while still being eligible to be used for compliance with the standard. Some commenters suggested that the difficulty in estimating biofuel imports in setting standards further supports interpreting “inadequate domestic supply” to exclude imports. Some commenters suggested that this interpretation is also consistent with the goals of the statute and intent of Congress to increase energy independence and security and domestic fuel production.

Other commenters suggested that reading “domestic supply” to exclude imports is not consistent with the plain reading of the statute, because it refers to “supply” and not “production.” One commenter noted that interpreting the statute in this way could harm the ability to meet both the total renewable fuel standard and the advanced biofuel standard. Another commenter noted that Congress intended to reduce dependence on foreign petroleum, and not foreign renewable fuel. Some commenters suggested that EPA should use the definition of “domestic supply” as articulated by the *ACE* decision, that supply is what is available to refiners, blenders, and importers and includes imports. Some commenters additionally stated that the goals of the RFS program are best served by reading “domestic supply” to include imports.

### **Response:**

EPA responds to comments about its interpretation of inadequate domestic supply, and whether EPA would be justified in exercising the general waiver authority on the basis of a finding of inadequate domestic supply in Section V.A of the final rule. EPA responds to comments about the goals of the statute and consideration of imports in Section I of this document.

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<sup>4</sup> 82 FR 46174 (October 4, 2017).

**Comment:**

Several commenters stated that EPA should reduce the advanced biofuel and total renewable fuel volumes by the quantity of fuel that was imported in the last year for which data are available.

**Response:**

We understand this commenter to suggest that EPA should interpret the inadequate domestic supply waiver to exclude imports from the volume of the “domestic supply” and to further suggest that it would be appropriate to exercise the inadequate domestic supply authority to reduce required volumes by an amount equal to imports in the most recent calendar year for which data are available. As discussed in Section V.A of the final rule, EPA has determined that the record does not indicate an “inadequate domestic supply” of renewable fuel that would justify use of the general waiver authority to further reduce volumes of renewable fuel below levels finalized, whether or not imports are considered part of the “supply.” Since EPA is not exercising its authority to grant a waiver on the basis of inadequate domestic supply at this time, it need not address what volume reduction would be appropriate if it were to do so.

**Comment:**

Some commenters suggested that EPA is permitted to consider costs when waiving volumes on the basis of a finding of inadequate domestic supply. These commenters suggested that the *ACE* decision’s conclusion that supply be interpreted as the “supply available to refiners, blenders, and importers to meet statutory requirements,” means that EPA must consider the costs of renewable fuel in determining whether it is “available.” These commenters suggested that “supply is not available if that supply is too costly.”

**Response:**

EPA evaluated the costs of the program in Section IV of the final rule, as well as in the context of evaluating whether the standards could lead to severe economic harm. EPA found the costs as compared to 2017 to be between \$(0.4) -- \$24 million in 2018, and determined that it was not appropriate to reduce volumes on the basis of severe economic harm. EPA does not believe that its assessment of the supply of renewable fuel “available” in 2018 would be different even if it adopted the commenter’s suggestion.

**Comment:**

One commenter stated that EPA continues to improperly rely on demand side factors when considering what is “reasonably attainable.”

**Response:**

EPA considers demand-side factors when it assesses what volumes may be “reasonably attainable” for purposes of the exercise of its cellulosic waiver authority. The *ACE* decision specifically approved this approach. However, EPA will no longer consider demand-side factors

when exercising the “inadequate domestic supply” waiver authority, in accordance with the *ACE* decision. This is not an issue for the final rule, as EPA is not exercising the inadequate domestic supply waiver authority with respect to the 2018 standards or 2019 biomass-based diesel volume requirement.

**Comment:**

One commenter suggested that lower imports are likely to result in an inadequate domestic supply of advanced biofuels.

**Response:**

EPA does not believe that there will be an inadequate domestic supply of advanced biofuels to satisfy the 2018 advanced biofuel percentage standard in the final rule, as described in Sections IV and V of the final rule.

**Comment:**

Many commenters submitted comments relating to the availability of domestically produced advanced biofuels in response to our request for comment on the potential interpretation of “domestic supply” as including domestic production of renewable fuel only. Some suggested that domestic feedstock availability in 2018 can only support 1.53 billion gallons of biodiesel without causing cost increases or feedstock switching. Others suggested that domestic production would be unable to ramp up fast enough to replace lost imports, with some citing to the fact that domestic production has never exceeded a 70% utilization rate.

**Response:**

As described in Section V.A of the final rule, EPA believes that there is uncertainty regarding the capability of the domestic advanced biofuel industry to compensate in 2018 for volumes that would not be counted as part of the “domestic supply” under the interpretation favored by the commenters. Taking this uncertainty into account (including the distinct possibility that the domestic industry could compensate for the exclusion of imports), as well as the availability of imported volumes and carryover RINs, EPA would not choose to exercise its authority to grant a waiver on the basis of inadequate domestic supply for 2018 even if it interpreted the term “domestic supply” to exclude imports. In light of this determination, we need not resolve at this time the interpretive issue regarding whether the term “domestic supply” should include consideration of imports.

**Comment:**

Many commenters, including obligated parties, suggested that EPA should not modify the 2018 BBD standard under the general waiver authority. Other commenters, however, suggested that EPA should use the general waiver authority to reduce the 2018 BBD standard under a finding of inadequate domestic supply, contending that EPA should interpret “domestic supply” to exclude imported biodiesel, and that domestic production is likely to fall short of the 2018 BBD standard.

Another commenter contended that excluding imports is appropriate due to impending duties, and that supply is likely to be inadequate.

**Response:**

While EPA sought comment on the potential use of the general waiver authority to modify the 2018 BBD standard, EPA is not taking action to reduce the 2018 BBD standard under the general waiver authority. EPA does not believe that such action would be justified based on the information before it at this time. See further discussion in Section V of the final rule, and the response to the previous comment.

## 2.1.2 Severe Economic Harm

Commenters that provided comment on this topic include, but are not limited to: 1692, 1754, 1756, 1776, 2542, 2545, 3105, 3175, 3242, 3248, 3251, 3429, 3478, 3645, 3677, 3679, 3680, 3681, 3878, 3961, 2547, 4503, 4645, 4687, 4702, 4703, 4709, 4713, 4884, 4885, and 4888.

### **Comment:**

Several commenters suggested both that EPA should exercise its general waiver authority under a finding of severe economic harm and that EPA should not exercise its general waiver authority under a finding of severe economic harm. Those commenters that suggested there is no basis to use the general waiver authority to reduce the total or advanced renewable volume requirements due to severe harm to the economy stated that, under the statute and under EPA's previous interpretation, the severe economic harm provision sets a high bar that has not been met, and only applies in narrow circumstances, which are not currently present.

### **Response:**

EPA's response to these and similar comments can be found in the docket memo "Assessment of Waivers for Severe Economic Harm or BBD Prices for 2018."

### **Comment:**

Some commenters suggested that EPA should reduce the 2018 BBD standard, along with the other 2018 standards, under a finding of severe economic harm. These commenters suggested that severe economic harm is occurring due to the current point of obligation and harm to refiners.

### **Response:**

EPA does not believe severe economic harm is occurring due to the current point of obligation or harm to refiners. This is further discussed in the docket memo "Assessment of Waivers for Severe Economic Harm or BBD Prices for 2018," and in EPA's recent denial of petitions seeking a change in the RFS point of obligation, available in this docket.<sup>5</sup> Consequently, EPA is not modifying the 2018 BBD standard, or other 2018 standards, on the basis of severe economic harm.

### **Comment:**

In EPA's notice of availability of supplemental information, EPA sought comment on its interpretation of severe economic harm articulated in its decisions denying waiver request in 2008, and 2012.<sup>6</sup> Some commenters pointed out that in those denial documents, EPA stated that

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<sup>5</sup> See "Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," EPA-420-R-17-008, November 2017.

<sup>6</sup> 82 FR 46174 (October 4, 2017).

its interpretation was guidance and non-binding, and therefore EPA had the ability to change that interpretation.

Some commenters, who argued that a waiver under severe economic harm was justified as a result of severe harm to a region that may occur as a result of a refinery shutdown, stated that to find “severe economic harm,” a shutdown need not occur prior to EPA issuing the waiver, and that requiring shutdown prior to issuance would not allow EPA to alleviate the harm to the region. Other commenters suggested that a waiver on the basis of severe economic harm should not require “closure” of refineries and that the high compliance costs are enough to justify waiver.

**Response:**

EPA agrees with commenters that EPA is not precluded from altering the interpretation of the term “severe economic harm” that it articulated in prior waiver decisions.

Commenters did not provide concrete information regarding a possible refinery shut-down or a particular refinery’s compliance costs, and EPA does not wish to opine on hypothetical situations. When and if EPA receives a petition for a waiver on the basis of possible refinery shut-down or high compliance costs, EPA will evaluate the facts to ascertain whether issuing a waiver would be appropriate. We note that EPA recently received a petition from the Governor of Pennsylvania seeking a waiver on the basis of potential closure of one or more east coast refineries. That request is not part of the administrative action for this 2018 standards rule; EPA intends to evaluate the request and to issue a response that is separate from this action. We note, for informational purposes, that in its “Denial of Petitions to Change the RFS Point of Obligation,” and a memorandum titled, “Assessment of Waivers for Severe Economic Harm or BBD Prices for 2018,” in this docket, EPA assessed available information and did not find credible evidence that compliance with the RFS program is leading to refinery closures.

**Comment:**

One commenter suggested that a waiver is proper if there would be “significant and potentially irreversible harm to a specific segment of the fuel market that forms a critical part of economy” and that “[t]he severity of economic harm may relate to the particular segment of the economy that is harmed and the role that segment plays in the economy.”

**Response:**

This suggested interpretation was tied to the idea that severe economic harm to small retailers is occurring. As described in the “Denial of Petitions to Change the RFS Point of Obligation,” available in the docket, and in the docket memo “Assessment of Waivers for Severe Economic Harm or BBD Prices for 2018,” EPA does not believe based on the record for this action that the RFS program is causing severe economic harm to small retailers, and therefore need not evaluate this potential interpretation at this time.

**Comment:**

Several commenters stated that exceeding the E10 blendwall will cause severe economic harm due to constraints in supply of E15 and E85, and suggested that EPA should set the RFS standards for 2018 in such a way as to ensure that the pool-wide ethanol content does not exceed 9.7%.

**Response:**

We have addressed this comment in a memorandum to the docket.<sup>7</sup> See also responses to comments in Section 5 of this document with respect to other E10 blendwall comments.

**Comment:**

Several commenters stated that high RIN prices are threatening the viability of refineries that purchase RINs to meet their RFS obligations. These commenters stated that if these refineries were to close this would cause severe economic harm, and therefore EPA should reduce the RFS volumes for 2018 to prevent this severe economic harm.

**Response:**

We have addressed this comment in a memorandum to the docket.<sup>8</sup>

**Comment:**

One commenter stated that the current point of obligation is causing severe economic harm to small and medium independent retailers. They also claimed that the current point of obligation harms consumers who are not receiving full pass through of RINs when withholding some of the RIN value allows the large retailers to undercut competition.

**Response:**

EPA evaluated these and similar claims in the context of responding to petitions we received requesting that the Agency change the point of obligation in the RFS program. We determined that small and medium independent retailers are not disadvantaged by the RFS program in comparison to large retailers, as the profits larger retailers receive from selling RINs are generally offset by the cost of acquiring the RINs that they sell. Neither are consumers harmed by the current point of obligation, as higher RIN prices do not result in higher prices for transportation fuel.<sup>9</sup>

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<sup>7</sup> “Assessment of waivers for severe economic harm or BBD prices for 2018,” memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

<sup>8</sup> “Assessment of waivers for severe economic harm or BBD prices for 2018,” memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

<sup>9</sup> This issue is discussed in further detail in “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” EPA-420-R-17-008, November 2017.

**Comment:**

One commenter stated that EPA should reduce the RFS volumes in an effort to reduce RIN prices and the incentives for fraud in the RFS program. The commenter claimed that this action would be justified as fraud in the RFS program was causing severe economic harm to obligated parties that have to replace fraudulent RINs, and that the risk of fraudulent RINs has resulted in higher RIN prices due to a “risk premium.”

**Response:**

While lower RIN prices may reduce the incentives for fraud within the RFS program, EPA does not believe this would be an appropriate way to address this issue. We continue to invest resources to improve the operation of the RFS program and the RIN market. EPA does not believe there is sufficient evidence that costs paid by obligated parties to address fraudulent behavior by others under the RFS program have resulted in severe economic harm, and these costs therefore do not provide sufficient justification for the use of EPA’s general waiver authority. In addition, we have clearly articulated that the RIN program is a “buyer beware” program, and that obligated parties should minimize the risk associated with the potential purchase of fraudulent RINs by conducting appropriate due diligence prior to their purchases and/or participating in the voluntary quality assurance program established through EPA regulations.

**Comment:**

One commenter suggested that severe economic harm is occurring because EPA continues to grant small refinery exemptions.

**Response:**

EPA notes that the standard for granting an exemption to a small refinery (“disproportionate economic hardship”) is different than the standard for a waiver of the RFS volumes (“severe economic harm”). The granting of hardship exemptions to small refineries has focused on the disproportionate hardship conditions of an individual refinery, and therefore the granting of such exemptions does not indicate that the RFS program is causing severe harm to “the economy . . . of a State, a region, or the United States.”

### 2.1.3 Severe Environmental Harm

Commenters that provided comment on this topic include, but are not limited to: 0236, 1692, 1756, 1759, 1776, 2539, 3306, 3320, 3575, 3679, 3680, 3681, 3934, 3961, and 4498.

#### **Comment:**

Several commenters suggested that EPA should reduce volumes below those obtained using the cellulosic waiver authority based on a finding of severe environmental harm. Commenters pointed to a range of alleged environmental harms, such as increased fertilizer and pesticide runoffs affecting water bodies (including the Gulf of Mexico and Lake Erie), as well as harm to soil quality, air quality, wildlife habitat (including deforestation and land conversion), and increased GHG emissions. In addition, several commenters expressed concern that biofuel production may harm threatened and endangered species through loss of habitat due to expanded crop cultivation and impacts associated with agricultural run-off to receiving waters. One commenter stated that EPA's current ethanol program is causing severe harm to the environment by decimating prairie and wetland ecosystems in corn-growing regions and jeopardizing the survival of grassland-dependent plant and animal species that are listed as threatened or endangered. Some commenters also pointed to the use in biofuel production of feedstocks which are also used for food (i.e., vegetable-oil based biofuels) as a reason to reduce volumes under a finding of severe environmental harm. These commenters suggested that the RFS requirements exceed the available supply of non-food based fuels, and thus vegetable oils are likely to be diverted to the fuel sector. Commenters suggest that this diversion creates a market for palm oil, resulting in social and environmental harm, including deforestation, ecosystem change, impacts to important species and increased GHG emissions. One commenter suggested that there are increased GHG emissions associated with palm oil replacement of vegetable oils that are diverted for biofuel, and that such emissions are exacerbating climate change. Some commenters specifically advocated for reducing the implied conventional volume. Other commenters also suggested that a determination that the RFS would cause severe environmental harm could not be supported and that the RFS program, and in particular the required use of advanced biofuels, creates environmental benefits. One commenter suggested that waiving volumes below 15 billion gallons of conventional biofuel would harm the environment, and another indicated that the RFS program protects the environment by encouraging recycling of waste materials. EPA also received comments suggesting that its interpretation of "severe harm" articulated in 2008 was "inappropriate and unlawful" and "essentially nullifies a statutory provision."

#### **Response:**

Although many commenters expressed general concern regarding the environmental impacts of increased soy, corn, and palm oil cultivation, or the general production and use of biofuels, for purposes of the present action these comments are only relevant insofar as they could justify a further reduction in volumes, beyond those achieved through use of the cellulosic waiver authority. EPA has not proposed any modification to its general RFS program regulations, and any suggestions for such modifications are beyond the scope of this rule. EPA's sole authority to address potential environmental impacts in the context of this rule, including potential impacts to threatened or endangered species and their critical habitat, would be through exercise of either

the cellulosic waiver authority or the severe environmental harm prong of the general authority. However, since EPA is already exercising its cellulosic waiver authority to the maximum extent permitted under the statute, the only remaining authority permitting further reductions to address environmental considerations would be through use of the severe environmental harm prong of the general waiver authority. In this section we discuss whether the record for this action could support a finding of “severe environmental harm” that would justify the exercise of the severe environmental harm waiver authority in CAA section 211(o)(7)(A)(i). Comments addressing environmental impacts of the volumes in this final rule more generally are further described, and EPA’s specific responses to them are set forth, in Section VII of the final rule.

While the commenters generally cite to environmental issues which they view as serious or severe that are associated with biofuels-related activities such as cultivation of crop-based feedstocks such as corn and soy, they generally presented no supporting data or studies to support their allegations. While such comments can help to stimulate needed research and data accumulation, they do not provide the type of record support that would be necessary to support a finding that implementation of the RFS standards finalized in this action would cause severe environmental harm. This would be the case even if EPA interpreted the severe environmental harm provision in a manner that would require a lesser showing of harm, or degree of certainty than EPA suggested would be necessary in its response to earlier petitions seeking waivers on the basis of severe economic harm.<sup>10</sup> For this reason, EPA need not address comments suggesting a re-interpretation of the provision at this time. EPA’s analysis of the information presented by commenters relating to environmental impacts is presented in Section VII of the final rule. In addition, we note below some general considerations that support EPA’s view that available information does not support a finding that the rule establishing the 2018 RFS standards and 2019 biomass-based diesel volume would lead to severe environmental harm.

As an initial matter, EPA notes that its action in setting the percentage standards for the four categories of renewable fuel for 2018, and the BBD volume for 2019, will result in only a minor incremental increase above the total and advanced biofuel volumes required through implementation of the percentage standards for 2017, and will result in no change in the required biomass-based diesel volume as compared to 2018. Such a small increase in biofuel volumes is unlikely to cause severe harm to the environment, and is unlikely to have any impact on threatened or endangered species or the critical habitat of such species.

Moreover, EPA does not believe that the record supports a finding that the 2018 RFS standards finalized in this action would cause severe environmental harm even if the 2018 standards were viewed in isolation as opposed to in relation to the 2017 standards. In addition, we believe that even with additional research and analysis, that any harm to threatened or endangered species or their critical habitat that may be associated with crop cultivation in 2018 could not be attributed with reasonable certainty to EPA’s action in setting the 2018 renewable fuel standards and 2019 biomass-based diesel applicable volume.

The RFS annual standards specify the percentage of transportation fuel used in the continental U.S. and Hawaii that must be comprised of renewable fuel. The standards are implemented on an

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<sup>10</sup> See 73 FR 47168, and 77 FR 70752, and also Section 2.2.1.3 of the “Renewable Fuel Standard Program – Standards for 2017 and Biomass-Based Diesel Volume for 2018: Response to Comments,” EPA-420-R-16-019.

annual average and nationwide basis. The types of renewable fuels that can be used to satisfy the requirements are generally broadly defined, and can be made from a variety of feedstocks and processes located in the United States or abroad. There is, for example, no specific requirement under the RFS program for the use of ethanol made from corn starch – a feedstock that is broadly used for many purposes, including feed and food in addition to biofuel production. Ethanol can be made from other grains, such as sorghum, or from waste materials or cellulosic feedstocks. And there are multiple types of renewable fuels that can be used to satisfy RFS requirements, including fuels such as ethanol, biodiesel, renewable diesel, butanol, compressed natural gas, and liquefied natural gas. Decisions on what type of feedstock to use for biofuel production, where such feedstocks are grown, the types and volumes of agricultural inputs such as fertilizer or pesticide to use in growing the feedstocks, and what types of renewable fuel will ultimately be produced, are made by third parties whose activities are not required by EPA’s renewable fuel standards and, as discussed below, are likely influenced by a number of market inputs that are at least as important if not more important than the RFS standards.

While a significant proportion of the corn crop in the U.S. each year is used as a feedstock to produce ethanol, in 2016 approximately two-thirds of the corn crop was used for other purposes.<sup>11</sup> Thus, it is unclear how to determine whether specific environmental harms can be attributed to ethanol or non-ethanol uses of corn, or both. In addition, it is unclear to what extent the RFS program is the key driver of corn ethanol production and use in the U.S. Corn ethanol is by far the most widely used biofuel in the U.S., and its use not only satisfies RFS requirements, but also provides an important low-cost source of octane for gasoline as well as gasoline volume.<sup>12</sup> Almost all gasoline in the U.S. now contains ethanol, which is generally blended downstream of refineries at terminals. The refineries themselves produce sub-octane gasoline blendstocks (referred to as blendstocks for oxygenate blending, or BOBs) that cannot be sold as gasoline without the subsequent addition of ethanol downstream at the terminal. This practice began in the 1990’s in reformulated gasoline areas, and quickly expanded beginning in 2006 into conventional gasoline areas as several factors, including the rising prices for crude oil relative to corn, caused ethanol to become the preferred source of octane for gasoline. The gasoline refining and distribution system, driven by the favorable blending economics of ethanol over the last dozen years has invested heavily to fully transform itself to rely on the use of ethanol. Refiners have modified their process units and operations to produce BOBs instead of finished gasoline. Pipelines likewise have shifted their physical assets and operations to distribute these BOBs instead of finished gasoline. Terminals across the country have all been modified to receive and store shipments of ethanol and blend it into these BOBs. Consequently, the blending of 10% ethanol into gasoline in the U.S. is now firmly entrenched. To reverse course and go back to refining and distributing ethanol free finished gasoline would require a marketwide decision that would then take years and likely billions of dollars to implement. This would require a significant economic driver over a sustained period. Given the current economic advantage of blending ethanol as E10, and the forecasts of crude oil and corn prices, there is no apparent

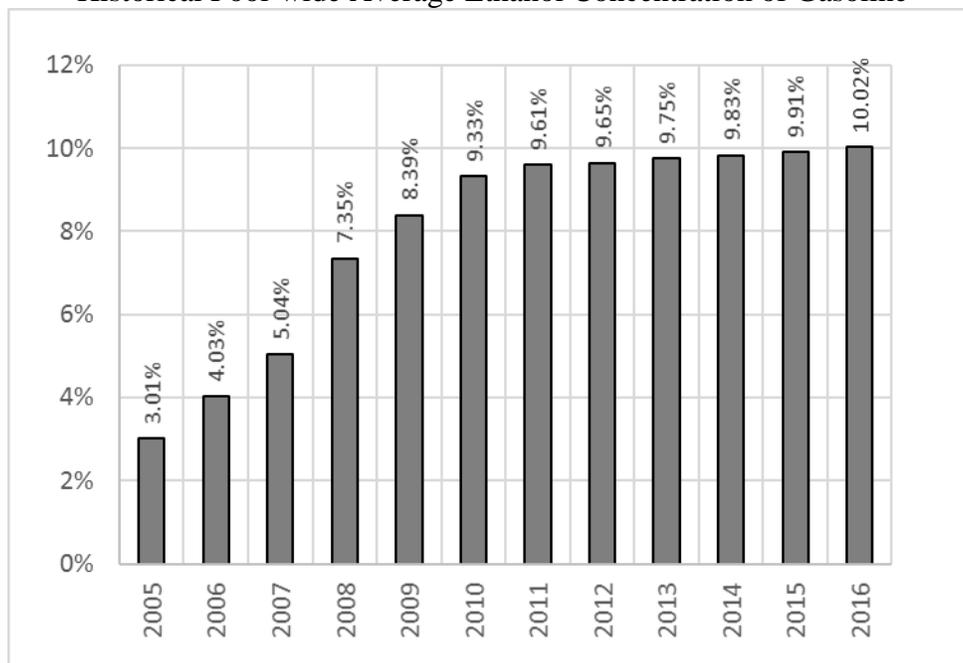
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<sup>11</sup> See <https://www.afdc.energy.gov/data/10339>. EPA notes that of the bushels of corn used for ethanol production, a co-product of ethanol production is distillers grain, which is used as animal feed.

<sup>12</sup> See, e.g. comments from PBF Energy, 4702, CVR Energy, 4888, REG, 4500.

economic driver either at present or on the horizon that would change this market dynamic.<sup>13,14</sup> Because of these considerations, it is likely that even if a complete RFS waiver were granted in 2018, the market would continue to demand essentially the same volumes of ethanol in 2018 for use as a gasoline octane enhancer and source of fuel supply. These findings are similar to those we made in response to petitions for a waiver of the 2012 and 2013 RFS standards on the basis of severe economic harm associated with a drought, where we concluded that in all likelihood the RFS standards in the latter part of 2012 and early part of 2013 would not drive ethanol use.<sup>15</sup> The volume of ethanol sales in 2012 was only slightly lower than it was in 2016 – the last full year for which data is available (see Figure 1 below). We also note that, as depicted in Figure 2, below, U.S. ethanol producers have exported substantial volumes of ethanol to overseas markets, even as use of this biofuel in the U.S. has increased.

Figure 1  
Historical Pool-wide Average Ethanol Concentration of Gasoline



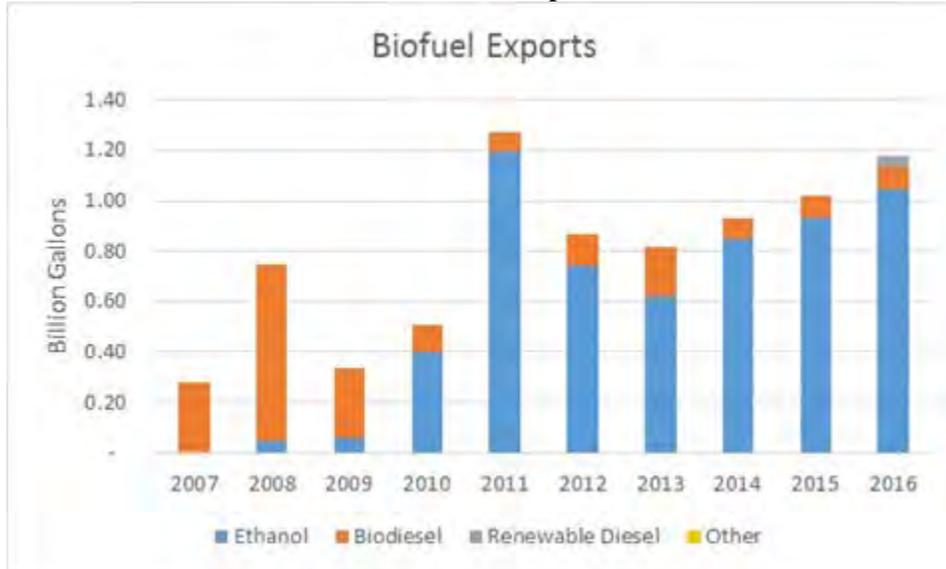
Source: EIA’s STEO, Table 4a

<sup>13</sup> On November 28, 2017, EIA reported ([www.eia.gov/todayinenergy/prices.php](http://www.eia.gov/todayinenergy/prices.php)) wholesale spot gasoline (RBOB) prices in different markets ranging from \$1.71-1.77 per gallon in comparison to a CBOT futures prices of ethanol at \$1.36 per gallon. Thus, even without the considerable added octane blending value of ethanol, current market prices favor blending ethanol as E10 (where ethanol’s lower energy content is not transparent to consumers).

<sup>14</sup> See EIA AEO 2017, Table A12: Petroleum and other Liquid Prices, Reference Case, projecting increases in crude oil prices from \$43/bbl in 2016 to \$86/bbl in 2025, and \$117/bbl in 2050, and USDA Long-Term Projections, February 2017, Table 5: U.S. Corn long-term projections, projecting slight increases from \$3.30/bushel in 2016 up to \$3.35/bushel in 2018 and \$3.65/bushel in 2025-26. These projections indicate that the market dynamics are unlikely to change in the near term, and on a longer basis.

<sup>15</sup> See 77 FR 70752.

Figure 2  
Annual U.S. Biofuel Export Volumes



<https://quickstats.nass.usda.gov/>

If EPA were to completely waive the 2018 RFS requirements, we would expect the domestic use of ethanol in the U.S. might decrease slightly (primarily as a result of decreased sales of higher level ethanol blends such as E15 or E85), but we also believe that it is likely that ethanol producers would seek to make use of their past investments to continue to produce the same volume of ethanol and would simply shift sales to overseas markets to accomplish this objective. The result would be comparable impacts associated with corn production as will occur through implementation of the 2018 RFS standards. Furthermore, even in the unlikely event that domestic ethanol production was to marginally decrease, corn plantings are a function of a large number of worldwide agricultural sector market factors (including markets in food and feed) that make it difficult or impossible to predict, and thus speculative, whether a marginal reduction in U.S. ethanol production, were it to occur, would have any impact on U.S. corn plantings. In sum, it is difficult, and speculative, based on available information to attempt to discern the extent to which the RFS program is driving corn plantings or ethanol production and use in the United States, and it would be particularly speculative to attempt to attribute any particular localized environmental harm related to corn production to the RFS standards in light of the competing uses of corn, ethanol exports, and the current reliance of the market on ethanol for attributes (octane) unrelated to the RFS program.

In contrast to ethanol, biodiesel is significantly more expensive than diesel fuel, and does not have properties that would likely result in its continued use in U.S. markets in the absence of support from the RFS program or other incentives (such as the biodiesel tax credit). It is uncertain, however, the degree to which decreased use of biodiesel in the US would impact the planting of soybeans. Soybeans, like other oilseed crops grown in the United States, are primarily grown to provide high protein animal feed. While lower demand for biodiesel would be expected to reduce prices for vegetable oils such as soy oil, the lower price for soy oil would not alter the market demand for high protein animal feed that is the primary driver of soy plantings. It is possible that soy producers might see reduced profits from their activities as the

result of lower soy oil prices, or it is possible that they would seek to recoup the loss in soy oil income through higher priced soy-based animal feed. In either event, it is highly speculative whether reduced production of soy-based biodiesel would lead to reduced soy plantings or soy-related impacts to the environment. Further, as depicted in the above chart on biofuel exports, there are foreign markets for domestically-produced biodiesel, and exports of biodiesel could increase if domestic demand for this renewable fuel were to drop in response to lowered RFS standards, potentially minimizing any associated reductions in soy plantings related to decreased domestic biodiesel use. Finally, we note that soybean acre plantings are often driven by the need to rotate corn plantings, and soybeans are the primary rotation crop in the U.S. For all of these reasons, even if use of soy biodiesel in the U.S. were to significantly decrease, such decreased use may not have an appreciable impact on the number of acres used to produce soybeans in the U.S. Stated differently, it is unclear at best whether implementation of the RFS program is driving soy plantings and causing whatever environmental harm may be associated with such plantings.

Since corn and soy are by far the predominant feedstocks used for renewable fuel production in the U.S., and since impacts related to their cultivation were the focus of comments alleging environmental harm, we believe that this analysis supports EPA's determination that there is insufficient record support for a finding that the 2018 RFS standards being finalized in this action would cause severe environmental harm. We also believe that the above considerations support our determination that whatever impacts or threats to listed and endangered species or their critical habitats that may be caused by corn or soy cultivation in 2018 cannot with reasonable certainty be attributed to the 2018 RFS standards or 2019 biomass-based diesel volume requirement.

## 2.2 Cellulosic Waiver Authority

Commenters that provided comment on this topic include, but are not limited to: 0792, 1756, 1776, 2539, 2542, 3108, 3142, 3174, 3175, 3306, 3320, 3377, 3428, 3429, 3478, 3493, 3497, 3575, 3578, 3593, 3645, 3649, 3679, 3876, 3880, 3934, and 3961.

### Comment:

In response to the 2018 NPRM, some commenters conflated EPA's use of the general waiver authority and its use of the cellulosic waiver authority in setting volume standards, and suggested that the Court's decision in *ACE* rejecting EPA's use of the general waiver authority under a finding of inadequate domestic supply for its consideration of demand side factors meant that EPA was precluded from considering these types of factors entirely in the annual rulemaking process.

### Response:

EPA disagrees. As articulated by the Court in its analysis of EPA's use of the cellulosic waiver authority in *ACE*, EPA has broad discretion to consider a variety of factors, including demand side limitations on the ability of the market to use advanced biofuels, in exercising the cellulosic waiver authority.<sup>16</sup>

### Comment:

Many commenters supported EPA's decision to use the cellulosic waiver authority to fully reduce advanced biofuel and total renewable fuel, without allowing other advanced biofuels to backfill for the shortfall in cellulosic, including some commenters representing biofuel interests. Some commenters mentioned the reduced GHG benefits of advanced biofuels as compared to cellulosic biofuel, and the fact that the feedstocks for advanced biofuels often come from food sources, which could result in food insecurity and land conversion.

Other commenters suggested that EPA should allow other available advanced biofuels to backfill for the shortfall in cellulosic as it has done in the past. Some commenters suggested that allowing the advanced biofuel industry to backfill supports the goals of the statute to grow renewable fuel volumes and achieve GHG and energy security benefits and that use of the cellulosic waiver authority should not undermine policy goals of the statute. One commenter suggested it was arbitrary for EPA to consider costs under the cellulosic waiver authority, and that costs should only be considered under the general waiver authority, while another suggested costs should be considered under the BBD waiver authority. Some commenters suggested that EPA has not considered congressional intent in determining whether to allow for backfilling of the cellulosic shortfall with advanced biofuels, suggesting Congress intended EPA should allow for backfilling. One commenter suggested that EPA did not consider the biodiesel production capacity or reasonably attainable volume of biodiesel production, and that EPA's actions will result in stranded assets, lost jobs, underutilized production capacity and a chilling effect on

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<sup>16</sup> *ACE* at 733.

investments. Another commenter also suggested that RFS has the potential to encourage development of new feedstocks.

**Response:**

As discussed in Section IV of the final rule, EPA has broad discretion under the cellulosic waiver authority to reduce advanced biofuel and total renewable fuel when it reduces the cellulosic biofuel volume. In deciding to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets, EPA considered a number of factors, including the production potential of the domestic biodiesel and renewable diesel industry, the potential for imported volumes of these fuels, a desire to avoid feedstock switching and diverting biofuels from foreign countries, and a recognition of the relatively high cost of advanced biofuels (see Section IV of the final rule for a further discussion of this issue).

EPA disagrees with commenters who suggested that EPA should not consider costs under the cellulosic waiver authority. The extent to which costs are directly or impliedly relevant to the exercise of other waiver authorities is not indicative of whether costs may appropriately be considered under the cellulosic waiver authority. EPA has broad discretion under the cellulosic waiver authority to consider many factors.

EPA also disagrees with commenters suggesting that EPA must allow backfilling of missing cellulosic volumes. The statute specifically authorizes EPA to reduce total renewable fuel and advanced biofuel by “the same or a lesser volume” than the reductions in cellulosic volumes. Because the statute allows for the “same” reductions, it is apparent that the statute does not require backfilling. EPA has broad discretion in deciding whether and by how much to reduce advanced and total renewable fuel volumes under the cellulosic waiver authority, subject only to the limitation that the reduction may not exceed that provided for cellulosic biofuels. In deciding how to exercise this broad discretion, EPA has appropriately considered a number of factors, as described in Section IV of the final rule.

In Section IV of the final rule, EPA discussed its consideration of biodiesel production capacity, and EPA is finalizing an advanced biofuel volume that is 10 million gallons higher than the advanced biofuel volume for 2017. We do not believe the standards we are finalizing will result in harm to the biodiesel industry, such as stranded assets, job losses, underutilized capacity, or a chilling effect on investment. While EPA recognizes biodiesel facilities are often performing at less than peak capacity, EPA has also received comments regarding the industry’s ability to ramp up to utilize that capacity over a short time frame. EPA does not believe the standards will be detrimental to the biodiesel industry due to underutilized capacity.

EPA agrees that the RFS program can encourage innovation in the development of new feedstocks for renewable fuel production. EPA has intentionally set the BBD standard at a level below what we would expect to be produced to meet the advanced biofuel standard so as to encourage the development and production of alternative advanced biofuels.

We recognize the GHG emissions and energy security benefits associated with the use of advanced biofuels (considerations that would weigh in favor of a higher advanced biofuel

requirement) and the fact that many biofuels are produced with feedstocks that could be put to alternate uses, such as for food or feed (a consideration that could justify lower advanced biofuel volumes). The factors of primary importance to EPA’s exercise of the cellulosic waiver authority in the context of the 2018 RFS standards are discussion in Section IV of the final rule.

In light of these considerations, EPA has determined that it would not be appropriate to allow backfilling of statutory cellulosic biofuel volumes with other advanced biofuel volumes. EPA believes that this approach still supports the goals of the statute, including energy security and production of renewable fuels.

**Comment:**

One commenter stated that the statute allows backfilling of the cellulosic biofuel standard with advanced biofuel.

**Response:**

EPA acknowledges that the statute allows for the backfilling of advanced biofuels, and has allows for backfilling in prior annual rulemakings. However, at this time, EPA does not find it appropriate to allow backfilling due to costs and the potential for feedstock switching as described in Section IV of the final rule.

**Comment:**

One commenter noted that EPA proposed to set the advanced biofuel volume below the level recognized as “reasonably attainable” using only cost as a concern, and that EPA is departing from past methodologies; they also noted that the market has expectations based on EPA’s past methodologies.

Another commenter suggested that EPA has not acknowledged the change from its previous position nor explained its reasoning for exercising the full waiver authority.

Another commenter suggested that when the Court in *ACE* listed the factors EPA considered in the 2014-2016 rule under the cellulosic waiver authority, feedstock switching and cost were not among the factors, and thus should be not considered for 2018. The commenter noted that although *FCC v. Fox TV* allows for agencies to depart from prior policy, that is not the case when industry has relied on a previous approach. Another commenter stated that EPA’s proposed action is inconsistent with *FCC v. Fox TV*.

**Response:**

Although it is accurate that the Court in *ACE* listed specific factors that EPA considered in determining the reasonably attainable volume of advanced biofuel in the 2014-2016 final rule, nothing in the Court’s decision limits EPA from considering other factors. As the Court stated, the statutory text “does not direct EPA to ‘consider particular factors.’” (quoting *Monroe Energy, LCC v. EPA*, 750 F.3d 909, 912 (D.C. Cir. 2014)).” In the proposed rule, EPA stated that it was

considering additional factors, including feedstock switching, and costs, and that it was “placing a greater reliance on cost considerations than we have in past rulemakings.” Thus, we provided stakeholders with ample notice of the potential change in approach. EPA further explains its decision to consider feedstock switching and costs in Section IV of the final rule.

Many of the commenter’s critiques of EPA’s cost analysis, which EPA considered as part of the basis for EPA’s decision to utilize the full reduction allowed under the cellulosic waiver authority, are addressed in Section 7 of this document. EPA believes that although there could be benefits associated with additional gallons of advanced biofuel, including benefits for rural economies, GHGs, or energy security, EPA believes that these benefits are outweighed by the high costs of the advanced biofuels.

Under *FCC v. Fox TV*, the Supreme Court found that there is “no heightened standard” for an agency change. The Court concluded that “the agency must show that there are good reasons for the new policy,” but that it “need not always provide a more detailed justification than what would suffice for a new policy created on a blank slate.” The Court noted that the agency may need to provide a more detailed justification if “its prior policy has engendered serious reliance interests” (citing *Smiley v. Citibank (South Dakota)*, N.A., 517 U.S. 735, 742 (1996)). Although commenters suggested that industry has relied on EPA’s previous approach, EPA does not believe this reliance has “engendered serious reliance interests.” EPA considered both “feedstock switching” and cost in prior rulemakings, so consideration of these factors is not new to this rule. And, although EPA has previously established rules so as to require reasonably attainable volumes of advanced biofuel to backfill for missing cellulosic volumes, EPA did not establish that approach as a rule that would bind future EPA action. Rather, EPA has consistently articulated in prior rules and in litigation that its discretion under the cellulosic waiver authority is very broad, and can be informed by any number of factors. Such statements provided notice to the biofuels industry that EPA could shift course in the exercise of its cellulosic waiver authority.

**Comment:**

One commenter suggested that the RFS requires renewable fuels to increase each year.

**Response:**

EPA does not agree with commenters who suggested that the RFS volume must increase every year. There is no such limitation stipulated in the statute with respect to the cellulosic waiver authority, or any other waiver authority. For example, the cellulosic biofuel applicable volume must be set equal to the lower of the statutory volume or EPA’s production projection. Nothing in the statute suggests that a higher value must be used if EPA’s production projection for the previous year was higher.

**Comment:**

Some commenters suggested that the methodology for determining the 2018 proposed volumes departed from EPA’s interpretation that reductions in volumes under the cellulosic waiver authority should result in levels that are “reasonably attainable.”

**Response:**

EPA disagrees with these comments; EPA has in fact determined that the advanced biofuel and total renewable fuel volumes that are expected to be necessary to comply with the 2018 standards for these fuel types are reasonably attainable. Not all reasonably attainable advanced volumes will be required, for reasons described in Section IV of the final rule

**Comment:**

One commenter suggested concerns about the full reduction in total renewable fuel and advanced biofuel under the cellulosic waiver authority as it does not further the intent of the program to diversify energy resources. The commenter also noted that the requirements underestimate the potential of the cellulosic and advanced biofuel industries, and does not account for prospective contributions from new cellulosic and advanced biofuel producers.

**Response:**

EPA believes that the finalized volumes do provide for diversified energy sources. While it may not diversify them as much as the commenter would prefer, nothing in the statute requires EPA to maximize this consideration over others when it exercises its cellulosic waiver authority. EPA also believes that it is important to consider several factors in determining the required volumes of advanced biofuels and total renewable fuels, and EPA's evaluation of the factors it considered in exercising its discretion under this authority is described in Sections IV and V of the final rule.

With respect to comments about the potential of the cellulosic and advanced biofuel industries, and future production facilities, EPA discusses these issues in Sections III (for cellulosic) and IV (for advanced) of this document.

**Comment:**

One commenter suggested that if EPA reduces the advanced biofuel standard using its cellulosic waiver authority, it should not use the cellulosic waiver authority to reduce total renewable fuel.

**Response:**

CAA section 211(o)(7)(D)(i) states that when EPA reduces cellulosic biofuel volumes, it "may also reduce the applicable volume of renewable fuel and advanced biofuels requirement . . . by the same or a lesser amount." EPA has consistently interpreted and applied this provision to yield equal reductions in total renewable fuel and advanced biofuels. EPA acknowledges that this is not the only permissible approach under the statute, but we believe that our approach best furthers the goals of the statute. We do not believe it would be appropriate for the gap in the availability of cellulosic biofuel in 2018 to be filled or partially filled with non-advanced biofuel, taking into consideration both the substantially lower GHG emissions reductions required for

non-advanced biofuel<sup>17</sup> and the Congressional intent reflected in the statutory tables that use of these biofuels in this time period would not exceed 15 billion gallons.

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<sup>17</sup> Non-advanced biofuel must either meet the 20% reduction in lifecycle GHG emissions described in CAA 211(o)(2)(A)(i), or if not, qualify for a grandfathering exemption under 40 CFR 80.1403.

## 2.3 Biomass-Based Diesel Waiver Authority

Commenters that provided comment on this topic include, but are not limited to: 4451, 4481, 4489, 4491, 4497, 4500, 4503, 4504, 4505, 4508, 4509, 4631, 4633, 4645, 4651, 4653, 4662, 4671, 4673, 4676, 4682, 4693, 4696, 4697, 4701, 4702, 4703, 4704, 4711, 4713, 4859, 4885, 4886 4888, and 4891.

### **Comment:**

One commenter stated that, in the event that EPA reduces the volume of BBD using the BBD waiver authority, it should also reduce advanced biofuel and total renewable fuel by the same amount.

### **Response:**

We have not made a finding in the final rule that there is a significant renewable feedstock disruption or other market circumstance that would make the price of BBD increase significantly, and thus we are not reducing the volume requirement for BBD under the BBD waiver authority. Therefore, in this final rule we are not making a definitive finding about the degree to which we would reduce advanced biofuel and total renewable fuel in the event we were to reduce BBD. Instead, we will make such a determination based on the factual circumstances presented if and when such a waiver is granted.

### **Comment:**

Many commenters opposed the possible use of the BBD waiver authority to reduce BBD volumes for 2018 or 2019. These commenters generally argued that there is no justification for the use of the BBD waiver authority as there has been no feedstock shortage or market disruption. Commenters stated that the expiration of the biodiesel tax credit and the potential countervailing duties on Argentinian and Indonesian biodiesel would not affect the supply of biodiesel imported into the U.S. Furthermore, commenters also stated that the use of the BBD waiver authority now for 2018 would upset the market by creating uncertainty. Commenters also stated that the BBD waiver authority was designed to be used retroactively, rather than prospectively, and could not be used to reduce the 2018 and/or 2019 BBD standards.

### **Response:**

EPA has decided not to exercise the biomass-based diesel waiver authority at this time. See Section V of the final rule for a further discussion of EPA's consideration of our use of the biomass-based diesel waiver authority. EPA will resolve relevant interpretive issues if and when it uses this authority.

**Comment:**

One commenter stated that in considering whether or not to exercise the BBD waiver authority EPA should consider the price of B99 (which qualifies for the tax credit) rather than B100 (which does not).

**Response:**

Rather than consider the price of B99, as the commenter has suggested, EPA has considered the retail price of B20 biodiesel blends and BBD RINs, both of which should be impacted by the tax credit and were more readily available to EPA than B99 prices, in our consideration of whether or not to exercise our BBD waiver authority. See Section V of the final rule for a further discussion of EPA's consideration of our use of the BBD waiver authority.

**Comment:**

One commenter stated that if EPA uses the BBD waiver authority, it should also allow obligated parties to subtract 15% of their total gasoline and diesel production from their obligation. Another commenter similarly stated that the BBD waiver authority should be interpreted to change the annual standards, not reduce volumes in a specific 60-day period.

**Response:**

EPA has decided not to exercise the BBD waiver authority at this time. It is therefore not necessary at this time to determine how the exercise of this authority would be implemented and applied to obligated parties. EPA will address such issues if and when it uses this authority.

**Comment:**

Several commenters stated that RIN prices and/or biodiesel prices will be higher in 2018 as a result of the proposed tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia, with some commenters stating that BBD RIN prices had already increased to compensate for the absence of the biodiesel tax credit. These commenters generally stated that EPA should exercise the BBD waiver authority in response to these price increases.

**Response:**

The proposed tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia have not been finalized as of this writing, and the impacts of these actions is uncertain. While a final imposition of tariffs and countervailing duties could be expected to lead to increases biodiesel prices to some degree, it is also possible that imported biodiesel from other countries and/or increased production of domestic biodiesel may be available with minimal biodiesel price increases. It is also possible that broader market conditions could result in lower prices for biodiesel despite these tariffs and countervailing duties. At this time EPA has not seen sufficient evidence of significant price increases for biodiesel to justify the use of our BBD

waiver authority. See Section V of the final rule for a further discussion of EPA's consideration of our use of the BBD waiver authority.

**Comment:**

Multiple commenters stated that the high cost of biodiesel relative to petroleum diesel would justify EPA's use of the BBD waiver authority.

**Response:**

EPA may exercise the BBD waiver authority if EPA determines that there is a significant renewable feedstock disruption or other market circumstance that would make the price of BBD increase significantly. EPA has reviewed various indicators of the price of biodiesel (including the price of B100, B20, and BBD RINs) and has not found sufficient evidence of a feedstock disruption or significant cost increase in the price of BBD that would justify the use of this waiver authority at this time. For a further discussion of our consideration of the BBD waiver authority, see Section V of the final rule.

**Comment:**

One commenter stated that the BBD waiver authority would allow EPA to reduce the BBD standard by 30% in 2018, from the use of two 60-day waivers. The commenter stated that the advanced biofuel and total renewable fuel volumes should be reduced by same amount as BBD.

**Response:**

EPA has determined that the statutory criteria for exercising the BBD waiver authority have not been met at this time, and we are therefore not exercising this waiver authority to reduce the volume of BBD for 2018. For a further discussion of our consideration of the BBD waiver authority, see Section V of the final rule.

## 2.4 Carryover RINs

Commenters that provided comment on this topic include, but are not limited to: 1913, 3142, 3241, 3478, 3497, 3645, 3677, 3680, 3681, 3953, and 3961.

### Comment:

Several commenters expressed their support for EPA's proposed decision to not intentionally draw down the bank of carryover RINs in setting the 2018 volume requirements. These commenters were generally obligated parties and reiterated the importance of maintaining the carryover RIN bank in order to provide obligated parties with necessary compliance flexibilities, better market trading liquidity, and a cushion against future program uncertainty.

Conversely, other commenters stated that the carryover RIN bank is larger than necessary and that carryover RINs represent actual supply and should be accounted for when establishing the annual volume standards. These commenters were generally renewable fuel producers and stated that not accounting for carryover RINs goes against Congressional intent of the RFS program, deters investment in next-generation biofuels, and ignores other programmatic buffers and flexibilities such as carry-forward deficits and small refinery hardship exemptions.

### Response:

EPA appreciates the importance of carryover RINs to the RFS program. As the comments indicate, carryover RINs have played a crucial role in actions by obligated parties to plan for and achieve compliance with RFS requirements, in enabling the RIN market to function in a liquid manner, in providing the statutorily required credit program function, in avoiding excessive market price swings, and in determining whether and to what extent statutory volume targets can be met. In establishing the renewable fuel volume requirements for 2018, we have weighed these various roles for carryover RINs and sought to appropriately balance them in the context of the overall statutory goal of significantly increasing the amount of renewable fuels in the transportation fuel supply through increasing RFS volume requirements. In light of our consideration of costs and other factors, as well as allowing for the aforementioned benefits of carryover RINs to continue to operate to facilitate program operation and compliance and to contribute towards avoiding the possibility of subsequent waivers, we have determined that it is prudent for EPA to set the volume requirements for 2018 without the express intention or expectation of a drawdown in the current bank of carryover RINs.

As explained in Section II.B of the final rule, we believe it is appropriate for EPA to not intentionally draw down the current bank of carryover RINs in setting the 2018 annual volume requirements. In *Monroe Energy v. EPA*, 750 F.3d 909 (D.C. Cir. 2014) the U.S. Court of Appeals for the D.C. Circuit upheld EPA's decision not to waive the 2013 statutory advanced and total renewable fuel volume requirements based in part on the availability of abundant carryover RINs to address a scenario where increasing physical volumes of renewable fuels may be inadequate to allow compliance. In *ACE*, the Court upheld EPA's decision to not consider carryover RINs as part of the "supply" of renewable fuel for purposes of determining whether an "inadequate domestic supply" exists that may warrant a waiver of the standards.

Where circumstances make it appropriate to rely on carryover RINs to avoid or minimize reductions in statutory volumes, we intend to do so, as we did in setting the 2013 standards. Though this number could be considerably lower as a result of compliance actions not yet recorded, for 2018, we project that as many as 2.22 billion carryover RINs will be available for compliance. This is 11.5 percent of the final 2018 total renewable fuel volume standard and less than the 20 percent limit permitted by the regulations to be carried over for use in complying with the 2018 standards. Consistent with our past practice, we considered the availability of carryover RINs in making a determination about whether and how to reduce the 2018 statutory volume requirements, and that assessment was properly done in view of the specific circumstances present for 2018. Considering all of the various relevant factors for 2018, including the potential benefit to biofuel producers in drawing down the bank of carryover RINs, the role they play for obligated parties in a well-functioning, liquid market for managing compliance, the increased level of the 2017 and 2018 standards, and the significant uncertainties and challenges involved in setting and meeting the final standards, we have concluded that we should not set the volume requirements for 2018 in a manner that would be expected to require a drawdown in the collective bank of carryover RINs.

We appreciate that it would be helpful to obligated parties if we foreclosed the possibility of ever again counting on carryover RINs to avoid or minimize the reduction of statutory standards. Leaving open that possibility leaves obligated parties with some uncertainty about their compliance options. However, EPA continues to believe that the statutory purpose of significantly increasing the volume of renewable fuels is best served by continuing to consider carryover RINs in deciding whether and how to exercise the statute's waiver authorities on a year-by-year basis. As explained in Section II.B of the final rule and below, we believe the circumstances for 2018 warrant setting the volume requirements without the express expectation or intention of drawing down the current bank of carryover RINs.

We also appreciate that it could be favorable to biofuel producers for us to always count on carryover RINs as a basis to maintain the statutory volume targets or minimize the reduction in the statutory volume targets, since higher standards generally create higher short-term demand for and/or higher prices for their products. If the standards cannot be achieved, then RIN prices may rise dramatically based on scarcity pricing, creating market turmoil that could operate to the short-term benefit of renewable fuel producers. At the same time, many biofuel producers have made significant investments in production capacity to meet the demand that the RFS standards help create. The concerns that many raised about the potential for the proposed standards to damage their businesses appear to be premised, however, on an assumption that renewable fuel production volumes would decline significantly. The final rule will continue to place upward pressure on the production of renewable fuels.

As discussed in the 2014-2016 and 2017 final rules, the bank of carryover RINs is analogous to a typical bank account, in which it is commonly understood that a reserve fund should be maintained to cover unforeseen circumstances.<sup>18</sup> If such currently unforeseen events occur without a bank of carryover RINs to operate as a program buffer, we could see RIN shortages and price spikes, potentially causing a need for an emergency waiver for even relatively small reductions in renewable fuel supply or increases in petroleum fuel demand. This would only

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<sup>18</sup> See 80 FR 77483-84 (December 14, 2015).

create further program uncertainty for the investment needed for the program to grow. We believe that we should not set the volume requirements for 2018 in a manner that would be expected to require a drawdown in the collective bank of carryover RINs given the level of the standards we are promulgating, the level of uncertainty in the market, and the desire to provide some market stability and assurance for further investment in renewable fuel production.

While the final volume requirements for advanced and total renewable fuels are lower than the statutory levels, the statute authorizes waivers and EPA has made a determination in this rulemaking that the statutory 2018 volumes should be waived consistent with EPA's cellulosic waiver authority. We have set the 2018 advanced biofuel and total renewable fuel volume requirements at a level that is expected to continue to place upward pressure on the production of renewable fuels. Setting standards in this manner should not result in a drawdown in the bank of carryover RINs. However, the projections on which the standards are based still involve unavoidable uncertainties. As a result, some risk remains that our projections are over-optimistic and that individual obligated parties will face challenges in complying with the standards. The bank of carryover RINs will be available for such eventualities.

**Comment:**

One commenter recommended that the carryover RIN bank should consist of at least 14.6% of the projected total renewable fuel volume standard, which was the relative size of the carryover RIN bank in 2013. The commenter stated that a carryover RIN bank of this size is necessary to ensure the stability and liquidity of the RIN market.

Conversely, another commenter objected to EPA's proposed rationale that carryover RINs should be preserved as a "programmatically buffer" and argued that EPA had not explained why a lower relative size of the carryover RIN bank couldn't provide an adequate buffer for the program. They also argued that this rationale could not be reconciled with the statute's provision for carry-forward deficits, which they contended was the only mechanism Congress provided for a buffer.

**Response:**

As discussed earlier, we have consistently considered the availability of carryover RINs in making waiver determinations, and we do so on a case-by-case basis taking into account all of the relevant facts before us.<sup>19</sup> Different circumstances can and do lead to different decisions about whether (and how much) to rely on a drawdown in the bank of carryover RINs when balancing the various objectives of the RFS program. Under the statutory provision for credits with a 12-month credit life and the regulations establishing carryover RINs, obligated parties have the option of obtaining and carrying over excess RINs or carrying forward a compliance deficit to the next compliance year. This makes it clear that carryover RINs are a key mechanism for providing compliance flexibility in addition to that provided by the ability to carry forward a

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<sup>19</sup> For information on our decision on the 2008 waiver request, see <http://www2.epa.gov/renewable-fuel-standard-program/denial-state-texas-request-waiver-portion-renewable-fuel-standard>. For information on our decision on the 2012 waiver request, see <http://www2.epa.gov/renewable-fuel-standard-program/learn-more-about-denial-requests-waiver-renewable-fuel-standard>.

deficit. “Buffer” is another way of conceptualizing the compliance flexibility that carryover RINs afford to address uncertainties and unforeseen circumstances and otherwise manage compliance efforts, as well as to avoid unnecessary RIN shortages or price spikes and provide liquidity to the RIN trading market. While EPA is not currently in a position to state with specificity the optimal size of the carryover RIN bank, we note that the carryover RIN bank had been steadily decreasing over the past several years, from a level of 2.5 billion RINs in 2013 down to 1.65 billion RINs in 2016, before increasing to 2.22 billion RINs in 2017. However, the relative number of available carryover RINs has decreased from approximately 15% of the total renewable fuel standard in 2013 to 11.5% of the total renewable fuel standard in 2017. Thus, we do not believe it is necessary at this time to determine an optimal absolute or relative carryover RIN bank size, either minimum or maximum.

**Comment:**

One commenter stated that EPA failed to explain why a number of BBD and advanced carryover RINs that exceed the number that can actually be used is necessary as a programmatic buffer.

**Response:**

EPA explained in the “Carryover RIN Bank Calculations for 2018 NPRM” memorandum that “because of the nested nature of the RFS standards, any 2017 D4 RINs in excess of the 20% carryover limit could still be used to satisfy the Advanced Biofuel or Renewable Fuel standards, as the total number of 2017 carryover RINs available for both of these categories is below the 20% carryover limit. Thus, in this scenario we expect that the total number of 2017 carryover RINs would be available to be used to satisfy an obligation in 2018.” Furthermore, EPA has projected that only BBD is expected to exceed the 20% threshold, but not advanced biofuel as indicated by the commenter.

**Comment:**

One commenter stated that EPA’s calculation of the relative size of the carryover RIN bank for 2012-2015 was flawed. Specifically, the commenter expressed concerns about the inclusion of exporter RVOs and the double-counting of obligated parties’ compliance deficits.

**Response:**

We have adjusted our calculation methodology of the relative size of the carryover RIN bank based on the commenter’s feedback. Specifically, we now account for compliance deficits in our calculations by adding the deficit to the reported total RVO in order to determine the actual total RVO for a given year. We have also clarified the language in our updated calculation of the size of the carryover RIN bank to better explain how exporter RVOs are treated for purposes of carryover RIN bank calculations.<sup>20</sup>

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<sup>20</sup> The calculations performed to estimate the number of carryover RINs currently available can be found in the memorandum, “Carryover RIN Bank Calculations for 2018 Final Rule,” available in the docket.

**Comment:**

One commenter stated that the use of carryover RINs was higher than EPA calculated.

**Response:**

The commenter is incorrect. As noted throughout the “Carryover RIN Bank Calculations for 2018 NPRM” memorandum, EPA calculates both the actual number of carryover RINs available *and* the number of carryover RINs that are available to comply with the following year’s standards by accounting for compliance deficits from that year (e.g., footnote 13: “In other words, while there were an estimated 2.54 billion carryover RINs available in 2013, this sum was effectively reduced to 2.47 billion RINs in light of the volume of 2012 deficits carried forward to 2013.”). For the purposes of assessing the relative size of the carryover RIN bank, we use the latter number in our calculations (e.g., 2.47 billion) since it more accurately reflects the number of RINs that were actually available to comply with the following year’s obligations (which do *not* include prior year deficits). However, the number used by the commenter was the absolute number of carryover RINs used for compliance with a given year’s RVO and the prior year deficits, which was the former number in our calculations (e.g., 2.54 billion). Therefore, the use of carryover RINs was not higher than EPA calculated.

**Comment:**

One commenter stated that EPA has misstated the number of RINs required to be retired by Chemoil as part of a settlement agreement.

**Response:**

This comment is no longer relevant, as Chemoil has retired all 65 million D4 RINs that were required as part of the settlement agreement and these RIN retirements are now incorporated in the EMTS data used in EPA’s updated calculation of the size of the carryover RIN bank.<sup>21</sup>

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<sup>21</sup> For more details on the Chemoil settlement, see <https://www.epa.gov/enforcement/chemoil-corporation-renewable-fuel-standard-settlement>.

### **3. Cellulosic Biofuel Standard**

#### **3.1 General Comments on Cellulosic Biofuels**

Commenters that provided comment on this topic include, but are not limited to: 0792, 1135, 1177, 1760, 1773, 1774, 1776, 1778, 2386, 2999, 3108, 3178, 3236, 3242, 3247, 3317, 3319, 3325, 3494, 3645, 3650, 3658, 3680, 3681, 3873, 3878, and 3931.

##### **Comment:**

Several commenters generally expressed support for cellulosic biofuels and support for higher volume requirements for cellulosic biofuel in the final rule. One commenter also stated that EPA should place a greater emphasis on promoting non-food sourced biofuels, such as cellulosic ethanol

##### **Response:**

EPA continues to believe that the RFS program provides appropriate support for the development and commercialization of cellulosic biofuels. As discussed in further detail in Section III of the final rule, we have increased our projection of cellulosic biofuel production in 2018 relative to the projection in the proposed rule. This projection is consistent with the Court's direction to project cellulosic biofuel production neutrally.

##### **Comment:**

Several commenters stated that the projected volume of cellulosic biofuel for 2018 was too low, and that volumes higher than the proposed volumes could be produced with strong federal support. These commenters generally suggested that EPA should increase the cellulosic biofuel requirements for 2018 to provide market stability for the cellulosic biofuel industry and continue to promote investment in domestic cellulosic biofuel projects in the future. One commenter also mentioned that state incentives could support higher volumes of cellulosic biofuel. These commenters generally claimed that if EPA were to finalize volumes similar to those proposed this would undermine the potential of the cellulosic biofuels industry, and that the cellulosic biofuel industry would be negatively impacted, and that many of the potential benefits associated with cellulosic biofuels, such as increased employment, GHG reductions, energy security, and energy independence would not be realized.

##### **Response:**

The approach we have adopted to projecting cellulosic biofuel production is a neutral projection of the volume of cellulosic biofuel that will be produced in 2018. We note that the cellulosic biofuel volume in this final rule is significantly higher than the proposed cellulosic biofuel for 2018. This increase is primarily due to the consideration of additional data that was not available at the time of the proposed rule, as well as minor modifications made to the cellulosic biofuel projection methodology (see Section III of the final rule and Sections 3.2, 3.2.1, and 3.2.2 of this document for further discussion of the methodology EPA used to project the cellulosic biofuel

volume for 2018). We believe that the changes to EPA's projection methodology for 2018 will increase the accuracy of our cellulosic biofuel production projections (taking into account all existing federal and state incentives), and that the increased accuracy of these projections will add to the sense of program stability the commenters describe as necessary for the development of the cellulosic biofuel industry, including investment in new commercial scale cellulosic biofuel production facilities in the U.S. EPA disagrees with commenters that a cellulosic biofuel standard greater than the standard finalized in this rule (288 million gallons) would lead to greater cellulosic biofuel production in 2018, as our projection of volume likely to be produced in 2018 reflects the volume of cellulosic biofuel that EPA projects will actually be supplied in 2018. We therefore disagree that the cellulosic biofuel volume requirement will result in lesser benefits (including additional jobs, GHG reductions, energy independence, and energy security) than would be achieved with a higher required volume of cellulosic biofuel. We will continue to monitor the progress of the cellulosic biofuel industry and will adjust our projection methodology as appropriate to ensure that the methodology results in an accurate and neutral projection.

**Comment:**

Several commenters stated that they are considering investing in cellulosic biofuel production technology, but that they will not do so if EPA establishes cellulosic biofuel volume requirements that are too low, leading to low RIN prices and instability in the cellulosic biofuel and cellulosic RIN markets. One commenter stated that the proposed volumes will force developers to discount their expectations for RIN values in future years when considering whether or not to invest in a cellulosic biofuel project. Some commenters specifically mentioned investments in technologies that would produce biogas for use as CNG/LNG from wastewater.

**Response:**

As noted above, the approach we have adopted to projecting cellulosic biofuel production is a neutral projection of the volume of cellulosic biofuel that will be produced in 2018, and we note that the cellulosic biofuel volume in this final rule is significantly higher than the proposed cellulosic biofuel for 2018. By establishing cellulosic biofuel requirements that are based on accurate and neutral projections, EPA is seeking to provide the market stability desired by these commenters. We further note that EPA's projections are not intended to achieve a particular RIN price, but rather to reflect cellulosic biofuel production as accurately as possible in 2018 in accordance with the statutory direction. EPA believes that accurate and neutral projections of cellulosic biofuel will result in a stable market for cellulosic biofuels and cellulosic biofuel RINs, and provide the appropriate incentives for investment in cellulosic biofuel production facilities (including facilities designed to produce biogas from wastewater).

**Comment:**

One commenter supported our determination that the statutory cellulosic volume for 2018 could not be met, and our decision to establish the cellulosic biofuel standard for 2018 at the projected volume available in this year.

**Response:**

We agree that the statutory volume for cellulosic biofuel in 2018 (7.0 billion gallons) is not achievable. We believe this annual rule is consistent with EPA's charge to establish cellulosic biofuel standards consistent with the projected production of cellulosic biofuels, using a "neutral aim at accuracy." By establishing cellulosic biofuel requirements equal to our projection of cellulosic biofuel production we believe we are providing the appropriate incentives for the purchase of cellulosic biofuels.

**Comment:**

Several commenters stated that EPA's projection of cellulosic biofuel production in 2018 should include volumes from all potential sources of cellulosic biofuel, including from pathways and/or facilities that have not yet been approved to generate cellulosic biofuel RINs (including RINs from mixed waste digesters, facilities intending to produce cellulosic ethanol from corn kernel fiber, electricity generated from biogas used as transportation fuel, etc.). By including all potential sources of cellulosic biofuel in our projection EPA will provide the support the cellulosic biofuel industry needs.

**Response:**

Our projection of cellulosic biofuel production in 2018 includes production volumes from all facilities EPA projects are reasonably likely to produce qualifying cellulosic biofuel in 2018. These projections include volumes from facilities that have not yet completed facility registration as cellulosic biofuel producers, but are expected to complete facility registration and produce cellulosic biofuel in 2018. We have not, however, included in our projections production from facilities that must address significant technical and regulatory issues prior to facility registration (such as corn ethanol producers that intend to produce cellulosic ethanol from corn kernel fiber but do not yet have an approved methodology for determining the portion of the ethanol they produce that is derived from cellulosic biomass or facilities seeking to generate RINs for electricity generated from biogas used as transportation fuel) or from pathways that have not yet been approved. While it is possible that the technical and regulatory issues associated with these facility registration requests could be resolved (or the pathways in question could be approved) in a timeframe that would allow additional facilities to produce cellulosic biofuel in 2018, such approvals and subsequent commercial-scale cellulosic biofuel production is highly uncertain. Some commenters noted that these approvals are dependent on EPA's actions, and therefore EPA could reasonably anticipate approving new facility registrations and/or pathways in 2018. Such an approach, however, inappropriately assumes that approval is a mere formality, and ignores the significant technical issues related with many of these facility registration requests and pathway petitions. Simply assuming these technical and regulatory issues can be resolved in a timeframe that would allow for significant production of cellulosic biofuel from the facilities awaiting registration (or facilities seeking to use pathways that have not yet been evaluated) would not result in a neutral projection of cellulosic biofuel production for 2018. EPA will continue to work with all companies interested in generating cellulosic RINs to address any outstanding technical and regulatory issues, and may include projected production from these sources in the future as appropriate.

**Comment:**

One commenter stated that EPA's actions in a potential future reset rule could impact investment in cellulosic biofuel production, including volumes that could be produced in 2018. EPA should assess whether any actions taken on the reset rule are likely to impact cellulosic biofuel volumes in 2018. If EPA does not expect any actions on the reset rule to impact cellulosic biofuel volumes in 2018, they should report such a determination.

**Response:**

EPA acknowledges the possibility that announcements with respect to actions we intend to take in a potential future reset rule could impact cellulosic biofuel production in 2018. At this time, however, we do not anticipate any action taken by EPA related to the reset rule will have a material impact on cellulosic biofuel production in 2018.

**Comment:**

One commenter stated that EPA should follow the direction of the D.C. Circuit and set volumes that encourage higher volumes of cellulosic biofuel, rather than setting the cellulosic biofuel required volume for 2018 at a level consistent with historical volumes.

**Response:**

The 2018 cellulosic biofuel volume in this final rule is not set at historical production levels, but rather uses historic production volumes to project likely cellulosic biofuel production in 2018. The direction from the D.C. Circuit with respect to the cellulosic biofuel production projections that form the basis for the cellulosic biofuel volume requirements is to project cellulosic biofuel production with a neutral aim at accuracy. We are not to be aspirational in our projections in an effort to provide additional support to the cellulosic biofuel industry. Our projection for cellulosic biofuel production in 2018 is consistent with this direction.

**Comment:**

One commenter stated that EPA's proposed rule wrongly assumes that cellulosic biofuel production will decline in 2018. The commenter notes that this is in conflict with monthly production volumes, which indicated that cellulosic biofuel production volumes have been increasing.

**Response:**

EPA disagrees with the commenters statement that we assume that cellulosic biofuel production will decline in 2018. While our projection of cellulosic biofuel production for 2018 is lower than our projected volume for 2017 in the 2017 final rule, this is in part due to our current expectation (based on cellulosic biofuel RIN generation data through September 2017) that actual cellulosic biofuel production in 2017 will fall short of the cellulosic biofuel volume requirement for that year. In projecting cellulosic biofuel production for 2018 we have considered all available

cellulosic biofuel RIN generation data (including data not available at the time of the proposed rule). We currently project that cellulosic biofuel production in 2018 will exceed cellulosic biofuel production in 2017.

**Comment:**

One commenter stated that EPA should make net cellulosic RIN generation data more easily accessible.

**Response:**

EPA currently makes cellulosic RIN generation and retirement data publicly available on our website.<sup>22</sup> This data is updated monthly, and includes monthly RIN generation data available by D-code, annual RIN generation data available by fuel type, and annual RIN retirement data by D-code and retirement reason. There are some limitations on EPA's ability to share RIN generation and retirement data related to our responsibility to protect confidential business information; however, we will work with interested parties to provide additional data as appropriate.

**Comment:**

One commenter stated that the shortfall of liquid cellulosic biofuel production in 2015 was due to program instability, and therefore is not indicative of likely success of liquid cellulosic biofuel production in future years.

**Response:**

EPA disagrees with this commenter. We note that for 2015 EPA only projected cellulosic biofuel volume for the last quarter of 2015 (production during the first three quarters of 2015 was based on actual RIN generation data). Several of the facilities EPA projected would produce liquid cellulosic biofuel in the 4<sup>th</sup> quarter of 2015 experienced significant technical challenges that resulted in lower than anticipated production volumes, and in some cases no production of cellulosic biofuel in 2015. Whether the shortfall in liquid cellulosic biofuel production in 2015 was caused by technical challenges or instability in the RFS program (as the commenter stated), these challenges are not directly relevant to EPA's projection of liquid cellulosic biofuel production in 2018. Changes in the production methodology for liquid cellulosic biofuels have been made primarily in response to the shortfall in liquid cellulosic biofuel production in 2016 and the projected shortfall in 2017 (see Section III of the final rule and Sections 3.2 and 3.2.2 for a further discussion of the methodology used to project liquid cellulosic biofuel production in 2018).

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<sup>22</sup> See <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/public-data-renewable-fuel-standard>.

**Comment:**

One commenter stated that EPA data on cellulosic RIN retirements is not transparent and cannot be independently verified. They stated that EPA should make this information more readily available, especially as these numbers are used to project cellulosic biofuel production.

**Response:**

EPA disagrees with this comment. EPA's public website contains annual totals of the number of RINs retired for various reasons by D-code. The difference in the RIN retirement numbers for 2016 noted by the commenter is the result of RINs that were retired for a reason other than compliance with the annual standards, and subsequently un-retired. We note that this relatively small difference in the number of available RINs in 2015 (less than 0.1%) has no impact on our projection cellulosic biofuel production in 2018. We will work with interested parties to provide additional data as appropriate in light of our desire to make information publicly available while still satisfying our obligation to protect confidential business information.

### **3.2 Methodology for Projecting Volumes**

Commenters that provided comment on this topic include, but are not limited to: 1692, 1774, 2542, 3475, 3478, 3645, 3680, 3681, and 3955.

#### **Comment:**

One commenter specifically supported EPA's decision to project liquid cellulosic biofuel production and the production of CNG/LNG derived from biogas separately. Another commenter stated that EPA must use a consistent methodology to project liquid cellulosic biofuel production and the production of CNG/LNG derived from biogas.

#### **Response:**

EPA is charged with neutrally projecting the volume of cellulosic biofuel likely to be produced in 2018. As discussed further in Section III of the final rule, the production of CNG/LNG derived from biogas is a relatively mature technology, while the production of liquid cellulosic biofuels is still in the early stages of commercialization. It would not, therefore, be appropriate to use the same methodology for projection production volumes of these two categories of cellulosic biofuel in 2018. The fact that significantly higher volumes of CNG/LNG derived from biogas have been produced in previous years than liquid cellulosic biofuels, both in absolute terms and relative to production projections received from the producers of these fuels, demonstrates the problems associated with using the same methodology to project production volumes of CNG/LNG derived from biogas and liquid cellulosic biofuels. Therefore, using differing methodologies to project CNG/LNG derived from biogas and liquid cellulosic biofuels is most consistent with EPA's charge to accurately project cellulosic biofuel production in 2018.

#### **Comment:**

Several commenters stated that EPA's methodology for projecting cellulosic biofuel production in 2018 was inappropriately "backwards looking," or that it assumes that the industry's past performance determines its future. These commenters generally claimed that our projection methodology and/or percentile values used to project liquid cellulosic biofuel volume in 2018 should be based less on history and more on factors likely to impact future production. Some commenters claimed that a "backwards looking" approach could depress investment and growth in the cellulosic biofuel market.

#### **Response:**

EPA disagrees that the methodologies used to project cellulosic biofuel production in 2018 are inappropriately "backwards looking," or that they should be based less on historical data. We acknowledge that in projecting both liquid cellulosic biofuel production and production of CNG/LNG derived from biogas we have used historical data to inform the percentile values used to project a production volume from a range of potential volumes and the year-over-year growth rate, respectively. In each case we believe using the historical data in this way is appropriate, as the percentile values and year-over-year growth rate observed in previous years are likely to be

indicative of these values in 2018. We also note that EPA is unaware of any suitable alternatives to using historical data to calculate these values. The two alternatives suggested by commenters, simply using the volume projections from potential producers or using the same percentile values as in previous years, have both been proven in previous years to result in inaccurate projections. We further note that basing elements of our projection methodology on historical data does not result in a stagnant or declining projection of cellulosic biofuel in 2018. The percentile value is applied to a potential production range which includes likely new producers of cellulosic biofuel and higher potential production volumes from existing producers of cellulosic biofuel – and therefore is likely to project higher volumes of biofuel as new facilities begin production. Similarly, the year-over-year growth rates calculated for CNG/LNG derived from biogas include increased production that resulted both from new facilities coming online and existing facilities expanding their production in previous years. As a result, the volume of cellulosic biofuel projected to be available in 2018 in this final rule is higher than the volume we currently expect will be produced in 2017. The methodologies used in this final rule reflect EPA’s best efforts to neutrally project cellulosic biofuel production in 2018, and should therefore provide the appropriate incentives for growth and investment in the cellulosic biofuel industry.

**Comment:**

Several commenters stated that the methods used by EPA to project cellulosic biofuel in previous years had proven accurate, and that EPA should not deviate from the methodology used to project cellulosic biofuel production in 2016 and 2017. One commenter claimed that EPA did not identify new data that lead to the change in methodology used to project cellulosic biofuel production. Some commenters noted that the methodology used in 2016 withstood legal challenge.

**Response:**

EPA disagrees with commenter statements that the methodology used in 2016 and 2017 has proven accurate. In our proposed rule, we noted that this methodology had resulted in an under-projection of cellulosic biofuel production in 2015 and an over-projection in 2016. However, the under-projection of cellulosic biofuel in 2015 was largely due to not accounting for very high RIN generation for CNG/LNG derived from biogas in December. Since EPA only projected cellulosic biofuel production for the final quarter of 2015, this had a significant impact on the accuracy of our projection in 2015. EPA now has cellulosic RIN biofuel generation data through September 2017, significantly more 2017 data than we had for the proposed rule. While there is still significant uncertainty as to the total volume of cellulosic biofuel that will be produced in 2017, data through September 2017 (approximately 158 million gallons of cellulosic biofuel produced) indicates that production for the year will likely fall short of the cellulosic biofuel standard for 2017 (311 million gallons). We believe this data, combined with the fact that this methodology also resulted in an over-projection of cellulosic biofuel for 2016, justifies a change to the methodology used to project cellulosic biofuel for 2018 in an effort to project cellulosic biofuel production more accurately. We further note that while the methodology used by EPA to project cellulosic biofuel in 2016 withstood legal challenge, this decision was based on the data available to EPA at the time the decision was made (November 2015). It would not be appropriate to continue using this methodology after it has resulted in significant over-estimates

of cellulosic biofuel production in 2016, and appears highly likely to again over-estimate cellulosic biofuel production in 2017.

**Comment:**

One commenter suggested that EPA should adopt “roll-over” and “true-up” methodologies to adjust the cellulosic biofuel volume requirement to equal the number of cellulosic biofuel RINs available at the end of the year (including both the RINs produced during the year and any available carryover RINs from the previous year)

**Response:**

EPA does not believe it would be appropriate at this time to adopt a “roll over” or “true up” methodology whereby the cellulosic biofuel standard was retroactively changed to the volume of available cellulosic RINs after the end of a compliance year. Such a methodology would cause significant uncertainty for obligated parties, as they would not know their actual cellulosic biofuel obligations for any given year until after the end of the year, at which point they would have limited time available to obtain the RINs necessary to demonstrate compliance. Such a change could also inadvertently harm cellulosic biofuel producers if obligated parties, uncertain of their final cellulosic biofuel obligations, wait until after the end of the calendar year to purchase cellulosic biofuel and/or cellulosic biofuel RINs. Cellulosic biofuel producers may be unable to continue commercial production without customers, and may therefore scale back production volumes or shut down their production facilities. Finally, we note that if carryover RINs were included in the “roll over” or “true up” calculation, this would effectively penalize obligated parties for acquiring excess cellulosic biofuel RINs in previous years, an action which would be beneficial to cellulosic biofuel producers.

**Comment:**

One commenter stated that EPA should quickly register new facilities, and that volumes from facilities that have not yet completed registration as cellulosic biofuel producers in the RFS program should be included in EPA’s projections of cellulosic biofuel production in 2018.

**Response:**

EPA is committed to reviewing facility registration requests and pathway petitions in a timely manner. However, as discussed in further detail in Section 3.1 of this document, we do not believe it would be appropriate to project cellulosic biofuel production from facilities (or pathways) for which there are significant outstanding technical and regulatory issues that must be resolved prior to these facilities generating cellulosic biofuel RINs.

**Comment:**

One commenter suggested that EPA has the ability to use the best data available, and that this data should be used in our projection of cellulosic biofuel for 2018. This commenter encouraged

EPA to work closely with individual companies, rather than to make aggregate projections of cellulosic biofuel by sector.

**Response:**

EPA continues to work closely with potential cellulosic biofuel producers to ensure that we have the most accurate and up to date information available when projecting cellulosic biofuel volumes for future years. For this final rule we have reached out to potential cellulosic biofuel producers to obtain updated information, and have reviewed and assessed additional cellulosic RIN generation data that was not available at the time of our proposed rule.

**Comment:**

Several commenters stated that EPA should assess potential cellulosic biofuel production (both for producers of liquid cellulosic biofuels and CNG/LNG derived from biogas) on a facility-by-facility basis. One commenter suggested several factors EPA could use to evaluate individual facilities to increase the accuracy of the production projection from individual facilities.

**Response:**

EPA disagrees that projecting precise production volumes from individual facilities would result in a more accurate overall cellulosic biofuel production projection. In previous years (2011-2013) EPA has used a facility-by-facility projection methodology similar to the methodology suggested by the commenters; however, this has not resulted in accurate projections. Each year, EPA has requested volume projections from project developers and these estimates have consistently proved to be overly optimistic. In recent years EPA has placed special emphasis on many of the factors suggested by the commenter, yet the accuracy of the production estimates provided by project developers have not significantly improved. While EPA believes we have gained sufficient experience to allow us to project likely production from broadly similar groups of companies, based in part on facility-specific information, we do not believe that our projections would improve through using a facility-by-facility assessment approach. We therefore believe the methodology used in this rule is likely to produce a more accurate projection than a methodology that projects production volumes for each specific facility with the potential to produce cellulosic biofuel in 2018.

**Comment:**

One commenter stated that EPA's cellulosic biofuel projection methodology should account for accelerating growth.

**Response:**

As discussed in more detail above, by applying a percentile value to a potential production range which includes likely new producers of cellulosic biofuel and higher potential production volumes from existing producers of cellulosic biofuel and using a year-over-year growth rate to

project CNG/LNG derived from biogas, our methodology accounts for the growth observed in cellulosic biofuel production in recent years.

### **3.2.1 Methodology for Projecting Liquid Cellulosic Biofuel Volumes**

Commenters that provided comment on this topic include, but are not limited to: 1177, 1756, 1774, 1776, 3174, 3242, 3247, 3251, 3428, 3497, 3645, 3658, 3680, 3681, 3878, and 3955.

#### **Comment:**

One commenter stated that EPA's projection of liquid cellulosic biofuel should be forward looking, and should not rely on data from 2016.

#### **Response:**

As discussed in more detail in Section III of the final rule and Section 3.2 of this document, EPA's methodology for projecting volumes of liquid cellulosic biofuels uses data from previous years (including both 2016 and 2017) to calculate a percentile value for expected production within a calculated range of likely production volumes for two groups of companies (those that have achieved consistent commercial scale production of liquid cellulosic biofuel and those that have not). This methodology appropriately uses relevant data from the performance of similar groups of facilities in previous years, along with production expectations in 2018, to neutrally project likely production of liquid cellulosic biofuel in 2018.

#### **Comment:**

One commenter stated that Enerkem intended to export cellulosic ethanol to the U.S. in 2018, and should be included in EPA's cellulosic biofuel projection.

#### **Response:**

After reviewing comments from Enerkem and gathering more information from Enerkem representatives, EPA agrees that it is likely that cellulosic ethanol produced at Enerkem's Edmonton facility will be imported into the U.S. in 2018. We have therefore considered production from this facility in our projection of liquid cellulosic biofuel production in 2018.

#### **Comment:**

One commenter claimed that it was arbitrary to base the percentile values used to project liquid cellulosic biofuel production on historical data from a single year (2016). They further claimed that data from 2016 did not reflect current market capabilities well. Several commenters claimed that EPA's proposed methodology did not include any volume from facilities that had not yet produced cellulosic biofuel. They claimed that this resulted in a projection that was inappropriately low.

#### **Response:**

EPA acknowledges that our proposed methodology projected very low volumes of cellulosic biofuel production from facilities that had not yet achieved consistent commercial scale

production. Our proposed methodology used a range of potential production volumes with a low end of the range at zero gallons and the 1<sup>st</sup> percentile value to project likely production from these facilities based on actual production data from 2016. In our final rule EPA has adjusted the percentile values using additional cellulosic biofuel RIN generation data from 2017.

Consideration of this additional data has resulted in an increased percentile value used to project liquid cellulosic biofuel production from facilities that have not yet achieved consistent commercial scale production to the 10<sup>th</sup> percentile. Using this percentile value effectively projects an increased production volume of cellulosic biofuel from these facilities in 2018. Several commenters have requested that higher percentile values be used (or that EPA develop individual percentile values for each facility). The approach adopted by EPA in this final rule appropriately uses historical data from 2016 and 2017 to calculate a percentile value that is likely to be reasonably indicative of cellulosic biofuel production from these facilities in 2018. We further note that, with the exception of the historical data used by EPA, we are not aware of any other empirical data that could be used to objectively calculate a percentile value for use in projecting likely cellulosic biofuel production from a range of potential values, whether for a group of companies or an individual facility.

**Comment:**

Several comments stated that EPA should project cellulosic biofuel production from corn kernel fiber differently than production of other liquid cellulosic biofuels. Commenters generally stated that corn kernel fiber conversion technology had been successfully demonstrated at commercial scale and would not face the same start-up challenges as large stand-alone cellulosic biofuel production facilities, and stated that EPA's projection methodology should reflect these differences. One commenter suggested that EPA should consider production of cellulosic ethanol from corn kernel fiber separately from the production of other liquid cellulosic biofuels. Another commenter requested that EPA project all potential producers of cellulosic ethanol from corn kernel fiber as if they were existing producers since these facilities face much fewer start-up challenges than other liquid cellulosic biofuel production technologies.

**Response:**

EPA recognizes that the challenges associated with producing cellulosic ethanol from corn kernel fiber at a facility currently producing ethanol from starch differ from the challenges associated with producing cellulosic biofuel from a large stand-alone cellulosic biofuel production facility. We also recognize that the production of cellulosic ethanol from corn kernel fiber has been successfully commercialized at existing ethanol production facilities. However, while the uncertainties related to the production volumes of cellulosic ethanol from corn kernel fiber may differ from those related to the production of other types of cellulosic biofuel, at this point EPA does not have sufficient data to suggest that these differences justify the use of different projection methodologies for corn kernel fiber relative to other liquid cellulosic biofuel production technologies. For example, while technologies that convert corn kernel fiber require little to no additional processing equipment and can theoretically ramp-up production more quickly than stand-alone cellulosic biofuel production facilities there is much more uncertainty with respect to the number of facilities that will pursue the use of this technology to produce cellulosic biofuel in 2018. For example, EPA has not considered any stand-alone liquid

cellulosic biofuel production facilities in our estimates for 2018 unless they have already made significant financial investments and achieved significant progress towards completing construction of their cellulosic biofuel production facilities. Conversely, many of the facilities EPA expects will produce cellulosic ethanol from corn kernel fiber have not yet signed binding contracts with the technology providers at this time. EPA will continue to monitor the success of producers of cellulosic ethanol from corn kernel fiber relative to producers of other liquid cellulosic biofuels to determine if using different methodologies to project production volumes from these two groups of facilities is merited in future years. At this time, however, EPA does not have sufficient data to justify different production methodologies for corn kernel fiber and other liquid cellulosic biofuels.

**Comment:**

EPA should recognize that current cellulosic biofuel production technologies are distinct from those in previous years, and have a higher likelihood of success.

**Response:**

EPA recognizes that in some cases, the production technologies expected to be employed by potential producers of cellulosic biofuel in 2018 differ from the technologies used by potential producers of cellulosic biofuels in previous years. We do not, however, agree that there is sufficient basis for the commenters claims that these technologies have a higher likelihood of success than previous technologies or facilities. We will continue to monitor the accuracy of the methodologies we used to project cellulosic biofuel production, and anticipate adjusting the methodology as appropriate to achieve greater accuracy in our cellulosic biofuel projections in future years.

**Comment:**

One commenter stated that EPA should not reduce the percentile value used to project production of liquid cellulosic biofuels due to the failure of a few large cellulosic biofuel production facilities.

**Response:**

EPA notes that the lower percentile values in our proposed rule were not simply due to the failure of a few large cellulosic biofuel producers to produce the projected volumes of cellulosic biofuel, but were based on the historical performance of all liquid cellulosic biofuel production facilities. For this final rule we have adjusted the percentile values to include additional cellulosic biofuel production data through September 2017 (in addition to the production data from 2016). These percentile values appropriately consider the success of all liquid cellulosic biofuel producers in EPA's projections in 2016 and 2017, which included both large and smaller cellulosic biofuel production facilities.

**Comment:**

One commenter stated that there is strong potential for additional production from the conversion of corn kernel fiber, but that expanded use of this technology was dependent on a strong market for cellulosic RINs.

**Response:**

EPA recognizes the potential for significantly increased production of cellulosic ethanol from corn kernel fiber in 2018. Our cellulosic biofuel production projections take into account potential production from facilities using this technology.

**Comment:**

One commenter stated that EPA should include volumes of cellulosic ethanol produced from corn kernel fiber at Poet's existing ethanol facilities in our projections of cellulosic ethanol production. This commenter also requested that EPA should include 80 million gallons of cellulosic ethanol already produced using this technology that is currently in storage.

**Response:**

As discussed in greater detail in Section 3.1 of this document, EPA does not believe it would be appropriate to project cellulosic biofuel production in 2018 from facilities using technologies for which there are significant outstanding technical issues that must be resolved prior to facility registration. We further note that in light of these unresolved technical issues, it is highly unlikely that EPA would allow RINs to be generated for stored fuel that was produced at a facility prior to the acceptance of that facility's registration as a cellulosic biofuel producer.

**Comment:**

One commenter stated that EPA should consider data from 2017 in projecting liquid cellulosic biofuel volumes.

**Response:**

For the final rule EPA has considered updated data, including both updated information from potential cellulosic biofuel producers in 2018 and additional cellulosic biofuel RIN generation data from 2017, in projecting cellulosic biofuel production volumes for 2018.

**Comment:**

One commenter stated that EPA should work with producers to approve quantification methods for technologies that convert both cellulosic and non-cellulosic feedstocks. Multiple commenters stated that EPA should approve more facilities to generate cellulosic RINs for cellulosic ethanol produced from corn kernel fiber, and that EPA should work with the industry to better quantify these volumes and include them in our projections for 2018.

**Response:**

EPA is committed to working with potential cellulosic biofuel producers to resolve issues related to the quantification of the conversion of cellulosic biomass to biofuel. In developing cellulosic biofuel production projections for 2018 EPA has been in contact with multiple companies working to commercialize technologies to convert corn kernel fiber to cellulosic ethanol, and to verify the quantify the production of cellulosic ethanol. As discussed above, it would not be appropriate for EPA to project cellulosic biofuel production from these facilities unless and until the significant technical issues related to the verification and quantification of the conversion of corn kernel fiber to cellulosic biofuel are resolved.

**Comment:**

One commenter supported EPA's proposed use of lower percentile values to project cellulosic biofuel production in 2017. However, the commenter claimed that the percentile values were still too high, as the industry has never produced more than 2.1% of their capacity. The commenter requested that EPA project liquid cellulosic biofuel production at 2.1% of the industry's capacity unless data exists that supports a higher number. Multiple commenters noted that the proposed volume of liquid cellulosic biofuel is 450% higher than the volume achieved in 2016, and that EPA had not shown that such an increase was possible.

**Response:**

This commenter inappropriately equates EPA's percentile values used to project cellulosic biofuel production from a calculated range of likely production volumes (with includes consideration of factors such as facility start-up date, a ramp-up period, and the company's own production targets) with a percentage of total facility capacity of all potential cellulosic biofuel producers. Projecting cellulosic biofuel production using the metric of percentage of total capacity utilized in previous years ignores many of these additional factors, which are likely to impact actual cellulosic biofuel production in 2018. Ignoring these factors and projecting liquid cellulosic biofuel volume for 2018 using a percentage of cellulosic biofuel production capacity is not an approach that is likely to result in a reasonably accurate projection.

EPA notes that the percentile values used to project liquid cellulosic biofuel production in 2018 in this final rule are based on percentile values that would have resulted in projections equal to the volume of cellulosic biofuel produced in 2016 and 2017.<sup>23</sup> We further note that the production of liquid cellulosic biofuel is currently projected to increase by over 100% from 2016 to 2017 (based on 2017 RIN generation data through September 2017), and that achieving the volume of liquid cellulosic biofuel projected for 2018 (14 million gallons) would require a smaller percentage increase from 2017 to 2018 (57%) than is projected to occur from 2016 to 2017 (106%). The methodology used by EPA to project liquid cellulosic biofuel volumes in

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<sup>23</sup> The development of these percentile values is discussed in further detail in "Calculating the Percentile Values Used to Project Liquid Cellulosic Biofuel Production for 2018," memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2017-0091. The percentile values that would have resulted in accurate cellulosic biofuel projections for 2017 are based on an updated projection of liquid cellulosic biofuel in 2017 using data on cellulosic RIN generation through September 2017.

2018 appropriately considers both historical production volumes of cellulosic biofuel and the real progress made in the cellulosic biofuel industry that is likely to impact cellulosic biofuel production volumes in 2018.

### 3.2.2 Methodology for Projecting Cellulosic Biogas Volumes

Commenters that provided comment on this topic include, but are not limited to: 1135, 1503, 1778, 2542, 3319, 3325, 3428, 3645, 3650, 3658, 3680, 3681, 3871, 3873, 3878, and 3953.

#### **Comment:**

Multiple commenters stated that EPA should use additional data from 2017 to update the year-over-year rate of growth used to project the production of CNG/LNG derived from biogas in 2018. Some commenter suggested that EPA should calculate the year-over-year growth rate using full 12-month periods (rather than partial years as in the proposed rule). One commenter noted using a full 12-month period is especially important since the 5 months considered by EPA in our proposed rule included January, a month with unusually low RIN generation data for CNG/LNG derived from biogas. One commenter stated that the sample size is too short to calculate a reliable growth rate. Another commenter alternatively requested that EPA use a growth rate of 35% (based on long term trends and accounting for leading factors) to project the production of cellulosic CNG/LNG derived from biogas in 2018.

#### **Response:**

For the final rule, EPA has used the most recent data available to update the rate of growth used to project production of CNG/LNG derived from biogas in 2018. Our updated growth rate is calculated by comparing RIN generation for these fuels during the most recent 12 months for which data are available to RIN generation for these fuels during the preceding 12 months.<sup>24</sup> EPA agrees with comments suggesting that using a full 12 month time period to calculate the rate of growth results in a growth rate more likely to result in an accurate projection of CNG/LNG derived from biogas in 2018, and that this methodology reduces the opportunity for parties to influence this growth rate to their benefit. While the consideration of additional data might be helpful, we believe that the time period used to calculate the growth rate (the most recent 2 years for which data are available) in this final rule is sufficient to form the basis for the growth rate in 2018. We further note that using data from previous years (e.g., prior to October 2015) would be unlikely to be indicative of the growth rate likely to occur through 2018, as the growth rate observed in the first year in which CNG/LNG derived from biogas was categorized as a cellulosic biofuel was very high and has not been sustained in recent years.

#### **Comment:**

Several commenters stated that EPA's industry-wide projection methodology does not adequately account for new facilities expected to begin generating cellulosic biofuel RINs in 2018. These commenters requested that EPA adjust our rate of growth methodology used to project the production of CNG/LNG derived from biogas to better account for new facilities. These commenters generally suggested that EPA use the rate of growth methodology to project production of CNG/LNG derived from biogas from currently producing facilities, but requested

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<sup>24</sup> For further detail on the methodology EPA used to project production of CNG/LNG derived from biogas in 2018 see "November 2017 Assessment of Cellulosic Biofuel Production from Biogas 2018," memorandum from Dallas Burkholder to EPA Docket EPA-GQ-OAR-2017-0091.

that EPA increase the volume further to account for new facilities. Many of these commenters referred to the affidavits submitted by the Coalition for Renewable Natural Gas as a source for reliable information on new facilities.

**Response:**

We disagree that the industry-wide projection methodology used by EPA in this final rule does not adequately account for new facilities that may begin producing CNG/LNG derived from biogas in 2018. As discussed in further detail in Section III.D.2 of the final rule, the growth rate used to project the production of CNG/LNG derived from biogas in 2018 includes both increased production from existing facilities, as well as new facilities that began producing fuel in the last 12 months for which data are available. If EPA were to add an additional volume to what we are currently projecting using our industry wide rate of growth projection methodology, we would effectively be double counting production from new facilities. The industry wide methodology already considers the impact of new facilities in the past in the calculated rate of growth. Adding additional production volumes expected to be produced from new facilities would not be appropriate, nor would it be likely to result in an accurate projection.

**Comment:**

Several commenters requested that EPA use the facility by facility approach from previous rulemakings (2016 and 2017) to project the production of CNG/LNG derived from biogas in 2018.

**Response:**

As discussed in further detail in Section III of the final rule, the relative maturity of the industry producing CNG/LNG derived from biogas and large number of potential producers of this fuel lends itself well to an industry-wide projection methodology. In such cases, industry-wide projection methods can be more accurate than a facility-by-facility approach, especially as macro market and economic factors become more influential on total production than the success or challenges at any single facility. We further note that the facility-by-facility approach used to project production of CNG/LNG produced from biogas in 2016 and 2017 significantly over-estimated production of these fuels. In light of these over projections, adjustments to the methodology used to project production of CNG/LNG derived from biogas were necessary for EPA to neutrally project cellulosic biofuel production for 2018.

**Comment:**

Multiple commenters requested that EPA include facilities that expect to produce CNG/LNG form both cellulosic and non-cellulosic feedstocks (such as agricultural or food waste digesters) in our projections of cellulosic biofuel production for 2018.

**Response:**

EPA's methodology for projecting CNG/LNG derived from biogas in 2018 in this final rule is an industry-wide, rather than a facility by facility approach. The projected growth rate (21.6%) is expected to be achieved by a combination of increased production from facilities currently generating cellulosic RINs for CNG/LNG derived from biogas and RIN generation from facilities that have not yet generated RINs, including the potential for RIN generation from facilities processing multiple types of feedstocks (if the appropriate technical issues are resolved in 2018). Our methodology therefore accounts for these facilities, as their potential production is accounted for in the year-over-year growth rate used by EPA to project the production of CNG/LNG derived from biogas in 2018.

**Comment:**

One commenter stated that using a historic growth rate to project the production of CNG/LNG derived from biogas in 2018 would restrict demand for these fuels.

**Response:**

Ultimately the incentives provided by the RFS program for cellulosic biofuels, including CNG/LNG derived from biogas, will be dependent on the cellulosic biofuel volume requirement in 2018 and in future years. Using a historic growth rate to project likely production volumes of CNG/LNG derived from biogas in 2018 is a neutral projection methodology expected to result in a reasonably accurate projection of the volume of these fuels that will be produced in 2018. Accurately projecting the volume of CNG/LNG derived from biogas that will be produced should provide the appropriate market demand for these fuels.

**Comment:**

One commenter stated that EPA should consider volumes of cellulosic CNG/LNG derived from biogas that would have been produced from facilities with pending registrations in our projection methodology.

**Response:**

Considering production of CNG/LNG derived from biogas that may have been produced from facilities with pending registration requests would inappropriately inflate the growth rate used to project CNG/LNG derived from biogas in 2018. Facilities cannot generate cellulosic biofuel RINs until they have completed EPA's facility registration process as cellulosic biofuel producers. This process requires the facility to submit the appropriate information and for EPA to review this information. The time necessary for potential producers of CNG/LNG derived from biogas to register as cellulosic biofuel producers is not expected to be significantly different in 2018 than in previous years. Calculating the year-over-year growth rate using actual RIN generation, rather than the number of RINs that could have been produced if additional facilities had completed the registration process, results in a neutral projection of CNG/LNG derived from biogas in 2018.

**Comment:**

One commenter stated that our projection of CNG/LNG derived from biogas should continue to grow to provide incentives to increase the production of renewable natural gas.

**Response:**

By attempting to neutrally and accurately project volumes of cellulosic biofuel (including volumes of CNG/LNG derived from biogas), the required volume of cellulosic biofuel in this final rule provides the appropriate incentives for the additional production of cellulosic biofuel (including renewable natural gas).

**Comment:**

One commenter stated that EPA should adopt the Coalition for Renewable Natural Gas's projection of CNG/LNG derived from biogas likely to be produced in 2018, and that discounting production projections from facilities that are currently producing fuel may not be warranted.

**Response:**

EPA's projection of the production of cellulosic CNG/LNG derived from biogas in 2016 and 2017 relied significantly on information provided by the Coalition for Renewable Natural Gas. EPA considered that information, and applied a range approach with percentile values for new and consistently producing facilities as appropriate to effectively discount the projections EPA received from the Coalition for Renewable Natural Gas in 2016 and 2017. Despite these efforts to appropriately discount these estimates, EPA's projections of CNG/LNG derived from biogas exceeded actual production of these fuels in 2016, and is expected to exceed actual production again in 2017. It therefore does not appear to be appropriate to continue to rely on these projections to project production of CNG/LNG derived from biogas in 2018.

**Comment:**

Multiple commenters stated that EPA's industry-wide approach to projecting cellulosic biofuel production for CNG/LNG derived from biogas is overly conservative.

**Response:**

EPA disagrees that our industry-wide approach to projecting cellulosic biofuel production for CNG/LNG derived from biogas is overly conservative. This methodology accounts for the observed growth rate in previous years and results in a projected production volume for these fuels for 2018 that is significantly higher than the volumes of these fuels expected to be produced in 2017. We further note that, as a result of considering additional data that was not available at the time of our proposed rule, our projection of CNG/LNG derived from biogas in this final rule is substantially higher than the volume of these fuels projected in the proposed rule, in part due to the information provided by the commenters.

**Comment:**

One commenter stated that the CNG/LNG derived from biogas industry is not sufficiently mature for industry-wide projection methodology. This commenter suggested that this approach would not have been accurate if used in previous years.

**Response:**

EPA disagrees that the CNG/LNG derived from biogas industry is insufficiently mature for an industry-wide production methodology. As noted in Section III.D.2 of the final rule, 41 facilities generated RINs for these fuels in the most recent 12 months in which data are available. Production of CNG/LNG derived from biogas in 2018 (274 million gallons) is expected to reach 47% of the total volume of CNG/LNG projected by EIA to be used as transportation fuel (580 million ethanol-equivalent gallons). We acknowledge that a year-over-year rate of growth rate would not have produced an accurate projection in previous years. When considering both the number of facilities currently producing CNG/LNG derived from biogas and the relatively high volumes of these fuels expected to be produced, it appears that the industry has sufficiently matured after experiencing significant and unsteady growth in the years immediately following the categorization of CNG/LNG derived from biogas as cellulosic biofuel in August 2014.

**Comment:**

One commenter stated that production of CNG/LNG derived from biogas will increase due to state incentives provided by the state of California.

**Response:**

We agree that production of CNG/LNG is likely to increase in future years due to a variety of incentives at the state and national level. The volume of these fuels we project will be produced in 2018 in this final rule is therefore substantially higher than the volume currently expected to be produced in 2017.

**Comment:**

One commenter stated that EPA should base our projection of CNG/LNG derived from biogas in 2018 at the production rate achieved in the most recent 3 months for which data are available (e.g., the projection for 2018 should be equal to RIN generation from these fuels during the last 3 months multiplied by four).

**Response:**

Projecting production of CNG/LNG derived from biogas in this manner effectively assumes no growth in the monthly production volume of these fuels from the most recent months in which data are available (July – September 2017) through the end of 2018. Projecting production of CNG/LNG derived from biogas in this manner is also inconsistent with the observed monthly

production volumes of these fuels, which are generally increasing over the past two years.<sup>25</sup> The methodology proposed by the commenter would therefore be inconsistent with EPA's charge to neutrally and accurately project the volume of these fuels likely to be produced in 2018.

**Comment:**

One commenter objected to an approach that uses past data to project future production. The commenter claimed that this was not a neutral projection methodology.

**Response:**

EPA disagrees with the commenter's claim that using past data to inform future production volumes of CNG/LNG derived from biogas does not result in a neutral production methodology. While this may be the case if there were evidence that the growth rate calculated using past data was unlikely to represent growth in the industry in 2018, EPA is not aware of any compelling evidence that would suggest this is the case. Rather, the relatively consistent increases in the monthly production volumes of CNG/LNG derived from biogas over the past two years indicate that an industry wide year-over-year growth rate methodology is appropriate for projecting production of CNG/LNG derived from biogas in 2018.

**Comment:**

One commenter claimed that the reason EPA under-projected production of CNG/LNG derived from biogas in 2015 and over-projected production of these fuels was the large production volume in December 2015 (and subsequent low production volume in January 2016). The commenter claimed that if EPA had properly accounted for this our projections in 2015 and 2016 would have been accurate, and that EPA therefore has not justified deviating from the methodology used to project CNG/LNG derived from biogas in 2015 and 2016. Another commenter similarly noted that since EPA under-projected production of CNG/LNG derived from biogas in 2015 and over-projected production of these fuels in 2016 the methodology was reasonably accurate and should be used to project production of these fuels in 2018.

**Response:**

The commenter claims that the reason EPA under-projected production of CNG/LNG derived from biogas in 2015 and over-projected production of these fuels in 2016 was solely due to RIN generation protocols for producers of CNG/LNG derived from biogas. This is incorrect. These RIN generation protocols lead to very low RIN generation numbers in January and very high RIN generation numbers in December of each year. EPA acknowledges that a significant portion of our under-projection of RINs generated for CNG/LNG derived from biogas in 2015 was the result of not adequately accounting for the impacts of this RIN generation pattern, combined with the fact that we only projected RIN generation for the final three months of the year

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<sup>25</sup> For monthly RIN generation totals for CNG/LNG derived from biogas from October 2015 to September 2017 see "November 2017 Assessment of Cellulosic Biofuel Production from Biogas 2018," memorandum from Dallas Burkholder to EPA Docket EPA-GQ-OAR-2017-0091.

(October – December). For 2016, however, EPA projected RIN generation for the entire year. The RIN generation protocol used by producers of CNG/LNG derived from biogas had no effect on the total number of RINs generated in 2016, as very low RIN generation in January of 2016 was offset by very high RIN generation in December of 2016.<sup>26</sup> EPA expects this RIN generation pattern will continue in future years. Contrary to the commenter’s claims, EPA’s over-projection of production of CNG/LNG derived from biogas in 2016 was not simply the result of the RIN generation protocol of these producers, but rather lower than projected production volumes of these fuels. Based on RIN generation data through September 2017, EPA currently projects that production of CNG/LNG derived from biogas will once again fall significantly short of our projected volume of these fuels in 2017 (see Section III.D.2 of the final rule for a further discussion of the accuracy of our projections of CNG/LNG derived from biogas in 2016 and 2017). These consistent over-projections of CNG/LNG derived from biogas in 2016 and 2017 are the basis for EPA’s revised projection methodology for these fuel in this final rule.

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<sup>26</sup> For monthly RIN generation totals for CNG/LNG derived from biogas from October 2015 to September 2017 see “November 2017 Assessment of Cellulosic Biofuel Production from Biogas 2018,” memorandum from Dallas Burkholder to EPA Docket EPA-GQ-OAR-2017-0091.

### 3.3 Proposed Cellulosic Biofuel Standard

Commenters that provided comment on this topic include, but are not limited to: 0446, 1132, 3105, 3106, 3142, 3174, 3177, 3178, 3237, 3242, 3249, 3251, 3319, 3429, 3475, 3478, 3493, 3497, 3645, 3650, 3878, 3887, and 3953.

#### **Comment:**

One commenter stated that EPA should approve electricity generated from cellulosic feedstocks to generate cellulosic biofuel RINs when used as transportation fuel. The commenter also requested that EPA's projection of cellulosic biofuel production include consideration of cellulosic RINs generated using this pathway.

#### **Response:**

While EPA's regulations currently contain a pathway allowing for the generation of cellulosic biofuel RINs for electricity generated from biogas that is used as a transportation fuel, there are several issues that must be resolved prior to the registration of facilities intending to register as cellulosic biofuel producers using this pathway. These issues were most recently discussed in the proposed Renewable Enhancement and Growth Support rule.<sup>27</sup> At this time, EPA does not anticipate that these issues will be resolved on a timeline that would allow for cellulosic RINs to be generated for electricity produced from biogas that is used as transportation fuel in 2018. We have therefore not included volumes of this fuel in our final projections of cellulosic biofuel production for 2018.

#### **Comment:**

One commenter expressed support for EPA's proposed volume for cellulosic biofuel in 2018.

#### **Response:**

EPA's projection of cellulosic biofuel for 2018 in this final rule, while higher than the projected volume in our proposed rule, uses the same general methodology, and is therefore consistent with the volume in the proposed rule.

#### **Comment:**

Many commenters requested that EPA's projection of cellulosic biofuel for 2018 should be higher in the final rule. Many commenters suggested alternative views on what the cellulosic biofuel standard should be for 2018. Commenters requested volumes including 358 million gallons (341 million gallons from CNG/LNG derived from biogas and 17 million gallons of liquid cellulosic biofuel), at least 380 million gallons, approximately 400 million gallons, and 420 million gallons.

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<sup>27</sup> See 81 FR 80828 (November 16, 2016).

**Response:**

EPA's projection of cellulosic biofuel expected to be produced in 2018 in our final rule is significantly higher than the volume in our proposed rule, primarily due to the consideration of additional data that was not available at the time of our proposed rule. Nevertheless, our projection is still significantly lower than the volumes requested by many of the commenters. Many of the projected volumes provided by the commenters are based on cellulosic biofuel production estimates from potential producers of these fuels. While EPA has also considered this data in our projection of cellulosic biofuel for 2018, we have also considered the accuracy of these projections in previous years. Cellulosic biofuel producers have consistently over-projected the volume of cellulosic biofuel they are likely to produce in the coming years. Any consideration of these projections must therefore appropriately account for these consistent historical over-projections. The volumes suggested by these commenters are overly optimistic, as they do not adequately account for this history of over-projection by potential cellulosic biofuel producers.

**Comment:**

Some commenters stated that EPA should consider a final cellulosic biofuel projection lower than the proposed volume. One commenter stated that our projection in the final rule should be based on updated cellulosic RIN generation data through September 2017.

**Response:**

EPA has considered updated cellulosic RIN generation data through September 2017 in our projection of cellulosic biofuel production for 2018, as requested by the commenter. Commenters requesting that EPA consider a lower projection of cellulosic biofuel production for 2018 in our final rule generally cited the current rate of cellulosic RIN generation and/or EPA's over-projections of cellulosic biofuel volumes in previous years as the basis for their requests. As noted above, EPA has considered all cellulosic RIN generation data available at the time of our assessment in projecting cellulosic biofuel for 2018, however it would not be appropriate to simply assume that the cellulosic biofuel industry produces fuel in 2018 at the same rate they are currently producing fuel. Monthly production volumes of cellulosic biofuel over the past two years have generally increased, and are expected to continue to increase through the end of 2018. In this case, simply assuming that the observed production rate of these fuels in 2017 holds constant throughout 2018 would not result in a neutral projection of cellulosic biofuel for 2018, but rather an inappropriately conservative projection. EPA also acknowledges that some of the cellulosic biofuel production methodologies used in previous years have resulted in over-projections of cellulosic biofuel. In light of these over-projections, EPA has adjusted our methodologies for projecting cellulosic biofuel for 2018 in this final rule (for a further discussion of the methodologies used to project cellulosic biofuel for 2018 see Section III of the final rule and Sections 3.2, 3.2.1, and 3.2.2 of this document).

**Comment:**

One commenter stated that EPA's projection of cellulosic biofuel must account for volumes of cellulosic biofuel expected to come online in 2018, in addition to what is expected to be produced in 2017. Multiple commenters more generally expressed concern about EPA's proposed cellulosic biofuel volume, which was lower than the required volume of cellulosic biofuel for 2017, and requested a higher volume in the final rule. One commenter described the proposed projection as overly pessimistic.

**Response:**

EPA's projection of cellulosic biofuel for 2018 accounts for production from facilities currently producing cellulosic biofuel, as well as those facilities expected to begin cellulosic biofuel production in 2018. We are, however, projecting a lower volume of cellulosic biofuel production for 2018 than we projected for 2017 in our 2017 final rule. As discussed in further detail in Section III of the final rule, this is due to the fact that EPA expects the methodology used to project cellulosic biofuel in the 2017 final rule to result in a significant over-projection. Our projection of cellulosic biofuel production in 2018 is substantially higher than the volume of cellulosic biofuel we currently anticipate will be produced in 2017. This projection is consistent with EPA's charge to neutrally and accurately project cellulosic biofuel production for 2018, and should provide the appropriate incentives for the continued development of the cellulosic biofuel industry.

**Comment:**

One commenter requested that EPA increase the cellulosic biofuel standard, and that a higher standard would lead to increased adoption of cellulosic technologies. Another commenter requested that EPA set more ambitious targets for cellulosic biofuel.

**Response:**

EPA's projection of cellulosic biofuel for 2018 is consistent with EPA's charge to neutrally and accurately project cellulosic biofuel production for 2018, and should provide the appropriate incentives for the continued development of the cellulosic biofuel industry. EPA does not have the statutory authority to establish "ambitious" cellulosic biofuel volume requirements (volume requirements that are higher than the volume that is expected to be produced in 2018) in an effort to provide additional support for the cellulosic biofuel industry.

**Comment:**

One commenter stated that EPA's proposed cellulosic biofuel standard for 2018 should reflect actual demonstrated domestic production, and should be set at a level that represents likely actual production in 2018.

**Response:**

As noted above, EPA has considered all cellulosic RIN generation data available at the time of our assessment in projecting cellulosic biofuel for 2018, however it would not be appropriate to simply assume that the cellulosic biofuel industry produces fuel in 2018 at the same rate they are currently producing fuel. Monthly production volumes of cellulosic biofuel over the past two years have generally increased, and are expected to continue to increase through the end of 2018. In this case, simply assuming that the observed production rate of these fuels in 2017 holds constant throughout 2018 would not result in a neutral projection of cellulosic biofuel for 2018, but rather an inappropriately conservative projection. As discussed in further detail in Section III of the final rule, the methodologies used by EPA to project cellulosic biofuel in 2018 are intended to neutrally and accurately project actual cellulosic biofuel production in 2018.

**Comment:**

One commenter stated that EPA should lower the cellulosic biofuel volumes because all CNG/LNG RINs are controlled by 1-3 companies who offer them only at high prices.

**Response:**

EPA's projection of cellulosic biofuel production for 2018 is required to reflect the volume of cellulosic biofuel expected to be produced in 2018. EPA does not have the authority to reduce our cellulosic biofuel projection in an effort to reduce RIN prices. We further note that the cellulosic waiver credit provisions in the RFS program, which allow obligated parties to purchase cellulosic waiver credits in lieu of cellulosic biofuel RINs in years that EPA exercises our cellulosic waiver authority to reduce the required volume of cellulosic biofuel from the statutory volumes, is intended to protect obligated parties from situations where a single or small number of parties control the supply of cellulosic RINs and demand excessive prices for these RINs. These provisions provide the appropriate safeguards to protect obligated parties from excessively high cellulosic biofuel RIN prices.

**Comment:**

One commenter stated that the cellulosic biofuel standard should account for cellulosic waiver credit purchases in previous years to avoid negative market pressure on cellulosic biofuel RINs and new cellulosic biofuel projects.

**Response:**

EPA's projection of cellulosic biofuel production for 2018 is to reflect the volume of cellulosic biofuel expected to be produced in 2018. Increasing the required volume of cellulosic biofuel for 2018 by the number of cellulosic waiver credits that were purchased in 2017 (or alternatively by the number of carryover 2017 cellulosic RINs available for use in 2018) could harm obligated parties that acquire cellulosic biofuel RINs in excess of their renewable volume obligations, an action which benefits cellulosic biofuel producers. We further note that the average cellulosic RIN price observed in 2017 through September (\$2.75 according to Argus Media) does not

indicate that cellulosic waiver credit purchases in previous years are having the negative market impacts suggested by the commenter.

**Comment:**

One commenter stated that imported cellulosic biofuel should not be included in EPA's projection of cellulosic biofuel production for 2018, as this fuel does not help achieve the goals of RFS program.

**Response:**

In the final rule, as well as in the proposed rule, EPA considered the potential for imported volumes of cellulosic biofuel to contribute to the overall supply of cellulosic biofuel in the U.S. in 2018. Our final rule projects imports of cellulosic biofuel from as many as four different facilities. We believe our approach, in which we contact all foreign facilities that are registered to produce cellulosic biofuels and include volumes from those facilities that are currently producing cellulosic biofuel and indicate that they intend to export cellulosic biofuels to the U.S. in 2018, is both reasonable and appropriate.

**Comment:**

Multiple commenters stated that the cellulosic standard should be lower until more liquid cellulosic biofuels are available. These commenters generally claimed that they do not have the infrastructure to sell CNG/LNG derived from biogas (expected to be the primary source of cellulosic biofuel in 2018). One commenter stated that there is no transportation fuel demand for CNG/LNG derived from biogas in their market and that they had been unsuccessful in sourcing liquid cellulosic biofuel. They therefore must purchase cellulosic RINs or cellulosic waiver credits to meet their cellulosic biofuel obligations.

**Response:**

EPA's projection of cellulosic biofuel production for 2018 is to reflect the volume of all cellulosic biofuel expected to be produced in 2018, not just liquid cellulosic biofuel. It would not be appropriate for EPA to reduce our cellulosic biofuel projection due to the fact that much of the available cellulosic biofuel is CNG/LNG derived from biogas, rather than liquid cellulosic biofuel. The compliance provisions developed by EPA, whereby obligated parties can acquire the RINs they need to comply with the RFS program by blending renewable fuels with attached RINs or purchasing separated RINs without blending renewable fuels are designed to address situations, such as the one described by this commenter, where the obligated party cannot or chooses not to blend renewable fuels. We believe that these provisions, along with the cellulosic waiver credit provisions which allow obligated parties to purchase cellulosic waiver credits to satisfy their cellulosic biofuel volume obligations in years EPA reduces the cellulosic biofuel volume requirement from the statutory levels, provide appropriate compliance options to obligated parties that do not have direct access to cellulosic biofuel.

**Comment:**

One commenter encouraged EPA to maintain the statutory volume for cellulosic biofuel to provide producers and stakeholders certainty in the investment of second generation biofuel technologies.

**Response:**

The approach we have adopted to projecting cellulosic biofuel production is a neutral projection of the volume of cellulosic biofuel that will be produced in 2018. The statutory volume for cellulosic biofuel in 2018 cannot be met, and a cellulosic biofuel standard greater than the standard finalized in this rule (288 million gallons) would be unlikely to lead to greater cellulosic biofuel production in 2018, as our projection of the volume likely to be produced in 2018 reflects the volume of cellulosic biofuel that EPA projects will actually be supplied in 2018.

## **4. Advanced Biofuel**

### **4.1 Inability to Meet Statutory Targets**

Commenters that provided comment on this topic include, but are not limited to: 1344.

#### **Comment:**

One commenter stated that EPA should set the 2018 volume requirements for cellulosic biofuel and advanced biofuel at the statutory volume targets to provide producers and stakeholders certainty in their investments in second generation technology.

#### **Response:**

Based on our assessment of reasonably attainable volumes, setting the volume requirements at the statutory targets would result in substantial shortfalls in supply of renewable fuel, which we believe would result in outcomes that would undermine the RFS program. These outcomes could include significant noncompliance, subsequent waiver of the original volume requirements, and a drawdown of the carryover RIN bank to zero with the attendant reduction in the ability of obligated parties to address unforeseen circumstances. Such outcomes would reduce rather than increase the certainty needed for long-term investment in and growth of renewable fuel volumes compared to our final standards. However, we note that the volume requirements that we are establishing in this final rule are higher than those we proposed.

## 4.2 Reasonably Attainable Volumes of Advanced Biofuel

Commenters that provided comment on this topic include, but are not limited to: 2540, 3248, 3249, 3319, 3377, 3430, and 3593.

### **Comment:**

One commenter requested that the advanced biofuel volume requirement be increased to 4.75 billion gallons, adding that there remains substantial opportunities for increasing advanced biofuel supply above the level that EPA proposed.

### **Response:**

In making our determination of the reasonably attainable and appropriate volume of advanced biofuels finalized in this rule, we have considered the set of issues related to production, distribution, and consumption (leading to an assessment of what is “reasonably attainable”) and the potential consequences of a volume requirement at the upper range of attainability such as feedstock switching, diversion of biofuels from other countries, and cost. This consideration led us to a final requirement that is less than we believe could be realized, but which is “appropriate” in light of these considerations. In this rule we are finalizing a volume for advanced biofuel that is higher than the proposed volume, but still lower than the 4.75 billion gallons requested by some commenters. See Section IV of the final rule for further discussion of the determination of the advanced biofuel standard for 2018.

### **Comment:**

Several commenters requested that the advanced biofuel volume requirement for 2018 be increased to 5.25 billion gallons based on the biodiesel industry’s capacity to substantially increase production, and the benefits it would have for jobs.

### **Response:**

While increasing the volume requirement for advanced biofuel would likely increase opportunities in the biodiesel industry and other industries for increased production, and that increased production may include new jobs, we believe it is legally permissible and appropriate to consider additional factors under the cellulosic waiver authority. As described in Section IV of the final rule, a consideration of production capacity must be tempered with a consideration of how quickly the industry could increase production. We have also considered the potential availability of feedstocks, the potential for feedstock switching, costs, and other factors. Taken together, these factors led us to conclude that it would not be appropriate to require 5.25 billion gallons of advanced biofuel in 2018.

**Comment:**

One commenter stated that EPA should require all of the advanced biofuel volumes that EPA says are reasonably attainable, since doing so would support the purpose of the RFS program to stimulate growth in the renewable fuel market and encourage infrastructure investments.

**Response:**

While we have determined in the final rule that 4.40 billion gallons of advanced biofuel would be reasonable attainable in 2018, we do not believe that it would be appropriate to require this level of advanced biofuel. Under the cellulosic biofuel waiver authority, we can consider a wide variety of factors in addition to the volumes that are reasonably attainable, and we have done so in making a determination of the volumes that would be appropriate to require in 2018. As described in Section IV of the final rule, we have considered such factors as feedstock switching, diversion of foreign advanced biofuel to the U.S., and costs to conclude that 4.29 billion gallons, resulting from the maximum permissible reduction under the cellulosic waiver authority, is a level that is both reasonably attainable and appropriate for 2018. See also responses to comments on the goals of the RFS program in Section 1 of this document.

**Comment:**

One commenter stated that EPA should permit advanced biofuels to backfill a portion of the shortfall in cellulosic biofuel, consistent with Congressional intent.

**Response:**

The statutory volume targets for 2018 include an allowance of 4.00 billion gallons for advanced biofuel that is not required to be cellulosic biofuel. For 2018, we are establishing volume requirements that maintain this 4.00 billion gallon allowance. The final standards do not, however, require additional volumes to partially compensate for the fact that cellulosic biofuel supply will fall far short of the 7 billion gallon statutory target in 2018 because we have determined that it would be inappropriate to do so. Indeed, there is no indication that the intent of Congress was to require such backfilling in the event of a shortfall in cellulosic biofuel. We have based our determination on a consideration of a variety of factors that are permissible to consider under the cellulosic waiver authority as described above.

**Comment:**

One commenter stated that EPA was stepping backwards in comparison to previous years when it proposed to not allow any backfilling of the shortfall in cellulosic biofuel with advanced biofuel in 2018.

**Response:**

The final 2018 advanced biofuel volume requirement is not stepping backwards, but instead represents an increase in comparison to 2017. However, we are not requiring more non-cellulosic

advanced biofuel in 2018 than the statute requires because we have determined that the circumstances in 2018 are different than those in 2017. In previous years, we determined that some advanced biofuels could partially backfill for the shortfall in cellulosic biofuel due both to the fact that such volumes were reasonably attainable and were appropriate to require. For 2018, we have determined that allowing such backfilling would result in an increase in non-cellulosic advanced biofuel volumes in comparison to those required in 2017, and that such an increase would be accompanied by an increased likelihood for feedstock/fuel diversions and increased costs.

**Comment:**

One commenter stated that, under the statute, EPA should not be basing its determination of the advanced biofuel volume requirement for 2018 on near-term petroleum diesel costs, energy security impacts, and feedstock availability. These criteria can change rapidly, and the U.S. should not be undercutting long-term federal policy objectives based on short-term considerations.

**Response:**

The statute does not preclude a consideration of factors other than volumes that are reasonably attainable when making a determination of the appropriate volume of advanced biofuel to require. As discussed in Section 2.2 of this document, EPA has wide discretion under the cellulosic waiver authority in the factors it may consider in setting standards. These include not only long-term factors, but also short-term factors, since the standards at issue are for 2018 (and 2019 for BBD).

**Comment:**

One commenter stated that the primary factor that EPA must consider in setting the advanced biofuel standard is the blending economics of biodiesel (i.e., whether retailers can acquire and blend biodiesel into diesel fuel such that they can make a profit and the resulting blend is attractive to their customers).

**Response:**

As discussed above, EPA considered a variety of factors in determining the volume of advanced biofuel that is reasonably attainable and appropriate to require for 2018. One of those factors is cost, and its consideration relates both to the blending economics of biodiesel as well as the societal impacts of the advanced biodiesel standard. The status of the federal tax credit for biodiesel and recent actions to impose countervailing duties on imports of biodiesel from Argentina and Indonesia both impact our consideration of costs as discussed in Section IV of the final rule. The consideration of the cost of advanced biodiesel, along with other factors, is an important component of our determination that the 2018 volume requirement for advanced biofuel should not be higher than the lowest level permissible under the cellulosic waiver authority despite the fact that slightly higher volumes may be reasonably attainable.

## 4.2.1 Imported Sugarcane Ethanol

Commenters that provided comment on this topic include, but are not limited to: 2542, 3110, 3429, 3496, and 3880.

### **Comment:**

One commenter stated that potential ethanol exports from Brazil to the U.S. are driven primarily by a combination of Brazilian ethanol production capacity and opportunities created by the RFS program itself.

### **Response:**

The RIN value of advanced biofuels is undoubtedly a factor in the volume of ethanol that Brazil exports to the U.S., and the RIN value is a function of the level of the advanced biofuel standard. However, recent data on imports of sugarcane ethanol into the U.S. suggest that it would be inappropriate to increase the volume used in the determination of the applicable volume requirement for advanced biofuel above 100 million gallons. For instance, when establishing the applicable standards for 2016, EPA assumed that 200 million gallons of sugarcane ethanol would be imported in 2016. In reality, only 34 million gallons was imported, highlighting the fact that higher standards do not necessarily result in higher levels of imported sugarcane ethanol and that other worldwide market factors are also important. Based on these facts, we continue to believe that recent low import levels and high variability in longer-term historical imports are significant and must be taken into account in the context of determining reasonably attainable volumes of advanced biofuel for 2018.

### **Comment:**

One commenter stated that EPA's assumption of 100 million gallons of imported sugarcane ethanol was too low, and should not be based on historical volumes. Instead, EPA has not appropriately considered the much higher volume that Brazil could export to the U.S. in 2018.

### **Response:**

In the 2018 NPRM we reiterated our observation that imports of sugarcane ethanol have been highly variable in the past. This fact makes it impossible to calculate exactly how much sugarcane ethanol will be imported in 2018; the number of worldwide market factors involved is large and there is no mechanism for predicting how they will change. As a result, we have no alternative but to consider historical import levels and the uncertainty associated with potential future imports in our determination of the applicable volume requirements. Moreover, even if we were to assume that more than 100 million gallons of sugarcane ethanol could be imported in 2018, our consideration of cost would still lead us to conclude that it is appropriate to require only that volume of advanced biofuel that results from the maximum reduction permitted under the cellulosic waiver authority.

We note that no commenters provided a calculation of exactly how much sugarcane ethanol would be imported into the U.S. in 2018 that takes into account the various factors influencing such imports, such as world demand for sugar and ethanol, effects of climate and plantings on Brazilian sugarcane production, and Brazilian gasoline demand and requirements for ethanol concentration of gasoline.

**Comment:**

One commenter stated that 100 million gallons of imported sugarcane ethanol is too high and is inconsistent with recent historical levels.

**Response:**

We believe that 100 million gallons reflects a reasonable intermediate point between the lower levels imported recently and the considerably higher levels that have been achieved in earlier years. It thus reflects a balancing of considerations in light of the considerable uncertainty in projecting future volumes of this source of advanced biofuel as permitted under the cellulosic waiver authority. Had we assumed a lower level of imported sugarcane ethanol in 2018, the total volume of reasonably attainable advanced biofuel would have been closer to the level generated through the maximum reduction permitted under the cellulosic waiver authority. There would, therefore, be no change in the applicable volume requirement for advanced biofuel, though the potential GHG and energy security benefits of the advanced biofuel volumes forgone would have been less.

Regardless of the assumed level used only in deriving the advanced biofuel volume requirement, we note that actual imports of sugarcane ethanol could be higher or lower than 100 million gallons.

**Comment:**

One commenter stated that EPA had ignored the fact that California's LCFS program will create an incentive for a significant volume of sugarcane ethanol to be imported.

**Response:**

California's LCFS program has not spurred demand for the large volumes of advanced ethanol imports that commenters have predicted it would. In 2016, despite both the LCFS and RFS programs creating an incentive for imported sugarcane ethanol, only 34 million gallons were actually imported in 2016. Based on this recent historical experience, we do not believe that the LCFS program can be relied upon to increase imported volumes for 2018.

## 4.2.2 Biodiesel and Renewable Diesel (Domestic and Imports)

Commenters that provided comment on this topic include, but are not limited to: 1500, 1754, 1775, 2380, 2542, 2545, 2547, 3105, 3106, 3245, 3248, 3377, 3429, 3430, 3478, 3493, 3496, 3497, 3578, 3593, 3677, 3679, 3680, 3876, 3880, 3887, 3934, 3959, 3961, and 3962.

### **Comment:**

One commenter stated that none of the factors discussed by EPA that could potentially limit the supply of biodiesel and renewable diesel are new, nor would they limit the supply of advanced biodiesel and renewable diesel in 2018. The commenter claimed that EPA could set higher standards for advanced biofuel, but is choosing not to and that this choice is contrary to the intent of congress.

### **Response:**

While concerns over issues such as the impact of feedstock and/or renewable fuel diversion as a means of increased biofuel production and the relatively high costs of advanced biofuels are not new, the magnitude of these concerns increases as advanced biofuel volumes increase. For example, lower advanced biofuel volume requirements are more likely to be satisfied by fuels produced from waste feedstocks or feedstocks that are by-products of other industries at a relatively low cost, while higher volumes of these fuels are more likely to be satisfied by fuels produced from feedstocks diverted from other industries (or biofuels diverted from other countries) at a relatively high cost. These concerns may not directly limit the volume of advanced biofuel that could be supplied to the U.S. in 2018, however they are relevant considerations in EPA's decision to exercise our cellulosic waiver authority. In this final rule EPA is exercising our statutory waiver authority to reduce the required volume of advanced biofuels. In doing so, we are maintaining the implied statutory volume of non-cellulosic advanced biofuels for 2018.

### **Comment:**

One commenter stated that the biodiesel and renewable diesel industry made investments assuming EPA would continue to require some portion of the shortfall in cellulosic biofuel to be backfilled with advanced biofuels, and that EPA should continue to require additional volumes of advanced biofuel in 2018.

### **Response:**

In this final rule EPA has exercised our statutory cellulosic waiver authority to the maximum extent in recognition of the high cost of advanced biofuels and in an effort to minimize the incentives for feedstock switching and/or the diversion of biofuels that would be produced in other countries. EPA has no obligation to increase the advanced biofuel volume for 2018 as the result of market expectations or investments. Regardless, the commenters provided no evidence to support this statement.

**Comment:**

One commenter claimed that lower biodiesel and renewable diesel requirements could harm the livestock sector, as higher prices for vegetable oils such as soy oil lead to lower livestock feed prices.

**Response:**

Higher prices for soybean oil, which may lead to lower feed prices for the livestock sector (or alternatively may lead to higher prices for soybeans) also result in higher prices for other industries that use soybean oil as a feedstock, including the biodiesel and renewable diesel industry. Potentially lower livestock feed prices are not a sufficient basis for requiring increased volumes of advanced biofuels in 2018, in light of the potentially adverse impacts of requiring greater volumes of these fuels, discussed in further detail in Section IV of the final rule.

**Comment:**

One commenter claimed that the global supply of feedstocks that could be used to produce advanced biodiesel and renewable diesel was sufficient to support higher volumes of these fuels than the reasonably attainable volumes projected by EPA.

**Response:**

EPA is aware that significant quantities of feedstocks that could be used to produce biodiesel or renewable diesel are expected to be produced globally in 2018. However, as discussed in further detail in Section IV of the final rule, EPA is concerned that requiring greater volumes of advanced biodiesel and renewable diesel would result in high costs and the potential to incentivize undesirable feedstock switching and/or the diversion of renewable fuels. In this final rule we have therefore exercised our cellulosic waiver authority to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets for 2018.

**Comment:**

One commenter stated that higher requirements for biodiesel and renewable diesel provide a higher value market for renewable oils. They claimed that higher standards could drive higher oil extraction or waste collection rates.

**Response:**

The final 2018 standards will already provide a high value market for renewable oils. As discussed in further detail in Section IV of the final rule, EPA is aware that even higher prices for renewable oils could result in the additional production or collection of oils such as distillers corn oil or used cooking oil. These higher prices, however, would also result in higher costs to parties that use renewable oils (including biodiesel and renewable diesel producers), and may result in feedstock switching and/or the diversion of biodiesel and renewable diesel that would

otherwise have been used in other countries, rather than additional production or recovery of renewable oils. This is especially true if the cost of production of palm oil is cheaper than the cost to recover or produce additional renewable oils, as suggested by some commenters.

**Comment:**

One commenter stated that the tax credit should not be a factor in EPA's assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel. The commenter noted that the tax credit could be renewed, and even if it were not, higher RIN prices could provide the same incentives as the biodiesel tax credit. The commenter further mentioned that if the tax credit was changed to a producers' tax credit this would not stop the import of biodiesel and renewable diesel from other countries, and that domestic production of these fuels would increase. Other commenters stated that market mechanisms exist to incentivize biodiesel production with or without the biodiesel tax credit, and that EPA should not consider the impact of the tax credit in our assessment of available volumes of biodiesel and renewable diesel.

**Response:**

It is true that Congress could renew the biodiesel tax credit for 2018. It is also the case that even if the tax credit is not renewed, the BBD RIN price could increase to replace the value that biodiesel blenders previously realized from the biodiesel tax credit. We further note that even if EPA's estimate of available volumes of advanced biodiesel and renewable diesel were slightly higher than those contained in our final rule, this would not impact the required volumes of renewable fuel for 2018, since these volumes are determined by reducing the cellulosic biofuel, advanced biofuel, and total renewable fuel statutory targets by the same amount are achievable in 2018. See Section IV of the final rule for a further discussion of EPA's decision to reduce all three volumes from the statutory targets by the same amount.

**Comment:**

One commenter stated that there was significant opportunity for growth in the supply of BBD, citing such factors as the number of vehicles that can consume biodiesel blends, growing diesel demand, the ability of the market to distribute biodiesel, and the opportunities to use biodiesel in non-road applications. The commenter requested an advanced biofuel standard of 4.75 billion gallons and claimed that this volume could easily be met with minimal RIN and feedstock cost increases. They also noted the availability of a large number of carryover RINs as a reason that the advanced biofuel standard should be higher.

**Response:**

EPA recognizes that higher volumes of advanced biofuel could potentially be achieved, and that factors listed by the commenter are unlikely to limit the use of advanced biodiesel and renewable diesel in 2018. However, as discussed in further detail in Section IV of the final rule, these higher volumes of biodiesel and renewable diesel are projected to have a high cost relative to the petroleum fuels they would displace, and would likely result in feedstock switching and/or diverting biofuel from use in other countries. In this final rule we have therefore decided to reduce

the cellulosic biofuel, advanced biofuel, and total renewable fuel statutory targets by the same amount. As discussed further in Section II of the final rule, we have determined that at this time it would not be appropriate to increase the advanced biofuel volume for 2018 due to the availability of advanced biofuel carryover RINs.

**Comment:**

One commenter stated that it was not reasonable for EPA to assume that all distillers corn oil would be used to produce biodiesel or renewable diesel, as removing corn oil from distillers grains removes energy content that must be replaced and makes the distillers grain less viable in certain markets, such as for chicken feed.

**Response:**

The removal of distillers corn oil can impact the value of distillers grains as livestock or poultry feed due to the lower energy content of the distillers grain after the distillers oil has been removed. However, the increasing removal of distillers corn oil in recent years supports EPA's projection that increasing quantities of distillers corn oil are likely to be available for use as biodiesel and renewable diesel feedstock in 2018. Even if we were to eliminate any consideration of additional volumes of distillers corn oil from our assessment of potentially available feedstocks we would still conclude that the volume of advanced biofuel in this final rule could be met through relatively small increases in advanced biodiesel and renewable diesel produced from increased production of vegetable oils in the U.S. and increased production/collection of animal fats and waste oils and greases.

**Comment:**

One commenter stated that there is sufficient production and infrastructure capacity to enable the distribution, sale, and use of 2.9 billion gallons of biodiesel and renewable diesel in 2018.

**Response:**

EPA's assessment of biodiesel and renewable diesel production capacity and distribution infrastructure similarly concluded that these factors were highly unlikely to constrain the production and use of biodiesel and renewable diesel in the U.S. to a volume below 2.9 billion gallons in 2018 given the current locations of production and import volumes across the country and the existing distribution infrastructure for biodiesel and renewable diesel.

**Comment:**

One commenter rejected claims by NBB that the domestic biodiesel industry is operating at around 65% of their facility capacity. The commenter estimated that domestic biodiesel industry could produce approximately 2 billion gallons in 2018.

**Response:**

According to EPA's October 2017 assessment, the total production capacity of biodiesel and renewable diesel production facilities that generated RINs for these fuels in 2017 is approximately 3.0 billion gallons.<sup>28</sup> In 2016, approximately 1.9 billion gallons of biodiesel and renewable diesel were produced in the U.S. according to EPA data, which suggests that domestic production facilities that are currently operating are operating at approximately 63% capacity. However, the ability for these facilities to increase production, and the time it would take for them to do so, is uncertain. Increasing production at these facilities would require, at minimum, acquisition of greater volumes of feedstocks (including from potentially new distant sources), and may require mechanical changes and equipment upgrades at the production facilities.

**Comment:**

Several commenters stated that EPA should not project increasing volumes of advanced biodiesel and renewable diesel, as increases in these fuels would cause the feedstock switching and fuel diversion that EPA seeks to avoid. The commenter claims that the feedstock increases are unrealistic and not supported by data. Multiple commenters also claimed that increasing demand for advanced biodiesel and renewable diesel would result in lower exports of soy oil, higher imports of canola oil, and higher vegetable oil prices.

**Response:**

As discussed in further detail in Section IV of the final rule, EPA's assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel for 2018 is designed to minimize impacts such as feedstock switching and fuel diversion. EPA's assessment of the reasonably attainable volumes of these fuels is based on the expected increase in the production and availability of feedstocks that can be used to produce advanced biodiesel and renewable diesel. The primary source of these feedstocks is expected to come from increased production of vegetable oils in the U.S. (according to USDA projection), as well as small increases in distillers corn oil production and the production and recovery of waste fats and oils. The final advanced biofuel volume for 2018 should therefore be able to be met without the need for decreased soy oil exports or higher imports of canola oil. Vegetable oil prices are impacted by a wide range of factors; however, we do not anticipate that the advanced biofuel volumes in this final rule will appreciably increase vegetable oil prices.

**Comment:**

One commenter stated that biodiesel and renewable diesel feedstocks are abundant. This commenter cited a study conducted by LMC and projections by the USDA to support claims that there is sufficient feedstock globally to produce approximately 9.3 billion gallons of biodiesel. The commenter also claimed that these feedstocks are commodities, so there will be competition for these feedstocks among various industries.

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<sup>28</sup> "Biodiesel and Renewable Diesel Registered Capacity (October 2017)" Memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2017-0091.

**Response:**

EPA has reviewed the study referenced by the commenter. While there are significant quantities of potential biodiesel and renewable diesel feedstocks available globally, much of the feedstock considered in this study is currently being used to produce biodiesel that is used in countries other than the U.S. While the incentives available through the RFS program may be capable of drawing a greater proportion of the biodiesel and renewable diesel (and/or the feedstocks used to produce biodiesel and renewable diesel) to the U.S. market, increasing the volume of advanced biofuel used in the U.S. in this way would not be expected to have the same benefits as biofuel produced from increased production of advanced biofuel feedstocks (see Section IV of the final rule for a further discussion of this issue). EPA's projection of the reasonably attainable volume of advanced biodiesel and renewable diesel in 2018 is based on the expected increase in the domestic production and/or collection of advanced biodiesel and renewable diesel feedstocks in 2018.

**Comment:**

One commenter stated that EPA's projection of reasonably attainable volumes of advanced biodiesel and renewable diesel should not include imports.

**Response:**

EPA's projection of reasonably attainable volumes of advanced biodiesel and renewable diesel do not include any growth in imported volumes of these fuels (or from fuels produced from imported feedstocks) in 2018. We do, however, project similar volumes of imported biodiesel and renewable diesel in 2018 as has been observed in 2017. This projection is based on the observed impact of the expiration of the biodiesel tax credit on imported volumes of biodiesel and renewable diesel in previous years when the tax credit was not available. While it is possible that tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia may impact the volume of biodiesel that is imported from these countries in 2018, the tariffs and countervailing duties have not yet been finalized. We further note that the impact of these actions is highly uncertain, as the market could respond to lower volumes of biodiesel imports from Argentina and Indonesia by increased imported volumes for other countries or by increased domestic production of these fuels.

**Comment:**

One commenter supported EPA's projection that the lack of the biodiesel tax credit would dampen growth of biodiesel and renewable diesel in 2018. Another commenter stated that the lapse of the biodiesel tax credit will likely decrease domestic biodiesel production in 2018.

**Response:**

EPA's projections on the impact of the current absence of the biodiesel are based on observations from previous years when the biodiesel tax credit was not available. The observed production and use of biodiesel and renewable diesel in previous years following the lapse of the

tax credit suggests that the market will likely supply a similar volume of these fuels as in previous years, rather than a decreased volume.

**Comment:**

One commenter stated that EPA's projection of advanced biodiesel and renewable diesel should be no greater than the 1.6 billion gallons that EIA projects will be produced domestically in 2018.

**Response:**

EPA is not aware of how EIA accounts for the impact of the incentives provided by the RFS program in their projection of biofuel production. We do not believe, however, that EIA's projections, which are based on economic modeling efforts rather than a consideration of the statutory volume targets and EPA's waiver authorities, should be used to determine the required volumes of advanced and total renewable fuel for 2018. The volume of advanced biofuel and total renewable fuel in this final rule are the lowest volumes that EPA can set for these fuel using our cellulosic waiver authority. As discussed further in Section V of the final rule, EPA has determined that it would not be appropriate at this time to further reduce the required volumes of renewable fuels using our general waiver authority or biomass-based diesel waiver authority.

**Comment:**

One commenter stated that some form of tariff against imported biodiesel was likely, and that EPA's standards should reflect this by projecting lower volumes of biodiesel that would be projected absent these tariffs. Another commenter requested that EPA consider the impacts of the proposed anti-dumping and countervailing duties cases on the availability of biodiesel and renewable diesel in 2018. Other commenters conversely claimed that the proposed tariffs would not impact biodiesel and renewable diesel imports since they only apply to biodiesel (not renewable diesel) and because imports could come from other countries not impacted by the tariffs. This commenter further stated that because the RFS is a mandate the U.S. market would be capable of outbidding foreign markets for available supplies of biodiesel and renewable diesel.

**Response:**

While it is possible that tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia may impact the volume of biodiesel that is imported from these countries in 2018, the tariffs and countervailing duties have not yet been finalized. We further note that the impact of these actions on the total volume of advanced biodiesel and renewable diesel supplied to the U.S. is highly uncertain, as the market could respond to lower volumes of biodiesel imports from Argentina and Indonesia by increased imported volumes for other countries or by increased domestic production of these fuels. EPA has considered the likely impacts of the continued absence of the biodiesel tax credit, as well as the potential finalization of proposed actions by the Department of Commerce, in our projection of the reasonably attainable volumes of advanced biodiesel and renewable diesel.

**Comment:**

One commenter claimed that due to the expiration of the biodiesel tax credit and potential action by the Department of Commerce on imported biodiesel, EPA should project that no more than 2.1 billion gallons of biodiesel and renewable diesel will be available to meet the advanced biofuel standard.

**Response:**

As discussed above, the potential tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia have not been finalized, and potential impacts of these actions (if finalized) on the supply of biodiesel and renewable diesel in the U.S. are highly uncertain. EPA has considered the likely impacts of the continued absence of the biodiesel tax credit, as well as the potential finalization of proposed actions by the Department of Commerce, in our projection of the reasonably attainable volumes of advanced biodiesel and renewable diesel.

**Comment:**

One commenter claimed that the domestic biodiesel and renewable diesel industry cannot ramp up fast enough to displace imported biodiesel due to insufficient feedstock and the lack of the biodiesel tax credit. This commenter requested that the projected volume of advanced biodiesel and renewable diesel for 2018 should be no higher than the volume of these fuels produced in 2016.

**Response:**

We expect that, even without the biodiesel tax credit and with the potential for tariffs and countervailing duties on Argentina and Indonesia, biodiesel and renewable diesel will continue to be imported into the U.S. in 2018, as imported biodiesel is often available at lower prices than domestically produced biodiesel, especially in parts of the U.S. where distribution costs are lower from foreign sources than domestic sources. However, even if imported volumes of biodiesel and renewable diesel were excluded from our consideration of the available supply of these fuels, it is possible that the domestic biodiesel and renewable diesel industries could increase production volumes to satisfy the advanced biofuel volume for 2018 finalized in this rule. Data reviewed by EPA indicates the available supply of feedstocks that can be used to produce advanced biodiesel and renewable diesel (both in the U.S. and globally) and the domestic biodiesel and renewable diesel production capacity are sufficient to produce the volume of biodiesel and renewable diesel necessary to meet the advanced biofuel volume. EPA is also not aware of any factors related to the distribution or use of biodiesel and renewable diesel expected to restrict the supply of these fuels to a volume below that which would be needed to satisfy the volume of advanced biofuel. Finally, we note that the significant increases in domestic production of biodiesel and renewable diesel in previous years (443 million gallons from 2012 to 2013 and 426 million gallons from 2015 to 2016) suggest that domestic biodiesel and renewable diesel producers are capable of significant production increases in a single year.

**Comment:**

One commenter stated that trade tariffs and the availability of the biodiesel tax credit do not impact the availability of biodiesel. The commenter claimed that these factors may impact international trade flows, but that all the biodiesel is still available to the U.S. market.

**Response:**

The biodiesel tax credit can impact the availability of biodiesel by increasing the expected return of using potential biodiesel and renewable diesel feedstocks used to produce biofuel as compared to other potential uses of these feedstocks. More generally, however, both trade tariffs and the availability of the biodiesel tax credit can have an impact on the volume of biodiesel and renewable diesel produced domestically or imported into the U.S. EPA's assessment of the reasonably attainable volume of biodiesel and renewable diesel considers the volume of these fuels available for use in the U.S., not the global availability of these fuels, or the volume of these fuels that could be produced from all potential global feedstocks.

**Comment:**

One commenter supported EPA's position that the primary driver for oil seed crops like soybeans in the U.S. will be protein for animal feed. The commenter noted, however, that while soybean planting is increasing, demand for soybean oil in food products is decreasing. The commenter stated that if demand for advanced biofuels does not increase it is possible that lower prices for soybean oil could lead to higher animal feed prices and/or lower soybean prices.

**Response:**

Higher prices for soybean oil, which may lead to lower feed prices for the livestock sector (or alternatively may lead to higher prices for soybeans) also result in higher prices for other industries that use soybean oil as a feedstock, including the biodiesel and renewable diesel industry. Potentially higher livestock feed prices are not a sufficient basis for requiring increased volumes of advanced biofuels in 2018, in light of the potentially adverse impacts of requiring greater volumes of these fuels, discussed in further detail in Section IV of the final rule.

**Comment:**

One commenter stated that additional biodiesel and renewable diesel feedstocks can be provided if EPA sets higher standards for these fuels. The commenter specifically noted that USDA projects increases in livestock and poultry production in future years (which would result in greater availability of animal fats). The commenter also stated that higher RFS standards have resulted in higher collection rates of used cooking oil. Another commenter provided data indicating that the supply of animal fats has not increased since 2010.

**Response:**

In EPA's projection of reasonably attainable volumes of advanced biodiesel and renewable diesel, we project that the supply of feedstocks other than vegetable oils and distillers corn oil (such as animal fats and used cooking oil) will increase by approximately 15 million gallons in 2018. This is consistent with the data presented by the commenter showing that production of animal fats has not increase appreciably since 2010. Some commenters suggested that the increase in the supply of these feedstocks will be greater, while other commenters claimed that the supply of these feedstocks is unlikely to increase. Similarly, there is uncertainty regarding the projected increase in the availability of used cooking oil in 2018 despite recent increases in used cooking oil collection rates, as it is uncertain whether these collection rates will continue to increase in future years. Regardless, EPA has decided to reduce the cellulosic biofuel, advanced biofuel, and total renewable fuel volumes by the same amount from the statutory targets for the reasons discussed in Section IV of the final rule. Thus, the volume of advanced biofuel in this final rule would not be impacted if EPA's projection of available animal fats and used cooking oil were slightly higher than the volume projected by EPA.

**Comment:**

One commenter stated that renderers currently supply 30% of all biodiesel feedstocks, and that they are confident in their ability to increase the supply of feedstocks to the biodiesel industry. The commenter stated that animal fats have a large and inelastic supply. They further noted that exported animal fats have decreased due to competition from other oils and trade barriers, and that biodiesel production provides a market for their products.

**Response:**

Because of the inelastic supply of animal fats, as noted by the commenter, increasing the quantity of animal fats used to produce biodiesel and renewable diesel would divert these feedstocks from other industries currently using them (such as the oleochemical industry). While we recognize the potential for biodiesel and renewable diesel feedstocks to be increased in this manner (by diverting feedstocks from existing uses), our projection of reasonably attainable volume seeks to minimize the incentives for this type of feedstock switching and its potential impact on costs (see Section IV of the final rule for a further discussion of this issue).

**Comment:**

One commenter stated that higher biodiesel and renewable diesel volume requirements increase environmental benefits by increasing collection rates of used cooking oils.

**Response:**

The environmental benefits of renewable fuels are generally the highest when they are produced from feedstocks that would otherwise be disposed of as waste materials. One of the results of increasing demand for biofuels, both domestically and internationally, has been increased collection rates of used cooking oils. However, there is significant uncertainty as to whether

higher advanced biofuel requirements would result in further increases to the collection rates of used cooking oil, or alternatively the diversion of feedstocks that can be used to produce advanced biofuels from existing uses to biofuel production and increased production of low cost renewable oils such as palm oil.

**Comment:**

One commenter stated that EPA's standards should account for the very high volumes of biodiesel and renewable diesel produced globally (at least 8.9 billion gallons).

**Response:**

EPA's consideration of the reasonably attainable volumes of advanced biodiesel and renewable diesel accounts both for the high volume of biodiesel and renewable diesel produced globally, as well as the fact that significant volumes of these fuels are currently being used in international markets, and likely will continue to be used in these markets due to incentives and mandates for biofuel use in other countries, as well as the considerable logistical constraints and cost associated with importing significantly higher volumes of these fuels into the U.S.

**Comment:**

One commenter stated that EPA should assume that the domestic biodiesel and renewable industry can produce at a level equal to their production capacity (4.2 billion gallons) in 2018.

**Response:**

EPA's projection of the reasonably attainable volume of advanced biodiesel and renewable diesel takes into account a number of factors, including domestic biodiesel production capacity and the ability to distribute and use biodiesel and renewable diesel domestically. Ultimately, however, we have based our projection of the reasonably attainable volume of biodiesel and renewable diesel on our assessment of the projected increase in domestically produced/collected feedstocks that can be used to produce these fuels (see Section IV of the final rule for further details).

**Comment:**

One commenter stated that if the advanced biofuel standard is too high it will divert a finite, inelastic supply of animal fats from existing uses (such as the oleochemical industry) to be used to produce biodiesel. The commenter noted that animal fats are currently more expensive than palm oil, and that industries such as the oleochemical industry will therefore use palm oil rather than animal fats as a feedstock. Ultimately this could result in the oleochemical industry relocating overseas, and the loss of jobs in the U.S. The commenter requested that EPA should exclude animal fats from our consideration of available feedstocks for biodiesel production, or set standards that do not divert animal fats from existing uses.

**Response:**

EPA's projection of reasonably attainable volumes of biodiesel and renewable diesel attempts to minimize the incentives for increasing the production of these fuels by diverting feedstocks (such as animal fats) from existing uses (such as the oleochemical industry). As discussed further in Section IV of the final rule, we recognize the potential negative impacts of this type of feedstock switching. However, as discussed in Section V of the final rule, EPA had decided that at this time further reductions to the advanced biofuel and total renewable fuel standards using the general waiver authority or the biomass-based diesel waiver authority are not warranted. Furthermore, such feedstocks qualify as renewable biomass under the statute and can be used to produce advanced biofuels. Consequently, it would not be appropriate for EPA to exclude these feedstocks from consideration in setting the standards.

**Comment:**

One commenter claimed that EPA had speculated about potential diversion of feedstocks without any proof. The commenter further stated that the diversion of feedstocks is irrelevant to the "reasonably attainable" volumes of biodiesel and renewable diesel as the impacts of feedstock diversion must be measured against petroleum fuels. Another commenter stated that EPA cannot use the diversion of feedstocks as a basis for not increasing advanced biofuel volumes, as Congress intended feedstock markets to be disrupted. The commenter claimed that feedstock suppliers will innovate and adapt if EPA sets higher standards for advanced biofuels. Another commenter stated that there would be no need for any feedstock switching to accommodate an advanced biofuel volume that is at least as high as the advanced biofuel volume in 2017.

**Response:**

The significant increase in the use of soybean oil and animal fats to produce biodiesel, repeated complaints from other industries that have historically used animal fats (such as the oleochemical industry), and the significant increase in imported volumes of biodiesel and renewable diesel in recent years are all indicators that the increase in biodiesel and renewable diesel production and use in the U.S. in recent years has, at least in part, been enabled by the diversion of feedstocks from other uses. EPA's focus in this rule, however, is the degree to which additional volumes of biodiesel and renewable diesel could be produced in 2018 without relying on further diversions of feedstocks. Even if the expansion of biodiesel in recent years primarily or exclusively relied on newly available feedstocks, rather than diverting feedstocks from other uses (which EPA contests, as discussed below) this does not necessarily mean that future growth could be achieved in the same manner. EPA's analysis of potential new sources of advanced feedstocks for biodiesel and renewable diesel (presented in Section IV of the final rule) suggests limited growth in these feedstocks in 2018. Ultimately, however, even if EPA has underestimated the growth in advanced biofuel feedstocks in 2018 this would not impact our standards, as we have decided it is appropriate to reduce the advanced biofuel and total renewable fuel volume requirements by the same level as the cellulosic biofuel volume requirement, despite the projected availability of additional volumes of advanced biofuel. The desire to avoid the potentially negative consequences of feedstock switching and the diversion of renewable fuels from use in other countries, along with concerns over the high cost of advanced biofuels relative

to petroleum fuels are factors that EPA may consider in deciding whether and to what degree to exercise our cellulosic waiver authority (see Section IV of the final rule and Section 5.2.5 of this document for a further discussion of this issue).

**Comment:**

One commenter suggested higher numbers for the availability of advanced biodiesel feedstocks. The commenter requested that EPA's projection of available feedstocks include the potential for a total of 78 million gallons from soybean oil, and an additional 35 million gallons from animal fats and 68 million gallons from canola oil.

**Response:**

Based on projections from USDA, in our projection of reasonably attainable volumes of biodiesel and renewable diesel, EPA projected that vegetable oil production in the U.S. in 2018 would be sufficient to produce an additional 94 million gallons of biodiesel and renewable diesel. We further projected that the increase in the production and collection of non-vegetable oils (such as animal fats and used cooking oil) would be sufficient to produce an additional 15 million gallons of these fuels. However, even if EPA has underestimated the growth in advanced biofuel feedstocks in 2018, as this commenter suggests, this would not impact our standards, as we have decided it is appropriate to reduce the advanced biofuel and total renewable fuel volume requirements by the same level as the cellulosic biofuel volume requirement, despite the projected availability of additional volumes of advanced biofuel.

**Comment:**

One commenter stated that reducing the advanced biofuel volume for 2018 from the 2017 volume, as EPA proposed, would result in stranded assets and underutilized feedstocks.

**Response:**

The advanced biofuel volume in this final rule is 10 million gallons higher than the advanced biofuel volume for 2017, while the implied non-cellulosic advanced biofuel volume (the volume of advanced biofuel minus the volume of cellulosic biofuel) is approximately 30 million gallons higher than the implied non-cellulosic advanced biofuel volume for 2017. These higher volumes are not expected to result in stranded assets or underutilized feedstocks.

**Comment:**

One commenter claimed that additional biodiesel production does not reduce the availability of fats and oils to other markets, but rather provides a market for surplus fats and oils that are byproducts of other industries such as the production of soybeans for animal feed. Another commenter suggested that BBD uses co-products or waste feedstocks, which will not cause diversions.

**Response:**

To the degree that biodiesel and renewable diesel are produced using increases in surplus feedstocks that are byproducts to other industries, increasing volumes of these fuels is unlikely to reduce the availability of these feedstocks to other industries. If, however, demand for these feedstocks by the biodiesel and renewable diesel industry exceeds the quantity that is surplus to other industries (i.e., feedstocks that are not being used in other industries), feedstock switching and market disruption can occur. EPA's projection of the reasonably attainable volume of biodiesel and renewable diesel attempts to minimize the incentives for feedstock switching and the diversion of renewable fuels from other countries (see Section IV of the final rule for more detail).

**Comment:**

One commenter stated that EPA is justified in considering the high cost of biodiesel in our standards for 2018. The commenter stated that higher volumes lead to increased production of palm oil, since palm oil is the cheapest vegetable oil that can be used to replace advanced feedstocks used to produce biofuel. Higher prices for soybean oil lead to greater palm oil imports into the U.S., and the diversion of waste oils to biodiesel production.

**Response:**

Not only can the high cost of biodiesel and renewable diesel lead to increased palm oil production (and the associated negative environmental impacts), but it can also increase fuel costs for consumers and feedstock costs for other industries that use vegetable oils. These factors are relevant considerations in EPA's decision whether and to what degree to exercise our cellulosic waiver authority.

**Comment:**

One commenter claimed that EPA did not consider the impact of new pathways that could contribute additional volumes of feedstock in 2018.

**Response:**

It would not be appropriate for EPA to include potential production of advanced biofuels from new pathways in our projection of the reasonably attainable volumes, effectively assuming that pending pathway petitions will be approved (thus prejudging the outcome of our consideration of these pathways). We further note that ultimately even if EPA's projection of reasonably attainable volumes of advanced biofuel had been slightly higher as a result of the inclusion of new pathways this would not impact our standards, as we have decided it is appropriate to reduce the advanced biofuel and total renewable fuel volume requirements by the same level as the cellulosic biofuel volume requirement, despite the projected availability of additional volumes of advanced biofuel.

**Comment:**

One commenter stated that increasing production at a biodiesel facility decreases the cost of production for biodiesel.

**Response:**

While it is the case that in most industries increasing production rates results in lower production costs due to economies of scale, there are several reasons to believe this may not be the case for the biodiesel industry. The majority of the cost of production of biodiesel is attributable to the feedstock costs, and higher advanced biofuel requirements may lead to higher feedstock costs. These higher feedstock costs could offset or outweigh any cost savings that result from increasing the production rates at existing biodiesel and renewable diesel production facilities. Finally, however, we note that even if higher advanced biofuel volumes resulted in marginally lower costs for biodiesel and renewable diesel the cost of these fuels would still be expected to be significantly higher than the petroleum fuels they displace.

**Comment:**

Multiple commenters stated that EPA should not ignore state incentives for biodiesel and renewable diesel. One commenter specifically mentioned actions in California, New York, Minnesota, Illinois, and Iowa.

**Response:**

EPA is aware that several states offer incentives designed to increase the production or use of biodiesel and renewable diesel. While these incentives may increase overall biodiesel production to some degree, the most likely impact of these state incentives is to draw production and use of biodiesel and renewable diesel to these states. EPA believes that our projection of the reasonably attainable volumes of biodiesel and renewable diesel in 2018 appropriately accounts for these state incentives.

**Comment:**

Multiple commenters claimed that production data from EMTS in 2017 proved that the absence of the tax credit is not impacting the supply of biodiesel and renewable diesel in 2017.

**Response:**

RIN generation data for advanced biodiesel and renewable diesel in 2017 is very similar to the number of RINs generated for these fuels in 2016. This suggests that the pattern observed in previous years, with the supply of advanced biodiesel and renewable diesel neither increasing nor decreasing substantially in years when the tax credit was not available is a reasonable expectation for the impact of the absence of the tax credit.

**Comment:**

One commenter stated that an increase in the advanced biofuel standard would be consistent with the past performance of the industry. Another commenter stated that technology they have developed would be used to produce additional volumes of advanced biodiesel and renewable diesel in 2018, and requested that these additional volumes be accounted for in EPA's projections.

**Response:**

In determining whether and to what degree to exercise our cellulosic waiver authority to reduce the volume of advanced biofuel from the statutory target EPA has considered a number of factors, including the performance of the advanced biofuel industry in previous years and the production capacity of the advanced biofuel industry, but also the projected increase in the availability of feedstocks that can be used to produce advanced biofuels and the cost of these fuels. See Section IV of the final rule for a further discussion of this issue.

**Comment:**

One commenter stated that domestic feedstock availability in 2018 can only support 1.53 billion gallons of biodiesel production without causing feedstock switching or cost increases.

**Response:**

EPA has reviewed this comment and determined that the commenter has underestimated domestic feedstock availability in 2018, both by assuming a volume of domestic advanced biodiesel and renewable diesel production for 2016 that was lower than actual production (possibly by failing to include domestic renewable diesel production) and by under-estimating the growth in domestic feedstocks in 2018. EPA's assessment of projected available feedstocks in 2018 can be found in Section IV of the final rule. We also note that further reductions to the advanced biofuel or total renewable fuel volumes must be made using EPA's general waiver authority (on the basis of inadequate domestic supply, severe economic harm, or severe environmental harm) or the biomass-based diesel waiver authority. Our consideration of these waiver authorities are discussed in Section V of the final rule.

### 4.2.3 Other Advanced Biofuel

Commenters that provided comment on this topic include, but are not limited to: 3680.

**Comment:**

One commenter stated that EPA's projections of advanced biofuel other than cellulosic biofuel and BBD was too low, and should take into account the investments that are now occurring for these fuels.

**Response:**

For 2018, we have based our estimate of other advanced biofuel on volumes of CNG, heating oil, naphtha, advanced renewable diesel, and domestic advanced ethanol on the volumes that have been produced in recent years. We agree that opportunities exist for additional volumes of other advanced biofuel to be supplied in 2018, and believe that they could help the total volume of other advanced biofuels to reach 60 million gallons in 2018. However, since they have been produced in only *de minimis* amounts in the past, we do not have a basis for projecting substantial volumes from these sources in 2018. Commenters provided no data to indicate that volumes of these other advanced biofuels will be higher in 2018 than they have been in recent years. Moreover, even if we were to assume that a higher level of other advanced biofuel was possible in 2018, our consideration of cost would still lead us to conclude that it is appropriate to require only that volume of advanced biofuel that results from the maximum reduction permitted under the cellulosic waiver authority.

### 4.3 Advanced Volume Achievable

Commenters that provided comment on this topic include, but are not limited to: 3108 and 3679.

**Comment:**

One commenter stated that the biodiesel industry produced 2.6 billion gallons in 2016, and that as a result the 2018 advanced biofuel volume requirement should be at least 5.25 billion gallons.

**Response:**

The domestic BBD industry supplied 1.83 billion gallons in 2016, equivalent to 2.79 billion D4 RINs.<sup>29</sup> When including imports and exports, the total volume supplied was 2.43 billion gallons, or 3.71 billion D4 RINs. Reaching 5.25 billion gallons of advanced biofuel in 2018 would require substantially higher volumes of BBD than occurred in 2016. As discussed further in Sections 4.2 and 4.2.2 of this document, we believe that a higher advanced biofuel volume requirement than we are establishing for 2018 would increase the likelihood of feedstock switching, diversion of foreign advanced biofuel to the U.S., and increased costs. Since we do not believe that these outcomes would be appropriate, we do not believe that a volume requirement above 4.29 billion gallons is warranted.

**Comment:**

One commenter stated that BBD supply has grown by about 300 million gallons per year between 2011 and 2016. Therefore, the 2018 advanced biofuel volume requirement should be 0.3 billion gallons higher than the 2017 volume requirement.

**Response:**

As described in Section IV of the final rule, we expect increasing volumes of BBD to be accompanied by an increasing likelihood for feedstock/fuel diversions and higher costs. Moreover, these are important considerations that are permitted to be considered under the cellulosic waiver authority. We have taken both the industry's ability to increase supply as well as these other potential impacts into account in our final determination.

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<sup>29</sup> "Updated 2016 RIN supply," available in docket EPA-HQ-OAR-2017-0091.

## 4.4 Proposed Advanced Biofuel Requirement

Commenters that provided comment on this topic include, but are not limited to: 0792, 1500, 1692, 2380, 2540, 2545, 3108, 3175, 3184, 3237, 3245, 3249, 3306, 3317, 3319, 3320, 3321, 3377, 3428, 3429, 3430, 3478, 3493, 3496, 3593, 3645, 3658, 3678, 3679, 3876, 3880, 3934, 3959, and 3961.

### **Comment:**

One commenter stated that the advanced biofuel volume requirement should be reduced from the proposed level of 4.24 billion gallons to decrease demand for vegetable oils used for food.

### **Response:**

We acknowledge that biodiesel and renewable diesel can be produced from food-based crops such as soybean oil, but they can also be produced from non-food based feedstocks such as waste grease. Cellulosic biofuel, in contrast, is produced entirely from non-food based feedstocks. Insofar as non-cellulosic advanced biofuels are allowed to partially backfill the shortfall in cellulosic biofuel, the total advanced biofuel volume would likely be composed of a greater proportion (though not necessarily a greater absolute volume) of food-based biofuels than would have been the case under the statutory volume targets. Since we have lowered the cellulosic biofuel applicable volume based on our production projection for 2018, we have broad discretion under the cellulosic waiver authority to consider an equal or lesser reduction in advanced biofuels. We believe it is reasonable and appropriate to use the cellulosic waiver authority to lower the advanced biofuel standard by the full amount of the cellulosic biofuel reduction. Doing so reduces the possibility that some food-based feedstocks will be used to produce biodiesel and/or renewable diesel that backfills a portion of the shortfall in cellulosic biofuel.

We do not believe, however, that further reductions below the level achieved through the full use of the cellulosic waiver authority are warranted for 2018. Further reductions would require the use of either the general waiver authority or the BBD waiver authority, and neither permits the direct consideration of competition for feedstocks used for food. While we could consider the impacts of costs, we are not aware of evidence indicating that competition for feedstocks used for food has caused either severe economic harm or significant increases in the price of BBD under the BBD waiver authority. Moreover, commenters did not request a reduction on the basis of costs or provide information quantifying the potential impact.

### **Comment:**

Some commenters believed that the proposed volume of 4.24 billion gallons for advanced biofuel was too high. They suggested an alternative 2018 advanced biofuel volume requirement of 2.61 billion gallons, based on 216 million gallons of cellulosic biofuel and 1.52 billion gallons of biodiesel and renewable diesel.

**Response:**

We do not believe that the suggested volume would be appropriate. Not only is it significantly lower than the volume we have determined to be both reasonably attainable and appropriate as discussed more fully in Section IV of the final rule, but we do not believe that the additional reductions required could be reasonably justified under the general waiver authority or the BBD waiver authority, as described more fully in Section 2 of this document and a memorandum to the docket.<sup>30</sup> See also discussion of the cellulosic biofuel volume requirement in Section 3 of this document.

**Comment:**

One commenter stated that EPA had not cited any new facts or circumstances that warranted a change in policy on advanced biofuel, and thus was not justified in proposing a level for 2018 that represented a reduction from 2017.

**Response:**

As described in Section IV of the final rule, the impacts of advanced biofuel change as the volume requirements increase. Not only is each increment likely to be costlier than previous increments, but the likelihood of feedstock/fuel diversions also increases. We believe that, given the magnitude of the 2018 standards, these factors are more important for 2018 than they were for previous years, and warrant a more measured approach to establishing the volume requirement for advanced biofuel. Nevertheless, we note that the final volume requirement for 2018 advanced biofuel represents an increase from the 2017 volume requirement of 10 million gallons.

**Comment:**

One commenter stated that, since domestic production of biodiesel and renewable diesel is primarily advanced, while imports of these two biofuels are primarily conventional, EPA could promote domestic production over imports by increasing the advanced biofuel standard.

**Response:**

While it is true that nearly all conventional biodiesel and renewable diesel in 2016 was imported (158 million gallons), there were still 725 million gallons of advanced biodiesel and renewable diesel imported into the U.S. This suggests that countries exporting biodiesel and renewable diesel to the U.S. are, in the aggregate, more likely to export advanced rather than conventional. Thus it is uncertain whether a higher advanced standard would increase domestic supply, or would instead result in higher imported volumes. Regardless, we do not believe that an advanced biofuel volume requirement higher than 4.29 billion gallons is warranted for 2018 after a

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<sup>30</sup> “Assessment of waivers for severe economic harm or BBD prices for 2018,” memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

consideration of not only the volumes that are reasonably attainable, but also feedstock/fuel diversions and costs.

**Comment:**

One commenter stated that since the advanced biofuel standard has been met or exceeded every year, EPA can continue to increase the volume requirement in 2018 with confidence that the industry will meet it.

**Response:**

Historical market responses to the applicable standards under the RFS program provide important benchmarks, but cannot be used to determine potential market responses to future standards without consideration of additional factors. As volume requirements increase, so also do the challenges associated with meeting those volume requirements. As described in Section IV of the final rule, we have taken into account not only the volume of advanced biofuel that is reasonably attainable in 2018, but also other factors that are legally permissible to consider under the cellulosic waiver authority. These other factors include the increased potential for feedstock/fuel diversions as volumes increases, and higher costs. Based on these additional considerations, we have established a 2018 volume requirement for advanced biofuel that is lower than the level which is reasonably attainable.

**Comment:**

One commenter stated that costs cannot be used to reduce the volume requirement for advanced biofuel below the level that is reasonably attainable.

**Response:**

We disagree. Under the cellulosic waiver authority, we can consider a wide variety of factors, including costs. We have used costs and other factors to make a determination that, although 4.40 billion gallons of advanced biofuel may be reasonably attainable in 2018, it would not be appropriate to require this level. Instead, we are establishing an advanced biofuel volume requirement of 14.29 billion gallons, the lowest level permitted under the cellulosic waiver authority. For a more detailed discussion of this determination, see Section IV of the final rule.

**Comment:**

One commenter suggested that EPA's analysis of wholesale costs in determining the volume of advanced biofuels was inappropriate. They suggested that EPA had failed to calculate representative costs to society because it had ignored factors such as subsidies provided to refiners and the potentially disruptive nature of accidents and Acts of God that can adversely affect refiners and fuel distribution infrastructure.

This commenter also suggested that EPA's analysis ignored competition, both within the biodiesel industry and between biodiesel and petroleum diesel.

The commenter also suggested that EPA did not consider benefits.

This commenter suggested that it was inappropriate for EPA to compare a gallon of biodiesel to petroleum diesel when biodiesel is typically blended at B5-B20.

**Response:**

As described in Section IV.E of the final rule, the costs that EPA has estimated are illustrative, and thus they “... do not attempt to capture the full impacts of this final rule.” Certain factors that are expected to have relatively modest impacts on the societal costs of renewable fuels or the petroleum-based fuels that they displace, such as subsidies or other supportive policies provided to the petroleum sector and the agricultural and renewable fuel sectors, or the price impact of increased fuel supply and increased competition in the transportation fuel sector from biofuels, have not been analyzed in the estimation of illustrative costs. EPA does not believe that the impacts of the factors noted by the commenter would affect our assessment of the cost of advanced biofuels to a degree that it would change our conclusion that advanced biofuels are more expensive than the petroleum fuels they displace.

EPA balanced the potential costs and benefits of additional advanced biofuel volumes when determining the reasonably attainable and appropriate level of advanced biofuels. This included costs, as pointed out by commenters, but also GHG reduction benefits, and energy security benefits. While the commenter is correct that EPA has not quantified these benefits, it nonetheless considered them in its determination.

Additional comments on the use of wholesale costs (including as opposed to costs of blended fuels) can also be found in Section 7.1.1 of this document.

**Comment:**

One commenter stated that by not allowing advanced biofuel to partially backfill for the shortfall in cellulosic biofuel, future investments in advanced biofuel and job creation will suffer.

**Response:**

As discussed in Section 4.2 of this document, our determination not to allow advanced biofuel to partially backfill for the shortfall in cellulosic biofuel is based on a variety of factors that we are legally permitted to consider under the cellulosic waiver authority. However, the statutory provision does not provide direction on how to balance the factors that we consider. In addition to assessing reasonably attainable volumes of advanced biofuel, we have also considered the increased potential for feedstock/fuel diversions that could dilute the GHG and energy security benefits of additional increases in advanced biofuel, while increasing costs. In making a determination not to allow advanced biofuel to partially backfill for the shortfall in cellulosic biofuel, we acknowledge that it may have the effect of also making certain future investments in biofuel production somewhat less financially attractive, but we believe we have appropriately balanced the relevant considerations and we do not believe that it would be appropriate to require additional increases in advanced biofuel under these conditions.

**Comment:**

One commenter stated that EPA had not conducted any analysis of projected production and import of advanced biofuel, but instead had simply set the 2018 advanced biofuel volume requirement at the statutory minimum.

**Response:**

We disagree. Section IV of the 2018 NPRM provided a detailed assessment of the availability of advanced biofuels, including separate discussions of imported sugarcane ethanol, biodiesel and renewable diesel, and other non-cellulosic advanced biofuels. An updated analysis of these sources can be found in Section IV of the final rule. Based on our assessment, we determined that 4.40 billion gallons of advanced biofuel were reasonably attainable in 2018. However, we also considered additional factors, including feedstock/fuel diversions and costs. As a result, we determine that the volume requirement that was both reasonably attainable and appropriate to require was 4.29 billion gallons, the lowest level permitted under the cellulosic waiver authority. We also made a determination that additional reductions using either the general waiver authority or the BBD waiver authority were not warranted, as discussed in Section V of the final rule.

**Comment:**

One commenter stated that EPA should consider costs only after accounting for the reduction in costs that result from the RIN, making biodiesel less expensive than diesel to consumers.

**Response:**

As we have discussed in previous annual rulemakings, it is not appropriate to treat RINs as a cost to obligated parties, nor as a cost to consumers. RINs represent transfer payments between parties in the fuel market, much like taxes, not societal costs. In our consideration and discussion of costs, we consider the costs of producing, distributing, and blending renewable fuels in comparison to the fuels they displace, rather than the price of the blended fuel sold at retail.

**Comment:**

One commenter took issue with the statement in the 2018 NPRM that stated that the proposed advanced biofuel volume requirement “provide[s] continued incentive for the development of other types of advanced biofuel” (at 82 FR 34209), since the proposed level was below the 2017 level.

**Response:**

As the context of the quoted phrase makes clear, the 2018 NPRM’s reference to “other types of advanced biofuel” meant advanced biofuel that is not required to be BBD. The proposed advanced biofuel volume requirement of 4.24 billion gallons would have allowed up to 850 million RINs to be met with advanced biofuel other than BBD, since the proposed BBD volume

requirement was 2.1 billion gallons.<sup>31</sup> That is, industries that produce advanced biofuel other than cellulosic biofuel and BBD have a continued incentive to play a role in meeting the advanced biofuel volume requirement, as they did in 2017. We note that the final volume requirement for advanced biofuel is 4.29 billion gallons, an increase of 0.05 billion gallons from the proposed level.

**Comment:**

One commenter stated that, if EPA wants to ensure that there is room for competition among different types of advanced biofuels, it should raise the advanced biofuel standard to at least 4.75 billion gallons.

**Response:**

The final volume requirements for advanced biofuel and BBD provide a significant opportunity for competition between different types of advanced biofuel (up to 850 million gallons as described above). Raising both the advanced standard and the BBD standard by the same amount would not change the 850 million gallons of undifferentiated advanced biofuel. Since we have determined that 4.40 billion gallons of advanced biofuel is reasonably attainable in 2018, a higher level such as 4.75 billion gallons would not be reasonably attainable. However, we have also determined that it would not be appropriate to require 4.40 billion gallons after a consideration of costs and other factors. Therefore, we are establishing an advanced biofuel volume require of 4.29 billion gallons for 2018.

**Comment:**

One commenter stated that the *ACE* decision precludes EPA from considering any factors other than supply to refiners, importers, blenders, or distributors, and that as a result EPA cannot set standards below the level that is reasonably available.

**Response:**

The Court's decision, wherein it disallowed the consideration of demand-side factors, applied to the use of the inadequate domestic supply prong of the general waiver authority. We did not propose to use the general waiver authority to reduce volumes of advanced biofuel, nor are we doing so in this final rule. Instead, we are reducing volumes only under the cellulosic waiver authority, under which EPA can consider such factors as costs and feedstock/fuel diversions. Based on a consideration of these additional factors, as discussed in the final rule, we have determined that it is appropriate to exercise the full cellulosic waiver authority for advanced volumes.

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<sup>31</sup> 4.24 bill gal advanced - 0.24 bill gal cellulosic - 2.1 bill gal BBD (x 1.5 RIN value) = 0.85 bill gal

**Comment:**

One commenter stated that EPA's refusal to increase advanced biofuel volumes when such volumes are available forgoes economic, environmental, and energy security benefits.

**Response:**

We acknowledged in the 2018 NPRM that the proposed advanced biofuel volume requirement might "...forgo the marginal benefit that might be achieved by establishing the advanced biofuel standard to require an additional 30 million gallons." We continue to believe that it is appropriate to set the final advanced biofuel volume requirement using the maximum reduction permitted under the cellulosic waiver authority in light of a consideration of the increased costs associated with each increment of advanced biofuel, a factor that we are legally permitted to consider under this authority.

**Comment:**

One commenter stated that the proposed volume for advanced biofuel could hurt investment in low carbon fuels used to meet California's LCFS program, since those investments presume high RIN prices.

**Response:**

EPA's determination of the advanced biofuel volume requirement to set for 2018 was based on a consideration of factors that could impact both the supply of advanced biofuel as well as its cost for the nation as a whole. As described in Section IV of the final rule, we have determined that it would not be appropriate to require advanced biofuel volumes higher than the level resulting from reducing the statutory target for advanced biofuel by the same amount as the reduction in cellulosic biofuel. Regional, state, or local programs targeting the use of renewable fuels are independent from the nationwide RFS program, and have independent standards that either require or incentivize the use of those fuels. While renewable fuels that qualify under those programs may also qualify under the RFS program, our determination regarding appropriate nationwide standards to set under the RFS program is not driven by potential impacts of those nationwide standards on regional, State, or local programs. Nevertheless, in estimating reasonably attainable volumes of advanced biofuel for 2018, we have considered imported sugarcane ethanol that could be used to meet both the California LCFS program and the federal RFS program.

**Comment:**

One commenter stated that the 2018 advanced biofuel volume requirement should not exceed EIA's domestic production projections for biodiesel and other advanced biofuel, which are far less than the 4.24 billion gallons proposed.

**Response:**

As discussed in more detail in Section V of the final rule, we have determined that it would not be appropriate to base the 2018 advanced biofuel volume requirement on only supply that can be produced domestically. We have made this determination after a consideration of comments on both the 2018 NPRM and the notice of availability of supplemental information.<sup>32</sup>

**Comment:**

One commenter stated that the decision by the Department of Commerce to impose tariffs on imported biodiesel eliminates a significant source of non-cellulosic biofuel supply, and that as a result the advanced biofuel volume requirement should be reduced by 400 million gallons compared to the proposed level of 4.24 billion gallons.

**Response:**

The impact of these potential duties is less certain than this commenter alleges. In the notice of availability of supplemental information,<sup>33</sup> we requested comment on the potential impact of the Department of Commerce's preliminary determination to impose duties on imported biodiesel from Argentina and Indonesia.<sup>34</sup> Apart from speculation, however, commenters provided no definitive information or quantified projections of what may occur to the total supply of biodiesel (including both domestic production and imports) as a result of new import duties. While imports of biodiesel from Argentina and Indonesia may be reduced, there are also likely to be shifts in international markets that could result in no net change in total imports of biodiesel into the U.S. It may also be the case that domestic production could compensate for any reduction in imports. Finally, the duties will not be final until and unless the International Trade Commission makes an affirmative injury determination. Because we cannot predict these outcomes, it would be inappropriate to reduce the 2018 advanced biofuel volume requirement below the proposed level based on the amount of biodiesel that has been imported by Argentina and Indonesia in the past.

**Comment:**

One commenter stated that the 2018 advanced biofuel volume requirement should be based on a reasonable projection of cellulosic biofuel plus 2.1 billion gallons of BBD.

**Response:**

Our determination of the appropriate volume requirement for advanced biofuel for 2018 includes a consideration of the volume of BBD that is reasonably attainable. As described in Section IV of the final rule, our analysis concluded that significantly more than 2.1 billion gallons of BBD - 2.55 billion gallons - is in fact reasonably available in 2018. As described in Section VI of the final rule, 2.1 billion gallons of BBD is not the most that could be expected to be supplied in 2018, but rather is a level that provides support to the BBD industry while simultaneously

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<sup>32</sup> 82 FR 46174 (October 4, 2017).

<sup>33</sup> 82 FR 46174 (October 4, 2017).

<sup>34</sup> That preliminary determination by the Department of Commerce has since been made final.

providing an opportunity for other advanced biofuels to compete with BBD under the advanced biofuel standard. We note that this commenter also excluded all consideration of other advanced biofuel (those with a D-code of 5) in its estimation of the volume of advanced biofuel that should be required in 2018. In contrast, we have estimated that 60 million gallons of such other advanced biofuel can be supplied in 2018.

**Comment:**

One commenter stated that the proposed advanced biofuel volume requirement of 4.24 billion gallons should be reduced to ensure that the RFS program does not incentivize international deforestation.

**Response:**

EPA has previously analyzed the potential indirect impacts of biofuels that can be used to meet the advanced biofuel volume requirement as part of our lifecycle GHG emissions analysis. Our analysis has shown that while increased demand for biofuels can lead to some deforestation and land use change, fuels that qualify as advanced biofuels have limited indirect impacts on deforestation while reducing lifecycle GHG emissions by at least 50% when compared to the petroleum fuel they displace.

**Comment:**

One commenter stated that the advanced biofuel volume requirement for 2018 should be based on actual volumes produced domestically in 2017.

**Response:**

EPA is obligated under the statute to make a determination of the appropriate volume requirements for 2018 based on the factual circumstances for 2018. As described in Section IV of the final rule, we have determined that a volume requirement calculated on the basis of the maximum reduction permitted under the cellulosic waiver authority is both reasonably attainable and appropriate given a consideration of costs and other factors.

We do not believe it would be appropriate to base the 2018 volume requirement for advanced biofuel on actual volumes produced domestically in 2017 for four reasons. First, this approach would require an extrapolation of production for the first part of the year to the end of 2017, and any extrapolation will be uncertain due to seasonal variability and other unpredictable factors. Second, production volumes must be adjusted for RINs made invalid for any reason (such as those listed in 40 CFR 80.1431), but some RINs are not determined to be invalid for many months after their generation. Third, actual production in 2017 provides little information about the production that is reasonably attainable in 2018, nor the costs of 2018 production. Fourth, as discussed in Section V of the final rule, we do not believe that the available information and evidence warrants the exclusion of imports in the determination of the volume requirements for 2018.

**Comment:**

One commenter stated that the advanced biofuel volume requirement must increase every year in order to provide investors the confidence that there will be a market for new sources of advanced biofuel and that the 2018 NPRM did not do this.

**Response:**

In order to determine the appropriate advanced biofuel volume requirement for 2018, we must not only project the volumes that are reasonably attainable in 2018, but we also have a responsibility to consider other factors that may make substantial increases from one year to the next inappropriate. For 2018 we have determined that costs, as well as feedstock/fuel diversions and other factors, are relevant considerations, and we are permitted to consider such factors under the cellulosic waiver authority. While we recognize that a higher advanced biofuel standard may provide greater support to the advanced biofuel industry, based on a consideration of these factors, we have determined that the 2018 volume requirement for advanced biofuel should be 4.29 billion gallons, an increase of 10 million gallons from 2017.

## 5. Total Renewable Fuel and Conventional Renewable Fuel

### 5.1 Ethanol

#### 5.1.1 E10 Blendwall and Total Gasoline Demand

Commenters that provided comment on this topic include, but are not limited to: 3110, 3177, 3241, 3319, 3497, and 3645.

##### **Comment:**

One commenter pointed to the *ACE* decision that ruled that EPA cannot consider demand-side factors when making a determination about whether any of the statutory targets can be met.<sup>35</sup> But, the commenter noted, EPA included demand-side factors in its proposed determination, including considerations of infrastructure and consumer preferences regarding E0, E15, and E85. Although the 2018 NPRM was released prior to the Court's decision, EPA is barred from any consideration of demand-side factors in the final rule.

##### **Response:**

The Court's ruling specifically indicated that EPA cannot consider demand-side factors in the context of the use of inadequate domestic supply under the general waiver authority. EPA is not barred from considering demand-side factors under the cellulosic waiver authority. In the final rule, we have considered infrastructure and demand for E0, E15, and E85 only in the context of the cellulosic waiver authority.

##### **Comment:**

Some commenters repeated their views from previous annual standard-setting rulemakings regarding the existence and nature of the E10 blendwall. For instance, some questioned the existence of an ethanol blendwall and claimed it is an idea invented by obligated parties to convince EPA to lower their blending obligations. Others stated that the blendwall is a firm barrier that cannot or should not be crossed.

##### **Response:**

Our view of the E10 blendwall falls between the two opposing viewpoints expressed by refiners and ethanol proponents. We believe that there are real constraints on the ability of the market to exceed a pool-wide ethanol content of 10%. However, these constraints do not have the same significance at all levels above 10% ethanol. Instead, for the state of infrastructure that can be available in 2018, the constraints represent a continuum of mild resistance to growth at the first increments above 10% ethanol and evolve to significant obstacles at higher levels of ethanol. This gradual nature of the impacts of the constraints is due to the fact that small increases in

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<sup>35</sup> *American for Clean Energy v. EPA*, Court of Appeals for the District of Columbia, No. 16-1005, Decided July 28, 2017.

ethanol volumes above 10% are likely to be possible with changes in RIN prices, while larger increases are only possible with changes to infrastructure that cannot occur as quickly. The transition from mild resistance to significant obstacles occurs by degrees rather than all at once, and overcoming the constraints will likely require different solutions over different time periods. It is difficult to identify the precise boundary between volumes that can be achieved with mild difficulty in 2018 and those that likely cannot realistically be achieved over the next year. Ultimately the market will determine the extent to which compliance with the annual standards is achieved through the use of greater volumes of ethanol or other, non-ethanol renewable fuels.

In short, the E10 blendwall is not the barrier that some commenters believe it to be, but neither are increases in pool-wide ethanol concentrations above 10% unlimited in the 2018 timeframe as other commenters have suggested. The final 2018 volume requirement for total renewable fuel can help to create some incentive for use of E15 and E85, but the volumes of E15 and/or E85 that would be needed to reach the statutory targets are not achievable in 2017.

Another reason that the E10 blendwall is not the barrier that some commenters make it out to be is that it is focused solely on ethanol. Many of the comments on both sides of the debate focus on ethanol, but there is nothing in the statute that requires the use of ethanol, and there is no reason that the E10 blendwall by itself should limit the total volumes of renewable fuels. The E10 blendwall may create a challenge toward increasing volumes of ethanol, but growth in other biofuels is not only possible but expected within the capabilities of their markets.

## 5.1.2 Exceeding the E10 Blendwall

Commenters that provided comment on this topic include, but are not limited to: 1754, 1756, 1776, 2545, 2547, 3105, 3106, 3175, 3177, 3184, 3249, 3478, 3645, 3680, 3887, and 3962.

### **Comment:**

There were differing views among commenters of Congress's expectations regarding the E10 blendwall when EISA was released in 2007, and whether current market conditions are consistent with those expectations. Some believed that Congress never intended for the E10 blendwall to be exceeded, while others stated there was a general expectation at that time that it would need to be exceeded for the statutory volume targets to be reached. One party referenced an EIA statement in 2008 indicating that the statutory targets could not be reached without volumes higher than could be used as E10 alone.

### **Response:**

It is unlikely that Congress expected the very high volumes that it specified in the statute to be reached with only E10 (notwithstanding the 1.0 billion gallon minimum required volume for BBD). At the time EISA was passed in 2007, EIA's Annual Energy Outlook for 2007 projected that 17.3 billion gallons of ethanol is the maximum that could be consumed in 2022 if all gasoline contained E10 and there was no E0, E15, or E85. However, 17.3 billion gallons is far less than the 36 billion gallons of renewable fuel that Congress targeted for use in 2022. Thus, if the statutory targets for 2022 were to be achieved, 18.7 billion gallons of renewable fuel would need to be consumed in 2022 either as higher level ethanol blends (E15 and/or E85), or as non-ethanol fuels.

Nevertheless, the RFS program does not require the use of ethanol, and there is no evidence that Congress specifically intended for volumes of higher level ethanol blends to increase. Our determination of appropriate volumes to require for 2018 is based on a consideration of all types of renewable fuel and factors that could either constrain its use or impact the benefits of requiring it. These considerations include, among other things, lower gasoline demand than was projected in 2007, costs, and energy security.

### **Comment:**

A number of commenters, particularly refiners, argued that the 2018 volume requirements should be set in such a way that the pool-wide ethanol content will be no higher than 9.7%. They based their preferred approach on the premise that E15 and E85 cannot contribute meaningfully to higher ethanol consumption, and that there is ongoing demand for E0 (gasoline containing no ethanol) at a level of at least 3% of the total gasoline pool.

### **Response:**

As we said in the 2014-2016 and 2017 final rules, we do not find the arguments that the pool-wide ethanol content cannot be higher than 10% to be compelling. As other commenters pointed

out, the nationwide average ethanol content in 2016 was 10.02%, and this result was undoubtedly influenced by the 2016 standards. Moreover, despite concerns raised by those advocating 9.7% ethanol, there is no indication that exceeding the blendwall in 2016 created severe economic harm for any state, region, or the U.S.

While we agree that use of E15 and E85 in 2018 cannot enable the market to achieve the statutory target for total renewable fuel, they can make meaningful contributions in 2018. The final 2018 volume requirement for total renewable fuel creates the opportunity for the market, should it so choose, to exceed a pool-wide ethanol concentration of greater than 10% as already occurred in 2016 without forcing the use of E15 and/or E85 in vehicles and engines for which they were not designed as a number of commenters feared.

**Comment:**

One commenter stated that targeting a nationwide average ethanol content of 10.13% for 2018 is unrealistic.

**Response:**

This concern is premised on assumptions regarding demand for E0, E15, and E85. As discussed in more detail in Sections 5.2.5 through 5.2.7 of this document, the commenter's assumptions about these fuels are unwarranted.

As noted in Section V.B.1 of the final rule, the national average ethanol content of gasoline rose from 9.91% in 2015 to 10.02% in 2016. An increase to 10.13% in 2017, as projected in the 2017 final rule, would be a smaller increment than that which occurred between 2015 and 2016.<sup>36</sup> Moreover, for the purposes of making a determination about whether a total renewable fuel volume of 19.29 billion gallons, based on the maximum permissible reduction under the cellulosic waiver authority, is achievable in 2018, we assumed that there would be at least 10.13% ethanol. In other words, despite the fact that increases in retail station offerings of E15 and E85 are likely to increase between 2017 and 2018, we only accounted for the nationwide ethanol content of gasoline expected to be reached in 2017 when assessing the 2018 total renewable fuel volume. Thus, not only is 10.13% ethanol content realistic, it is likely conservative.

**Comment:**

Several commenters stated that the nationwide average ethanol content of gasoline should be kept at or below 10% in order to ensure the well-being of other industries that are indirectly affected by the price of corn used for animal feed. Similarly, one commenter stated that the implied conventional renewable fuel volume requirement should be reduced below 15 billion gallons for the same reason.

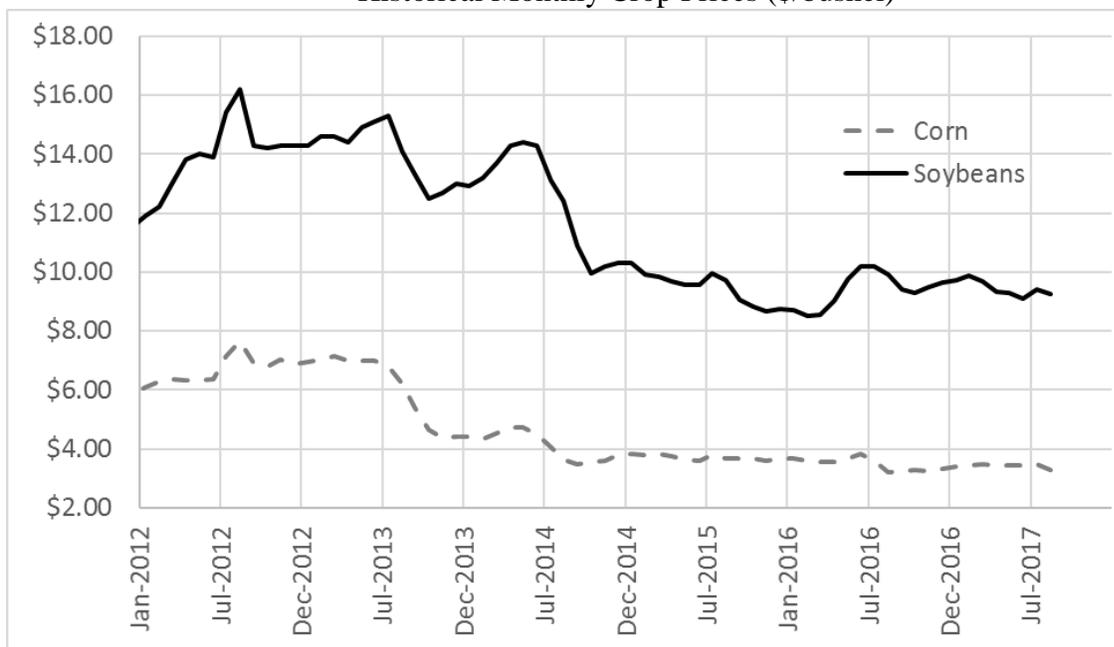
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<sup>36</sup> 81 FR 89746

**Response:**

EPA recognizes that renewable fuel production from traditional feedstocks (e.g., corn, soybeans, canola) can benefit some sectors of rural economies while having adverse impacts on other sectors. While demand for agricultural feedstocks can provide benefits to rural areas that grow the agricultural feedstocks, the industries that depend on agricultural feedstocks (e.g., the livestock industry) may face higher input costs, which in turn can lower their profitability. The actual impacts, however, will depend on how the agricultural market responds both short-term and long-term. While agricultural feedstock prices rose following the implementation of the RFS2 program in 2010 (due to a changes in the world market in addition to the RFS), since that time the agricultural sector has responded to increase supply, causing prices to drop as shown in Figure 3 below. Further discussion of this issue can be found in Section 7.1.5 of this document.

Figure 3  
Historical Monthly Crop Prices (\$/bushel)



Source: USDA National Agricultural Statistics Service  
[https://www.nass.usda.gov/Charts\\_and\\_Maps/Agricultural\\_Prices/](https://www.nass.usda.gov/Charts_and_Maps/Agricultural_Prices/)

**Comment:**

One commenter stated that EPA should not be including the denaturant as ethanol volume when calculating the average ethanol concentration of the gasoline pool.

**Response:**

As required in 40 CFR 80.1401, ethanol that qualifies under the RFS program must be denatured. Further, the denaturant portion of ethanol counts towards RIN generation so long as the concentration of the denaturant is equal to or less than 2%. Since the nationwide average ethanol concentration of ethanol is the result of the use of E10, E15, and E85, all of which are produced

from ethanol containing denaturant, it is appropriate to include the denaturant as part of the ethanol pool.

Moreover, the nationwide average ethanol concentration is generally calculated using total ethanol use from EIA's STEO, or from RIN supply for ethanol. In both cases, the ethanol represents denatured ethanol.

**Comment:**

One commenter stated that the actual estimate of ethanol concentration in 2016 is 9.81% according to EIA, but EPA claims that the nationwide average ethanol concentration in 2016 was 10.05%.

**Response:**

EIA's estimate of 9.81% is based on "Refinery and Blender Net Input" which is part of EIA's tabulation of refining and processing volumes of petroleum and other liquids. These volumes represent upstream production, not downstream consumption, and it is downstream production which is the relevant measure for the RFS program given that ethanol is added downstream.

Since the 2018 NPRM, EIA has updated the fuel supply estimates for 2016, which in turn results in a change in the 2016 nationwide average ethanol concentration. While the 10.05% was derived from the March 2017 version of EIA's STEO (Table 4a), EIA's October 2017 version leads to an ethanol concentration 10.02%.

**Comment:**

One commenter stated that refiners and importers reached the E10 blendwall as early as 2010 and definitely surpassed it in 2012, contrary to EPA's claims that the blendwall was not reached until after 2010.

**Response:**

The calculations done by the commenter to reach this conclusion, while based primarily on data from EMTS made available through a Freedom of Information Act Request, also included a number of assumptions that were incorrect. For instance, the commenter made its own assumptions about the fraction of total obligated fuel volume (gasoline and diesel) that was gasoline, and assumed that exempt small refiners and refineries blended no ethanol into their gasoline. These and other assumptions resulted in estimates of the nationwide average ethanol concentration that appeared to exceed 10% for all years between 2010 and 2016.

We believe that the best estimate of total gasoline use comes from EIA's STEO, and that the best estimate of total ethanol use comes from the number of RINs generated for ethanol used as fuel in the U.S. Based on these sources, the nationwide average ethanol concentration did not exceed 10% until 2016, when it was 10.02%.

### **5.1.3 Domestic Production Capacity**

Commenters that provided comment on this topic include, but are not limited to: 3178.

#### **Comment:**

One commenter stated that since current corn-ethanol production capacity is over 16 billion gallons and more is under construction, there is no need to reduce the volume requirement for conventional renewable fuel.

#### **Response:**

We agree that domestic production capacity of corn-ethanol is higher than the 15 billion gallon implied volume requirement for conventional renewable fuel that we are setting in this annual rule for 2018. However, ethanol producers are not limited by the standards set under the RFS program. They can produce more ethanol than is required under the RFS program, and the market will determine if that additional ethanol production will either be used domestically or in export markets. In recent years, corn ethanol exports have been rising, allowing U.S. production to continue to grow.

## 5.1.4 Refiner Responsibilities to Expand Ethanol Use

Commenters that provided comment on this topic include, but are not limited to: 1756 and 3177.

### **Comment:**

One commenter stated that refiners are responsible for selling higher level ethanol blends, and that they have had plenty of time to put in place the necessary infrastructure. This commenter stated that refiners should not be rewarded for failing in their responsibilities.

### **Response:**

The RFS program is structured to create a market for renewable fuels, and it is within that market system that many different interested parties contribute to maintaining and expanding the renewable fuel supply chain from producer to ultimate consumer. Obligated parties have a unique role in being required to acquire RINs that demonstrate compliance with RFS standards, but the ultimate success of the program depends on the actions of many market participants.

The regulatory structure generally places the responsibility on producers and importers of gasoline and diesel to ensure that transportation fuel sold or introduced into commerce contains the required volumes of renewable fuel. Obligated parties have a variety of options available to them, both to increase volumes in the near term (i.e., through the period being addressed by this final rule) and in the longer term. The standards that we are establishing in this action reflect both the responsibility placed on obligated parties as well as their ability to undertake the short-term activities available to them. We also expect obligated parties to be taking actions now that will help to increase renewable fuel volumes in future years. However, this general responsibility does not require obligated parties to take actions specific to E15 and/or E85 infrastructure, as the RFS program does not require any actions specific to E15 or E85, and in fact does not require any actions specific to ethanol at all. Moreover, we do not believe the statute should be interpreted to require that refiners and importers change the fundamental nature of their businesses so as to comply with RFS requirements, as this would be a far-reaching result that Congress can be expected to have clearly specified if it was intended. For example, to the extent that commenters imply that refiners should be required to build or purchase renewable fuel production facilities, take over ownership of retail stations, produce or sell cars capable of using high-ethanol blends, or plant cropland to provide feedstock for increased renewable fuel production, we would disagree, since they would then be engaging in business practices other than those directly relevant to their position as a “refiner, importer, or blender” as specified in the statute. The primary role that obligated parties play in the RFS program is to acquire RINs, and it is this demand for RINs that in turn drives demand for renewable fuel and which should stimulate other parties to increase their activities to supply it. In so doing, obligated parties provide the funding (recouped through higher petroleum fuel prices) to subsidize renewable fuel prices so that the market is incentivized to expand renewable fuel supply.

**Comment:**

One commenter stated that refiners don't control the price of ethanol, and ethanol price is the primary driver of how much ethanol will be used in higher ethanol blends such as E15 and E85. If ethanol producers want to sell more ethanol, this commenter stated, they need to reduce the selling price of their ethanol.

**Response:**

Producers of renewable fuel are to a large degree compelled to price their products on the basis of feedstock costs, just as gasoline and diesel producers are compelled to price their products on the basis of crude oil prices. Nevertheless, all parties involved in the fuels market play a role in the volume of renewable fuel that is consumed, and there is no requirement in the statute or regulations that places the burden on a single industry or market segment for creating the conditions necessary to increase renewable fuel use. The primary role that obligated parties play in the RFS program is to acquire RINs sufficient to comply with the applicable standards, while the primary role that producers of renewable fuel play is to make renewable fuel available. Both of these groups, as well as marketers, blenders, distributors, and retailers, can play a role in expanding and updating infrastructure to make renewable fuels available to consumers.

### **5.1.5 E0**

Commenters that provided comment on this topic include, but are not limited to: 1301, 1692, 1754, 2547, 3105, 3106, 3175, 3177, 3184, 3238, 3478, 3645, 3649, 3680, and 3887.

#### **Comment:**

Several commenters stated that EPA's estimate of the volume of E0 consumed by recreational marine engines is far too low.

#### **Response:**

The commenters did not provide any data on actual consumption of E0 by recreational marine engines. Instead, commenters pointed to anecdotal evidence that owners of recreational marine engines preferentially seek out E0. We addressed these comments in detail in the rulemaking which established the 2017 standards.

#### **Comment:**

Several commenters stated that EPA has ignored information on actual historical demand for E0 in its estimation of E0 volumes consumed in recent years. For instance, Pure-gas.org indicates that 12,000 stations offer E0, Magellan Midstream Partners submitted information indicating that they sold nearly 700 million gallons of E0 in 2016, and CountryMark indicated that the number of their retail stations offering E0 has increased from 2012 to 2017. Another commenter pointed to data from Iowa on E0 use in that state. Also, EIA's Weekly Refiner & Blender Net Production report indicates that E0 production by refiners was more than 12 billion gallons in 2016.

#### **Response:**

None of the information cited by commenters represented E0 sold at retail, and is therefore of less value in estimating the actual volume of E0 used than commenters claim. For instance, there is no way to determine with any certainty the volume of E0 sold at retail stations listed in Pure-gas.org without data on E0 versus E10 throughput at such retail stations, which commenters did not provide. Similarly, there is no straightforward way to extrapolate data from CountryMark on E0 sales trends at their own retail stations, or data on E0 use in Iowa, to the nation as a whole. Data provided by Magellan Midstream Partners represents 87 and 91 octane E0 sold from their terminals, but despite their statement that they believe most or all of that E0 is actually used as E0, they provided no data to support their claim. Finally, we do not believe that EIA's Weekly Refiner & Blender Net Production is an adequate basis for estimating E0 sold at retail. Not only is the "Other Conventional Motor Gasoline" category presumed to be finished gasoline without ethanol, but this category does not capture the significant volumes of gasoline that are blended with ethanol downstream of the refinery.

Commenters did not address the methodology used to estimate 500 million gallons of E0 described in the document titled "Estimate of E0 use in 2016," other than to say that it was too low. We continue to believe that the approach to estimating E0 in that document, updated with

additional data in the document “Revised estimate of E0 use in 2016,” is the most appropriate way to estimate nationwide E0 use, as it relies on gasoline demand in 2016 as estimated by EIA in their STEO and ethanol use as recorded in EMTS. We believe that EMTS data provides more accurate information on actual use of ethanol in motor fuel than EIA’s survey data on ethanol production, blending, imports, and exports because it accounts for every gallon of ethanol produced but not exported, and is verified by the purchaser in the transaction within EMTS. Using this methodology, our updated estimate of E0 for 2016 is about 700 million gallons.

**Comment:**

Several commenters pointed to a report from EIA suggesting that 5.3 billion gallons of E0 was consumed in 2015.

**Response:**

With regard to EIA’s estimate that 5.3 billion gallons of E0 was consumed in 2015, we discussed this source in detail in the 2017 final rule, and commenters provided no new information on it. As described in that rule, we do not believe that the 5.3 billion value represents consumption of E0 at the retail. EIA’s estimate was based on survey data from most U.S. terminals, which include information about domestic distribution from the terminal level and exports of ethanol-free gasoline, with the difference representing domestic disposition. EIA combines this information with estimates of available ethanol, assuming that the ethanol is used in a 10% blend with ethanol-free gasoline. As described in a memorandum to the docket, our analysis of EIA’s estimate of 5.3 billion gallons of E0 concludes that it would require E85 volumes significantly higher than the volumes likely to have been supplied in 2015 in order to be consistent with either EMTS or EIA data on ethanol consumption. In our view, the 5.3 billion gallons of E0 estimated by EIA must include volumes of gasoline that are subsequently blended with ethanol downstream of the terminal prior to dispensing from retail and centralized fleet refueling stations; a common practice not captured in EIA’s estimate. Furthermore, EIA’s calculations are very sensitive to the exact volume of total ethanol available for blending, and EIA’s estimate based on survey data differs from EPA’s compliance data by about 1 percent.

**Comment:**

One commenter stated that EPA continues to falsely claim that only 200 million gallons of E0 has been used in the past.

**Response:**

EPA does not believe that E0 in previous years was 200 million gallons. Instead, as described in the 2017 final rule, we indicated our belief that the RFS program could result in all but a tiny portion— estimated at 200 million gallons—of gasoline to contain at least 10% ethanol. We based this determination on the following two considerations:

1. The RFS program will continue to incentivize the market to transition from E0 to E10 and other higher level ethanol blends through the RIN mechanism.

2. Recreational marine engines represent a market segment that we believe would be particularly difficult to completely transition from E0 since they are used in a water environment where there is a greater potential for water contamination of the fuel. Some recreational marine consumers are concerned that there could be a potential for consequent engine damage following phase separation of the water and fuel.

**Comment:**

One commenter stated that it is not appropriate for EPA to assume any volume of E0 in its determination of the volume requirements for 2018, since the RFS program should be forcing increased volumes of renewable fuel use.

**Response:**

As described in a previous memorandum, we expect there to be an ongoing need for some E0 for use by recreational marine engines, since they are used in a water environment where there is a greater potential for water contamination of the fuel.<sup>37</sup> Some consumers are concerned that there could be a potential for consequent engine damage following phase separation of the water and fuel.

However, we are not assuming any particular level of E0 use in the final rule to support our determination of the 2018 standards. For the 2018 NPRM, we noted that based on EIA projected gasoline consumption data and estimates of E0, E10, E15, and E85 use, the market could reasonably attain a nationwide average ethanol concentration of 10.13% ethanol in 2017. In concluding that the total renewable fuel standard does not need to be reduced further in 2018 below the level resulting from full use of the cellulosic waiver authority, we assumed that the market could maintain this 10.13% level in 2018. However, for the final rule, we have based our determination of the volume requirement for total renewable fuel on reducing the statutory target for total renewable fuel by the same amount as the reduction in advanced biofuel under the cellulosic waiver authority. To perform this calculation, there was no need to assume a particular volume of E0, nor of ethanol generally. Additionally, we determined that there is no need for further reductions in the volume requirement for total renewable fuel using any other waiver authority, including inadequate domestic supply under the general waiver authority wherein we considered only the supply of conventional renewable fuel to refiners, importers, and blenders. See Sections IV and V of the final rule for further discussion.

**Comment:**

Several commenters stated that EPA should target 9.7% for the nationwide average ethanol content because doing so would accommodate the 3% of gasoline which is E0.

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<sup>37</sup> “Estimating E0 use in recreational marine engines,” memorandum from David Korotney to docket EPA-HQ-OAR-2015-0111.

**Response:**

In the 2014–2016 final rule we addressed refiners’ claim that 3% of the gasoline pool has been E0 for several years, concluding that those estimates were generated from incomplete EIA gasoline supply data which overestimated the potential demand for E0 at retail. Comments from refiners in response to the 2018 NPRM did not provide any new or different information that would change our conclusions with regard to that 3% estimate. Regardless, we are not targeting any particular ethanol concentration to support the 2018 standards, as described above.

**Comment:**

One commenter stated that many consumers want E0, and EPA should account for that fact when establishing the volume requirements. This commenter pointed to demand for E0 by owners of motorcycles, ATVs, boats, lawn mowers, and other nonroad equipment.

**Response:**

The RFS program is designed to permit the use of any type and amount of renewable fuel to be used within the conditions imposed by the four renewable fuel categories (cellulosic biofuel, BBD, advanced biofuel, and total renewable fuel). The market will supply E0 so long as there is demand for it. In the context of EPA’s determination of the appropriate volume requirements to set for 2018, we have not assumed a specific volume of ethanol nor of E0. Instead, we determined that there is an adequate supply of renewable fuel available to refiners, importers, and blenders to meet the volume requirements of 4.29 billion gallons of advanced biofuel and 19.29 billion gallons of total renewable fuel. See Section V.A of the final rule for further discussion.

**Comment:**

One commenter stated that, while EPA proposed to increase the demand for E0 from 200 million gallons to 500 million gallons, the proposed standards would nevertheless make it increasingly difficult for boaters to find E0, and the constrained supply will increase its price.

**Response:**

This commenter misunderstood both our calculation of E0 volumes and the impact that the proposed standards would have on E0. The 500 million gallons was our proposed estimate of the volume of E0 used in 2016, not a projection nor requirement for 2018.<sup>38</sup> The 200 million gallons was the volume that we believed would need to continue to be used when we established the 2016 and 2017 standards, but we did not explicitly use this volume in determining the proposed 2018 standards. Instead, we proposed that the nationwide ethanol concentration in 2018 could be at least 10.13% without proposing specific volumes of E0, E10, E15, or E85. Moreover, for the final rule we have not made any projection of the volume of ethanol that is reasonably attainable in the determination of the applicable volume requirements. Instead, we determined that there is

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<sup>38</sup> For the final rule, we have revised the estimate of E0 use in 2016 to about 700 million gallons.

an adequate supply of renewable fuel available to refiners, importers, and blenders to meet the volume requirements of 4.29 billion gallons of advanced biofuel and 19.29 billion gallons of total renewable fuel.

While the final 2018 volume requirements are slightly higher than those established for 2017, the market will determine whether this increase will occur through the increased use of ethanol or through non-ethanol renewable fuels. However, we note that it is the advanced biofuel volume requirement which has increased between 2017 and 2018 rather than the implied volume requirement for conventional renewable fuel which remains constant at 15 billion gallons. The predominant advanced biofuel used to date is biodiesel rather than ethanol, and thus it is more likely that the increase between 2017 and 2018 will be met with biodiesel with no concurrent impact on E0 use.

### **5.1.6 E15**

Commenters that provided comment on this topic include, but are not limited to: 1301, 1756, 2545, 2547, 3242, 3319, 3497, 3645, 3680, 3681, and 3962.

#### **Comment:**

One commenter stated that many retailers are avoiding installing E15 pumps because of poor return on investment, and that retailers who have tried to sell E15 have seen low sales volumes.

#### **Response:**

We recognize that return on investment is the primary consideration for many retail station owners. As pointed out by many commenters, grant programs such as USDA's BIP program and the ethanol industry's Prime the Pump program have increased the availability of E15 at retail by offsetting some of the costs of installing or upgrading equipment, and this is expected to help increase the return on investment. The RFS program also provides an incentive for the market to use higher level ethanol blends such as E15, though the market could also choose non-ethanol renewable fuels as well.

#### **Comment:**

One commenter stated that retail infrastructure to offer E15 is not a limiting factor in the level of E15 supply that can be achieved. This commenter quoted a study from the National Renewable Energy Laboratory (NREL) that said, "...the majority of installed tanks can store blends above E10."

#### **Response:**

We disagree that retail infrastructure is not a limiting factor in E15 supply. Commenters representing retail stations indicated that, while it may be the case that much of the existing equipment at retail is compatible with E15, compatibility with E15 is not the same as being approved for E15 use. Recently-amended EPA regulations require that parties storing ethanol in underground tanks in concentrations greater than 10 percent demonstrate compatibility of their tanks with the fuel, through either a certification or listing of underground storage tank system equipment or components by a nationally recognized, independent testing laboratory for use with the fuel, written approval by the equipment or component manufacturer, or some other method that is determined by the agency implementing the new requirements to be no less protective of human health and the environment. The use of any equipment to offer E15 that does not satisfy these requirements, even if that equipment is technically compatible with E15, would pose potential liability for the retailer, including concerns related to liability for equipment damage. Few retailers would be willing to assume such liability, according to comments submitted by their national associations. This issue is of particular concern for underground storage tanks and associated hardware, as the documentation for their design and the types of materials used, and even their installation dates, is often unavailable.

**Comment:**

One commenter stated that many retailers have significant concerns about liability for misfueling of pre-2001 vehicles or nonroad engines with E15, and so have a disincentive to install or upgrade equipment to offer E15.

**Response:**

EPA regulations require pump labeling, a misfueling mitigation plan, surveys, product transfer documents, and approval of equipment configurations for a retail station owner choosing to offer E15. These regulations are designed to ensure that misfueling does not occur. Nevertheless, the RFS program does not require the use of E15 or ethanol in any form, and retailer stations owners are therefore not required to offer E15.

**Comment:**

The costs associated with upgrading old equipment at retail stations in order to offer E15, or installing new equipment, was a matter of disagreement among commenters. In general, commenters representing the ethanol production industry believed that the costs would be low, while those who represent the interests of retail stations believed that they would be high.

**Response:**

Actual costs for a retailer to offer E15 will vary depending on whether existing equipment can be recertified for E15, whether it is only pumps/dispensers that must be upgraded versus underground storage tanks and/or other hardware, the number of dispensers at a given retail station that the retailer wants to be able to offer E15, and other factors. However, based on expenditures for USDA's BIP program, the average retail station upgrade costs about \$140,000 (approximately \$200 million in total funds to upgrade about 1,400 stations).<sup>39</sup>

**Comment:**

One commenter stated that EPA has significantly underestimated the potential for E15 sales. The majority of vehicles are legally permitted to use E15.

**Response:**

We do not believe that the number of vehicles that are legally permitted to use E15 is the predominant factor in the volume of E15 that is likely to be consumed in 2018. Instead, it is the number of retail stations offering E15 in 2018 that is a more important factor.

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<sup>39</sup> The BIP program provided about \$100 million in total federal grants, covering about 50% of the costs of the upgrades. State grants, funding provided by the Prime the Pump program, and private funding supplied the remaining 50%.

**Comment:**

One commenter stated that EPA needs to guarantee the availability of E0/E10 for recreational marine engines. E15 will damage these engines.

**Response:**

The RFS program does not require the use of E15, and in fact does not require the use of ethanol at all. If there is a demand for E0 and/or E10 for recreational marine engines or any other engine or vehicle, it can be supplied so long as the volume requirements under the RFS program are met. Moreover, E15 is not permitted to be used in motorcycles nor any nonroad engine, and retail pumps must be labelled to ensure that misfueling does not occur.

**Comment:**

One commenter stated that EPA has not accounted for the fact that the number of retail stations offering E15 is increasing significantly. Moreover, this commenter stated that this increase will continue into 2018 and beyond because, contrary to EPA's statement in the 2018 NPRM, the Prime the Pump program is not ending in 2017.

**Response:**

We agree that the number of retail stations offering E15 has increased in 2017 compared to 2016. With regard to Prime the Pump, information available to EPA for the 2018 NPRM was that the program would complete its current round of funding for E15 upgrades at retail stations by the end of 2017.<sup>40</sup> However, based on information provided by commenters, it is apparent that additional funding has been procured and additional retail stations will be upgraded to offer E15 in 2018 and beyond. Regardless, we are not relying on any particular volume of E15 use to support the 2018 standards, as described above.

**Comment:**

One commenter stated that demand for E15 is not constrained. It will increase if EPA increases the standards, since the standards determine the RIN price, the RIN price determines the retail fuel price of E15 relative to E10, and consumers make choice based on retail fuel price.

**Response:**

As described in the 2017 final rule, the applicable standards that we set under the RFS program provide incentives for the market to overcome many constraints associated with the use of higher level ethanol blends. However, the market is not unlimited in its ability to respond to the standards we set. RIN prices are highly variable, and the value of the RIN is not fully passed on to consumers. Moreover, the standards we set are not specific to ethanol, and the market can respond to the standards we are establishing for 2018 through volumes of higher ethanol blends

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<sup>40</sup> "E-mail dialogue with Robert White on Prime the Pump," available in docket EPA-HQ-OAR-2016-0004.

such as E15 and E85, or by increasing non-ethanol renewable fuels such as biodiesel and renewable diesel. Thus, notwithstanding the constraints associated with the use of higher level ethanol blends, increasing standards may result in no change in the use of ethanol. Regardless, we are not relying on any particular volume of E15 use to support the 2018 standards, as described above.

**Comment:**

Several commenters stated that EPA's assumption that 15% of gasoline sold at retail stations offering both E10 and E15 is E15 is not supported by statistical evidence.

**Response:**

We are not aware of any data on nationwide sales of E15, and no the commenter provided such data, though some pointed to E15 sales data from Iowa. In lieu of nationwide data, we made estimates of E15 sales in 2016 using the following equation:

$$\begin{aligned} \text{E15 volume} &= (\text{Total gasoline throughput per station}) \\ &\quad \times (\text{Number of stations offering E15}) \\ &\quad \times (\text{Fraction of total gasoline sales which are E15}) \end{aligned}$$

This equation was introduced in the 2014-2016 final rule. Our use of 15% for the fraction of total gasoline sales that are E15 is based on data provided by commenters in response to the 2017 NPRM, and is discussed in the 2017 final rule.<sup>41</sup> No commenter provided alternative data in response to the 2018 NPRM.

**Comment:**

One commenter stated that the RFS is already forcing E15 to be sold to meet the 15 billion gallon implied volume requirement for conventional renewable fuel, and that any further increases in the applicable volume requirements will result in significant costs to retailers to upgrade their equipment to offer E15.

**Response:**

The RFS program does not require the use of ethanol, nor does it require retailers to offer particular blends of ethanol. The market will determine the types and volumes of renewable fuels that will be supplied and used in order to meet the applicable standards. See also responses in Section 5.3.2 of this document on comments that conflate the implied conventional renewable fuel volume requirement with ethanol volumes.

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<sup>41</sup> 81 FR 89777

**Comment:**

One commenter stated that, due to USDA's BIP program and the Prime the Pump program, the volume of E15 could reach 1.2 billion gallons in 2018, which would be a problem for motorcycles, which cannot use E15.

**Response:**

The BIP and Prime the Pump programs enable retail stations to offer E15, but do not require its use; the market will determine the volume of E15 actually sold. Moreover, these grant programs are not associated with the RFS program, and the RFS program does not require the use of E15 nor of ethanol generally. We note that, even if 1.2 billion gallons of E15 were sold in 2018, it would represent less than 1% of all gasoline sold, such that motorcycles would continue to have reasonable access to E10.

**Comment:**

One commenter stated that raising the ethanol mandate to E15 would force retailers to dedicate limited underground storage capacity to E15, limiting the ability to carry other blends.

**Response:**

The RFS program does not require E15 nor ethanol generally, and retailers are not required to offer E15 or any other ethanol blends.

**Comment:**

One commenter stated that EPA continues to overestimate the amount of E15 that will be used.

**Response:**

For both the 2018 NPRM and the 2018 final rule, we did not project a specific volume of E15 that could be used in 2018. As described in more detail in Section 5.1.5 of this document, the 2018 NPRM included an assumption that the market could reach a nationwide average of 10.13% ethanol in 2018, the same as that assumed in establishing the 2017 volume requirements. However, for the 2018 final rule, we have based our determination of the volume requirement for total renewable fuel on reducing the statutory target for total renewable fuel by the same amount as the reduction in advanced biofuel under the cellulosic waiver authority. To perform this calculation, there was no need to assume a particular volume of E15, nor of ethanol generally.

### 5.1.7 E85

Commenters that provided comment on this topic include, but are not limited to: 1692, 1756, 2545, 3105, 3106, 3177, 3242, 3497, 3645, 3649, 3680, 3681, 3887, and 3962.

#### **Comment:**

A number of commenters pointed to efforts by major retailers to offer E85. In contrast, other commenters pointed to examples of retailers who have discontinued offering E85 due to low sales.

#### **Response:**

Despite these conflicting comments, the totality of available evidence suggests that infrastructure will expand through 2018 due in part to installation/upgrade costs that have been subsidized by USDA's BIP program and/or the ethanol industry's Prime the Pump program. Although we recognize that some retailers may have ended offerings of E85, the net result of expanded infrastructure under these programs is that E85 use is likely to increase in 2018 compared to previous years. Regardless, we are not relying on any particular volume of E85 use to support the 2018 standards, as described above.

#### **Comment:**

Commenters representing ethanol interests generally stated that an E85 price discount significantly higher than energy parity is achievable, while commenters representing refiners and retailers generally stated that this was not possible without losing money.

#### **Response:**

Commenters were strongly divided on what E85 price discount may be attainable in 2018. No commenters provided an unambiguous, quantitative methodology for determining an appropriate future E85 price discount that would occur under the influence of higher RFS volume requirements. Since the RFS program does not require the use of ethanol, the market will determine whether compliance with the applicable standards will occur as a result of increased E15 and E85 use, or through the use of non-ethanol renewable fuels. Regardless, we are not relying on any particular volume of E85 use to support the 2018 standards, as described above.

#### **Comment:**

One commenter stated that the 2018 NPRM provided no reason to believe that EPA's projection of 350 million gallons of E85 is attainable, and that an E85 price discount of 30% cannot be reached in 2018.

**Response:**

The 2018 NPRM did not project a specific E85 volume for 2018, and thus did not discuss the E85 price discount that was achievable in 2018. However, in the context of describing various ways in which the proposed standards could be met, we said that an E85 volume as high as 350 million gallons was possible if, among other things, the E85 price discount reached 30%.<sup>42</sup> The 2018 NPRM did not identify 30% as a likely outcome, and indeed said that:

“The scenarios above cannot be treated as EPA’s views on the only, or even most likely, ways that the market may respond to the proposed 2018 volume requirements. Instead, the scenarios are merely illustrative of the various ways that it could play out. Our purpose in generating the list of scenarios above is only to illustrate a range of possibilities which demonstrate that the standards we are establishing in this action can reasonably be met.” (82 FR 34235)

The 2018 NPRM said that an E85 price discount of 30% was possible because there was evidence that it had already occurred in a more limited fashion. Commenters provided no compelling evidence that this was not possible.

**Comment:**

One commenter stated that EPA’s continued reference to so-called constraints on E85 use ignores the fact that achievable volumes of E85 are determined by the standards that EPA sets. The market will respond to the standards that EPA sets to increase E85 use.

**Response:**

As described earlier, the market is not unlimited in its ability to respond to the standards we set as implied by many commenters that represent the ethanol production industry. We continue to believe that constraints on the use of higher ethanol blends such as E85 are real, and that higher standards do not necessarily correspond to increased use of ethanol. Commenters provided no new information to indicate otherwise. Moreover, the standards we set are not specific to ethanol, and the market can respond to the standards we are establishing for 2018 through E15 and/or E85, or through non-ethanol renewable fuels such as biodiesel and renewable diesel.

**Comment:**

One commenter stated that EPA’s correlation between E85 sales volumes and E85 price discount is based on a flawed analysis, resulting in a correlation that is far too strong. It should be based on more accurate information.

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<sup>42</sup> Table V.C-1 in the 2018 NPRM (82 FR 34206, July 21, 2017).

**Response:**

The commenter provided critiques of the correlation between E85 sales volumes and price discount that was developed in the context of the 2014-2016 final rule.<sup>43</sup> That correlation was updated with additional data and a more robust statistical analysis for the 2017 final rule.<sup>44</sup> The commenter's criticisms do not apply to the updated correlation, and the commenter did not provide a critique of the updated correlation.

**Comment:**

One commenter stated that the available data on E85 sales volumes versus price discount is not valid because it occurred when RFS standards were not high enough to push E85 sales significantly. Because the underlying data is not a valid basis for the correlation, EPA should base the shape of the curve on what is reasonable and consistent with economic theory rather than on which curve fits the data best.

**Response:**

We disagree with the commenter's assertion that the available data is not valid. The available data represents real-world consumer responses to the retail price difference between E85 and E10. About one third of the available data is for E85 price discounts higher than the 22% level representing energy parity between E85 and E10.<sup>45</sup> Since it is the data above the energy parity point that is of primary interest to ethanol proponents, the data on which the updated correlations were based is more than sufficient to capture consumer response at those levels.

Just as importantly, we disagree with the commenter's position that a correlation based on economic theory is a more appropriate basis than a correlation based on data. Our analysis included an investigation into nonlinearity in the region surrounding the energy parity point.<sup>46</sup> We determined that the theoretical upward trend that might be expected for E85 price discounts above the energy parity point of 22% was not evident in the data.

We note that the correlations at issue were not used in making projections of reasonably attainable ethanol volumes for 2018. We are not relying on any particular volume of E85 use to support the 2018 standards, as described above.

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<sup>43</sup> "Correlating E85 consumption volumes with E85 price," memorandum from David Korotney to docket EPA-HQ-OAR-2015-0111.

<sup>44</sup> "Updated correlation of E85 sales volumes with E85 price discount," memorandum from David Korotney to docket EPA-HQ-OAR-2016-0004.

<sup>45</sup> "State E85 Sales and Price Data," Excel file available in docket EPA-HQ-OAR-2016-0004.

<sup>46</sup> "Updated correlation of E85 sales volumes with E85 price discount," memorandum from David Korotney to docket EPA-HQ-OAR-2016-0004. See section "Additional investigation of nonlinearity."

**Comment:**

One commenter stated that there are about 3,700 stations offering E85 now, which indicates that the opportunities for using E85 are expanding. Therefore, there is no reason that E85 cannot increase substantially in 2018 compared to 2017.

**Response:**

As described in a memorandum to the docket, we do not believe that the number of retail stations offering E85 that is available at E85prices.com is accurate.<sup>47</sup> Instead, we have used data from DOE's Alternative Fuels Data Center, which indicates that the number of stations offering E85 as of September 2017 was 3,322, an increase from the 2016 annual average of 3,091.

We note, however, that we have not projected a specific number of retail stations offering E85 for 2018, nor have we projected a specific E85 sales volume for 2018. While the number of retail stations offering E85 will undoubtedly be higher in 2018 than in 2017, our determination of whether there will be an adequate supply in 2018 to meet a volume requirement of 19.29 billion gallons of renewable fuel assumes that, at a minimum, the pool-wide ethanol concentration of 10.13% targeted for 2017 can also be reached in 2018.

**Comment:**

One commenter stated that retail stations upgraded through the BIP program will only benefit E15, not E85.

**Response:**

As described in a memorandum for the 2017 final rule, both the BIP program and the Prime the Pump program are intended to upgrade retail stations to offer both E15 and E85.<sup>48</sup>

**Comment:**

One commenter stated that EPA is incorrect when it says that poor pricing constrains sales of E15 and E85. In fact, ethanol reduces prices at the pump.

**Response:**

As described in the 2018 NPRM and in a memorandum to the docket, the relative price of E15 and E85 compared to the price of the primary alternative E10 is one factor that affects sales volumes of these higher level ethanol blends.<sup>49</sup> The price difference between E15/E85 and E10 is a function of the price of ethanol (which is in turn primarily a function of the price of corn) in

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<sup>47</sup> "Estimates of the number of retail stations offering E85," memorandum from David Korotney to docket EPA-HQ-OAR-2015-0111.

<sup>48</sup> "Projections of retail stations offering E15 and E85 in 2017," memorandum from David Korotney to docket EPA-HQ-OAR-2016-0004.

<sup>49</sup> "Market impacts of biofuels," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

comparison to the price of gasoline (which is in turn primarily a function of the price of crude oil). Under conditions wherein ethanol prices are low and gasoline prices are high, ethanol may indeed reduce the price of E15/E85 at retail in comparison to E10 if parties in the distribution system pass those relative savings to retail customers. Not only is this not always the case as described in a docket memorandum, but such reductions, if and when they occur, may not be sufficient to incentivize many customers to purchase E15/E85 instead of the more familiar E10.<sup>50</sup> For these reasons, we continue to believe that the retail price of E15/E85 does in fact place constraints on the volumes that are sold.

**Comment:**

One commenter stated that EPA should be relying on EIA estimates of E85 volumes sold, not creating their own estimates. EIA says that E85 volumes used in 2015 were only 87 million gallons, not 186 million gallons as EPA estimated.

**Response:**

As discussed in the 2014–2016 final rule and the 2017 final rule, the EIA sources on which this estimate was based do not capture all E85 that is actually used; not all production at terminals, ethanol production facilities, or blenders with less than 50,000 barrels of product storage capacity are included, nor is E85 captured which is produced using reformulated gasoline or natural gasoline as the petroleum based component. Also, reported E85 production at ethanol production facilities is likely to represent net rather than total finished fuel production given the occasional negative values reported in the past. These commenters provided no new information on historical E85 supply beyond what these EIA sources capture. We continue to believe that our own estimate of actual E85 use based on E85 supply data from six states - 186 million gallons - is a more accurate estimate of nationwide E85 sales in 2015.<sup>51</sup> We have used the same methodology to estimate E85 use at 205 million gallons in 2016.<sup>52</sup>

**Comment:**

One commenter stated that EPA should rely on E85 estimates from EIA’s AEO. For 2016, AEO2017 estimates that 320 million gallons of E85 were used, not the 192 million gallons that EPA estimated in the 2018 NPRM.

**Response:**

As discussed in detail in the 2017 final rule, we do not believe that the AEO is an appropriate basis for estimating E85 use in the past nor for purposes of setting future applicable volume requirements under the RFS program.<sup>53</sup> As EIA’s STEO projections are based on more current

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<sup>50</sup> “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.

<sup>51</sup> “Final estimate of E85 consumption in 2015,” memorandum from David Korotney to docket EPA-HQ-OAR-2016-0004.

<sup>52</sup> “Final estimate of E85 consumption in 2016,” memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

<sup>53</sup> 81 FR 89778.

information and are focused on more near-term outcomes, and the STEO also forms the basis for the gasoline and diesel demand projections that EIA has indicated should be used for determining the applicable percentage standards, we do not believe that AEO is an appropriate basis for estimating the E85 supply.

**Comment:**

One commenter stated that EPA continues to overestimate the amount of E85 that will be used.

**Response:**

For both the 2018 NPRM and the 2018 final rule, we did not project a specific volume of E85 that could be used in 2018. As described in more detail in Section 5.1.5 of this document, the 2018 NPRM included an assumption that the market could reach a nationwide average of 10.13% ethanol in 2018, the same as that assumed in establishing the 2017 volume requirements. However, for the 2018 final rule, we have based our determination of the volume requirement for total renewable fuel on reducing the statutory target for total renewable fuel by the same amount as the reduction in advanced biofuel under the cellulosic waiver authority. To perform this calculation, there was no need to assume a particular volume of E15, nor of ethanol generally.

## 5.1.8 Other Comments Related to Ethanol

Commenters that provided comment on this topic include, but are not limited to: 1774, 3175, 3237, 3242, and 4397.

### **Comment:**

One commenter stated that EPA and EIA should work together to estimate volumes of E0, E15, and E85.

### **Response:**

EPA and EIA have shared information relevant to the estimation of E0, E15, and E85 for prior years. While EPA relies on EIA estimates of gasoline demand, both agencies have information on total ethanol use: EIA's information comes through its surveys of production, imports, and use, and EPA's information comes through RIN generation and retirement data in EMTS. Similarly, both agencies have information on E85 use: EIA's information comes through its surveys of production by refineries, and EPA's information comes through an analysis of E85 use from six states.<sup>54</sup> Neither agency has direct information on the use of E15 or E0. Therefore, EPA has made estimates of E15 and E0 use using a combination of information from EIA, EMTS, and other sources.<sup>55</sup>

### **Comment:**

One commenter stated that ethanol is a costly way to increase the octane of gasoline, and that there are less expensive alternatives that are better for the environment.

### **Response:**

Ethanol is often a cost-effective way to increase the octane of gasoline. Studies by others have indicated that ethanol is in fact a comparatively low cost means of increasing octane.<sup>56</sup> Comments related to environmental impacts are addressed in Section 7.2.

### **Comment:**

One commenter stated that current implementation of the RFS program encourages imports of ethanol and fails to encourage exports of ethanol.

### **Response:**

Total imports of ethanol have demonstrated a decreasing trend since 2012, contrary to this

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<sup>54</sup> "Final estimate of E85 consumption in 2016," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

<sup>55</sup> "Revised estimate of E0 use in 2016," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

<sup>56</sup> "OPIS Octane Value Forum - Lay of the Land - Terry Higgins," available in docket EPA-HQ-OAR-2017-0091

commenter's assertion.<sup>57</sup> Similarly, exports of ethanol have demonstrated an increasing trend over the same time period.<sup>58</sup> While it would be difficult to make a direct causal connection between the RFS program and imports and exports of ethanol due to the many other factors that can affect imports and exports, nevertheless the assertions made by this commenter are not supported by the available data.

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<sup>57</sup> "Imports of ethanol 2011 - 2017," available in docket EPA-HQ-OAR-2017-0091.

<sup>58</sup> "Exports of ethanol 2011 - 2017," available in docket EPA-HQ-OAR-2017-0091.

## **5.2 Biodiesel and Renewable Diesel**

### **5.2.1 Infrastructure for Distributing, Blending, and Dispensing**

Commenters that provided comment on this topic include, but are not limited to: 3249.

#### **Comment:**

One commenter estimated that 3.29 billion gallons of biodiesel and/or renewable diesel would be needed to meet EPA's proposed volumes for 2018. The commenter stated that the biodiesel distribution infrastructure would need to be expanded to accommodate this volume of biodiesel, and that this expansion of biodiesel blending infrastructure could be problematic.

#### **Response:**

EPA's market assessment indicates that the required volumes of renewable fuel in this final rule could be achieved with 2.9 billion gallons of biodiesel and/or renewable diesel.<sup>59</sup> This is equal to the volume of these fuels EPA projected would be used to meet the 2017 RFS standards, and less than 300 million gallons more than was used in 2016. The average annual increase in the volume of biodiesel and renewable supplied from 2011 through 2016 is slightly higher than 300 million gallons. This data indicates that if an expansion of the biodiesel and/or renewable distribution infrastructure is necessary to satisfy the renewable fuel volume requirements for 2018, the market is capable of adding the necessary infrastructure.

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<sup>59</sup> For further detail, see "Market impacts of biofuels," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

## 5.2.2 Vehicles That Can Use It

Commenters that provided comment on this topic include, but are not limited to: 3321.

### **Comment:**

One commenter stated that biodiesel can be used in engines in higher blends, and that renewable diesel can be used as a drop in fuel. There are therefore no limitations to the use of biodiesel/renewable diesel related to the ability of vehicles to use these fuels.

### **Response:**

While EPA continues to note that there are a significant number of vehicles for which biodiesel blends above B5 are not recommended (particularly heavy duty diesel engines, which consume significant quantities of diesel fuel), we agree with the commenter that the ability of vehicles to consume biodiesel and renewable diesel is highly unlikely to constrain the use of these fuels in 2018.

### 5.2.3 Cold Temperature Impacts

Commenters that provided comment on this topic include, but are not limited to: 3177 and 4397.

**Comment:**

Multiple commenters stated that customer concerns about biodiesel have merit, and noted that poor cold weather properties have impeded greater volumes of biodiesel entering the fuel system. One of these commenters noted that their customers generally do not purchase biodiesel in the winter months (between November 1 and mid-March). This commenter further stated that they average less than 2% biodiesel in all diesel fuel sales, and that over 75% of their blends are B5 or less. One commenter stated that biodiesel has a high viscosity and poor low temperature volatility and flow properties. This commenter claimed that biodiesel damages engines.

**Response:**

EPA recognizes the challenges associated with using biodiesel blends in cold weather. We also acknowledge that the industry has developed approaches for addressing these issues, including heated storage and blending with #1 diesel or other additives. We further note that several cold weather states have used biodiesel blends without significant reported issues in recent years. While poor quality fuel, including both petroleum based diesel and biodiesel, can damage engines, EPA is not aware of any diesel engines that recommend consumers do not use biodiesel up to 5% blend levels (B5), nor are we aware of evidence that suggests that biodiesel that meets the relevant fuel quality specifications, when stored and handled appropriately, damages engines. Finally, we note that the RFS program is designed to allow obligated parties that cannot obtain RINs necessary for compliance (or choose not to do so) to purchase separated RINs.

## 5.2.4 Production Capacity

Commenters that provided comment on this topic include, but are not limited to: 2540, 2542, 3177, 3319, 3321, 3430, 3497, and 3593.

### **Comment:**

One commenter claimed that excess biodiesel and renewable diesel production capacity exists to support higher volume requirements for these fuels.

### **Response:**

EPA acknowledges that existing biodiesel and renewable diesel production capacity exceeds the projected reasonably attainable volume of advanced biodiesel and renewable diesel for 2018 (2.55 billion gallons) as well as the total volume of biodiesel and renewable diesel projected to be used to meet the 2018 standards (2.9 billion gallons). However, for the reasons articulated in Section IV of the final rule, we do not believe it would be appropriate to require higher volumes of biodiesel or renewable diesel in this rule.

### **Comment:**

One commenter questioned claims by NBB that the biodiesel industry is operating at 65% of capacity. This commenter estimated that the domestic biodiesel production capacity is approximately 2 billion gallons.

### **Response:**

For this final rule, EPA has updated our assessment of the volume of registered capacity of biodiesel and renewable diesel.<sup>60</sup> Based on this updated assessment, EPA finds that the current domestic production capacity of registered biodiesel and renewable diesel production facilities is approximately 4.1 billion gallons, and that the production capacity for these fuels from the subset of facilities that generated RINs in 2017 (through September 2017) was 3.0 billion gallons. It is uncertain, however, how quickly these facilities could ramp-up production from current production levels to production volumes at or near their facility production capacities.

### **Comment:**

Multiple commenters cited EPA's October 2016 assessment of registered biodiesel production capacity (4.2 billion gallons), and suggested that this large production capacity, including significant unused domestic capacity, supported higher volumes of biodiesel and renewable diesel in the final rule. One commenter stated that production capacity is the only appropriate basis for determining the reasonable supply of biodiesel and renewable diesel. Another

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<sup>60</sup> See "Market impacts of biofuels," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

commenter noted that this total capacity did not include non-registered domestic facilities or any foreign production capacity.

**Response:**

EPA acknowledges that existing biodiesel and renewable diesel production capacity exceeds the projected reasonably attainable volume of advanced biodiesel and renewable diesel for 2018 (2.55 billion gallons) as well as the total volume of biodiesel and renewable diesel projected to be used to meet the 2018 standards (2.9 billion gallons). We disagree, however, that this excess production capacity provides a sufficient basis for higher required volumes of biodiesel and/or renewable diesel, or that the production capacity is the only appropriate basis for determining the reasonably available supply of these fuels. For the reasons articulated in Section IV of the final rule, we do not believe it would be appropriate to require higher volumes of biodiesel or renewable diesel in this rule.

**Comment:**

One commenter stated that the biodiesel industry requires certainty to plan for production and utilization. The commenter stated that there is more than enough domestic production capacity to meet higher volumes, and that the certainty of an increasing RVO could help the biodiesel industry get back on track.

**Response:**

We recognize that certainty in the RFS program is important to the biodiesel industry. By establishing the RFS standards by the statutory deadline (November 30) and in accordance with EPA's statutory authority, EPA believes we are providing the appropriate certainty and incentives to the renewable fuels industry, including the biodiesel industry.

**Comment:**

One commenter stated that biodiesel production capacity is expanding, noting that from 2016 to 2018 total biodiesel production capacity in Iowa is expected to increase by 78 million gallons (approximately 25%). The commenter stated that the investments to increase the production capacity have, in part, been made on the promise of a strong and growing RFS program.

**Response:**

EPA recognizes that some biodiesel producers have recently made investments to expand capacity at their biodiesel production facilities. As the biodiesel market has matured over the last decade, larger plants have come on line as some smaller plants have either expanded or closed. Thus one cannot look just at actions of individual facilities to get a sense of the overall biodiesel market. Regardless, for the reasons articulated in Section IV of the final rule, we do not believe that it would be appropriate to increase the required volumes of advanced or total renewable fuel on this basis alone.

**Comment:**

One commenter stated that the domestic biodiesel industry historically has had a relatively low capacity utilization, and imported volumes have been necessary to provide the required volumes of these fuels.

**Response:**

While it is true that the domestic biodiesel industry has historically had relatively low capacity utilization rates, this does not necessarily mean that these facilities are incapable of operating at higher utilization rates. The biodiesel industry has had relatively low capacity utilization rates over its history for a wide range of reasons. One of these reasons is that in certain markets foreign sources of biodiesel have often outcompeted potential domestic sources for U.S. market share. We believe the market is capable of supplying the 2.9 billion gallons of biodiesel and renewable diesel we projected would be used to satisfy the volumes in the final rule, whether this volume comes from increased domestic production or imported biodiesel and renewable diesel.

## 5.2.5 Feedstock Availability

Commenters that provided comment on this topic include, but are not limited to: 1775, 2539, 3245, 3319, 3321, 3430, 3497, 3578, 3593, 3647, 3680, and 3880.

### **Comment:**

One commenter stated that higher renewable fuel requirements would result in greater demand for palm oil.

### **Response:**

EPA recognizes that higher renewable fuel requirements generally, and higher required volumes for biodiesel and renewable diesel specifically, have the potential to increase global demand for palm oil. As discussed in further detail in Section IV of the final rule, EPA has considered the growth in the production of advanced biofuel feedstocks in exercising our cellulosic waiver authority in an effort to minimize the incentives for feedstock switching and the increased production of non-advanced renewable oils.

### **Comment:**

One commenter stated that farmers are capable of producing additional biodiesel feedstocks.

### **Response:**

We acknowledge that farmers have the capability to produce additional biodiesel and renewable feedstocks, and that it is possible that farmers could respond to higher RFS standards by producing additional feedstocks (such as soybean or canola oil) that could then be used to produce biodiesel and renewable diesel. It is also possible, however, that the market could respond by diverting these feedstocks from existing uses and that the industries currently using these feedstocks would instead use palm or petroleum based feedstocks. EPA has exercised our cellulosic waiver authority in an effort to minimize the incentives for this type of feedstock switching.

### **Comment:**

One commenter submitted a study of the global supply of waste oils that could be used to produce biodiesel. This study concluded that the global availability of waste greases could increase from 29.0 million metric tons in 2017 to 34.2 million metric tons in 2022.

### **Response:**

This study suggests that increased collection of waste greases globally could increase the supply of biodiesel feedstocks by approximately 5.2 million metric tons by 2022. This would be equal to an average annual increase in waste greases of 1.04 million metric tons per year, or enough feedstock to produce approximately 290 million gallons of biodiesel. This study does not,

however, attempt to quantify how much of this feedstock will be available to produce biodiesel or renewable diesel for the U.S. market. In fact, the study notes that a key driver for the increased collection of waste greases in recent years have been the incentives for biodiesel produced from these fuels in the E.U., making it unavailable for the U.S. market. Furthermore, EPA found that some of the assumptions made in calculating the total available volume of waste greases are overly optimistic. For example, the study assumes that countries that have exported used cooking oil to either the U.S. or the E.U. in recent years increase their collection rates to equal that of the U.S. by 2022, despite the fact that the majority of these countries do not have incentives in place to increase the collection of these oils. The study also includes significant volumes of grease trap oil in their estimate, even while noting that there are significant constraints to using grease trap oil as a biodiesel feedstock. In addition, the feedstocks in question are often geographically dispersed, making the collection and transportation costs associated with bringing them to local markets, let alone the U.S. market cost prohibitive. While we acknowledge that the increased collection of waste greases is likely to increase the available supply of advanced biodiesel and renewable diesel feedstocks in 2018 to some degree, we conclude that the actual increase in the supply of these feedstocks available to producers of biodiesel and renewable diesel to the U.S. market will be far less than 1.04 million metric tons. We finally note that including some portion of this available feedstock in our assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel in 2018 would not impact the required volumes we are finalizing in this rule, since we ultimately decided to reduce the advanced and total biofuel requirements from the statutory volumes by the same amount as the reduction to the cellulosic biofuel statutory volume despite the projected availability of additional advanced biodiesel and renewable diesel feedstocks.

**Comment:**

Multiple commenters claimed that EPA had presented no evidence that higher advanced biofuel standards could lead to feedstock switching. One commenter claimed that feedstock switching concerns were speculative and contrary to the facts that more feedstocks are becoming available through more efficient soybean oil crushing, increased use of distillers corn oil, and increased use of used cooking oil in recent years. The commenter noted that EPA's own analysis showed that 2.9 billion gallons of feedstock would be available for use to produce biodiesel and renewable diesel in 2018. Another commenter submitted a study examining whether or not biodiesel production in the past had diverted feedstocks from other uses. This study concluded that feedstock diversion has not occurred, and will not occur in the future.

**Response:**

The significant increase in the use of soybean oil and animal fats to produce biodiesel, repeated complaints from other industries that have historically used animal fats (such as the oleochemical industry), and the significant increase in imported volumes of biodiesel and renewable diesel in recent years are all indicators that the increase in biodiesel and renewable diesel production and use in the U.S. in recent years has, at least in part, been enabled by the diversion of feedstocks from other uses. EPA's focus in this rule, however, is the degree to which additional volumes of biodiesel and renewable diesel could be produced in 2018 without relying on further diversions of feedstocks. Even if the expansion of biodiesel in recent years primarily or exclusively relied

on newly available feedstocks, rather than diverting feedstocks from other uses (which EPA contests, as discussed below) this does not necessarily mean that future growth could be achieved in the same manner. EPA's analysis of potential new sources of advanced feedstocks for biodiesel and renewable diesel (presented in Section IV of the final rule) suggests limited growth in these feedstocks in 2018. Ultimately, however, even if EPA has underestimated the growth in advanced biofuel feedstocks in 2018 this would not impact our standards, as we have decided it is appropriate to reduce the advanced biofuel and total renewable fuel volume requirements by the same level as the cellulosic biofuel volume requirement, despite the projected availability of additional volumes of advanced biofuel (see Section IV of the final rule for a further discussion of this issue).

EPA has reviewed the study submitted by the commenter; however, we do not believe the study supports the stated conclusions. The primary evidence presented in this study that increased biodiesel production and use has not diverted feedstocks from existing uses is the increased use of non-vegetable oil feedstocks (used cooking oil, tallow, white grease, etc.) and distillers corn oil (DCO). The authors of the study suggest that rather than diverting feedstocks, the expansion of the biodiesel industry has led to the growth of new feedstock sources and the use of co-products and by-products from other sectors. While EPA recognizes that the expansion of the biodiesel industry has contributed to the collection or recovery of new feedstocks such as waste oils and greases and distillers corn oil, and that biodiesel production has expanded to areas outside traditional soybean growing regions, some of these feedstocks were already being used in non-biofuel industries prior to the expansion of biodiesel such as the oleochemical industry and animal feed.<sup>61</sup> The report cites potential for the increased use of DCO in future years as an example of a feedstock that could enable additional biodiesel production without diverting feedstocks from existing uses, even while stating that currently only 40% of DCO is used as biodiesel feedstock with the remainder being used primarily as animal feed. Increasing the use of DCO in the biodiesel industry would therefore likely result in diverting DCO from its current use as animal feed – precisely the type of diversion EPA is seeking to minimize.

It is also not the case that the growth in the biodiesel industry was entirely due to increased use of non-vegetable oil feedstocks. While the commenter notes that the share of soybean oil used to produce biodiesel has not significantly increased since 2011, the quantity of soybean oil used to produce biodiesel has increased dramatically from 1,141 million pounds in 2010 to 4,153 million pounds in 2011 and 6,096 million pounds in 2016.<sup>62</sup> The study cites lower prices for soybean oil since 2011 as evidence that the biodiesel industry is not diverting these oils from other industries. However, there are a wide variety of factors that impact the price of soybean oil (including things such as the size of the soybean harvest, the price and availability of other vegetable oils, broad global economic factors, etc.) besides demand from biodiesel producers.

The study also acknowledges that imports of biodiesel have increased significantly in recent years, but simply states (without supporting analysis) that this was the result of factors other than the RFS program.

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<sup>61</sup> See comments from the American Cleaning Institute (3578)

<sup>62</sup> Data from EIA Monthly Biodiesel Production Reports (June 2012 and October 2017)

**Comment:**

Multiple commenters stated that there are sufficient feedstocks available to produce greater volumes of biodiesel and renewable diesel. One commenter claimed that the diversity of biodiesel feedstocks can stimulate new technology and innovation.

**Response:**

Commenters suggest that there will be additional volumes of advanced feedstocks that could be used to produce biodiesel and renewable diesel in 2018. We have adjusted our projections where we find these comments are well supported. EPA's analysis of potential new sources of advanced feedstocks for biodiesel and renewable diesel (presented in Section IV of the final rule) suggests limited growth in these feedstocks in 2018. Ultimately, however, even if EPA has underestimated the growth in advanced biofuel feedstocks in 2018 this would not impact our standards, as we have decided it is appropriate to reduce the advanced biofuel and total renewable fuel volume requirements by the same level as the cellulosic biofuel volume requirement, despite the projected availability of additional volumes of advanced biofuel (see Section IV of the final rule for a further discussion of this issue).

**Comment:**

One commenter submitted a study that found that increasing biodiesel production from soybean oil could affect the use of soybean oil in food markets, and could cause market disruption across the agricultural, food, and fuel sectors. The study also found that increasing demand for biodiesel would result in soybean oil price increases, additional planting of soybeans, and increased costs for food and diesel fuel.

**Response:**

EPA recognizes that increasing renewable fuel volume requirements can result in price increases for feedstocks that are used to produce renewable fuels, which can impact the price of renewable fuels as well as other sectors that use these feedstocks. EPA has reviewed this study, and notes that the scenarios modeled (required volumes of 3.0 and 4.0 billion gallons of biodiesel and renewable diesel) are both higher than the volume of these fuels EPA projects will be used to meet these final standards (2.9 billion gallons). While we acknowledge the possibility that the RFS standards for 2018 could result in some of the impacts found in the study (such as higher prices for soybean oil, BBD RINs, greater planting of soybeans, etc.) we have exercised our waiver authorities in a manner to seek to minimize these impacts. We finally note that while the modeling results of the study may be directionally accurate, they are highly dependent on many assumptions used in the model used for the study, and may not accurately model the precise impacts of any renewable fuel requirement.

**Comment:**

One commenter noted that each year approximately 10 billion pounds of recycled animal fats and refined used cooking oil are used in the renewable fuel industry. This commenter stated that

the biodiesel and renewable diesel industry can produce more fuel if the RFS volumes were increased, and that feedstock availability would not limit the production of these fuels.

**Response:**

Recycled animal fats and refined cooking oil are significant sources of biodiesel and renewable diesel feedstocks, and we recognize that greater quantities of these products could be used to produce biodiesel and renewable diesel. However, as discussed in Section IV of the final rule, diverting these feedstocks for use to produce additional volumes of biodiesel and renewable diesel could reduce the benefits associated with biodiesel and renewable diesel production. EPA's assessment of the reasonably available volumes of these fuels sought to avoid these feedstock diversions, and is based on projected growth in the production of advanced biodiesel and renewable diesel feedstocks.

**Comment:**

One commenter stated that the RFS disadvantages industries that traditionally have used animal fats, such as the oleochemical industry. The commenter claimed that the supply of animal fats is inelastic, and that manufacturers face disruption in market availability and higher prices for animal fats as a direct result of federal incentives for biodiesel production. The commenter requested that EPA exclude animal fats from our consideration of available biodiesel feedstocks, or that we require biodiesel volumes at a level that does not unfairly impact historical feedstock uses for animal fats.

**Response:**

EPA recognizes the potential negative impacts that could result from diverting animal fats from traditional uses such as the oleochemical industry to instead use it as biodiesel and renewable diesel feedstocks. In this final rule we have exercised our waiver authority in such a way that seeks to minimize these potential negative impacts.

**Comment:**

One commenter stated that planted crops that supply oil for advanced biodiesel are primarily grown as livestock feed, and that planted acres respond to the projected demand for livestock feeds, not demand for vegetable oil for biodiesel production. The commenter further stated that increased use of oils for biodiesel and renewable diesel feedstock do not compete directly with use of non-oil components.

**Response:**

EPA recognizes that planted crops in the U.S. that supply oil for advanced biodiesel and renewable diesel are primarily grown to provide protein for livestock feed, and that plantings of these crops are thus much more sensitive to demand for livestock feed. We further recognize that increased demand for the oil portions of these crops due to higher demand for biodiesel and renewable diesel does not negatively impact the supply of the non-oil components of these crops.

Our projection of reasonably available volumes of biodiesel and renewable diesel for 2018 (from Section IV of the final rule) reflects these facts, by projecting growth in the availability of vegetable oils in 2018 based on USDA projections of domestic vegetable oil production in 2018.

## 5.2.6 Imports of Conventional Biodiesel and Renewable Diesel

Commenters that provided comment on this topic include, but are not limited to: 2545, 3105, 3106, 3177, 3497, and 3887.

### **Comment:**

One commenter stated that 400 million gallons of conventional biodiesel and renewable diesel is not available, noting that the supply of these fuels has not exceeded 200 million gallons in any previous year.

### **Response:**

In our final rule, as in our proposed rule, EPA is not projecting that 400 million gallons of conventional biodiesel and/or renewable diesel will be supplied to the United States in 2018, rather we are projecting that 2.55 billion gallons of advanced biodiesel and renewable diesel will be reasonably available in 2018, and that the market will likely supply a total volume of approximately 2.9 billion gallons of biodiesel and renewable diesel in 2018. The volume of biodiesel and renewable diesel beyond the volume projected to come from advanced biodiesel and renewable diesel could be supplied by conventional biodiesel and renewable diesel or additional volumes of advanced biodiesel and renewable diesel. We also note that historical volumes of conventional biodiesel and renewable diesel imports are not necessarily reflective of the volumes of these fuels that could be imported in future years. In light of the significant production capacity for biodiesel and renewable diesel, the large quantity of feedstocks that can be used to produce these fuels (both domestically and globally), and domestic infrastructure capable of distributing and using this volume of biodiesel and renewable diesel, EPA is not aware of any factors that would limit the total supply of biodiesel and renewable diesel to the U.S. in 2018 to a volume below 2.9 billion gallons.

### **Comment:**

One commenter stated that EPA should not want to provide incentives for conventional biodiesel, as these fuels are imported from foreign countries and have high GHG emissions.

### **Response:**

The statutory volume targets imply a target of 15 billion gallons for conventional biofuels. This volume can be satisfied with any type of conventional biofuel (including corn ethanol and biodiesel produced from a grandfathered facility), as well as additional volumes of advanced biofuels. EPA recognizes the concerns related to importing volumes of conventional biodiesel and/or renewable diesel to satisfy the RFS standards, however as discussed in Section V of the final rule, we do not believe it would be appropriate to further reduce the renewable fuel volume requirements for 2018 using the general waiver authority or the biomass-based diesel waiver authority at this time.

**Comment:**

One commenter stated that EPA should consider the impact of the proposed anti-dumping and countervailing duty cases on the availability of biodiesel and potential distortions in the market. Another commenter similarly stated that the final RFS level for BBD must account for biodiesel imports. This commenter estimated that imports will be less in 2017 than in 2016 and the proposed Department of Commerce countervailing duty determinations against biodiesel imports from Argentina and Indonesia will likely lower volumes of imported biodiesel and renewable diesel further in 2018.

**Response:**

In establishing the renewable fuel volume requirements for 2018, EPA had considered both domestically produced renewable fuels, as well as the potential for imported renewable fuels. We note that at this time the Department of Commerce has not yet made a final decision with respect to tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia. Even if tariffs and countervailing duties are ultimately applied to biodiesel from these countries, the impact of these actions is uncertain. If biofuel imports from Argentina and Indonesia decrease as a result of tariffs or countervailing duties it is possible that biodiesel imports from countries unaffected by these actions may increase. As discussed in further detail in Section V of the final rule, EPA has determined that the volumes in this final rule could be achieved through the increased production of domestic biofuels, or alternatively through a combination of domestically produced and imported renewable fuels.

**Comment:**

One commenter claimed that domestic biodiesel industry historically has had a relatively low capacity utilization, and that imported volumes of biodiesel and renewable diesel have been necessary to fill the gap. The commenter believes that Department of Commerce action on tariffs for imported biodiesel will effectively limit volumes of BBD that will be available for blending, and that EPA should exercise its general waiver authority to account for lower available volumes of these fuels.

**Response:**

EPA acknowledges that the utilization of biodiesel production capacity in the United States has historically been relatively low. We also acknowledge that in previous years, significant volumes of biodiesel have been imported to the U.S. because this fuel was available to satisfy the local demand for biodiesel at a lower price. At this time the Department of Commerce has not yet made a final decision with respect to tariffs and countervailing duties on biodiesel imported from Argentina and Indonesia. Even if tariffs and countervailing duties are ultimately applied to biodiesel from these countries, the impact of these actions is uncertain. If biofuel imports from Argentina and Indonesia decrease as a result of tariffs or countervailing duties it is possible that biodiesel imports from countries unaffected by these actions may increase. Alternatively, domestic production of biodiesel and/or renewable diesel may increase to supply volumes of these fuels previously imported from Argentina and Indonesia. As discussed in further detail in

Section V of the final rule, EPA has determined that the volumes in this final rule could be achieved through a combination of domestically produced and imported renewable fuels, and that the use of our general waiver authority to further reduce the required volume of renewable fuels is not necessary at this time.

## 5.2.7 Total Volume Achievable

Commenters that provided comment on this topic include, but are not limited to: 2545, 3319, 3497, 3649, 3677, 3961, and 3962. This section includes comments related to the total volume of biodiesel and renewable diesel achievable in 2018. For a discussion of the reasonably attainable volume of advanced biodiesel and renewable diesels see Section IV of the final rule and Section 4.2.2 of this document. For a discussion of the BBD standard for 2019, see Section VI of the final rule and Section 6 of this document.

### **Comment:**

One commenter stated that EPA should consider that the lapse of the biodiesel tax credit will likely decrease domestic biodiesel production.

### **Response:**

In this final rule EPA has considered the likely impacts of the lapse of the biodiesel tax credit on the total supply of biodiesel and renewable diesel in 2018. We believe, based on the supply of biodiesel and renewable diesel in previous years when the biodiesel tax credit was not available, that the most likely impact on the total supply of biodiesel and renewable diesel in 2018 is that the supply of these is unlikely to decrease, but is similarly unlikely to increase at the rate observed in previous years. In other words, we anticipate that the supply of biodiesel and renewable diesel in 2018 will likely be similar to the volume of these fuels we projected would be available for use in 2017 (2.9 billion gallons).

### **Comment:**

One commenter claimed that the supply of biodiesel and renewable diesel could increase by at least 100 million gallons (to 3.0 billion gallons) in 2019. Another commenter supported EPA's proposed volumes.

### **Response:**

EPA acknowledges that the total supply of biodiesel and renewable diesel in 2018 could be higher than the volume of these fuels we projected would be available in 2018. The 100 million gallon increase cited by the commenter is lower than the average increase of approximately 300 million gallons observed from 2011 to 2016. In EPA's market impacts assessment,<sup>63</sup> we simply determined that at least 2.9 billion gallons of biodiesel and renewable diesel could be supplied in 2018. As discussed in more detail in Section IV of the final rule, EPA has determined that despite the potential supply of volumes of biodiesel and renewable diesel greater than 2.9 billion gallons in 2018 it is appropriate to reduce the required volumes of cellulosic biofuel, advanced biofuel, and total renewable fuel by the same amount from the statutory targets for these fuels for 2018.

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<sup>63</sup> "Market impacts of biofuels," memorandum from David Korotney to docket EPA-HQ-OAR-2017-0091.

**Comment:**

One commenter stated that EPA's proposed rule overemphasized the impact of the lapsed federal biodiesel tax incentive on potential volumes of biodiesel and renewable diesel for 2018 and 2019.

**Response:**

EPA recognizes that there is significant uncertainty surrounding whether or not the biodiesel tax credit will be available in 2018, as well as the likely impact of the presence or absence of the tax credit. Our review of the supply of biodiesel and renewable diesel in years in which the tax credit was not available suggests that even if the tax credit continues to be unavailable, it is reasonable to project that the volume of biodiesel and renewable diesel projected to be available in 2017 will continue to be available in 2018. As discussed in the previous response, a greater projected available supply of biodiesel and renewable diesel in 2018 would not impact the volume requirements for 2018 in this final rule.

**Comment:**

Multiple commenters claimed that a supply of 2.9 billion gallons of biodiesel and renewable diesel is not achievable in 2018. One commenter claimed that achieving this supply of biodiesel and renewable diesel would require more than 2.5 billion gallons of advanced biodiesel and renewable diesel (which would cause feedstock switching/diversion EPA sought to avoid in the proposed rule) or 400 million gallons of conventional biodiesel and renewable diesel. This commenter stated that the total supply of conventional biodiesel and renewable diesel has never exceeded 200 million gallons in any year, and claimed that all conventional biodiesel and renewable diesel is imported and produced from palm oil, which causes negative environmental impacts. Finally, the commenter claimed that the proposed tariffs and countervailing duties on biodiesel and renewable diesel imported from Argentina and Indonesia will decrease availability of biodiesel and renewable diesel in 2018.

**Response:**

The volume of biodiesel and renewable diesel beyond the volume projected to come from advanced biodiesel and renewable diesel could be supplied by conventional biodiesel and renewable diesel or additional volumes of advanced biodiesel and renewable diesel. While historical volumes of conventional biodiesel and renewable diesel imports have not exceeded 200 million gallons in previous years, these volumes are not necessarily reflective of the volumes of these fuels that could be imported in future years. In light of the significant production capacity for biodiesel and renewable diesel, the large quantity of feedstocks that can be used to produce these fuels (both domestically and globally), and domestic infrastructure capable of distributing and using this volume of biodiesel and renewable diesel, EPA is not aware of any factors that would limit the total supply of biodiesel and renewable diesel to the U.S. in 2018 to a volume below 2.9 billion gallons. We acknowledge that supplying this volume of biodiesel and renewable diesel in 2018 may lead to some degree of the feedstock switching and/or diversion. EPA is seeking to minimize the incentive for such feedstock switching in this rule, as well as the

potential for imported biodiesel and renewable diesel produced from palm oil at grandfathered biodiesel or renewable diesel production facilities. However, EPA has determined that at this time it would not be appropriate to exercise our general waiver authority or biomass-based diesel waiver authority to further reduce the required renewable fuel volumes in an effort to prevent these results.

**Comment:**

One commenter expressed support for EPA's assessment that that expiration of the biodiesel tax credit is likely to have two primary impacts on supply of renewable and biodiesel: decreased economic incentives for blending BBD for downstream fuel marketers who in the past have been able to then lower prices at the pump for consumers and the potential for decreased volumes of imported biodiesel and renewable diesel.

**Response:**

While EPA expects that the absence of the biodiesel tax credit will likely result in decreased economic incentives for blending BBD for downstream fuel marketers and potentially lower volumes of imported biodiesel and renewable diesel, our review of the supply of biodiesel and renewable diesel in previous years when the tax credit was not available suggests that these impacts are unlikely to result in a decrease in the supply of biodiesel and renewable diesel in 2018 relative to the volume projected to be available in 2017.

**Comment:**

One commenter claimed that the market signal of an increasing RVO for biomass-based diesel must be significantly strong to overcome any uncertainty about the expiration of the biodiesel tax credit. This commenter noted that EPA acknowledged this in our proposed rule and projected that that the supply of biodiesel and renewable diesel could reach 2.9 billion gallons in 2018 despite the current absence of tax credit.

**Response:**

EPA believes that the RFS program, including the required volumes finalized for 2018 that are being finalized in this rule, provide the appropriate incentives for the biodiesel and renewable diesel industry.

**Comment:**

One commenter stated that EPA's proposed total renewable fuel volume (which EPA projected would be met with approximately 2.9 billion gallons of biodiesel and renewable diesel) would result in higher biofuel prices, especially in light of the expiration of the biodiesel tax credit and the potential tariffs on imported biodiesel from Argentina and Indonesia.

**Response:**

EPA has estimated the cost increases of the renewable fuel volumes in this final rule (see Section IV of the final rule for EPA's illustrative cost estimates). EPA has determined that these costs do not justify further reductions to the RFS standards using EPA's general waiver authority.

## **5.2.8 Consumer Response**

Commenters that provided comment on this topic include, but are not limited to: 1791

### **Comment:**

One commenter stated that the market for diesel fuel is growing in the U.S., and that consumers are choosing to use biodiesel blends.

### **Response:**

EPA recognizes that demand for diesel fuel in the U.S. may rise in future years, and that consumers are choosing to demand biodiesel and renewable diesel blends. We anticipate that this will continue in 2018 given the standards being finalized.

## **5.3 Determination of Standards**

### **5.3.1 Total Renewable Fuel Volume**

Commenters that provided comment on this topic include, but are not limited to: 2539, 2545, 3174, 3237, 3249, 3306, 3317, and 3658.

#### **Comment:**

One commenter stated that the proposed volume of 19.24 billion gallons for total renewable fuel will result in high volumes of soybean oil used to produce biodiesel, and that this soybean oil will be pulled from other vegetable oil markets. To replace the lost soybean oil, palm oil use will increase. Since palm oil has a number of environmental problems, EPA should reduce its volume requirements to ensure that palm oil use does not increase.

Similarly, another commenter stated that EPA should reduce the total renewable fuel volume to avoid competition between biofuel production and the use of vegetable oil for food.

#### **Response:**

In establishing the final volume requirements for 2018, we determined that it would not be appropriate to establish a total volume requirement greater than 19.29 billion gallons due to the increased potential for feedstock switching. Since the 2018 volume requirements are very similar to the 2017 volume requirements, we do not believe that there will be an increase in the volume of palm oil used as a result of the RFS program between 2017 and 2018. Further discussion of feedstock switching can be found in Section 5.2.5 of this document. Comments on environmental impacts are addressed in Sections 6.4.3 and 7.2 of this document. We note that further reductions of the volume requirements would require exercise of other waiver authorities, which do not permit consideration of feedstock switching.

#### **Comment:**

One commenter stated the proposed 2018 volume requirement for total renewable fuel is too low compared to the 2017 volume requirement. The RFS program was meant to increase volumes every year.

#### **Response:**

Congress provided EPA with the authority to waive volumes under certain conditions. The statutory text of the waiver provisions does not require that volume requirements increase every year even after they are waived in part using one of the available authorities. Nevertheless, in determining that the 2018 statutory volume requirement for total renewable fuel is not achievable and therefore should be waived, we are establishing a volume requirement for 2018 that is slightly higher than the volume for 2017.

**Comment:**

One commenter stated that EPA should increase the 2018 volume requirement for total renewable fuel in comparison to the 2017 volume requirement in proportion to the increase in gasoline and diesel demand between the two years.

**Response:**

The sum of gasoline and diesel is projected by EIA to increase by about 1% between 2017 and 2018.<sup>64</sup> However, our assessment of the volume of renewable fuel that is both reasonably attainable and appropriate to require is based on a more expansive consideration of relevant factors impacting the renewable fuel market than just gasoline and diesel demand. As described in Sections IV and V of the final rule, we have considered volumes that can be produced or imported, available feedstocks, and costs. As a result of our assessment, the 2018 volume requirement for total renewable fuel will be 10 million gallons higher than the 2017 volume requirement.

**Comment:**

One commenter suggested that the blending requirements under the RFS program be based on a specified proportion of gasoline demand rather than on a specified volume of renewable fuel.

**Response:**

The applicable standards under the RFS program are percentages rather than volumes. While the statutory targets and waivers of those targets that EPA determines are appropriate are given in volumes, the statute requires that those volumes be converted into percentage standards by dividing them by the projected demand for non-renewable gasoline and diesel. It is the percentage standards that are then published in the regulations at 40 CFR 80.1405, and with which obligated parties must comply.

See also responses to comments in Section 5.1.2 of this document regarding commenter requests that the volume requirements be specified in such a way as to ensure that the nationwide average ethanol content of gasoline is no higher than 9.7%.

**Comment:**

One commenter stated that the total renewable fuel volume requirement for 2018 should be 17.05 billion gallons.

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<sup>64</sup> Based on the October 2017 version of EIA's Short-Term Energy Outlook, 2017 consumption will be 142.53 bill gal gasoline and 53.16 bill gal diesel, while 2018 consumption will be 143.22 bill gal gasoline and 54.76 bill gal diesel.

**Response:**

A total volume requirement of 17.05 billion gallons is below the lowest volume permitted under the cellulosic waiver authority, which is 19.29 billion gallons in the final rule.<sup>65</sup> As discussed in Section V of the final rule, we have made a determination that additional reductions beyond 19.29 billion gallons are not warranted for 2018. Moreover, this commenter's suggested volume of 17.05 billion gallons is premised on 9.7% ethanol, which, as described in Section 5.1.2 of this document, is inappropriate.

**Comment:**

One commenter stated that, without regard to the specific waiver authority being exercised, the volume of total renewable fuel must be reduced by the same amount as the reduction in advanced biofuel to ensure that the requirement for conventional renewable fuel does not exceed 15 billion gallons. This commenter stated that this approach is justified by the fact that the standards are nested.

**Response:**

In past annual rulemakings, we have stated our belief that the statute is best interpreted to require equal reductions in advanced biofuel and total renewable fuel under the cellulosic waiver authority.<sup>66</sup> We have exercised the cellulosic waiver authority in that way in this rule as well, and the result is that the implied requirement for conventional renewable fuel (i.e., the difference between the volume for total renewable fuel and advanced fuel) is 15 billion gallons.

**Comment:**

Some commenters suggested that when reducing a specific standard under the general waiver authority, EPA may reduce any standard within which the reduced standard is nested at the same time.

**Response:**

EPA sought comment on the approach proposed by commenters. However, as EPA is not making reductions for 2018 under the general waiver authority, it need not resolve this issue at this time.

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<sup>65</sup> If this commenter's preferred cellulosic biofuel volume requirement of 216 mill gal were used, the lowest permissible volume under the cellulosic waiver authority would be 19.22 bill gal.

<sup>66</sup> For instance, see 81 FR 89752.

### 5.3.2 Conventional Renewable Fuel / Corn-Ethanol “Mandate”

Commenters that provided comment on this topic include, but are not limited to: 1177, 1301, 1754, 1776, 3237, 3242, 3251, 3319, 3478, and 3645.

#### **Comment:**

Several commenters stated that the implied volume requirement for conventional renewable fuel should be 13.86 billion gallons rather than 15 billion gallons, as this would represent a nationwide average gasoline ethanol concentration of 9.7%.

#### **Response:**

This view conflates the implied conventional renewable fuel volume requirement with ethanol. The two are not the same. Significant volumes of non-ethanol conventional renewable fuel, primarily but not limited to biodiesel, are also reasonably attainable in 2018. Moreover, as described in Section 5.1.2 of this document, we believe that E15 and E85 can supplement E10 to increase total ethanol supply to at least 10.13% in 2018. Finally, there is no conventional biofuel standard under the statute, but rather advanced biofuel and total renewable fuel standards that differ in the statute by 15 billion gallons in 2018. If more advanced biofuel volumes are used than required by the 2018 standard, then less than 15 billion gallons of conventional biofuel will be needed to meet the total renewable fuel standard.

#### **Comment:**

One commenter stated that the proposed volume of 15 billion gallons for the implied conventional renewable fuel volume requirement increases exports of ethanol. This in turn increases the use of corn for ethanol without any benefits to the U.S. This commenter stated that these facts warrant reducing the implied conventional renewable fuel volume requirement below 15 billion gallons.

#### **Response:**

The volume requirements under the RFS program can only be fulfilled by renewable fuel that is used in the U.S. Parties that export denatured ethanol must retire RINs representing that exported volume. Moreover, the volume that is exported is driven by the relative price in foreign markets versus the U.S. market. As a result, lowering the volume requirements under the RFS program would be unlikely to reduce exports, and could result in higher exports by lowering domestic demand and therefore domestic prices.

#### **Comment:**

Many commenters supported the proposed 15 billion gallons of conventional renewable fuel. Most of these commenters pointed to the fact that the domestic corn ethanol industry has sufficient capacity to produce 15 billion gallons of ethanol per year. Commenters that asked that the volume of conventional renewable fuel be set at the implied statutory target of 15 billion

gallons also emphasized the negative impacts of any reduction on jobs in the corn ethanol industry and rural economies.

**Response:**

Consistent with 2018 NPRM, we are finalizing standards that provide an implied conventional renewable fuel volume of 15.0 billion gallons, the same as the implied conventional volume in the statute.

**Comment:**

Many commenters, regardless of their views on whether the E10 blendwall can or should be a consideration in the determination of applicable volume requirements, made the implicit assumption in their comments that the total volume of ethanol that would be used was identical to the volume of non-advanced (i.e., conventional) renewable fuel that would be necessary.

**Response:**

Not only is this assumption incorrect, but it oversimplifies the true nature of the standards and the process of determining appropriate levels for those standards. Significant volumes of ethanol may be used to meet the advanced biofuel volume requirement. It is also likely that a portion of the renewable fuel pool that is not required to be advanced biofuel will be non-ethanol as evidenced by production and imports of conventional biodiesel and renewable diesel in the past. Thus it is inappropriate and misleading to assume that the conventional renewable fuel volume is identical to the volume of the ethanol that would be needed, and the conventional renewable fuel volume should not be used to determine how the market will respond *vis-a-vis* the E10 blendwall.

**Comment:**

Some commenters stated that Congress set a minimum required volume of 15 billion gallons for conventional renewable fuel.

**Response:**

This is not the case, as the statute does not specify targets for conventional renewable fuel. Instead, the statute sets targets for total renewable fuel and advanced biofuel, and then provides waiver authorities for reducing either or both of those targets. Nevertheless, as noted above, the final rule in fact provides an implied conventional volume of 15 billion gallons.

**Comment:**

One commenter stated that the requirement for 15 billion gallons of conventional renewable fuel should be reduced to protect marine engines which cannot tolerate ethanol blends higher than 10%. By setting the conventional volume requirement at 15 billion gallons, this commenter asserted, consumers would be denied choice at the pump.

**Response:**

As stated above, this comment conflates the implied conventional renewable fuel volume requirement with ethanol. More importantly, the RFS program does not require the use of ethanol nor the use of specific blends of ethanol and gasoline. See also Section 5.1.6 of this document.

**Comment:**

One commenter stated that the actual volume of conventional renewable fuel that entered into commerce exceeded 15 billion gallons in 2016, contrary to the Congressional cap in the statute.

**Response:**

As described in a memorandum to the docket, total RIN generation for conventional renewable fuel, prior to any consideration of exports or adjustments for invalid RINs, was 14,999 million RINs in 2016.<sup>67</sup> It is possible that additional biofuel was produced or imported that did not generate RINs, but if so such biofuel would either not have met the definition of renewable fuel under the RFS program, or had not been produced or imported for use as transportation fuel, heating oil, or jet fuel. EPA does not collect information on biofuel production or import that does not qualify under the RFS program.

Regardless the RFS program places no limitations on the total volume of renewable fuel that can be produced, imported, and/or used in the U.S. The applicable standards under the RFS program are not a cap on the volumes that might be used.

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<sup>67</sup> “Updated 2016 RIN supply,” available in docket EPA-HQ-OAR-2017-0091.

### **5.3.3 Other Comments Related to the Determination of Standards**

Commenters that provided comment on this topic include, but are not limited to: 3249.

#### **Comment:**

One commenter stated that 3.29 billion gallons of advanced biodiesel would be needed to meet the proposed standards. Such a level would be unrealistic to achieve, and could also result in “tightness” in the market and problems with distribution.

#### **Response:**

This commenter made a number of assumptions that we believe are inappropriate in deriving its estimate of 3.29 billion gallons of advanced biodiesel. First, they assumed lower levels of available cellulosic biofuel and ethanol than EPA has estimated would be available in 2018. Comments on these issues are addressed separately in Sections 3 and 5.1 of this document. This commenter also assumed that there would be no imported sugarcane ethanol nor advanced biofuels other than BBD and cellulosic biofuel (e.g. naphtha, heating oil, etc), contrary to EPA’s estimates. Finally, this commenter assumed that all biodiesel used to meet the implied conventional renewable fuel volume requirement of 15 billion gallons would be advanced biodiesel rather than conventional biodiesel. Taken together, this commenter’s assumptions work to exaggerate the impact of the proposed volume requirements on advanced biodiesel. Since their estimate of 3.29 billion gallons of advanced biodiesel is inappropriate, the concerns they raised with achieving this level are baseless.

## **6. BBD Standard for 2019**

### **6.1 General**

Commenters that provided comment on this topic include, but are not limited to: 0446, 1759, 1775, 2539, 2540, 2542, 2999, 3245, 3319, 3321, 3377, 3429, 3430, 3493, 3497, 3575, 3578, 3593, 3645, 3658, 3678, 3679, 3880, 3934, 3959, 3961, and 3962.

#### **Comment:**

Numerous commenters were in favor of increasing the BBD volume requirements beyond the 2.1 billion gallons proposed for 2019-- from 2.5 to 2.9 billion gallons, to reflect the projected supply of BBD available in 2018. In arguing for increases, these commenters asserted that the proposed freeze on BBD's 2019 required volume was contrary to Congress's objective of promoting growth in renewable fuels and that EPA could not neglect to encourage further growth in BBD production. These commenters cited additional reasons for increasing the volume requirement including environmental benefits, energy security benefits, and rural economic development benefits associated with greater use of BBD. Many biodiesel industry and association commenters also argued that EPA cannot arbitrarily maintain the volume at a static level with the rationale that the advanced biofuel standard it will set a year later will provide the same incentives provided by stronger biomass-based diesel volumes. These commenters argue that, beyond the BBD volume of 2.1 billion gallons proposed for 2019, the reduction in the advanced biofuel volume that EPA proposed for 2018 will not create a sustainable, profitable market that is needed to support investment, much less the aggressive targets Congress sought to have the industry reach. One commenter, in arguing for a 2.3-billion-gallon BBD mandate for 2019, indicated that 200 million gallons of BBD above the 2018 level would accomplish Congress' intent with regard to both advanced and BBD.

#### **Response:**

EPA disagrees with commenters who advocate a higher mandated level of BBD for 2019. EPA, in finalizing the 2019 requirement and as required under the Clean Air Act, reviewed the implementation of the renewable fuels program, all the factors required under the statute, comments received, and coordinated with the Departments of Energy and Agriculture. EPA recognizes that there are differing views on what is the appropriate level for the BBD applicable volume for 2019. EPA has endeavored to consider all comments and has weighed the statutory factors to reach a decision that is appropriate and reasonable. A final rule memorandum to the docket entitled, "Final Statutory Factors Assessment for the 2019 Biomass Based Diesel (BBD) Applicable Volume," discusses our consideration of the statutory factors set forth in CAA section 211(o)(2)(B)(ii)(I)-(VI) in the context of deriving the final 2019 BBD applicable volume.

Based on a review of the implementation of the program to-date and all the factors required under the statute, we are finalizing the BBD volume at 2.1 billion gallons for 2019. We believe that maintaining the level finalized for 2018 supports the overall goals of the program while also maintaining the incentive for development and growth in production of other advanced biofuels as well as the continued growth in BBD.

Arguments in favor of increasing the required volume must be balanced against the benefits of EPA retaining a substantial degree of neutrality with regards to the types of advanced biofuel that are used to meet the advanced biofuel standard. We continue to believe that allowing competition among qualifying advanced biofuels types provides an incentive for innovation, and could lead to the development of new fuels with advantages, including increased volume potential, lower costs, and greater environmental and energy security benefits. EPA is not arbitrarily keeping the 2019 BBD applicable volume low as some commenters suggest, but rather for these reasons is not increasing BBD. In addition, while competition with other advanced biofuels is not one of the explicit factors listed in the statute that EPA must take into consideration in establishing the BBD standard for years after 2013, EPA is not limited to just those factors listed in the statute.

As discussed in the 2018 NPRM and reiterated in the 2018 final rule, given current and recent market conditions, the advanced biofuel volume requirement continues to drive the BBD volumes. While we have not yet established the advanced biofuel standard for 2019, we nevertheless expect this to continue in 2019 as the advanced biofuel standard for 2018 is already above the BBD standard for 2019. 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.

**Comment:**

Several commenters stated that EPA cannot set the 2019 BBD volume requirement based on an anticipated approach to setting the 2019 advanced biofuel requirement in the future.

**Response:**

We disagree. With the exception of years for which we engaged in retroactive rulemaking (2014 and 2015), we have consistently sought to set the BBD applicable volume for years after volumes are specified in the statute significantly below the volume of BBD we anticipated would be supplied under the influence of the advanced and total renewable fuel standards, for the reasons described in our response to the comment above. It is reasonable for us to expect that the 2019 advanced biofuel volume requirement will be at least as high as the 2018 level, as it has consistently in the past, and that the volume requirement for BBD that we are finalizing in this action will appropriately provide additional support for the BBD industry while allowing the opportunity for competition with other advanced biofuels to satisfy the advanced biofuel volumes under that future standard.

**Comment:**

Several commenters promoted a higher BBD mandate by arguing that the proposed BBD volume for 2018 fails to recognize the existing production capacity, does not reflect the growth that is occurring in renewable diesel capacity, and ignores the ability for the biodiesel industry to increase production from existing capacity in a short period of time to address increased annual RVOs.

**Response:**

We disagree. EPA considered the production capacity for advanced biodiesel and renewable diesel production in setting the total advanced biofuel standard for 2018. There is already more than sufficient capacity to meet the 2.1-billion-gallon BBD volume requirement for 2019 as discussed in Section VI.B. of the final rule as evidenced by the fact that the current total capacity of all registered biodiesel and renewable diesel production facilities in the U.S. is approximately 4.1 billion gallons. As stated earlier, EPA believes that the BBD volume of 2.1 billion gallons being finalized for 2019 strikes the appropriate balance between providing a market environment where other types of advanced biofuels are incentivized and providing support and a degree of certainty for the BBD industry and the RFS program. This approach does not limit additional BBD production and in fact in deriving the 2018 advanced biofuel requirement we determined that 2.55 billion gallons of BBD would be reasonably available.

**Comment:**

Several commenters argued for a reduced BBD volume requirement for 2019. Some oil industry commenters stated that in reducing the BBD 2019 RVO, EPA should exclude the amount of BBD imports, include only domestic production, and account for the large number of BBD RINs that EPA has held to be invalid under past and ongoing enforcement actions. One commenter in arguing for reduced or flat-lined BBD 2019 standards, indicated that there were significant unresolved safety and reliability issues associated with higher blends of biodiesel for home heating oil, including sale and storage of seasonal blends, and corrosion issues.

**Response:**

As discussed in the 2017 final rule, we continue to believe that under the statute, imports of renewable fuel qualify to generate RINs for compliance with the applicable RFS standards. The statutory language indicates that imports can play a role in meeting the volume targets that Congress set. For a further discussion of EPA's consideration of imported biofuels, see Section 1.2 of this document. With regard to accounting for BBD RINs that have been invalidated under past and ongoing enforcement actions, EPA has taken these into account in setting the BBD final standards for 2019 and in past years as well. One of the primary considerations in determining the BBD volume each year is a review of the implementation of the program to date, as it affects BBD. This review is required by the CAA, and also provides insight into the capabilities of the industry to produce, import, export, and distribute BBD. Table VI.B.1-1 in Section VI of the final rule provides an overview of available BBD RINs generated, exported BBD RINs, and BBD RINs retired for non-compliance reasons information from EMTS for the years 2011-2016, the latest year for which we have complete information. With regard to the technical issues raised for home heating oil, EPA acknowledges that there may be issues associated with use of biodiesel in home heating oil but believes that these are due to use of poor quality biodiesel blends or the improper handling of biodiesel in the home heating oil context. With regard to corrosion issues raised by the commenter, at this point EPA has no evidence of a link between biodiesel and storage tank corrosion and has not considered this in setting BBD standards.

**Comment:**

Several commenters stated that BBD had grown beyond the mandate put in place by Congress and advocated for a reduced BBD standard for 2019. Their arguments for reducing BBD volumes focused on feedstock diversion, reliance on biodiesel from palm oil, reduced cost from a lower BBD RVO, and greater competition and innovation in the advanced biofuel industry for the development of more environmentally beneficial fuels.

**Response:**

We do not dispute the possibility that increased biodiesel production could result in negative impacts leading to increasing competition for feedstock which could result in exacerbation of social/environmental problems associated with expansion of palm oil production. However, at this time, we do not believe that the 2019 BBD volume requirement of 2.1-billion gallons will lead to such a result. We also note that in exercising our broad discretion under the cellulosic waiver authority to establish the advanced biofuel volume requirement for 2018 we took into consideration the availability of increased volumes of advanced feedstocks to be used for additional advanced biofuel production and sought to minimize the incentives for feedstock switching and/or the diversion of biofuel that would otherwise be used in other countries (see Section IV of the final rule and Section 4.2.2 of this document for a further discussion of this topic).

## 6.2 Supporting the BBD Industry

Commenters that provided comment on this topic include, but are not limited to: 0446, 1775, 2540, 3319, 3377, 3430, 3593, 3679, 3959, and 3961.

### **Comment:**

Numerous commenters supported the BBD industry, indicating that the industry had the capacity to produce greater volume, and stating that EPA should increase the 2019 mandated BBD volume requirement to 2.3 - 2.9 billion gallons. These commenters stated that maintaining the current volume of 2.1 billion gallons for BBD sends a negative signal to an industry that already has underutilized production capacity and is capable of quickly bringing that existing capacity back online if the BBD RVO were increased. They also noted that maintaining the BBD volume at 2.1 billion gallons for 2019 would be perceived as a lack of commitment to advanced biodiesel and could potentially stifle future investment in the industry. In addition, these commenters noted that EPA had previously supported and increased the BBD volumes to ensure that the goals of Congress were met, and that the proposed BBD and advanced biodiesel substantially move away from the statute, creating uncertainty and perpetuating the status quo that Congress sought to change. These commenters stated that EPA must do more to fulfill the intent of Congress to promote advanced fuels, including BBD. At least one commenter argued that, if Congress intended to simply let BBD remain underutilized throughout the RFS program and let overall advanced volumes drive the market for diesel fuel substitutes, it would not have needed to give EPA authority to set BBD RVOs starting in 2013. Another commenter viewed EPA's proposal of no growth in 2019 for the BBD RVO as inappropriate, and contrary to the purposes of RFS as established by Congress. Finally, some commenters indicated that higher BBD volumes beyond 2.1 billion gallons would still allow opportunities and competition for other advanced biofuel feedstocks while delivering real GHG emissions benefits and would also result in positive economic and employment benefits.

### **Response:**

EPA acknowledges comments submitted by various individuals, associations, and industries, supporting the BBD industry. The BBD industry has been an important part of the RFS program to date, delivering ever-increasing volumes of BBD while continuing to address constraints that impede BBD's future growth and diligently working to develop real world solutions to ensure growth. Our decisions to establish increasing BBD volumes each year was made in light of the fact that while cellulosic biofuel production had fallen far short of the statutory volumes, the available supply of BBD in the U.S. had grown each year, exceeding the statutory BBD volumes. 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. It provided 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.

However, EPA believes that our final 2019 BBD volume requirement, which maintains the BBD volume finalized for 2018, strikes the appropriate balance at this time, between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. Given the success of the industry in the past few years, as well as the substantial increases in the BBD volume being driven by the advanced standard, we have determined that a volume requirement greater than 2.1 billion gallons for BBD in 2019 is not necessary to provide support for the BBD industry. Setting the BBD standard in this manner continues to allow a considerable portion of the advanced biofuel volume to be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced biofuels.

### **6.3 Ensuring Opportunities for Other Advanced**

Commenters that provided comment on this topic include, but are not limited to: 2542, 3377, 3497, 3575, 3593, 3679, 3680, 3934, and 3961.

#### **Comment:**

Several commenters supported either maintaining the BBD requirement at 2.1 billion or to further lower the BBD standard to allow for greater competition and innovation within the advanced biofuel industry rather than favoring the biodiesel industry. A few supporters of advanced biofuels indicated that the BBD volume requirement did not matter as long as the total advanced mandate maintains a stable growth trajectory. Numerous commenters indicated that EPA should support both biodiesel and other advanced biofuels by increasing both the advanced the BBD volumes. One commenter stated that it was hard to take EPA's rationale for freezing the BBD 2019 requirement at 2018 level at face value considering EPA's 2018 NPRM would lower advanced biofuel levels to less than the 2017 targets. Finally, one commenter stated that EPA improperly focused on advanced biofuels as driving BBD volumes when this fact should be irrelevant to setting the minimum BBD volume for a given year, especially when EPA is required to set these volumes over a year ahead of setting the advanced/total standards.

#### **Response:**

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, 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 and general advanced categories through 2022. We believe that Congress clearly intended for EPA to evaluate the appropriate volume requirement for BBD within the advanced biofuel standard as described in CAA section 211(o)(2)(B)(ii). We note that Congress could have set ambitious targets for BBD for years after 2012, as it did for cellulosic biofuel, but did not do so. Within the statutory volumes of advanced biofuels for 2019, the statute specifies 8.5 billion gallons of cellulosic biofuel and a minimum volume requirement of 1.0 billion gallons of BBD, with the remainder left unspecified – providing space for the market to develop technologies and advanced biofuels not known at the time by Congress. Due to the success of BBD industry, and to provide continued support, we raised the BBD standard to more than double the minimum specified by Congress to 2.1 billion gallons for 2018.

When viewed from this perspective, BBD can be seen as competing for investment dollars with other types of advanced biofuels for participation as advanced biofuels in the RFS program. 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. Therefore, by setting the BBD volume requirement at a level lower than the advanced biofuel

volume requirement (and lower than the expected production of BBD to satisfy the advanced biofuel requirement), we are allowing the potential for some competition between BBD and other advanced biofuels to satisfy the advanced biofuel volume standard. We believe that this competition will also help to encourage, over the long term, the development and production of a variety of advanced biofuels that will be needed for the long-term growth of RFS volumes. However, in the short term it could also result in lower cost advanced biofuels for consumers.

We believe our final 2019 BBD volume requirement strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. Given the success of the industry in the past few years, as well as the substantial increases in the BBD volume being driven by the advanced standard, we have determined that a volume requirement greater than 2.1 billion gallons for BBD in 2019 is not necessary to provide support for the BBD industry. Setting the BBD standard in this manner continues to allow a considerable portion of the advanced biofuel volume to be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced biofuels.

**Comment:**

Several commenters restated claims made in previous RFS annual rulemakings that EPA improperly based our consideration of the statutory factors on a comparison of BBD to other advanced biofuels, rather than to diesel fuel. They continued to suggest that setting the BBD standard at a higher level than proposed would actually result in BBD competing against diesel fuel, and therefore, EPA should analyze the impacts of displacing diesel fuel with BBD in its statutory factors analysis.

**Response:**

We continue to disagree. In setting the advanced biofuel volume requirement, EPA sets the advanced biofuel standard based on reasonably attainable and appropriate volumes of BBD and other advanced biofuels. After determining that it is in the interest of the program, as described in Section VI.B of the final rule to set the 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 diesel. The only way for EPA's action on the 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.

## **6.4 Comments on Consideration of Statutory Factors (BBD)**

### **6.4.1 General Comments on the Consideration of Statutory Factors**

Commenters that provided comment on this topic include, but are not limited to: 3317, 3593, 3679, 3880, and 3961.

#### **Comment:**

Several commenters asserted that EPA had improperly or inadequately undertaken the statutory factors analysis and pointed to specific factors that they felt EPA had failed to consider or had not adequately considered (Comments on specific factors can also be found in Sections 6.4.3 through 6.4.8 of this document). Each of these commenters claimed that EPA would have arrived at a higher BBD volume requirement for 2019 if we had correctly considered the various statutory factors.

#### **Response:**

EPA believes it properly considered the statutory factors both in the 2018 NPRM and the 2018 final rule. EPA has endeavored to consider all comments and has weighed the statutory factors to reach a decision that is appropriate and reasonable. A final rule memorandum to the docket entitled, “Final Statutory Factors Assessment for the 2019 Biomass Based Diesel (BBD) Applicable Volume” discusses our consideration of the statutory factors set forth in CAA section 211(o)(2)(B)(ii)(I)-(VI) in the context of deriving the final 2018 BBD applicable volume. Based on a review of the implementation of the program to date and all the factors required under the statute, we are finalizing the BBD volume at 2.1 billion gallons for 2019. We believe that maintaining the level finalized for 2018, 2.1 billion gallons, supports the overall goals of the program, continues to support the BBD industry, while also maintaining the incentive for development and growth in production of other advanced biofuels as well as the continued growth in BBD.

Consistent with our 2017 and 2018 approach in setting the final BBD volume requirement, EPA’s primary assessment of the statutory factors for the final 2019 BBD applicable volume is that because the BBD requirement is nested within the advanced biofuel volume requirement, we expect that the final 2019 advanced volume requirement, when set next year, will largely determine the level of BBD production and imports that occur in 2019. Therefore, EPA continues to believe that the same overall volume of BBD would likely be supplied in 2019 regardless of the BBD volume we mandate for 2019 in this final rule. This assessment is based, in part, on our review of the RFS program implementation to date, as discussed above in Sections VI.B.1 and VI.B.2 of the final rule.

#### **Comment:**

Some biodiesel industry commenters stated that we improperly based our consideration of the statutory factors on a comparison of BBD to other advanced biofuels, rather than to diesel fuel. They suggested that setting the BBD standard at a higher level than proposed would actually

result in BBD competing against diesel fuel, and therefore, EPA should analyze the impacts of displacing diesel fuel with BBD.

**Response:**

We disagree. In setting the advanced biofuel volume requirement, we have assumed reasonably attainable volumes in advanced biofuels. After determining that it is in the interest of the program, as described in Section VI.B of the final rule to set the BBD volume requirement at a level below anticipated BBD production and imports, so as to provide continued incentives for research, development, and commercialization of alternative advanced biofuels, it is apparent that excess BBD above the BBD volume requirement will compete with other advanced biofuels, rather than diesel. The only way for EPA's action on the 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. These commenters also asserted that our analysis of the desirability of setting the BBD volume requirement in a manner that would promote the development and use of a diverse array of advanced biofuels is prohibited by statute. We disagree with these comments and continue to believe that the statutory volumes of renewable fuel established by Congress in CAA section 211(o)(2)(B) provide 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.

**Comment:**

Some commenters stated that the consideration of competition within the advanced biofuel pool between BBD and other advanced biofuels, and the potential for lower compliance costs cited in our proposed rule, are not included in the list of factors in CAA section 211(o)(2)(B)(ii)(V) that EPA is to consider in establishing the volume requirement for BBD.

**Response:**

EPA disagrees. Three of the factors specified in the statute are indeed related to the considerations discussed above. The "impact of the use of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods" referenced in CAA section 211(o)(2)(B)(ii)(V) is relevant, since we believe a diverse advanced biofuel pool will potentially result in decreased costs associated with the use of advanced biofuels and, consequently, decreased costs to consumers. Similarly, the "impact of the production and use of renewable fuels on the environment" referenced in CAA section 211(o)(2)(B)(ii)(I) is relevant, since we believe that incentivizing research and development in a variety of advanced biofuels could lead to the development of biofuels that have more benign effects on the environment than those that are currently available. In addition, "the impact of renewable fuels on the energy security of the

United States” referenced in CAA section 211(o)(2)(B)(ii)(II) is relevant, since we believe that incentivizing the development of a diverse array of biofuels will increase energy security. Furthermore, we note that the list of factors specified in the statute is not exclusive; that is EPA is not precluded from considering additional factors that advance the statutory objectives when it sets applicable volumes for years not specified in the statute.

## 6.4.2 Consideration of the Review of the Program to Date

Commenters that provided comment on this topic include, but are not limited to: 3430, 3478, 3593, 3679, and 3880.

### **Comment:**

One commenter stated that, with respect to BBD, the “years specified in the tables” that EPA must review are 2009 through 2012 and that EPA incorrectly makes the primary consideration in determining the level of BBD based largely on EPA’s analysis of data from 2016.

### **Response:**

EPA disagrees that the language in CAA section 211(o)(2)(B)(ii) “based on a review of the implementation of the program during calendar years specified in the tables,” refers only to 2009 through 2012 for BBD. We believe this language to requires us to review all calendar years since the RFS program was launched-- up to the present time that we have data with which to assess the program. This type of review 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. Not reviewing the program in this manner would lead to the absurd result that we could only look at the very early years of the RFS program, 2009 and 2010, when the program was not fully operational, and 2011 and 2012, when the program was still in its infancy, when making decisions about the capabilities of this industry to produce and distribute BBD in 2019, seven years since the last of those dates.

Therefore, our review of the RFS program in Sections IV.B.2 and VI.B of the final rule, and also discussed in the statutory factors memo to the docket, discuss both the historical and recent trends in the supply of biodiesel and renewable diesel. As EPA noted in Section VI.B of the final rule, the BBD industry is more mature, and we have increased BBD volumes significantly in recent years so that the BBD standard is now over twice the minimum statutory volume required in CAA section 211(o)(2)(B)(v). In these circumstances we do not believe that an additional increase in the required BBD required volume is necessary to support the industry in 2019.

In addition, while we do not expect the BBD applicable volume to be determinative of the volume of BBD use in 2019, the BBD volume requirement can still have a positive impact on the future development and marketing of BBD by providing a base guaranteed level for investment certainty in meeting the (anticipated) higher advanced volume requirement. This is consistent with the objectives of the CAA to support the continued growth in production and use of renewable fuels including advanced biofuels.

### **Comment:**

One commenter stated that biodiesel has shown it can meet rising RFS standards in previous years, thus retaining a 2.1 billion gallon requirement for BBD is arbitrary and capricious. The commenter further asserted that EPA fails to explain how finalizing a volume at the same level

as 2018, and well below actual production, provides any support for growth which is the purpose of RFS.

**Response:**

EPA disagrees with this commenter. We believe that setting the applicable volume of BBD at 2.1 billion gallons sets the appropriate floor for BBD, and that the volume of advanced biodiesel and renewable diesel actually used in 2019 will be driven by the level of the advanced biofuel and total renewable fuel standards that the Agency will establish for 2019 in 2018.

As discussed more fully in Section VI.B. of the final rule, EPA believes that our final 2019 BBD volume requirement strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. Given the success of the industry in the past few years, as well as the substantial increases in the BBD volume being driven by the advanced standard, we have determined that a volume requirement greater than 2.1 billion gallons for BBD in 2019 is not necessary to provide support for the BBD industry. Setting the BBD standard in this manner continues to allow a considerable portion of the advanced biofuel volume to be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced biofuels.

**Comment:**

One commenter stated that EPA failed to articulate what other types of advanced biofuels could be used to meet the advanced biofuel volume requirement in 2019, and that this actually argues for increasing advanced biofuel requirements to accommodate both BBD and “other types” of advanced biofuels.

**Response:**

EPA disagrees and we note that in the Final Statutory Factors Docket Memo, EPA discusses other types of advanced biofuels that could meet the advanced biofuel volume requirements including: sugarcane ethanol; ethanol from grain sorghum using certain processing technologies; renewable naphtha from food waste or cover crops; CNG/LNG from non-cellulosic sources; renewable diesel co-processed with petroleum diesel fuel; renewable jet fuel; renewable heating oil; and cellulosic biofuel.

While non-cellulosic advanced biofuel volumes other than BBD have not grown appreciably in recent years, this may not be the case in the future, particularly given that the biodiesel blender’s tax credit has not been renewed to date. Without the competitive advantage the tax credit provided to BBD, other advanced biofuels may become more competitive with BBD, potentially filling a larger share of the advanced biofuel space above the BBD standard.

In setting the BBD volume requirement at 2.1 billion gallons for 2019 EPA believes this volume sets the appropriate floor for BBD, and that the volume of advanced biodiesel and renewable diesel actually used in 2019 will be driven by the level of the advanced biofuel and total renewable fuel standards that the Agency will establish for 2019. At that time, we will undertake our analysis to determine what is the reasonably available supply of advanced biofuels. We note, however, that the advanced biofuel volume in 2018 is already larger than the BBD volume established for 2019 and therefore is likely to be in 2019 as well.

**Comment:**

One commenter noted that the supply of biodiesel should be sufficient to meet the 2.1 billion gallon 2019 RVO, although the supply may be impacted by expiration of the blender's tax credit and ongoing Department of Commerce action on biodiesel imports.

**Response:**

As discussed in Section 4.2.2 of this document, we believe that approximately 2.55 billion gallons of advanced biodiesel and renewable diesel will be reasonably attainable in 2018 despite the expiration of the blender's tax credit and the impact of potential tariffs.

### 6.4.3 Environmental Impacts (Air Quality, Climate Change, Conversion of Wetlands, Ecosystems, Wildlife Habitat, Water Quality, Water Supply)

Commenters that provided comment on this topic include, but are not limited to: 0236, 0792, 1759, 2539, 3242, 3306, 3320, 3430, 3575, 3578, 3679, 3681, 3880, 3959, and 4397.

#### Comment:

Several commenters raised concerns regarding a wide variety of environmental impacts from biofuel feedstock production such as degradation of habitat, biodiversity, wildlife, water quality, and water supply. For example, one commenter noted that EPA modeling indicates increased corn production in the Chesapeake Bay watershed has led to increase nitrogen and phosphorus loadings to the Bay. Several commenters described similar impacts to the Great Lakes and Gulf of Mexico. Several commenters expressed concerns about habitat loss and degradation due to extensification and intensification of biofuel crop production, especially corn ethanol and soy biodiesel. Many of these commenters also raised concerns regarding deforestation and peatland conversion, in countries such as Malaysia, Argentina, and Indonesia, from any potential increases in demand for palm and soy oils.

#### Response:

Analyses completed in 2011 suggested that environmental impacts from increased biofuels production and use associated with EISA 2007 were negative but limited in magnitude, mostly associated with the intensification of corn feedstock production.<sup>68, 69</sup> A more recent review of the scientific literature still supports this finding. There is more evidence of negative environmental impacts associated with land use change and biofuel production than there was suggested in 2011.<sup>70</sup> However, the magnitude of the effect from biofuels is still unknown and has not been quantified to date. Furthermore, the more recent scientific literature continues to support the conclusion from the First Triennial Report to Congress that biofuel production and use can be achieved with minimal environmental impacts if existing conservation and best management practices for production are widely employed.<sup>71</sup>

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<sup>68</sup> U.S. Environmental Protection Agency. December, 2011. *Biofuels and the Environment: First Triennial Report to Congress*.

<sup>69</sup> Committee on Economic and Environmental Impacts of Increasing Biofuels Production, National Research Council, National Academies of Science. 2011. *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy*. National Academies Press. Washington, D.C.

<sup>70</sup> Since the 2011, there have been several advances in our understanding of land use change trends in the U.S. Three major national efforts have been published: (1) a pair of related studies quantifying cropland extensification from 2008-2012 (Lark et al. 2015; Wright et al. 2017), (2) the USDA 2012 Census of Agriculture (Census) (USDA 2014), and (3) the 2012 USDA National Resources Inventory (NRI) (USDA 2015). There have also been several regional studies documenting land use change in different parts of the country, including the Prairie Pothole Region (Johnston 2013; Johnston 2014; Reitsma et al. 2016), around the Great Lakes (Mladenoff et al. 2016), for the western cornbelt (Shao et al. 2016), for lands in the Conservations Reserve Program (CRP) (Morefield et al. 2016), and for corn/soybean farms (Wallander et al. 2011).

<sup>71</sup> U.S. Environmental Protection Agency. December, 2011. *Biofuels and the Environment: First Triennial Report to Congress*.

While some commenters believed that the connections between RFS mandates and the environmental impacts are undeniable, the science continues to tell us that quantifying such connections is very complicated. Specifically, identifying and separating the extent of negative environmental impacts attributed to the RFS program from the negative impacts due to overall land use changes is difficult. Since 2010, researchers have continued to explore potential connections between biofuel production and environmental impacts. Areas of particular focus for this new, growing body of research include GHGs, water quality, and land use change impacts from biofuel production, particularly impacts associated with the production of corn, soy, and perennial grasses as biofuel feedstocks. While no definitive conclusions have been made regarding RFS-caused environmental impacts, the potential for impacts remains an area of interest and EPA continues to look at these impacts and track the science in these areas.

**Comment:**

One commenter raised concerns that RFS promotes the cultivation of invasive, non-native, and/or noxious weeds. This commenter raised specific concerns regarding water use in biofuel production, explaining that biofuel production uses more water per unit of energy than refined petroleum fuels. This commenter also stated that ethanol extends gasoline soil and groundwater pollution plumes.

**Response:**

In the context of RFS pathways analysis and approval, EPA solicits public comment as part of its evaluation of new biofuel feedstocks. As part of that process, concerns regarding potential invasiveness of some feedstocks have been brought to EPA's attention. In response to these comments, and in collaboration with USDA, EPA has examined the invasion risk of feedstock species and includes further regulatory requirements (e.g., a Risk Mitigation Plan) as appropriate in pathway approvals in order to reduce the risk that species with invasive potential spread beyond the cultivated acres. We note that the principal planted biofuel crops – corn and soybeans – do not raise invasiveness concerns.

Analysis completed in 2011 suggests that water used for irrigation of feedstocks greatly exceeds the water required for conversion of feedstocks to biofuels. Additionally, water use for biofuel conversion depends on several factors including facility size, water reuse technologies, and other process efficiencies.<sup>72</sup> Irrigation practices are dependent on a number of economic and agronomic factors that drive land management practices making attribution of increased irrigation and water quantity to biofuels difficult let alone the subset driven by the RFS. More research and quantitative evaluations are needed on increases in water use through changes in land use and/or land management, and whether those changes can be attributed to feedstock production.

EPA's 1999 Blue Ribbon Panel report on oxygenates cited by one commenter characterizes ethanol as traveling at about the same rate but degrading faster than the oxygenate being examined, methyl tertiary butyl ether (MTBE). The range to which the commenter stated ethanol

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<sup>72</sup> U.S. Environmental Protection Agency. December, 2011. *Biofuels and the Environment: First Triennial Report to Congress*.

extends a gasoline plume was not confirmed by the Panel, but rather presented as a hypothetical situation to the Panel with no corroborating evidence, data gathered from the field, or any additional research. Therefore, EPA still considers this a hypothetical outcome that needs additional research and data to verify.<sup>73</sup>

**Comment:**

Several commenters raised a recent EPA Office of Inspector General report, which concluded that EPA had not delivered in a timely manner required reports to Congress on the environmental impacts of biofuels.<sup>74</sup>

**Response:**

The agency is currently working on the Second Triennial Report to Congress (as noted in other responses) and expects to deliver that report in the spring of 2018.

**Comment:**

Several commenters stated that BBD has air quality benefits over petroleum diesel fuel and that biomass based diesel production reduces emissions of PM, CO, and unburned hydrocarbons when compared to petroleum diesel and further noting that scientific studies have linked PM to many health problems and that there are dollar benefits to reducing PM.

**Response:**

EPA agrees that human exposure to PM and other pollutants is associated with adverse health effects. Reducing exposures to such pollutants yields health benefits that can be both quantified in terms of avoided incidence and monetized. More detailed information is available in Sections 3.5 and 5.4 of the RFS2 RIA.<sup>75</sup>

EPA did not conduct a new air quality impact assessment in assessing the volumes of renewable fuel that are expected to be available for this rulemaking. However, as part of the RFS2 rulemaking in 2010, EPA conducted a detailed assessment of the emissions and air quality impacts associated with an increase in production, distribution, and use of the renewable fuels sufficient to meet the RFS2 volumes, including biodiesel and ethanol blends. That air quality assessment is described in Section VI.D of the preamble<sup>76</sup> for that rule and Chapter 3.4 of the RIA<sup>77</sup> for that rule.

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<sup>73</sup> U.S. EPA. September 15, 1999. *Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline* (EPA420-R-99-021).

<sup>74</sup> U.S. EPA Office of Inspector General. August 18, 2016. *EPA has not met certain statutory requirements to identify environmental impacts of Renewable Fuel Standard* (16-P-0275). <https://www.epa.gov/office-inspector-general/report-epa-has-not-met-certain-statutory-requirements-identify>

<sup>75</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006.

<sup>76</sup> Available at <http://www.gpo.gov/fdsys/pkg/FR-2010-03-26/pdf/2010-3851.pdf>.

<sup>77</sup> Available at <http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>.

The RFS2 RIA indicates that the impact of increased biofuels (as assumed to meet the RFS2 volumes) on PM and some air toxics emissions at the tailpipe is generally favorable compared to petroleum fuels, but the impact on VOCs, NOx, and other air toxics is generally detrimental.<sup>78</sup> The impact of biodiesel specifically on VOC, PM, and air toxics emissions at the tailpipe is generally favorable compared to petroleum diesel fuel, but the impact on NOx is slightly detrimental.<sup>79</sup> The RFS2 RIA also indicates that the upstream impacts on emissions from production and distribution of biofuel (including biodiesel) are generally detrimental compared to petroleum fuel.<sup>80</sup> Taking tailpipe, upstream, and refueling emissions into account, the net impact on emissions from RFS2 volumes of renewable fuels was projected to be increases in the pollutants that contribute to both ambient concentrations of ozone and particulate matter as well as some air toxics. The air quality impacts, however, are highly variable from region to region and more detailed information is available in Section 3.4 of the RFS2 RIA.

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<sup>78</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-7 and 3.2-8.

<sup>79</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-9.

<sup>80</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-2 and 3.2-3.

## 6.4.4 Energy Security Impacts

Commenters that provided comment on this topic include, but are not limited to: 0446, 1756, 2540, 3184, 3245, 3321, 3496, 3679, 3681, 3880, and 3934.

### **Comment:**

Numerous commenters lauded the energy security benefits for the U.S. associated with increases in BBD as a result of the RFS program. They suggested that increasing the 2019 BBD RVO reduces U.S. oil imports, and contributes to U.S. energy independence and security. They also suggested that the increased production of renewable fuels, such as BBD, is consistent with the current Administration's energy policy priority of "energy dominance". One commenter suggested that the petroleum-based fuel displaced by renewable fuels in domestic fuel markets does not appear to reduce U.S. crude production or domestic refinery output. Instead, the surplus petroleum-based fuel is likely to be absorbed by the export markets and improves the U.S.'s market share in the world petroleum products market. Finally, commenters suggested that renewable fuels, such as BBD, provide a hedging function and diversify fuel supplies in U.S. motor fuel markets. This helps to moderate motor fuel prices while shielding U.S. consumers from potential world oil price spikes. Another commenter suggested that reducing the BBD standard would provide greater opportunity for non-BBD biofuels to contribute towards the advanced biofuel volume requirement. This commenter suggested that reducing the BBD standard may provide greater energy security benefits, since there may be more advanced biofuel pathways, improving fuel supply diversification.

### **Response:**

We believe our final 2019 BBD volume requirement strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. Arguments in favor of increasing the required BBD volume must be balanced against the benefits of EPA retaining a substantial degree of neutrality with regards to the types of advanced biofuel that are used to meet the advanced biofuel standard. While biodiesel and renewable diesel help diversify energy sources beyond petroleum, 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). We continue to believe that allowing competition among qualifying advanced biofuels types provides an incentive for innovation, and could lead to the development of new fuels with advantages, including increased volume potential, potentially lower costs, and energy security benefits that are as yet unforeseen.

### **Comment:**

EPA requested comment on whether volumes of imported renewable fuels to the U.S. have the same impact on energy independence and security benefits as renewable fuels produced

domestically. When requesting comment, EPA noted that for 2017, the U.S. imported 731 million gallons of BBD. One commenter suggested that considerations of energy independence and security must consider the volumes of imported renewable fuels. They stated that 731 million gallons of BBD are roughly equivalent to 47,700 barrels per day of BBD. This volume of BBD, one commenter suggested, is too small to have significant effects on the U.S.'s energy independence and security. This commenter also suggested that imports of renewable diesel are largely the result of California's LCFS program. If the renewable fuel volumes for the RFS program were reduced, this might not have a significant impact on imports of renewable diesel to the U.S., since imported renewable diesel would still likely be used to meet the California LCFS program.

**Response:**

The terms energy security and energy independence are complimentary but not interchangeable concepts.<sup>81</sup> A country's energy security measures the ability of the country to withstand and adapt to sudden shocks in energy prices or, in extreme cases, physical availability. The concept of U.S. energy independence, on the other hand, suggests that the U.S. is self-sufficient in providing for its own energy needs from domestic production sources. U.S. energy independence implies eliminating payments to energy suppliers outside of the U.S. Since many energy markets are global in nature, especially liquid fuel markets, even if the U.S. achieved energy independence, energy supply disruptions throughout the globe would still result in price spikes that increase fuel costs to consumers. Thus, energy independence does not mean that the U.S. is necessarily more energy secure.

The wider use of renewable fuels such as BBD as well as other advanced biofuels in the U.S., both domestically produced and imported, improves the U.S.'s energy security position. The major energy security issue that the U.S. deals with is the possibility of foreign oil supply disruptions which raise the cost of fuels to consumers. These disruptions largely stem from the possibility of actions that restrict the supply of oil by significant key market participants such as the Organization of the Petroleum Exporting Countries (OPEC), or from wars or other sudden events. Since oil demand is highly insensitive to its own price, modest changes in the global supply of petroleum can lead to large oil price swings that adversely affect consumers.

BBD, both domestic and imported, as well as other biofuels, are less likely to face supply disruptions in comparison to global oil supply. When BBD and other biofuels, experience supply disruptions, they are likely to be tied to weather patterns (i.e., drought). Since weather patterns are not correlated with wars and other sudden events that may restrict global oil production, the wider use of BBD and other biofuels will improve the energy security position of the U.S. EPA agrees with the commenter that California's LCFS program may still result in imports of renewable diesel into California, even in the absence of the RFS program, though the market may shift to other low carbon fuels without the incentive provided by the RFS program.

Increased renewable fuels such as BBD and other advanced biofuels produced in the U.S. reduce U.S. imports of oil. Also, renewable fuels such as BBD and other biofuels produced in the U.S.

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<sup>81</sup> Greene, D., Measuring energy security: Can the U.S. achieve oil independence?“, Energy Policy, 38 (2010); pp. 1641-1621

reduce U.S. oil consumption, which may allow for the displaced oil consumption to be exported. The likely result is an improvement in the U.S.'s net export position in terms of energy. Imports of BBD and other biofuels do not promote a goal of energy independence, since they are not domestically produced.

We believe our final 2019 BBD volume requirement strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied. Arguments in favor of increasing the required BBD volume must be balanced against the benefits of EPA retaining a substantial degree of neutrality with regards to the types of advanced biofuel that are used to meet the advanced biofuel standard. We continue to believe that allowing competition among qualifying advanced biofuel types provides an incentive for innovation, and could lead to the development of new fuels with advantages, including increased volume potential, potentially lower costs, and energy security benefits that are as yet unforeseen.

## 6.4.5 Expected Rate of Production of Biofuels

Commenters that provided comment on this topic include, but are not limited to: 3317, 3319, 3880, and 3934.

### Comment:

Several commenters challenged EPA's proposed BBD volume requirement of 2.1 billion gallons for 2019 based on their assessment of a much higher expected annual rate of future commercial production of renewable fuels (statutory factor III). They argued that this much greater capacity for BBD should warrant raising the BBD volume requirement for 2019, and that to the extent the production capacity is currently idle, there is more than enough time to ramp up production to meet increased BBD volume requirements for 2019. Another commenter stated that the BBD volume requirement should account for increased demand for renewable jet fuel (renewable diesel).

### Response:

EPA acknowledges that the annual rate of future commercial production of renewable fuels is not expected to act as a constraint for setting the BBD volume requirement for 2019. As we noted in Section IV.B.2 of the final rule and in a memo to the docket,<sup>82</sup> the available production capacity for all registered domestic biodiesel and renewable diesel production facilities was approximately 4.1 billion gallons. Registered production capacity of biodiesel and renewable diesel facilities in the U.S. that generated RINs in 2017 (through September 2017) was approximately 3.0 billion gallons.

EPA also acknowledges that more than 2.1 billion gallons of advanced biofuel and renewable diesel is capable of being produced in 2019. In fact, as discussed in Section IV of the final rule, we project that already in 2018 2.55 billion gallons is reasonably attainable. However, it does not follow that we must therefore mandate this higher BBD volume requirement in 2019. In setting the BBD requirement for any given year, we are setting a floor for the minimum amount of biodiesel volume that is guaranteed to the industry. Additional levels of BBD volumes will be incentivized by the final advanced biofuel volume requirement for 2019. EPA did take into account other advanced biofuel, including jet fuel, in determining the reasonably available supply. Discussion of potential volumes for 2018 are discussed in Section IV.B.3 of the final rule. There, we recognize that the potential exists for additional volumes of advanced biofuel from sources such as jet fuel, LPG, and LNG (as distinct from CNG), as well as non-cellulosic biogas such as from digesters. However, since they have been produced in only *de minimis* and sporadic amounts in the past, we do not have a basis for projecting substantial volumes from these sources in 2018.

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<sup>82</sup> "Biodiesel and Renewable Diesel Registered Capacity (October 2017)" Memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2017-0091.

**Comment:**

Several commenters stated that we should be setting the 2019 BBD requirement at the full volume of BBD that we believe is reasonably attainable for 2019, and then provide space for other advanced biofuels to compete in the space between the established 2019 BBD volume requirement and the advanced biofuel requirement in 2019.

**Response:**

We disagree. EPA has not yet determined what volumes of advanced biofuels might be reasonably attainable in 2019. These will be the subject of regulatory actions next year. But since the statute requires that we set the BBD standard volumes earlier, we have done so with this final rulemaking. The 2019 BBD volume requirement is being finalized in a manner consistent with how we set the 2017 and 2018 BBD volume requirement, and is based on a review of the implementation of the program to date and all the factors required under the statute as detailed in Section VI of the final rule and in the “Final Statutory Factors Assessment for the 2019 Biomass Based Diesel (BBD) Applicable Volume” memorandum to the docket. Overall, we have determined that the assessment of all the statutory factors specified in CAA section 211(o)(2)(B)(ii)(I)-(VI) for the 2019 BBD applicable volume, which includes statutory factor III, “expected annual rate of future commercial production...” does not provide significant support for proposing the BBD requirement at a level higher or lower than 2.1 billion gallons in 2018.

We believe that maintaining the level of BBD finalized for 2018 of 2.1 billion gallons supports the overall goals of the RFS program while also maintaining the incentive for development and growth in production of other advanced biofuels as well as the continued growth in BBD and renewable diesel. 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.

Arguments in favor of increasing the required BBD volume must be balanced against the benefits of EPA retaining a substantial degree of neutrality with regards to the types of advanced biofuel that are used to meet the advanced biofuel standard. We continue to believe that allowing competition among qualifying advanced biofuels types provides an incentive for innovation, and could lead to the development of new fuels with advantages, including increased volume potential, potentially lower costs, and greater environmental and energy security benefits that are as yet unforeseen. EPA is not arbitrarily keeping the 2019 BBD applicable volume low, but rather for these reasons is not increasing it as might otherwise be possible were there no advanced biofuel standard. While competition with other advanced biofuels is not one of the explicit factors listed in the statute that EPA must take into consideration in establishing the BBD standard for years after 2013, EPA is not limited to just those factors listed in the statute, and furthermore costs are listed, and competition with other sources of supply is a key factor in the costs of the program. We do not believe it is either necessary or appropriate to set the BBD volume at a higher value closer to the full projected value of commercial production, but instead believe that it is appropriate to set the BBD mandate in a manner to provide space for other advanced biofuels to compete with BBD within the advanced biofuel volume requirement.

In summary, the domestic BBD industry coupled with foreign production available for import to the U.S. already has sufficient production capacity to meet the full 2.1 billion gallons being finalized for 2019. Based on comments received and further analysis, we believe that maintaining the BBD volume at 2.1 billion gallons for 2019 strikes the appropriate balance between providing a market environment where other types of advanced biofuels are incentivized and providing support and a degree of certainty for the BBD industry.

**Comment:**

One commenter stated that recent increases in the BBD standard are greater than increases in advanced feedstock availability and therefore the BBD 2019 requirement should be lowered.

**Response:**

EPA disagrees with this comment. An advanced biodiesel or renewable feedstock refers to any of the biodiesel, renewable diesel, jet fuel, and heating oil feedstocks listed in Table 1 to 40 CFR 80.1426 or in petition approvals issued pursuant to 40 CFR 80.1416, that can be used to produce fuel that qualifies for D4 or D5 RINs. These feedstocks include, for example, soy bean oil; oil from annual cover crops; oil from algae grown photosynthetically; biogenic waste oils/fats/greases; non-food grade corn oil; camelina sativa oil; and canola/rapeseed oil. Data reviewed by EPA indicates the available supply of feedstocks that can be used to produce advanced biodiesel and renewable diesel (both in the U.S. and globally) and the domestic biodiesel and renewable diesel production capacity are sufficient to produce the volume necessary to meet the 2018 advanced biofuel volume. EPA is also not aware of any factors related to the distribution or use of biodiesel and renewable diesel expected to restrict the supply of these fuels to a volume below that which would be needed to satisfy the volume of advanced biofuel. Finally, we note that the significant increases in domestic production of biodiesel and renewable diesel in previous years (443 million gallons from 2012 to 2013 and 426 million gallons from 2015 to 2016) suggest that domestic biodiesel and renewable diesel producers are capable of significant production increases in a single year.

#### **6.4.6 Impact of Renewable Fuels on Infrastructure in the U.S. (Deliverability of Materials, Goods, Renewable Fuels, and Other Products) and Sufficiency of Infrastructure to Deliver and Use Renewable Fuel**

Commenters that provided comment on this topic include, but are not limited to: 3249, 3679, and 3880.

##### **Comment:**

Several commenters faulted EPA for refusing to recognize that, in the absence of infrastructure constraints, EPA should increase the volume requirement for BBD in 2019. One commenter noted that infrastructure for BBD is a significant advantage when compared to less established advanced biofuels. Another commenter stated that the BBD industry continues to improve its distribution infrastructure to meet increased production. For example, a review of listed bulk liquid storage facilities by OPIS shows they more than doubled from the 2016 to 2017 edition.

##### **Response:**

EPA acknowledges that the biodiesel industry has continued to expand its distribution and retail infrastructure. While our final rule analysis indicates that there is sufficient infrastructure to support greater than 2.1 billion gallons of biodiesel and renewable diesel for 2019, it does not follow that we must therefore mandate this higher BBD volume requirement in 2019. In setting the BBD requirement for any given year, we are setting a floor for the minimum amount of biodiesel volume that is guaranteed to the industry. Additional levels of BBD volumes will be incentivized by the final advanced biofuel volume requirement for 2019.

## 6.4.7 Impact on Transportation Fuel Prices and the Cost to Transport Goods

Commenters that provided comment on this topic include, but are not limited to: 2547, 3245, 3248, 3593, 3645, 3880, and 3934.

### **Comment:**

Several commenters stated that EPA should consider costs when setting the BBD standards and give more weight to fuel costs in determining the level of the BBD standard for 2019. One commenter urged EPA to lower the 2019 BBD standard since this would reduce the cost of transportation fuel prices since BBD is much more expensive than diesel.

### **Response:**

We acknowledge that current renewable fuels, in particular BBD, are generally more expensive than the petroleum fuels on an energy equivalent basis, and therefore increasing renewable fuel use is expected to result in a modest increase in the cost of transportation fuel and cost to transport goods in 2018 and 2019. This is true even in situations where renewable fuel blends have a lower retail price than petroleum fuels with little or no renewable content due to the transfer payments associated with tax credits and the RIN value. Despite the higher expected costs of renewable fuels in these years, we believe the 2019 BBD standard in this final rule is appropriate in light of the statutory direction in EISA.

In Section IV.E.2 of the final rule, we provide illustrative cost estimates for examples in which either soybean oil biodiesel, sugarcane ethanol, cellulosic biofuel from CNG/LNG, or cellulosic biofuel from corn kernel fiber fills the entire change in the overall advanced biofuel mandate in 2018 which includes BBD. We estimate the difference in the price per energy-equivalent biofuel on the one hand, and the petroleum-based fuel they would replace on the other. We then multiply this difference by the year-on-year change in the advanced biofuel volume requirement. More detail on this analysis can be found in the memo to the docket titled, "Illustrative Costs Impact of the Final Annual RFS2 Standards, 2018." These costs estimates are based on current market conditions, and it is likely that market conditions will vary over time. While these illustrative costs do not address 2019 costs estimates, they are informative for 2019.

### **Comment:**

Several commenters stated that due to the value of RINs, BBD blends can be offered at a cost lower than that of 100% petroleum diesel fuel. Thus, compared to petroleum the commenters argued, BBD production lowers the costs for the end users as well as the cost to transport goods. The commenters also stated that obligated parties don't pass along costs of RFS compliance on to consumers in the form of higher diesel pump prices. The commenters stated that overall, the supply-increasing effect of adding BBD to the pool of transportation fuels, reduces the cost of petroleum diesel to consumers.

**Response:**

As we have discussed in previous annual rulemakings, we do not believe it would be appropriate to treat RINs as a cost to obligated parties, or as a cost adjustment to consumers. RINs represent transfer payments within the marketplace in a similar fashion to fuel taxes, not societal costs. Thus, it is not directly relevant to our consideration of the costs of the program whether biodiesel or any other renewable fuel is less costly relative to petroleum-based gasoline or diesel for an individual that purchases. Instead, the relevant costs of producing, distributing, and blending are the costs that we consider. Further, while the increase in transportation fuel supply for biodiesel should have a directional impact of lowering transportation fuel prices, this impact will be small in comparison to the higher costs of biodiesel and renewable diesel given the size of the global transportation fuel market in comparison to U.S. biodiesel use.

**Comment:**

One commenter questioned EPA's ability to forecast accurately both petroleum diesel and biodiesel costs in 2019. The commenter stated that marginal costs differentials should not be the basis for failing to increase the BBD RVO for 2019.

**Response:**

As we discussed above, in the final rule EPA has provided illustrative costs examples for changes in the advanced fuel volumes, including soy-based biodiesel, which continues to represent the feedstock most often used to produce BBD. Compared to 2017, we estimate what an additional 10 million gallons of advanced biofuels could cost in 2018. The estimate for 10 million additional gallons of soy-based biodiesel ranges from \$10-\$13 million in 2018. It is important to note that these illustrative costs do not take into consideration the benefits of the program. To the extent that cost considerations favor BBD, the cost benefit can be obtained through the market choosing BBD over competing products in meeting the advanced and total RFS standards.

#### **6.4.8 Impacts on Other Factors (Jobs, Price and Supply of Agricultural Goods, Rural Economic Development, Food Prices)**

Commenters that provided comment on this topic include, but are not limited to: 1775, 2540, 3245, 3322, 3430, 3575, 3578, 3679, 3880, and 3959.

##### **Comment:**

Several commenters suggested that increasing BBD volumes for the 2019 RFS standard would increase employment in the renewable fuels industries, industries that supply inputs to the renewable fuels industry, and be overall beneficial to rural economies. For example, these commenters suggested that the BBD industry supports 64,000 jobs throughout its supply chain in the U.S. and every 500 million extra gallons of BBD will increase the number of jobs by 13,000.

##### **Response:**

EPA recognizes that the BBD standards have led to significant job creation, especially in rural areas, and in addition indirectly supports job creation in other industries. However, an increase in the BBD standard for 2019 will result in more employment in the BBD industry but at the expense of employment in industries that produce other (i.e., non-BBD) advanced biofuels. Accordingly, we do not believe that this factor provides a compelling reason for setting a higher or lower nested standard for BBD. We believe our final 2019 BBD volume requirement continues to provide support for continued rural economic development while striking the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced standard, we conclude that the advanced standard continues to drive the ultimate volume of BBD supplied.

##### **Comment:**

Several commenters requested that the BBD RVO for 2019 be set to discourage the use of food-based biofuels to backfill for the so-called advanced or cellulosic biofuels gap. These commenters suggested that backfilling will likely increase food prices.

##### **Response:**

To the extent that the BBD standard causes more BBD to be used to fulfill the non-cellulosic advanced biofuel volume, there might be modest increases in the price of soybeans and soybean oil. However, increases in BBD may also result in offsetting price and supply impacts on feedstocks used to make other advanced biofuels such as grain sorghum and sugarcane. In the aggregate, the impacts on individual feedstock prices may balance each other out and result in a negligible impact on overall food prices. Accordingly, we do not believe that this factor warrants setting a higher or lower nested standard for BBD.

**Comment:**

One commenter suggested that BBD has benefitted farmers by increasing the supply of co-products of soy oil such as soybean meal. The commenter stated that that increased production of BBD has reduced U.S. soybean meal prices that livestock producers pay for animal feed by approximately \$21 per ton. As another example, the commenter suggested that the use of animal fats in BBD production has increased the value of those fats, providing \$16 per head of value to beef producers.

**Response:**

To the extent that the BBD standard causes more BBD to be used to fulfill the non-cellulosic advanced biofuel volume, there might be modest increases in the amount of soybean meal and animal fats used to make renewable fuels. However, using more BBD may cause offsetting price and supply impacts on feedstocks used to make other advanced biofuels such as grain sorghum. Thus, the overall impacts on the prices of feedstocks used to make advanced renewable fuels may be modest. Given the success of the BBD industry in the past few years, as well as the substantial increases in the BBD volume being driven by the advanced standard, we have determined that a volume requirement greater than 2.1 billion gallons for BBD in 2019 is not necessary to provide support for the BBD industry. Setting the BBD standard in this manner continues to allow a considerable portion of the advanced biofuel volume to be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced biofuels. Accordingly, we do not believe that this factor warrants setting a higher or lower nested standard for BBD.

**Comment:**

Several commenters pointed to the positive impacts an increasing BBD requirement can have on the soybean industry, noting that expanding biodiesel markets are important since soybean production is driven by demand for livestock feed and the oil is a co-product. The commenters state that without a market outlet for the co-product, production of the protein meal is restrained and that biodiesel provides a market outlet for the surplus soybean oil. Another commenter noted that higher BBD requirements also helps protect jobs in the rendering industry as biodiesel producers provide a market for rendered animal fats.

**Response:**

An increase in the BBD standard for 2019 may have benefits to some sectors of the economy, but at the expense of benefits in other advanced biofuel sectors that BBD would displace. Similarly, an increase in the BBD standard for 2019 will result in more employment in the BBD industry but at the expense of employment in industries that produce other (i.e., non-BBD) advanced biofuels. Accordingly, we do not believe that these factors warrant setting a higher or lower nested standard for BBD. We believe our final 2019 BBD volume requirement strikes the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized, while also maintaining support for the BBD industry. Based on our review of the data, and the nested nature of the BBD standard within the advanced

standard, we conclude that the advance standard continues to drive the ultimate volume of BBD supplied.

## **7. Economic and Environmental Impacts**

### **7.1 Economic Impacts and Considerations**

#### **7.1.1 Illustrative Costs of the Program**

Commenters that provided comment on this topic include, but are not limited to: 1776, 2547, 3245, 3322, 3428, 3593, 3645, 3679, 3680, 3961, and 3964.

#### **Comment:**

Several commenters stated that while EPA provides cost estimates for the 2018 RFS rule, it does not account for the benefits (e.g., energy security, the ability of renewable fuels to protect consumers from oil price swings, air quality impacts etc.) in its rulemaking. Other commenters stated that EPA does not undertake a complete cost analysis for the 2018 RFS rule, since EPA does not account for factors such as infrastructure costs and investment impacts. Another commenter suggested that EPA's estimates of the costs of the 2018 RFS are understated since EPA only focuses on wholesale costs. Another commenter suggested that EPA overestimated costs by not accounting for the reduction in the price of diesel fuel and home heating oil prices from the increase in renewable fuel volumes as a result of the 2018 RFS. One commenter suggested that EPA's 2018 RFS analysis fails to satisfy a cost/benefit analysis test since EPA has not updated its lifecycle GHG estimates since 2010. One commenter submitted a confidential analysis assessing the impacts of higher advanced renewable fuel and biodiesel volumes (4.75 billion gallons of advance fuel in 2018 and 2.5 billion gallons of biodiesel in 2019, respectively). The analysis suggests that the increases in the volumes of renewable fuels modeled in their study would have only modest impacts on agricultural commodity markets.

An additional commenter submitted a Working Paper (The Renewable Fuel Standard in Competitive Equilibrium: Market and Welfare Effects, by Moschini et al.) that uses a multi-market model (e.g., corn, soybeans, petroleum etc.) to assess the costs and impacts of the RFS program. The model suggests that the RFS program has improved the overall economic welfare of the U.S. by altering "terms of trade" effects. The U.S. is a net exporter of farm products and a net importer of petroleum. The model estimates that the RFS has increased agricultural prices (e.g., corn, soybeans) and lowered the price of imported oil. According to the paper, these price effects stemming from the RFS benefit the U.S. and increase economic welfare. Another commenter suggested that EPA needs to have better cost estimates of the individual renewable fuels, instead of basing illustrative cost estimates on representative fuels (e.g., using soy oil biodiesel to represent the costs of all biodiesel). This commenter suggested that EPA undertake a more detailed cost analysis of the 2018 standards similar to the type of analysis that EPA undertook for the Regulatory Impact Analysis that accompanied the 2010 RFS rulemaking.

#### **Response:**

EPA continues to believe that while costs can be associated with the impacts of the rule on an annual basis, the long-term nature of the benefits of the RFS program are not well suited for being analyzed on a piecemeal basis and are better addressed with the full maturity of the

program in 2022. EPA estimated GHG, energy security, air quality impacts, and benefits in the 2010 RFS2 final rule assuming full implementation of the statutory volumes in 2022. EPA focuses on wholesale fuel costs in its cost analysis since wholesale cost estimates exclude transfer payments (i.e., RIN values, tax payments) that are included in the retail price of both renewable fuels and petroleum-based fuels. By focusing on the wholesale level, EPA's analysis is better able to estimate societal costs. In response to one commenter who suggested EPA account for the reduction in the price of diesel fuel and home heating oil prices from the change in renewable fuel volumes as a result of the 2018 RFS, it is not anticipated that petroleum-based fuel prices will be measurably affected. Thus, we use the most recent fuel price available from DOE's STEO. Another commenter suggested that the agricultural commodity impacts of increasing renewable fuel volumes would be modest. The commenter's assessment, however, assumed that the biodiesel blenders' credit will continue to be renewed and doesn't consider the possibility of U.S. tariffs on Argentina and Indonesian biodiesel. Extension of the biodiesel blenders' credit and U.S. import tariffs on biodiesel would likely alter the agricultural commodity impacts of higher renewable fuel volumes from this rule. One commenter suggested that EPA consider "terms of trade" effects when accounting for the costs of the 2018 RFS. Given the modest increase in volumes of renewable fuels being required in this rulemaking, it is unlikely that the terms of trade for agricultural and petroleum products for the U.S. would be altered significantly. As a result, EPA did not factor terms of trade effects into its cost analysis. Given the limited time frame for conducting this annual rule, it is not feasible to develop a detailed cost analysis of each type of individual renewable fuel that could comply with the 2018 RFS. In response to the comment that EPA should update its lifecycle GHG estimates as part of a revised cost benefit analysis, see Section 7.2.1 of this document.

**Comment:**

Several commenters stated that the illustrative cost analysis is inaccurate since it focuses on the societal costs of the program, and not the costs to consumers of using blended fuels. One commenter suggested that the RIN associated with BBD allows parties to sell the BBD fuel at a lower cost to consumers, providing costs savings to the consumer. The same commenter suggested that that EPA should provide estimates of the costs of 2018 RFS by comparing the retail prices of biodiesel and diesel fuel using information from the DOE's Alternative Fuels Data Center, instead of estimating the costs of renewable and petroleum fuels at the wholesale level.

**Response:**

When undertaking a cost analysis, EPA assesses the societal costs of renewable fuels compared to the petroleum fuels that they are replacing. Societal costs represent the resource costs (e.g., extra costs in making the fuel such as the use of corn or soybeans, fertilizers to grow the crops, tractors to plow the fields) that are required to produce the renewable fuels. The RIN value is a transfer payment between renewable fuel providers and RFS obligated parties that are required to blend renewable fuels into their petroleum-based fuels. The RIN value reduces the price of the renewable fuel in relation to the petroleum fuel into which it is blended, but also increases the price of the petroleum fuel blendstock. In many blends, these two price impacts essentially offset each other. In blends with higher than average renewable fuel content, marketers can offer them

to consumers at a price discount as the commenter suggests. However, that price discount is offset by other consumers paying higher prices for fuel with less than average renewable fuel content. Other than the administrative transaction costs associated with exchanging the RIN, there are no societal costs associated with the RIN. The DOE Alternative Fuels Data Center reports retail prices of renewable and petroleum-based fuels that drivers see when they purchase the fuels. Retail fuel prices are determined by a variety of factors including the costs of the fuels, the RIN values for renewable fuels and fuel taxes. Thus, retail prices combine the costs of producing the renewable fuels with their RIN values, as well as other transfer payments such as fuel taxes. Therefore, retail fuel prices do not reflect the real societal costs of the RFS program.

**Comment:**

Several commenters recommended that EPA should place more weight and emphasis on cost considerations when setting the renewable fuel volumes for the 2018 RFS.

**Response:**

As described in the Section IV and V of the final rule, the costs of using renewable fuels is one factor that EPA has considered in setting the advanced biofuel and BBD standards for 2018 renewable fuel volumes for the RFS.

## 7.1.2 Energy Security

Commenters that provided comment on this topic include, but are not limited to: 0446, 3184, 3245, 3317, 3496, 3497, 3681, and 3961.

### **Comment:**

Numerous commenters lauded the energy security benefits for the U.S. associated with increases in renewable fuels as a result of the RFS program. They suggested that increasing renewable fuels, such as ethanol and biodiesel, reduce U.S. oil imports, and contribute to U.S. energy independence and security. They also suggested that the increased production of renewable fuels is consistent with the current Administration's energy policy priority of "energy dominance." They further suggested that the gasoline displaced by renewable fuels in domestic fuel markets does not appear to reduce U.S. crude production or domestic refinery output. Instead, the surplus gasoline is likely to be absorbed by the export markets and improves the U.S. market share in the world petroleum products market. Finally, commenters suggested that renewable fuels provide a hedging function and diversify fuel supplies in U.S. motor fuel markets. This helps to moderate motor fuel prices while shielding U.S. consumers from potential world oil price spikes. Another commenter stated that advances in unconventional oil and gas production has transformed North America into a major hydrocarbon producing region. The commenter stated that imports as a share of U.S. petroleum consumption declined from 60 percent in 2005 to 25 percent in 2016. This commenter suggested that energy security was a spurious rationale for the RFS even in the mid-2000s, and is now obsolete.

### **Response:**

EPA believes that the production of renewable fuels supports one of the goals of the RFS program by improving energy independence and security of the U.S. through diversification of U.S. transportation fuels and displacing imported petroleum. Also, the renewable fuels that displace petroleum are less likely to be subject to periodic supply disruptions or "oil shocks." Additional details on the energy security benefits associated with the full implemented of the RFS program are included in the March 2010 final RFS2 rulemaking.

### **Comment:**

EPA requested comment on whether volumes of imported renewable fuels to the U.S. have the same impact on energy independence and security benefits as renewable fuels produced domestically. When requesting comment, EPA noted that for 2017, the U.S. has imported 46 million gallons of ethanol and 731 million gallons of biodiesel/renewable diesel. One commenter suggested that considerations of energy independence and security must consider the size of the volumes of imported renewable fuels. They stated that 46 million gallons of ethanol are roughly equivalent to 2,740 barrels per day of ethanol and the 731 million gallons of biodiesel/renewable diesel are roughly equivalent to 47,700 barrels per day of biodiesel/renewable diesel. These volumes, the commenter suggested, are too small to have significant effects on the U.S.'s energy independence and security. The commenter also stated that 3,000 barrels per day of imports, roughly the quantity of ethanol being imported, represents 0.3% of U.S. ethanol production.

Also, the commenter suggested that imports of both sugarcane ethanol and renewable diesel are largely the result of the California LCFS program. If the renewable fuel volumes for the RFS program were reduced, this might not have a significant impact on imports of renewable fuels to the U.S., since imported renewable fuels would still likely be used to meet the California LCFS program requirements.

**Response:**

The terms energy security and energy independence are complimentary but not interchangeable concepts.<sup>83</sup> A country's energy security measures the ability of the country to withstand and adapt to sudden shocks in energy prices or, in extreme cases, physical availability. The concept of U.S. energy independence, on the other hand, suggests that the U.S. is self-sufficient in providing for its own energy needs from domestic production sources. U.S. energy independence implies eliminating payments to energy suppliers outside of the U.S. Since many energy markets are global in nature, especially liquid fuel markets, even if the U.S. achieved energy independence, energy supply disruptions throughout the globe would still result in price spikes that increase fuel costs to U.S. consumers. Thus, energy independence does not mean that the U.S. is necessarily more energy secure.

The wider use of renewable fuels in the U.S., both domestically produced and imported, improves the U.S.'s energy security position. The major energy security issue that the U.S. deals with is the possibility of foreign oil supply disruptions which raise the cost of fuels to consumers. These disruptions largely stem from the possibility of actions that restrict the supply of oil by significant key market participants such as the Organization of the Petroleum Exporting Countries (OPEC), or from wars or other sudden events. Since oil demand is highly insensitive to its own price, modest changes in the global supply of petroleum can lead to large oil price swings that adversely affect consumers.

Renewable fuels, both domestic and imported, are less likely to face supply disruptions in comparison to global oil supply. When renewable fuel supply disruptions occur, they are likely to be tied to weather patterns (e.g., drought). Since weather patterns are not correlated with wars and other sudden events that may restrict global oil production, the wider use of renewable fuels will improve the energy security position of the U.S. EPA agrees with the commenter that California's LCFS program may still result in imports of renewable fuels into California, even in the absence of the RFS program, though the market may shift to other low carbon fuels without the incentive provided by the RFS program. Renewable fuels produced in the U.S. reduce U.S. oil consumption, which may allow for the displaced oil consumption to be exported. The likely result is an improvement in the U.S.'s net export position in terms of energy. Imports of renewable fuels do not promote a goal of energy independence since they are not domestically produced. In any case, EPA agrees with the commenter that energy security and energy independence outcomes are only modestly affected by the current size of the volumes of imported renewable fuel to the U.S.

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<sup>83</sup> David L. Greene 2010 "Measuring energy security: Can the United States achieve oil independence?" Energy Policy, 38(4), 1614-1621

### 7.1.3 Impacts of Standards on RIN Prices

Commenters that provided comment on this topic include, but are not limited to: 1776 and 2547.

**Comment:**

One commenter submitted a study projecting a variety of agricultural, economic, and RIN price impacts of various RFS volume scenarios in future years.

**Response:**

This study focused on several different RFS scenarios in the year 2022. While it may provide some insights to the economic impacts of potential future scenarios, it is not directly relevant to this final rule.

**Comment:**

Multiple commenters requested that EPA finalize RFS volumes that are lower than the proposed volumes in an effort to reduce RIN prices. These commenters often claimed that merchant refiners are suffering economic harm from high RIN prices.

**Response:**

EPA has invested significant resources evaluating the impact of high RIN prices on refiners. After reviewing the available data, EPA has concluded that refiners are generally able to recover the cost of RINs in the prices they receive for their refined products, and therefore high RIN prices do not cause significant harm to refiners.<sup>84</sup> In light of these findings, EPA does not have the statutory authority to reduce the required renewable fuel volumes for 2018 in an effort to achieve lower RIN prices. For a further discussion of EPA's consideration of the use of the general waiver authority on the basis of severe economic harm, see Section V of the final rule.

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<sup>84</sup> For more detail on EPA's assessment of this issue 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 and "Denial of Petitions to Change the RFS Point of Obligation," available in EPA docket EPA-HQ-OAR-2016-0054.

## 7.1.4 Impacts of Standards on Retail Fuel Prices

Commenters that provided comment on this topic include, but are not limited to: 3248, 3961, and 4397.

### **Comment:**

One commenter stated that biodiesel is far more expensive to produce than petroleum diesel, but that it can be sold for less than petroleum diesel due to the value of the BBD RIN and the biodiesel tax credit.

### **Response:**

EPA recognizes biodiesel is typically more expensive to produce than petroleum diesel, but that the combination of the RIN value and the biodiesel tax credit (when available) has resulted in some retailers offering biodiesel blends (such as B20) at lower prices than petroleum diesel. We note, however, that while the value of the RINs may enable retailers to offer biodiesel blends at lower prices than petroleum diesel, as long as the cost of biodiesel is greater than the cost of petroleum diesel requiring greater volumes of biodiesel in the fuel supply will ultimately increase the price of transportation fuel. Specifically, the RIN value reduces the effective price of the renewable fuel in relation to the petroleum fuel into which it is blended, but also marginally increases the price of the petroleum fuel blendstock. In many blends, these two price impacts essentially offset each other. In blends with higher renewable fuel content, marketers can offer them to consumers at a price discount as the commenter suggests. However, that price discount is offset by other consumers paying higher prices for fuel with lower renewable fuel content.

### **Comment:**

One commenter claimed that BBD RIN costs are absorbed by refiners and are not passed on to consumers.

### **Response:**

EPA has invested significant resources evaluating the impact of high RIN prices on refiners and consumers. After reviewing the available data, EPA has concluded that refiners are generally able to recover the cost of RINs in the prices they receive for their refined products, and therefore high RIN prices do not cause significant harm to refiners.<sup>85</sup> Higher RIN prices are therefore not absorbed by refiners, but rather effectively function as a cross-subsidy. In other words, higher RIN prices function to decrease the cost of fuels that contain higher proportions of renewable fuel (such as B20 or E85), while at the same time increasing the cost of fuels with relatively low proportions of renewable fuel (such as E0 or petroleum diesel).

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<sup>85</sup> For more detail on EPA's assessment of this issue 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 and "Denial of Petitions to Change the RFS Point of Obligation," available in EPA docket EPA-HQ-OAR-2016-0054.

**Comment:**

One commenter claimed that ethanol and biodiesel cost more than gasoline and diesel to produce, and that requiring the use of these fuels increases fuel prices. The commenter further stated that high RIN prices increase fuel prices. Other commenters stated that ethanol was cheaper than gasoline, and that increased use of ethanol resulted in lower fuel prices for consumers. Some of these commenters also mentioned that ethanol was the cheapest source of octane available to the market.

**Response:**

EPA recognizes that the cost of biodiesel, and at times ethanol, is higher than the petroleum fuels they displace on an energy-equivalent basis. We note, however, that there are a number of factors, such as the high octane value of ethanol, that may result in the use of ethanol in E10 blends even in the absence of RFS standards. If the cost of biodiesel and/or ethanol are higher than the petroleum fuels they displace (after accounting for the value and/or cost of the various properties of these fuels, such as the octane value of ethanol), then requiring greater volumes of these fuels will increase the price of fuel to consumers. In this final rule EPA has considered the impact of renewable fuels on costs, and has concluded that these costs do not represent severe economic harm, and therefore do not justify additional volume reductions using our general waiver authority (see Section V of the final rule for a further discussion of EPA's consideration of severe economic harm). EPA has also invested significant resources evaluating the impact of high RIN prices on refiners and consumers. After reviewing the available data, EPA has concluded that for any given renewable fuel volume requirement consumers are not harmed by higher RIN prices themselves, as RINs effectively function as a cross-subsidy between fuels with varying levels of renewable fuel.<sup>86</sup>

**Comment:**

Several commenters stated that high RIN prices disadvantaged small retailers and distorted the retail fuel market, as larger retailers capable of blending renewable fuels are able to benefit from large profits by selling RINs. These commenters generally claimed that larger retailers are using these profits to gain market share at the expense of small retailers.

**Response:**

EPA evaluated these claims in the context of responding to petitions we received requesting that the Agency change the point of obligation in the RFS program. We determined that small retailers are not disadvantaged by the RFS program, as the profits larger retailers receive from selling RINs are generally offset by the cost of acquiring the RINs that they sell.<sup>87</sup>

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<sup>86</sup> For more detail on EPA's assessment of this issue 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 and "Denial of Petitions to Change the RFS Point of Obligation," available in EPA docket EPA-HQ-OAR-2016-0054.

<sup>87</sup> See "Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," EPA-420-R-17-008, November 2017.

## 7.1.5 Price and Supply of Agricultural Commodities and Farm Income

Commenters that provided comment on this topic include, but are not limited to: 0446, 1754, 1756, 1775, 1776, 3237, 3959, and 4397.

### **Comment:**

Numerous commenters addressed the impact of the RFS RVOs on agricultural commodities and prices (e.g., corn, soybeans), various intermediate products such as seed, as well as suppliers of agricultural inputs (e.g., agricultural equipment manufacturers). The commenters argued for higher renewable fuels volumes associated with the RFS annual standard in order to boost agricultural commodity demand and, thereby, raise agricultural commodity/input suppliers' prices and U.S. farm income. They point out that agricultural commodities are currently in relative abundance. For example, one commenter pointed to information that shows 2017 U.S. agricultural producers are facing their fourth year of depressed agricultural commodity prices and farm income. According to the commenter, U.S. net farm income has declined 50 percent since 2013. U.S. net farm income is expected to increase slightly in 2017 compared to 2016, but corn receipts have declined for the past five years. Corn prices averaged roughly \$3.40 for the 2016/2017 marketing year, with corn prices below the costs of production, which are roughly \$4.24/bushel, according to the commenter. Another commenter pointed out that that USDA data shows that soybean production has been increasing significantly in recent years and is projected to increase in 2017. According to the commenter, the U.S. soybean harvest last year was a record 4.3 billion bushels; 380 million bushels larger than the previous year. Given the recent relatively large agricultural commodity crops and the current low agricultural commodity prices, numerous commenters argued that now is not the time to reduce the demand for agricultural commodities with lower RFS RVOs.

### **Response:**

By requiring volumes of renewable fuels, the RFS increases the demand for key agricultural commodities (e.g., corn and soybeans) and agricultural input supplies (e.g., agricultural equipment) and boosts the prices of these commodities. In the March 2010 RFS2 final rule, EPA found that increased renewable fuel volumes will result in a modest increase in key agricultural commodity prices and boost net U.S. farm income. The final 2018 standards are expected to continue to provide support for agricultural commodity/input supply prices as well as net farm income in the U.S.

### **Comment:**

Several commenters argued for reductions in 2018 RFS RVOs because of the adverse impacts higher agricultural commodity prices could cause. One commenter pointed out that the more corn oil that is extracted from distillers dried grain solubles (DDGS) to make biodiesel for the RFS program, the less useful the DDGS become as feed ingredient for poultry production.

**Response:**

EPA recognizes that increasing renewable fuel production from traditional feedstocks (e.g., corn, soybeans) can benefit some segments of the U.S. agricultural economy while having adverse impacts on other segments of the agricultural economy. While increased demand for agricultural feedstocks can provide benefits to agricultural economy that grow the agricultural feedstocks used to make renewable fuels, alternative industries that depend on agricultural feedstocks (e.g., the livestock, chicken industries) may face higher input costs, which, in turn, can lower their profitability. The actual impacts, however, will depend on how the agricultural market responds both short-term and long-term. Agricultural feedstock prices rose following the implementation of the RFS2 program in 2010 (due to a changes in the world market in addition to the RFS). Since that time, the agricultural sector has responded to increase supply, causing agricultural commodity prices to drop.

An important factor to consider when discussing the impacts on the demand for a crop for renewable fuels is feed co-products. For every extra bushel of corn demanded for food or ethanol use, DDGS are produced, which can be supplied into feed markets. Absent this co-product from ethanol production, much of this feed demand would be met directly with corn. Therefore, any impact on corn prices due to changing demand for ethanol will generally result in a lesser impact on the cost of feed. The same fundamentals are true for soybean meal, a feed co-product that results from the soybean oil extraction process. Greater production of biodiesel leads to greater volumes of soy meal, which can benefit poultry, swine and to a lesser extent cattle production.

**Comment:**

Some commenters raised concerns that higher 2018 RFS RVOs will place an upward pressure on food prices. For example, one commenter asserted that increasing renewable fuel volumes have driven up, and will continue to drive up, U.S. agricultural commodity prices (e.g., corn and soybean prices). In turn, higher commodity prices will increase the overall price of food both in the U.S. and internationally. Another commenter suggested that food commodity costs for chain restaurants and their small business franchisees have been volatile and difficult to predict. This commenter suggested that volatile food commodity costs has coincided with the enactment and implementation of the RFS. Alternatively, another commenter suggested that the proposed 2018 RFS renewable fuel volumes would have little impact on food prices. For example, according to this commenter, in 2016 U.S. food prices experienced the first yearly decline since 1967, and the current consumer price index for food is up just 0.9% since June 2016.

**Response:**

EPA has not undertaken a detailed analysis of the food price impacts of the 2018 annual RFS standards (as compared to the 2017 standards). However, given the modest changes in the RFS renewable fuel volumes for 2018, EPA does not believe that the standards will have a discernable impact on overall food prices. Based on the analysis we did for the March 2010 RFS2 final rule, we believe that increases in renewable fuels as a result of the RFS program are likely having a modest overall impact on the price of agricultural commodities (e.g., corn and soybeans) and, in turn, food prices. Also, since the RFS program began, the agricultural sector

has responded by increasing supply, such that agricultural commodity prices are now at, or near, levels experienced prior to the RFS program.

## 7.1.6 Rural Economies

Commenters that provided comment on this topic include, but are not limited to: 0446, 1756, 1774, 1775, 3178, 3184, 3496, 3680, 3681, and 3959.

### **Comment:**

Numerous renewable fuels industry commenters asserted that increases in RFS renewable fuel requirements raise farm incomes and spur rural development in the U.S. For example, one commenter stated that the RFS has restored farming as a viable business and revitalized small communities across the U.S. Similarly, another commenter asserted that renewable fuel production has provided an essential market for U.S. farmers and has helped to offset low overall agricultural commodity prices. In turn, this commenter suggested that renewable fuel production has helped to revitalize rural communities.

Numerous renewable fuels industry commenters suggested that the benefits of the RFS program extend beyond the individual farmer to the broader agriculture sector of the U.S. Commenters asserted that impacts on the agriculture sector from the RFS extend to a number of industries that provide inputs and services to agricultural production (e.g., farm equipment manufacturers and services). One commenter suggested that in many rural areas of the U.S., biodiesel plants are the driving force of the local rural economy. Another commenter suggested that the RFS has driven investment and high skilled job creation in rural economies. Numerous commenters stated that the economies of many rural communities in the U.S. are closely tied to the agriculture sector and that these communities are likely to benefit when the RVOs of the RFS are increased.

According to one commenter, U.S. farmers and rural communities are struggling economically as a result of a multi-year slump in the prices for corn, wheat and other farm commodities, brought on by a world-wide glut of grain. This glut is pushing many farmers in the U.S. into debt. According to this commenter, net U.S. farm income dropped 15 percent to about \$68 billion last year, the lowest since 2009. By way of comparison, according to the commenter, net U.S. farm income was \$124 billion in 2013. Net U.S. farm income is expected drop another 9% in 2017. According to the commenter, the number of farms continues to decline in the U.S. The commenter contended that as EPA has set renewable fuel volumes that have deviated from statutory levels, demand for agricultural commodities and also rural economies have stagnated. In addition, this commenter points out that in the decade prior to RFS passage, row crop production in the U.S. routinely hovered at or below the cost of production. The low market prices for farm commodities required significant transfer of taxpayer dollars to producers under existing farm programs to maintain growers' solvency.

### **Response:**

EPA has not undertaken a detailed analysis of the impacts of the 2018 annual RFS standards (as compared to the 2017 standards) on U.S. farm incomes or rural development. However, given the modest changes in the renewable fuel volumes for 2018, EPA does not believe that farm income or rural development will be influenced significantly. Based on the analysis we did for the March 2010 RFS2 final rule, we believe that increases in renewable fuels as a result of the

RFS program generally boost U.S. farm income and promote rural development. Both farmers and agricultural input suppliers (e.g., farm equipment manufacturers and services), located principally in rural areas of the U.S., benefit from the RFS program because of the higher demand from renewable fuels in the U.S.

**Comment:**

Numerous commenters advocated that EPA set RFS RVOs at statutory volumes to spur increases in U.S. farm income and promote rural economic development. The same commenters warn that reductions from RFS statutory volumes will have a depressing effect on U.S. farm incomes and, in turn, rural communities.

**Response:**

Since EPA does not consider the statutory targets for cellulosic biofuel, advanced biofuel and total renewable fuel to be attainable, we do not believe it is appropriate to attribute any perceived negative impact on U.S. farm incomes and rural economies to EPA's decisions to lower the statutory volumes for these fuel types. Furthermore, we are only using our cellulosic waiver authority (not using general waiver authority) to reduce the advanced biofuel and total renewable fuel volumes. As a result, the implied volume for conventional renewable fuel (total minus advanced) is maintained at the full volume of 15 billion gallons provided for in the statute.

### **7.1.7 Jobs and Profitability of Biofuel Producers**

Commenters that provided comment on this topic include, but are not limited to: 0446, 1775, 3304, 3321, 3496, 3959, and 4397.

#### **Comment:**

Several commenters addressed the impact of the RFS RVOs on employment and the profitability of firms in the U.S. producing renewable fuels, as well as firms that supply inputs to renewable fuels industries (e.g., agricultural equipment manufacturers, methanol manufacturers). For example, these commenters suggested that the BBD industry supports 64,000 jobs throughout its supply chain in the U.S. and every 500 million extra gallons of BBD will increase jobs by 13,000. The commenters suggested that reducing the RFS RVOs would reduce employment and the profitability of renewable fuels industries and related industries that supply inputs to renewable fuels producers.

#### **Response:**

EPA has not undertaken a detailed analysis of the impacts of the 2018 annual RFS standards (as compared to the 2017 standards) on the renewable fuel industries and their input suppliers. However, given the modest changes in the renewable fuel volumes for 2018, EPA does not believe that employment or the profitability of the renewable fuels industries and input suppliers will be influenced significantly. While the comments on employment and profitability provide insights into the impacts of the RFS on the renewable fuels and related industries, they do not necessarily provide a complete picture of the impact of a change in the RFS RVOs standards on employment and the profitability of firms throughout the whole U.S. economy. From an economy-wide perspective, consider an example estimating the overall impacts on employment in the U.S. of an environmental requirement. When the economy is at full employment, an environmental regulation is unlikely to have much impact on net overall U.S. employment; instead, labor would primarily be shifted from one sector of the economy to another sector. On the other hand, if a regulation comes into effect during a period of high unemployment, a change in labor demand due to regulation may affect net overall U.S. employment because the labor market is not in equilibrium. In the longer run, the net effect on employment is more difficult to predict and will depend on the way in which the related industries respond to the regulatory requirements. For this reason, caution is needed when assessing the net employment impacts for the whole U.S. economy of an individual environmental standard such as the RFS.

## 7.2 Environmental Impacts and Considerations

### 7.2.1 GHG Impacts

Commenters that provided comment on this topic include, but are not limited to: 0446, 0792, 1692, 1759, 3184, 3247, 3681, 3964, and 4397.

#### **Comment:**

Various commenters voiced their concerns about either positive or negative perceived climate impacts of biofuels, sharing multiple studies and statistics in support of their positions. Several commenters pointing to GHG reduction benefits of replacing petroleum-based fuel with renewable fuels cited a recent report by ICF, contracted by USDA<sup>88</sup> that concluded with greater GHG reductions from corn starch ethanol than EPA's analysis in the 2010 RFS final rule. Multiple other commenters pointed to a report by Cerology, commissioned by the Clean Air Task Force and National Wildlife Federation<sup>89</sup> critiquing the ICF report. One commenter cited excerpts from that Cerology report finding that "the USDA-commissioned report, completed by ICF International, includes 'too many problems... for the numerical lifecycle results to be considered informative.'" Several commenters also cited various, different conclusions for reductions in GHG emissions from corn starch ethanol based on the work of Argonne National Lab's GREET model.<sup>90</sup> Based on this information, multiple commenters requested that EPA update its lifecycle analysis (LCA) modeling in order to reflect new data and information.

#### **Response:**

EPA has reviewed both the study by ICF and the study by Cerology. We believe the Cerology report raises some important points, and we note that the ICF report is not a peer-reviewed study. Based on our ongoing review of the peer-reviewed literature associated with lifecycle GHG emissions of biofuels, we believe EPA's 2010 analysis still falls within the wide range of published results. EPA will continue to monitor the GHG emission impacts and lifecycle determinations as we implement the program going forward. However, these issues and related requests for updating biofuel LCA results under the RFS program are beyond the scope of this annual rulemaking.

#### **Comment:**

Multiple commenters requested that EPA update its LCA modeling in order to reflect an increasing carbon intensity of petroleum fuels used as the baseline in comparison to the values

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<sup>88</sup> Mark Flugge et al., "A Life-Cycle Analysis of the Greenhouse Gas Emissions of Corn-Based Ethanol," January 12, 2017, [https://www.usda.gov/oce/climate\\_change/mitigation\\_technologies/USDAEthanolReport\\_20170107.pdf](https://www.usda.gov/oce/climate_change/mitigation_technologies/USDAEthanolReport_20170107.pdf).

<sup>89</sup> Chris Malins, "Navigating the Maize," July 2017, [http://www.cerology.com/wp-content/uploads/2017/07/Cerology\\_Navigating-the-maize\\_July2017.pdf](http://www.cerology.com/wp-content/uploads/2017/07/Cerology_Navigating-the-maize_July2017.pdf).

<sup>90</sup> Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET). Argonne National Laboratory, Department of Energy. <https://greet.es.anl.gov/>.

that EPA currently use. These commenters suggested that changes in petroleum sources make the use of renewable fuels more beneficial than in the past.

**Response:**

EPA has not assessed the impacts of changes in petroleum sources since the CAA requires EPA to compare renewable fuel GHG emissions relative to the U.S. 2005 petroleum baseline fuel that it replaces.

**Comment:**

Some commenters pointed to increased productivity and improved agricultural practices on farms, as well as improvements in the energy efficiency of many biofuel production facility technologies over time. One other commenter countered that U.S. based corn yields have “plateaued”, and that herbicide-resistant weeds are a concern for future advancements in efficiency.

**Response:**

When EPA conducted the lifecycle GHG analysis for RFS2 in 2010, the analysis took into account projected improvements in both agriculture and conversion efficiencies. In addition, EPA allows facilities that have incorporated improvements in production technology to take credit for these energy efficiency improvements in our approvals of facility-specific petitions. For example, the Efficient Producer Petition Process allows certain ethanol facilities to demonstrate more efficient production and reductions in GHG emissions, and to receive expedited review and approval. EPA has approved over 70 Efficient Producer Petitions since this program was implemented in 2014, and has improved the petition review time by over 80%. Conversely, EPA does not have significant information to support that crop yield rates have plateaued.

## 7.2.2 Air Quality

Commenters that provided comment on this topic include: 3106, 3887, and 4397.

### **Comment:**

Several commenters stated that the annual renewable fuel mandates should be reduced until EPA has completed the required studies of the environmental impacts of the RFS program. The required studies include the triennial Report to Congress on the environmental and resource conservation impacts of the RFS program, and the Anti-backsliding study and determination on adverse air quality impacts of the RFS program.

### **Response:**

Neither the Report to Congress or the anti-backsliding study provide EPA with authority to reduce the renewable fuel mandates under the RFS program. The agency is currently working on the Second Triennial Report to Congress (as noted in other responses) and expects to deliver that report in 2018.

### **Comment:**

One commenter expressed concern on the non-CO<sub>2</sub> air quality impacts associated with ethanol and the RFS standards in general and that EPA is pursuing a policy that results in negative air quality impacts.

### **Response:**

EPA did not conduct a new air quality impact assessment in assessing the volumes of renewable fuel that are expected to be available for this rulemaking. However, as part of the RFS2 rulemaking in 2010, EPA conducted a detailed assessment of the emissions and air quality impacts associated with an increase in production, distribution, and use of the renewable fuels sufficient to meet the RFS2 volumes, including biodiesel and ethanol blends. That air quality assessment is described in Section VI.D of the preamble<sup>91</sup> for that rule and Chapter 3.4 of the RIA<sup>92</sup> for that rule.

The RFS2 RIA indicates that the impact of increased biofuels (as assumed to meet the RFS2 volumes) on PM and some air toxics emissions at the tailpipe is generally favorable compared to petroleum fuels, but the impact on VOCs, NO<sub>x</sub>, and other air toxics is generally detrimental.<sup>93</sup> The RFS2 RIA also indicates that the upstream impacts on emissions from production and distribution of biofuel (including biodiesel) are generally detrimental compared to petroleum

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<sup>91</sup> Available at <http://www.gpo.gov/fdsys/pkg/FR-2010-03-26/pdf/2010-3851.pdf>.

<sup>92</sup> Available at <http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>.

<sup>93</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-7 and 3.2-8.

fuel.<sup>94</sup> Taking tailpipe, upstream, and refueling emissions into account, the net impact on emissions from RFS2 volumes of renewable fuels is increases in the pollutants that contribute to both ambient concentrations of ozone and particulate matter as well as some air toxics. The air quality impacts, however, are highly variable from region to region and more detailed information is available in Section 3.4 of the RFS2 RIA.

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<sup>94</sup> U.S. EPA, 2010. Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-2 and 3.2-3.

### 7.2.3 Water Quality and Quantity

Commenters that provided comment on this topic include, but are not limited to: 0236, 0792, 1759, 3242, 3306, 3320, 3681, 3959, and 4397.

#### **Comment:**

Several commenters highlighted concerns with growing corn, including: the relatively high use of water, fertilizer and pesticide runoff, impacts on aquifers, increasing number of algae blooms, and costs to drinking water systems. For example, one commenter stated that EPA models show that increased corn production in the Chesapeake Bay watershed has led to increased nitrogen and phosphorus loadings. Several other commenters described similar impacts to the Great Lakes and Gulf of Mexico. One commenter raised specific concerns with the water quality of Lake Erie that the group traces back to runoff from corn production. Another commenter also linked corn ethanol expansion with water quality and quantity impacts.

#### **Response:**

In previous rulemakings, EPA has recognized the potential impacts on water use and water quality from row crops, especially corn. These impacts were assessed in the First Triennial Report to Congress, which qualitatively assessed both potential impacts and opportunities for mitigation.<sup>95</sup> A more recent review of the scientific literature still supports this finding. There is more evidence of negative environmental impacts associated with land use change and biofuel production than there was in 2011.<sup>96</sup> However, the magnitude of the effect from biofuels is still unknown and has not been quantified to date. Furthermore, the scientific literature continues to support the conclusion from the First Triennial Report to Congress that biofuel production and use can be achieved with minimal environmental impacts if existing conservation and best management practices for production are widely employed.<sup>97</sup>

While these potential impacts remain an area of interest, in our judgment the information and data available on these issues does not warrant our taking a different approach than is reflected in the final rule. EPA supports the growing adoption of mitigation techniques such as no till farming and better control of fertilizer usage, and notes that further technical information on this complicated set of issues would be helpful.

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<sup>95</sup> U.S. Environmental Protection Agency. December, 2011. *Biofuels and the Environment: First Triennial Report to Congress*.

<sup>96</sup> Since the 2011, there have been several advances in our understanding of land use change trends in the U.S. Three major national efforts have been published: (1) a pair of related studies quantifying cropland extensification from 2008-2012 (Lark et al. 2015; Wright et al. 2017), (2) the USDA 2012 Census of Agriculture (Census) (USDA 2014), and (3) the 2012 USDA National Resources Inventory (NRI) (USDA 2015). There have also been several regional studies documenting land use change in different parts of the country, including the Prairie Pothole Region (Johnston 2013; Johnston 2014; Reitsma et al. 2016), around the Great Lakes (Mladenoff et al. 2016), for the western cornbelt (Shao et al. 2016), for lands in the Conservations Reserve Program (CRP) (Morefield et al. 2016), and for corn/soybean farms (Wallander et al. 2011).

<sup>97</sup> U.S. Environmental Protection Agency. December, 2011. *Biofuels and the Environment: First Triennial Report to Congress*.

**Comment:**

One commenter raised more specific concerns regarding water use in biofuel production explaining that biofuel production uses more water per unit of energy than refined petroleum fuels. This same commenter also stated that ethanol extends gasoline soil and groundwater pollution plumes.

**Response:**

Analysis completed in 2011 suggests that water used for irrigation of feedstocks greatly exceeds the water required for conversion of feedstocks to biofuels. Additionally, water use for biofuel conversion depends on several factors including facility size, water reuse technologies, and other process efficiencies.<sup>98</sup> Irrigation practices are dependent on a number of economic and agronomic factors that drive land management practices making attribution of increased irrigation and water quantity to biofuels difficult. More research and quantitative evaluations are needed on increases in water use through changes in land use and/or land management, and whether those changes can be attributed to feedstock production.

EPA's 1999 Blue Ribbon Panel report on oxygenates cited by one commenter characterizes ethanol as traveling at about the same rate but degrading faster than the oxygenate being examined, methyl tertiary butyl ether (MTBE). The range to which the commenter stated ethanol extends a gasoline plume was not confirmed by the Panel, but rather presented as hypothetical situation to the Panel with no corroborating evidence, data gathered from the field, or any additional research. Therefore, EPA still considers this a hypothetical outcome that needs additional research and data to verify.<sup>99</sup>

**Comment:**

Several commenters stated that the RFS program contributes to protecting water quality and habitats by encouraging the recycling of used cooking oils and greases that keeps them out of the nation's waterways and sewer systems.

**Response:**

EPA acknowledges that fats, oils, and greases that are improperly disposed of can cause municipal water systems to malfunction and lead to public health and environmental problems. However, EPA has not conducted an analysis of the degree to which the recycling of used cooking oils and greases may mitigate the potential adverse impacts on water quality and sewer system maintenance costs for this rule. No supporting analysis was submitted with the comments.

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<sup>98</sup> Ibid.

<sup>99</sup> U.S. EPA. September 15, 1999. *Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline* (EPA420-R-99-021).

## 7.2.4 Ecosystems, Wildlife Habitat, and Conversion of Wetlands

Commenters that provided comment on this topic include, but are not limited to: 0236, 0792, 1759, 3242, 3306, 3320, 3681, 3959, and 4397.

### **Comment:**

Several commenters raised general concerns about the loss of habitats, including wetlands, forests, and grasslands, to biofuel crop expansion. For example, several commenters expressed concerns about habitat loss and degradation due to extensification and intensification of biofuel crop production, especially corn ethanol and soy biodiesel. Many of these commenters also raised concerns regarding deforestation and peatland conversion, in countries such as Malaysia, Argentina, and Indonesia, from any potential increases in demand for palm and soy oils (i.e., food-based oils). Several of these commenters also shared their perspective that aggregate compliance does not meet the land protection mandate in the statute.

### **Response:**

EPA acknowledges that habitat loss and landscape simplification are detrimental to environmental health with potential for acute impacts in environmentally sensitive areas. However, as discussed in Section 6.4.3, identifying the extent of negative environmental impacts due to overall land use changes that may be attributed to the RFS program, as opposed to other factors that may influence such conversion, is difficult, and the relative contribution of the RFS program has not been quantified to date. Since 2010, researchers have continued to explore any potential connections between biofuel production and environmental impacts. While no definitive conclusions have been made regarding RFS-caused environmental impacts, EPA continues to look at these impacts and track the science in these areas.

We note that under the aggregate compliance requirements of the RFS program, applicable to crops and crop residue grown in the United States and Canada, total agricultural acres cannot exceed the baseline amount of agricultural land in 2007. In fact, based on data provided by USDA and the government of Canada, the number of acres used for agricultural production in the U.S. and Canada has decreased as compared to the 2007 baseline. Thus, while some shifting in agricultural land use has likely occurred (e.g., moving from crops to pasture or pasture to crop production), data does not indicate a net increase in land devoted to agricultural production. More importantly, changes in the types of crops grown and the location of these crops is due to a host of factors, not just the demand created by the RFS program. Further information and studies would be helpful to better understand specific impacts that may arise from renewable fuel production.

### **Comment:**

Several commenters mentioned impacts on listed, threatened, or endangered species as part of a general list of environmental impacts, such as biodiversity and habitat loss, that commenters linked to the RFS program, specifically corn, palm oil, and soy oil production.

**Response:**

No specific supporting analysis was submitted with these comments. EPA acknowledges that habitat loss and landscape simplification are detrimental to ecosystems and could result in potential acute impacts in environmentally sensitive areas. However, as noted above, identifying the extent of negative environmental impacts due to overall land use changes that may be attributed to the RFS program, as opposed to other factors that may influence such conversion, is difficult, and the relative contribution of the RFS program has not been quantified to date. Since 2010, researchers have continued to explore any potential connections between biofuel production and environmental impacts. While no definitive conclusions have been made regarding RFS-caused environmental impacts, EPA continues to look at these impacts and track the science in these areas.

We note that the 2018 rule will require only a very modest increment in renewable fuel volumes as compared to 2017, and this incremental volume can readily be satisfied based on current agricultural output, without additional expansion of agricultural production. Under these circumstances, the information and data available in the record does not warrant our taking a different approach than is reflected in the final rule.

For further discussion, see Section 2.1.3 of this document.

## **8. Percentage Standards**

### **8.1 General Comments on the Percentage Standards**

[No comments]

## 8.2 Accounting for Small Refinery Hardship Exemptions

Commenters that provided comment on this topic include, but are not limited to: 2547, 3105, 3106, 3142, 3429, 3478, 3647, 3657, 3677, 3680, 3887, and 3953.

### **Comment:**

Several commenters expressed their support for EPA's current approach for accounting for small refinery hardship exemptions (which is to not adjust the annual percentage standards after EPA issues the final RFS standards for given year). These commenters also expressed support for not adjusting the annual standards for the given year to "make up for" small refinery exemptions granted for the previous year. Several commenters also stated that EPA cannot practically grant small refinery exemptions before the 2018 standards are established under the current petition process, and so there is no practical way to account for 2018 small refinery exemptions in the 2018 rulemaking and EPA should maintain its current approach on this issue.

### **Response:**

EPA has decided to maintain its current approach regarding the treatment of small refinery exemptions. While EPA disagrees with commenters that stated that it is impractical to grant small refinery exemptions before the annual standards are established (CAA section 211(o)(9)(B)(i) allows for small refineries to petition for an exemption "at any time," including before the annual standards are established), we nevertheless agree with the commenters that the current approach for accounting for small refinery hardship exemptions is appropriate and no changes are necessary at this time.

### **Comment:**

Several commenters stated that when small refinery exemptions are granted before the annual standards are established, EPA should uniformly lower the volume requirements by an equivalent amount rather than spreading the burden across the rest of the industry. Another commenter suggested that EPA should account for any exempted small refinery volumes by reducing the following year's RVO to reflect reality when the RVO has created a hardship.

### **Response:**

EPA's intent in seeking comment on the issue of accounting for small refinery exemptions in establishing the percentage standards was in the context of a potential change in the number and magnitude of small refinery exemptions granted. Thus, EPA was seeking information on whether changes were needed to how the percentage standards are calculated in order to ensure that the renewable fuel volume requirements established in this rule are met. The approaches suggested by the commenters all seek to reduce the applicable volumes of renewable fuel used in the percentage standards calculations, thereby reducing the standards themselves. EPA is required to ensure that transportation fuel (i.e., gasoline and diesel) sold in the U.S. contains the applicable volumes of renewable fuel established by EPA on an annual basis under CAA section 211(o)(2)(A)(i). Furthermore, CAA section 211(o)(3)(B)(i) requires that the percentage

standards established by EPA ensure that the volume requirements are met. Currently, when exemptions are granted before the annual standards are established, the exempted gasoline and diesel volumes are excluded from the denominator in the calculation of the percentage standards. However, the volume of renewable fuel required in the numerator of the calculations does not change.

**Comment:**

Several commenters opposed the granting of any small refinery hardship exemptions. These commenters stated that because RIN costs are recovered by refiners through the market value of products sold, these exemptions create an unlevel playing field and give the exempted refineries a windfall from avoided compliance costs. Commenters also stated that if circumstances do warrant the granting of small refinery exemptions, EPA should uniformly lower the volume standards for everyone by an equivalent amount.

One commenter stated that when small refinery exemptions are granted retroactively, the market perceived demand for RINs is greater than reality and therefore sets the price of RINs too high, and so EPA should only grant small refinery exemptions prior to the compliance year. The commenter suggests that alternatively, EPA should require the retirement of any RINs held by a small refinery when an exemption is granted or provide immediate transparency to the market so that prices are not set higher than necessary to meet actual demand.

One commenter suggested that exempted small refineries should not be able to carryover RINs into the following compliance year in order to ensure that those RINs are made available to the market for compliance. The commenter stated that this could be accomplished by removing the refiner's ability to demonstrate compliance with a prior year RIN if that refiner was exempted in the prior year.

**Response:**

These comments are beyond the scope of this rulemaking. EPA did propose changes to, nor take comment on, the manner in which small refinery hardship petitions are evaluated; rather, EPA only sought comment on whether any changes were needed to how we account for exemptions in setting the annual percentage standards.

## **9. Other Comments**

### **9.1 Dates/Deadlines**

Commenters that provided comment on this topic include, but are not limited to: 1776, 3645, and 4453.

#### **Comment:**

Several commenters stated that EPA should ensure that it finalizes the 2018 standards by the November 30<sup>th</sup> statutory deadline.

#### **Response:**

EPA has met the November 30<sup>th</sup> statutory deadline to set percentage standards for 2018, and plans to continue to do so in the future.

## 9.2 Statutory and Executive Order Reviews

Commenters that provided comment on this topic include, but are not limited to: 1792, 3105, 3572, and 3657.

### Comment:

Several commenters raised concerns with the screening analysis performed by EPA. Specific issues raised by the commenters include:

- EPA's screening analysis should have considered the cost of compliance with the RFS program as a whole, rather than an incremental cost of compliance from the 2017 standards
- EPA cannot rely on the 2010 SBREFA analysis because it:
  - o Is outdated and unreliable
  - o Does not consider manipulation, speculation, and fraud in the RIN market
  - o Does not accurately capture the impacts of the RFS program on small refiners
  - o Does not consider the impacts of the RFS program and designation of obligated parties on small retailers
  - o Does not include the significant increase in RIN prices
- EPA's screening analysis did not accurately assess the impact of the 2018 standards on small entities because it:
  - o Did not include other costs of compliance such as financing costs to borrow money to buy RINs, opportunity costs of spending money on RINs, lost sales of refined petroleum products as a result of the RFS program, and the inability to purchase RINs ratably throughout the year
  - o Should have used a cost-to-profit test instead of a cost-to-sales test because it is a better indicator of the economic impact on small refiners
  - o Overestimated small refineries' sales and should have only considered sales from the refinery's transportation fuel production
  - o Should have used the average profit margin of small refiners as the threshold for the cost-to-sales analysis, rather than 1%
- EPA should have consulted with small refiners on ways to minimize the impact of the rule

### Response:

EPA has updated the screening analysis using more recent prices for gasoline, diesel, renewable fuels, and RINs. As discussed in the updated screening analysis memo<sup>100</sup>, our analysis was performed for those entities meeting the definition of a small business as defined by the Small Business Administration.<sup>101</sup> Refiners not meeting this definition but meeting the definition of a small refinery in CAA section 211(o)(1)(K) were not included in this analysis. The memo concerns our screening analysis performed for the 2018 annual volume standard rule only.

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<sup>100</sup> "Screening Analysis for the Final Renewable Fuel Standard Program Renewable Volume Obligations for 2018," Memorandum from Dallas Burkholder, Nick Parsons, and Tia Sutton to EPA Docket EPA-HQ-OAR-2017-0091.

<sup>101</sup> Entities in the petroleum refining industry with 1,500 employees or less company-wide (13 CFR 121.201).

However, prior to issuing our 2009 NPRM for the RFS regulatory program regulations required to implement amendments enacted pursuant to the Energy Independence and Security Act, we analyzed the potential impacts of implementing the full RFS program on small entities through calendar year 2022 (the “RFS2” rule), and convened a Small Business Advocacy Review Panel (SBAR Panel, or ‘the Panel’) to assist us in this evaluation. This information is located in the RFS2 rulemaking docket (Docket No. EPA-HQ-OAR-2005-0161).

We continue to believe that it is more appropriate to consider the impacts of the 2018 standards on small businesses as a part of the overall RFS program, rather than as a separate action. We disagree with the commenters that the SBREFA analysis performed in conjunction with the 2010 rule is no longer valid. Further, EPA has determined, based on available information, that obligated parties, including small entities, are generally recovering the cost of acquiring the credits (called “renewable identification numbers,” or “RINs”) necessary for compliance with the RFS standards through higher sales prices of the petroleum products they sell.<sup>102,103</sup> This is true whether they acquire RINs by purchasing renewable fuels with attached RINs or purchase separated RINs. If we were to consider the impacts of the 2018 standards as a separate action, then we believe it is appropriate to look at the incremental costs associated with the increased renewable fuel volumes being finalized for 2018 relative to those established for 2017. In this context, and that the screening analysis is complimentary to, rather than a replacement for, the full SBREFA analysis performed as part of the 2010 rule. Nevertheless, as detailed in our updated screening analysis memo, even if the RFS standards for 2018 are viewed as a separate action and the ability for obligated parties to recover the cost of acquiring RINs is not considered, EPA finds that these standards will not have a significant economic impact on a substantial number of small entities.

To perform our screening analysis, we used a cost-to-sales ratio test – a ratio of the estimated annualized compliance costs to the value of sales (for a complete description of the method used to analyze costs, please see the screening analysis memo). A cost-to-sales ratio test is a recommended quantitative approach for small business screening analyses. While we acknowledge that other factors such as those identified by commenters may affect a small entity’s profitability, these factors are not generally considered under the cost-to-sales ratio test. Further, in performing such analyses, agency practice involves assessing the cost-to-sales percentages – and impact of less than 1% is generally recognized as a threshold for the assessment of whether or not an action constitutes a significant impact on small entities. For our first approach and the one we consider to be most appropriate, we considered the annual RFS standards as a subset of the overall RFS2 program finalized in 2010; for the remainder of our approaches, we considered the 2018 standards to be a separate action. For our second approach, we compared obligated parties’ cost of compliance (whether they acquire RINs by purchasing renewable fuels with attached RINs and blending these fuels into transportation fuel or by purchasing separated RINs) with the ability for the obligated parties to recover these compliance

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<sup>102</sup> 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.

<sup>103</sup> 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>.

costs through higher prices for the gasoline and diesel fuel they sell than would be expected in the absence of the RFS program. While some commenters have contended that the RIN value is not able to be passed through in the market and that RIN prices represent a net cost for compliance with the RFS program, we do not believe the record supports these claims. Nevertheless, for our third and fourth approaches we assumed that obligated parties were unable to recover the cost of the RFS program or the cost of acquiring RINs in the marketplace. Finally, for our last approach, we analyzed the specific situations of small refiners (using their actual gasoline and diesel production volumes from 2016) under the same assumption that RIN costs could not be passed through to consumers. The cost-to-sales test indicated that all obligated parties, including the small refiners subject to the RFS program, would be affected at less than 1 percent of their sales (i.e., the estimated costs of compliance with the rule would be less than 1 percent of their sales) even when we did not consider their potential to recover RIN costs – with the estimated cost-to-sales percentages ranging from -0.04% (a cost savings) to 0.006%. For a more detailed description of EPA’s analyses, see the updated screening analysis memo. With respect to comments claiming that EPA did not consider the impacts of the RFS program and designation of obligated parties on small retailers, EPA evaluated these claims in the context of responding to petitions we received requesting that the Agency change the point of obligation in the RFS program. We determined that small retailers are not disadvantaged by the RFS program, as the profits larger retailers receive from selling RINs are generally offset by the cost of acquiring the RINs that they sell.<sup>104</sup>

**Comment:**

One commenter stated that this rulemaking does not comport with the mandates of Executive Order (EO) 12866, the Paperwork Reduction Act, and the Regulatory Flexibility Act.

**Response:**

EPA complied fully with EO 12866, the Paperwork Reduction Act, and the Regulatory Flexibility Act. EPA based its decisions in this rule on the best available data. EPA does not view EO 12866 as directing EPA to reopen the entire RFS2 program in the context of an annual rulemaking. The impacts of the RFS2 program were already addressed in the RFS2 final rule promulgated on March 26, 2010 (75 FR 14670). For purposes of the Paperwork Reduction Act, this final rule will not impose any additional requirements or collect new information beyond those already analyzed. EPA addresses its Regulatory Flexibility analysis in a previous response.

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<sup>104</sup> See “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” EPA-420-R-17-008, November 2017.

### 9.3 Annual Point of Obligation Evaluation

Commenters that provided comment on this topic include, but are not limited to: 2547, 3105, 3106, 3429, 3649, 3677, and 3887.

#### **Comment:**

Several commenters suggested that EPA is required to evaluate the point of obligation with each annual rulemaking.

#### **Response:**

As noted in Sections 1 and 9.4 of this document, comments on changing the point of obligation are beyond the scope of this rulemaking. EPA does not agree with the commenters that the statute requires annual reconsideration of the matter, *see Order on Motion to Dismiss, Valero Energy Corp. v. EPA., No. 7:17-cv-00004-O, ECF No. 39 (ND Tex, Wichita Falls Div., Nov. 28, 2017)*. We believe the instability and uncertainty that would be associated with an annual reconsideration of the point of obligation would undermine success in the program. EPA issued a final denial of several petitions for reconsideration or rulemaking to change the current point of obligation on November 22, 2017, and this issue is also addressed there.<sup>105</sup>

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<sup>105</sup> See “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” p. 7, EPA-420-R-17-008, November 2017.

## 9.4 Beyond the Scope

Commenters that provided comment on this topic include, but are not limited to: 0446, 1177, 1301, 1756, 1774, 1776, 1913, 2539, 2542, 2545, 3105, 3106, 3110, 3142, 3178, 3241, 3247, 3306, 3497, 3575, 3593, 3646, 3677, 3678, 3873, 3887, and 3955.

### Comment:

Commenters addressed numerous additional topics, including the following:

- Legislative changes for the RFS program, including repeal of the RFS program
- Changes to the existing RFS regulations, including removing the obligation on exported renewable fuel
- Updates to EPA's lifecycle analyses
- Treatment of cellulosic waiver credits
- Changes to the point of obligation for the RFS program
- RFS registration issues
- Suggestions for new RIN-generating pathways including renewable electricity, and improvements to the petition and efficient producer pathways processes
- Impacts of ethanol on engines
- Extending the 1 psi RVP waiver for E15
- Changes to the E15 misfueling mitigation plans
- Approving new fuels such as mid-level ethanol blends and biobutanol
- Potential future RFS rulemakings such as the "reset rule" or an action to address the remand of the 2016 RFS standards
- The creation of a general hardship exemption for refiners
- The Renewables Enhancement and Growth Support (REGS) rule, including biointermediates and ethanol flex fuel

### Response:

These comments are all beyond the scope of this rulemaking as EPA did not propose any changes to the overall structure of the RFS program or otherwise seek comment on these issues. These topics are not further addressed in this document.