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# Renewable Fuel Standard Program - Standards for 2019 and Biomass-Based Diesel Volume for 2020:

## Response to Comments

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## 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)
<i>API</i>	<i>API v. EPA</i> , 706 F.3d 474 (D.C. Cir. 2013)
BBD	Biomass-Based Diesel
BIP	Biofuels Infrastructure Partnership
CAA	Clean Air Act
CBI	Confidential Business Information
CFTC	U.S. Commodity Futures Trading Commission
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CWC	Cellulosic Waiver Credits
DDGS	Distillers Dried Grain Solubles
DOE	U.S. Department of Energy
EIA	U.S. Energy Information Administration
EISA	Energy Independence and Security Act of 2007
EPA	U.S. Environmental Protection Agency
<i>Ergon</i>	<i>Ergon-West Va., Inc. v. EPA</i> , 896 F.3d 600 (4th Cir. 2018)
GHG	Greenhouse Gas
GREET	Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model
IMO	International Maritime Organization
LCA	Lifecycle Analysis
LCFS	Low Carbon Fuel Standard
LNG	Liquified Natural Gas
<i>Monroe</i>	<i>Monroe Energy v. EPA</i> , 750 F.3d 909 (D.C. Cir. 2014)
NO <sub>x</sub>	Nitrogen Oxides
OPEC	Organization of the Petroleum Exporting Countries
PM	Particulate Matter
REGS	Renewables Enhancement and Growth Support Rule
RFS	Renewable Fuel Standard
RIA	Regulatory Impact Analysis
RIN	Renewable Identification Number
RVO	Renewable Volume Obligation
SO <sub>x</sub>	Sulfur Oxides
STEO	Short-Term Energy Outlook
USDA	U.S. Department of Agriculture
VOC	Volatile Organic Compounds

## List of Organizations Submitting Comments

Commenter or Organization Name	Docket Item Number <sup>a</sup>
Absolute Energy, LLC	0675
Ace Ethanol LLC	0674
ACT Commodities	0615
Action for Ecology and People's Emancipation (AEER) Indonesia, et al.	1033
ActionAid USA, et al.	1036
Adkins Energy LLC	1296
Advanced Biofuels Association (ABFA)	1277
Advanced Biofuels Business Council	1037
Aemetis, Inc.	0901
AFBF	0657
AgriReNew	0220
American Biogas Council (ABC)	0697
American Coalition for Ethanol (ACE)	1285
American Farm Bureau Federation	0130
American Fuel & Petrochemical Manufacturers	0187, 0672
American Motorcyclist Association (AMA)	0439
American Petroleum Institute (API)	0188, 0620
American Soybean Association	0227, 0659
Anderson, Inc	0490
Anonymous mass comment campaign	0131, 0132, 0133, 0134, 0143, 0145, 0298, 0304, 0314, 0315, 0553, 0554, 0555, 0684
Anonymous public comment	0478
Archer Daniels Midland	0196, 0591
Association of Equipment Manufacturers (AEM)	0514
B & D Farms Corporation	1182
Biogas Researchers, Inc. (BR)	0294, 0673
Biomass Power Association et al.	1265
Biotechnology Innovation Organization (BIO)	0586
Boat Owners Association of The United States (BoatU.S.)	1029
Boeing Company	0525, 0526
BP	1040
Bracewell	1148, 1149

<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
Brazilian Sugarcane Industry Association (UNICA)	1195
BTR Energy, Benefit LLC	1280
Business Council for Sustainable Energy	1266
Carbon Green BioEnergy	0190
Chevron	0536
Clean Air Task Force, Mighty Earth & National Wildlife Federation	0271, 0472
Clean Fuels Development Coalition (CFDC) et al.	1270
Coalition for Renewable Natural Gas et al.	0671
Coffeyville Resources Refining & Marketing, LLC (CRRM) and Wynnewood Refining Company, LLC (WRC)	1283
Commonwealth Agri-Energy, LLC	0676
Congressman Donald Norcross, First Congressional District of New Jersey	0518
Corn Plus	0512
Council on Intelligent Energy & Conservation Policy	1042
Darling Ingredients Inc.	0201, 1039
Drive Green	0316
DTE Biomass Energy	0198
DuPont	0215, 1193
Dynamic Group	0516
East Kansas Agri-Energy	1295
Edeniq, Inc.	0515, 1199
Enerkem	0214, 0493
Exxon Mobil Corporation	1271
Food Bank Council of Michigan	0206
Gardner Agriculture Policy Program and Laurence J. Norton Chair of Agricultural Marketing	0670
Grain Processing Corporation	0677
GreenTop Acres	0228
Growth Energy	0193, 1292
Gundersen Health System Envision	0434
Heartland Corn Products	0436
Hero BX Fuel For Humanity	0207, 0208
HollyFrontier Corporation	0194, 1197
Honeywell UOP's	0532



<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
Illinois Corn Growers Association and Illinois Renewable Fuels Association President	0621
Incobrasa Industries	0197
Independent Fuel Terminal Operators Association (IFTOA)	1273
Independent Oil Workers (IOW)	0519
International Brotherhood of Electrical Workers (IBEW) Local Union No. 8.	0438
International Council on Clean Transportation (ICCT)	0531
Iowa Biodiesel Board	0209, 0219, 0664
Iowa Corn Growers Association (ICGA)	0529
Iowa Department of Agriculture and Land Stewardship	0961
Iowa Farm Bureau Federation (IFBF)	1192
Iowa Governor	Comment is testimony
Iowa Renewable Fuels Association (IRFA)	0202, 0683
Iowa United States Senate	0669
J. Jung	0115
Kansas Corn	1263
Kansas Corn Growers Association	1262
Kentucky Corn Growers Association	0537
Klickitat Public Utility District	Comment is testimony
Kolmar Americas, Inc. (Kolmar) and American GreenFuels, LLC (American GreenFuels)	0204
Kolmar Americas, Inc.	0530
Little Sioux Corn Processors, LLC	0437
Magellan Midstream Partners	0667
Marathon Petroleum Corporation (MPC)	0617
Marc IV	Comment is testimony
Methanol Institute (MI)	0661
Michigan Biomass	0534
Michigan Boating Industries Association	0138
Michigan Corn Growers Association	0223, 0224, 0225, 0226
Michigan Department of Agriculture and Rural Development	1289
Mid-Missouri Energy (MME)	1066
Midwest AgEnergy Group LLC	0312
Minnesota Bio-Fuels Association (MBA)	1278
Minnesota Corn Growers Association (MCGA)	0666

<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
Minnesota Farmers Union (MFU)	0435
Missouri Corn Growers Association (MCGA)	0533
Monroe Energy, LLC	0622
Montauk Energy (Montauk)	0492
Murex LLC	1191
Murphy Oil USA, Inc.	0696
National Association of Clean Water Agencies (NACWA)	0663
National Association of Convenience Stores (NACS) and the Society of Independent Gasoline Marketers of America (SIGMA)	0523
National Association of Truckstop Operators (NATSO)	0216
National Biodiesel Board	0191, 0192, 0195, 0199, 0711
National Chicken Council (NCC)	0522
National Corn Growers Association	0539
National Farmers Union	0619
National Marine Manufacturers Association (NMMA)	1035
National Renderers Association (NRA)	1201
National Wildlife Federation	Comment is testimony
National Wildlife Federation Action Fund (NWA)	0256
NATSO	0662
Nebraska Corn Board, Nebraska Corn Growers Association	0611
New Jersey Senate & General Assembly	0508
Newport Biodiesel, Inc.	0189
North Dakota Ethanol Producers Association (NDePA)	0521
North Dakota Farmers Union	0527
Northwest Ohio Building Trades Council (NWOBTC)	0520
Novozymes North America Inc.	1284
Omaha, Nebraska-Based Green Plains Inc.	0517
Oregon Economic Development Foundation	0668
Owensboro Grain	0712
Pacific Ethanol	0678
PBF Energy Inc. (PBF)	1196
Peterson Aviation, Inc. Minden, Nebraska	0136
Petroleum Marketers Association of America (PMAA)	1200
Philadelphia Energy Solutions (PES)	1274
Phillips 66 Company	1267

<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
POET Biofuels	0682, 0716
POET Biofuels	Comment is testimony
Producers of Renewables United for Integrity Truth and Transparency	1198
Purdue University	0221, 0222
Quad County Corn Processors Cooperative (QCCP)	0656
R. Wenzinger	0299
R.W. Beckett Corporation	0442
Renew Kansas Association	1194
Renewable Biofuels LLC	0660
Renewable Energy Group (REG)	0186
Renewable Energy Group, Inc. (REG)	1286
Renewable Fuels Association (RFA)	0205, 0665
Rio Valley Biofuels LLC	1272
Rocky Mountain Farmers Union	1268
Scenic View Dairy, LLC (BVD and SVD)	0217
Shell Oil Products US	0513
Sierra Club	1288
Sievers Family Farms, LLC	1140
Small Refiners Coalition	0166, 1281
South Dakota Corn Growers Association	1005
South Dakota Farmers Union	0700
South Dakota Soybean Association	0389
StandUpforCorn.com	0129
State of Nebraska	0524
Syngenta	1282
Taxpayers for Common Sense (TCS)	0594
Texas Corn Producers Association (TCPA)	0538
Thumb Bioenergy LLC	0200
Toledo Regional Chamber of Commerce	0440
U.S. Canola Association	0658
U.S. Department of Agriculture (USDA)	1038
Union of Concerned Scientists (UCS)	0289, 0535
United Steelworkers Union (USW)	0491
United Way of Gloucester County	0511
Valero Energy Corporation	1041

<b>Commenter or Organization Name</b>	<b>Docket Item Number<sup>a</sup></b>
Wardford Equipment	1168
Waste Management (WM)	0313
Western New York Energy LLC	0679
Western Plains Energy, LLC	0680
White Energy, Inc.	0681
Wisconsin BioFuels Association (WBFA)	1275
Wisconsin Corn Growers Association (WCGA)	1276
World Agricultural Economic and Environmental Analysis (WAEES)	0203
World Energy	0210, 1269

<sup>a</sup> Individual comments from the public (and attachments submitted with comments) submitted to Docket No. EPAHQ-OAR-2018-0167 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-2018-0167-0500 is presented as 0500 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: 0530, 0619, 1282, and 1286.

### **Comment:**

A commenter suggested that EPA should increase advanced biofuel volumes to fulfill the intent of Congress. One commenter suggested this should be accomplished by allowing advanced biofuels to backfill for cellulosic biofuel. Another commenter more generally stated that EPA should place increasing biofuel volumes above all other considerations, as Congress intended.

### **Response:**

Although the statutory tables do exhibit increasing volumes of advanced biofuels, much of that increase is attributable to the cellulosic biofuel standard. EPA is increasing the advanced biofuel standard in this action in accordance with the 500 million gallon statutory increase in the implied volume of non-cellulosic advanced biofuels.

We disagree with commenters who suggested that increasing volumes should drive our decision-making, or that Congress intended for advanced biofuels to backfill for cellulosic in all circumstances. Congress clearly envisioned that under certain circumstances, articulated in the waiver authorities under CAA section 211(o)(7), the volumes can be waived. As discussed further in Section 2.2 of this document, the cellulosic waiver authority in CAA section 211(o)(7)(D) grants EPA broad discretion in determining whether to use that waiver authority to adjust total renewable fuel and advanced biofuel volumes. While in the past we have found it appropriate to allow advanced biofuel to backfill for a portion of missing cellulosic biofuels, in this rulemaking we do not find such backfilling to be appropriate, as discussed in Section 2.2 of this document and Section IV of the final rule.

### **Comment:**

One commenter suggested that EPA should use the RFS program to provide certainty for development and investment in renewable fuels. Another commenter stated that it was Congress' original intent to generate billions of dollars in capital investments in the agriculture and bioenergy sectors.

### **Response:**

We believe that the RFS program continues to incentivize development and investment in renewable fuel. This is particularly true this year, where the advanced biofuel volume is increasing in accordance with the statute.

**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.” We agree with the commenter that “energy independence and security” is a stated goal of the Act. However, the statutory language does not specify whether the production of clean renewable fuels is to come from domestic or foreign production. Energy security can be enhanced through a range of different practices beyond just domestic production, namely diversifying sources.<sup>1</sup> More importantly, it is the statute’s plain text, read in its context, that is our primary guide to its meaning. We will not presume with the commenter that any result consistent with their account of the statute’s overarching goal must be the law but will presume more modestly instead that the legislature says what it means and means what it says. Thus, notwithstanding the commenter’s speculation about Congress’ policy purposes, we do not believe that the text of the “inadequate domestic supply” waiver provision requires us to grant a waiver based solely on a consideration of domestic production. See also our discussion of the inadequate domestic supply waiver authority in Section 2.1.1 of this document.

In addition, while the statute does direct EPA to consider “energy security” in CAA section 211(o)(2)(B)(ii), that section applies only when EPA is setting volumes for calendar years after those specified in the statutory tables, or when evaluating volumes under the “reset authority” in CAA section 211(o)(7)(F). Therefore, we have considered this statutory factor in establishing the BBD volume for 2020.<sup>2</sup> This statutory provision, however, does not apply to our actions on the other biofuel categories. Nor does it require us to consider energy security in the context of the “inadequate domestic supply” waiver authority in CAA section 211(o)(7)(A)(i), which is an entirely separate statutory provision — or *a fortiori* grant such a waiver based solely on domestic production.

**Comment:**

One commenter stated that making space in the market for alternative fuels that contribute to energy independence, environmental improvement, and economic development is exactly the point of RFS2.

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<sup>1</sup> See, e.g., discussion in the RFS2 final rule (75 FR 14841, March 26, 2010).

<sup>2</sup> See “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume,” available in docket EPA-HQ-OAR-2018-0167.

**Response:**

Congress created the RFS program to increase the use of renewable fuels in the transportation sector, and the standards that EPA is setting for 2019 help to fulfill this goal.

**Comment:**

One commenter stated that for the second year in a row, EPA had inappropriately reduced volume requirements after drafts of the rule had been approved in the interagency review process.

**Response:**

The interagency review process provides a means for other federal agencies to provide input on rulemakings before they are signed and published. EPA considers that input and then makes judgments about the appropriate standards to propose or set based on the statute governing the action and the discretion that that statute provides.

**Comment:**

One commenter stated that Congress clearly intended for the use of renewable fuel to increase, and that it is now time for EPA to get back to that mission by faithfully administering the rule of law as intended under the RFS.

**Response:**

The standards we are setting for 2019 include an increase of 630 million gallons in the advanced biofuel and total renewable fuel standards in comparison to the 2018 standards.

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

Commenters that provided comment on this topic include but are not limited to: 0312, 0513, 0523, 0530, 0536, 0539, 0591, 0615, 0617, 0620, 0622, 0660, 0662, 0671, 0696, 0711, 1037, 1040, 1041, 1192, 1197, 1198, 1267, 1273, 1274, 1281, 1283, 1285, and 1286.

### **Comment:**

Several commenters suggested increasing the amount of data related to the RIN market that EPA makes publicly available. Suggestions included publishing RIN prices, information on small refinery exemptions, information on the number of RINs held by different entity categories, RIN trades exceeding a certain threshold, and number of parties with RIN holding positions above a certain threshold. Some comments also suggested increasing the frequency at which EPA updates publicly available information. Other commenters stated that the RIN market is already sufficiently transparent, and that EPA should not bother publishing certain data, such as RIN prices, because they are already available to the public elsewhere. At least two commenters urged EPA to protect CBI as it considers what data to make publicly available.

### **Response:**

In a separate, earlier action, we made additional information available through our public website.<sup>3</sup> The website now publishes data on a number of items of interest to stakeholders, including the number of small refinery exemption petitions received, granted, and denied by year; the fuel volume exempted by year; weekly volume-weighted average RIN prices by D-code; and weekly aggregated RIN transaction volumes by D-code. The website also publishes RIN holding information by quarter that can be parsed by category (exporter, RIN owner, RIN originator, refiner, and importer). We intend to update these data regularly going forward. We believe this additional information will increase the transparency of the RIN market, and positively impact EPA's administration of the RFS program.

In this rule we are not taking action on any of the other data availability recommendations, due in part to CBI concerns or resource limitations. However, we may consider implementing some of these recommendations at a later time.

### **Comment:**

Several commenters provided input on the potential impacts of changing rules related to who may purchase RINs, the duration for which RINs could be held, and other rules related to the buying, selling, or holding of RINs. Some commenters supported the ideas under EPA consideration, including restricting the purchase of RINs to obligated parties only and requiring RIN retirement for compliance more frequently than annually. At least one commenter supported restricting RIN trading but suggested that a wider group than just obligated parties would be more appropriate. Many other commenters opposed the ideas under EPA consideration. Many commenters stated that limiting RIN market participation would reduce liquidity, increase

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<sup>3</sup> See <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/public-data-renewable-fuel-standard>



volatility, and ultimately increase RIN prices. In addition, at least one commenter opined on the benefits that non-obligated parties bring to the RIN market, such as purchasing and breaking up large RIN offerings or purchasing and aggregating small RIN offerings that might not otherwise attract buyers. Some of these commenters also opposed increasing the compliance frequency.

Several commenters provided additional suggestions for changing RIN market rules beyond those ideas under EPA consideration. For example, some commenters recommended that EPA consider allowing RINs for exported renewable fuel, limiting the number of times a separated RIN can be traded, limiting how long a non-obligated party can hold a RIN, limiting a party's RIN holdings or position, and establishing rolling compliance dates. Other commenters generally opposed any restrictions on how the RIN market operates and how entities participate.

Several commenters also provided other ideas to stabilize RIN prices beyond changing RIN market operations. For example, commenters recommended that EPA collect more data and enhance collaboration with CFTC.

**Response:**

We appreciate the insights and feedback from commenters. As we stated in the proposal, we did not propose to make any of these or other regulatory changes to the RFS program and did not intend to take final action on any such changes in this rule. Thus, they are outside the scope of this rulemaking.

However, we note that in October 2018, President Trump directed EPA to consider reforms to increase transparency and prevent price manipulation in the RIN market.<sup>4</sup> EPA will be going through a notice-and-comment rulemaking process for that rulemaking with a goal of finalizing it by summer 2019. That rulemaking will be informed by comments received in this proceeding. We do not, however, intend to transfer the comments received on this rule to that proceeding. Interested parties should therefore submit comments anew in that rulemaking processing.

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<sup>4</sup> See <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-expanding-waivers-e15-increasing-transparency-rin-market>

## **2. Waiver Authorities**

### **2.1 General Waiver Authority**

Commenters that provided comment on this topic include but are not limited to: 0439, 0531, 0586, 0617, 0619, 0620, 0660, 0671, 0672, 0711, 1041, 1267, 1277, 1282, and 1286.

#### **Comment:**

Numerous commenters stated that the general waiver authority is not triggered in this rulemaking, as none of the criteria for issuing a waiver have been met. 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. A commenter suggested that reducing the total renewable fuel and advanced biofuel volumes such that the conventional renewable fuel volume falls below 15 billion gallons could harm the advanced biofuel and cellulosic biofuel industries. Some commenters suggested that the notice and comment requirements provided in the CAA have not been met to allow EPA to finalize use of the general waiver authority.

Conversely, other commenters suggested that EPA should use the general waiver authority to reduce volumes. One commenter suggested that feedstock market impacts, increased compliance costs, and indirect GHG emissions at the volumes proposed might constitute severe economic and environmental harm and may warrant use of the general waiver authority to reduce advanced and total renewable fuel volumes. Other commenters suggested that EPA has the authority to waive RFS mandates to reflect declining gasoline consumption, the lack of drop-in biofuels, and the limited availability of E15 and E85. A commenter suggested that EPA could not avoid analyzing the need for reductions under the general waiver authority.

#### **Response:**

We are not using the general waiver authority to set the 2019 standards, as described in Section II of the final rule, and elsewhere in this section. Use of the general waiver authority under a finding of inadequate domestic supply is discussed in Section 2.1.1 of this document. Use of the general waiver authority under a finding of severe economic harm is discussed in Section 2.1.2 of this document. Finally, use of the general waiver authority under a finding of severe environmental harm is discussed in Section 2.1.3 of this document. below and in the docket memorandum “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under the General Waiver Authority for the 2019 Final Rule.” We have assessed whether to reduce volumes under these authorities and determined that doing so would not be appropriate.

#### **Comment:**

A commenter suggested that EPA should use the general waiver authority to reduce total renewable fuel and advanced biofuel volumes for 2019. They noted that the biodiesel volumes

necessary to meet the standard are not available. This commenter cited a study by Advanced Economic Solutions (AES) titled “Analysis of Potential RFS Volumes for Biodiesel.”

Other commenters suggested that the advanced volume should be reduced under the general waiver authority because 2.8 billion gallons of biodiesel is unattainable.

**Response:**

We have reviewed the study cited by commenters, but still find our assessment of biodiesel volumes provided in Section IV of the final rule to be a more appropriate assessment of the availability of biodiesel for compliance with the RFS program. We continue to believe that the volume of 2.8 billion gallons of biodiesel is attainable.

We do not believe the AES study demonstrates severe economic harm for several reasons. The study by AES considered several scenarios, including two scenarios that assumed the RFS program would require the use of 4.0 billion gallons of biodiesel and renewable diesel in 2018. These scenarios, which exceed the volumes of biodiesel and renewable diesel we expect will be used in 2019 to meet the advanced biofuel and total renewable fuel volumes, were responsible for the most extreme findings of the study. These findings are therefore not relevant to the 2019 rule. The study also notes significant differences depending on whether or not the tax credit is available. EPA does not consider these impacts costs, but rather transfer payments between parties. Finally, we note that this study was conducted in August 2017. It therefore does not consider the large projected stocks of soybeans and other crops for 2019, nor recent trade actions, which have had a significant impact on the price of agricultural commodities and biofuels produced using these commodities.

**Comment:**

Some commenters suggested that the volume reductions using solely the cellulosic waiver authority are insufficient to arrive at appropriate volumes.

**Response:**

Were the full exercise of the cellulosic waiver authority to be insufficient, further reductions to the volume requirements would need to be based on the general waiver authority. We have evaluated whether the criteria for use of the general waiver authority have been met. As we explain throughout this section, we have determined that exercising the general waiver authority would not be appropriate.

**Comment:**

One commenter pointed to the requirements for public notice and comment before issuing a waiver, saying that the general request for comment in the proposal on the possibility of using the general waiver authority was insufficient. This commenter stated that EPA had proposed not to use the general waiver and, as such, it must initiate a new public notice and comment process, as well as consultation with USDA and DOE, before acting on any further reductions.

**Response:**

After consideration of comments received in response to the proposal, we have determined that further reductions using the general waiver authority are not warranted for 2019.

## 2.1.1 Inadequate Domestic Supply

Commenters that provided comment on this topic include but are not limited to: 0539, 0622, 0672, 0711, 1041, 1198, 1281, 1282, and 1283.

### **Comment:**

Several commenters stated that use of the general waiver authority under a finding of inadequate domestic supply would be inappropriate given plentiful supply of feedstocks and renewable fuel to obligated parties.

### **Response:**

We agree with commenters who suggested that we should not use the general waiver authority under a finding of inadequate domestic supply to waive volumes for the final rule. See responses within this section for further discussion.

### **Comment:**

Several commenters stated that in setting the advanced biofuel standard, EPA should not consider imports of advanced biofuels and should instead only look at domestic production. They suggested that the proposed volumes were “out of line” with the RFS goal of promoting greater energy independence and security.

### **Response:**

Although this comment addresses how EPA should set the advanced biofuel standard, we note that because we are using the full reduction under the cellulosic waiver authority for advanced biofuel, the only way to achieve further reductions is through use of the general waiver authority under a finding of inadequate domestic supply or severe environmental or economic harm. As discussed below, we do not believe it is appropriate to exercise our discretion under a finding of inadequate domestic supply to reduce volumes. As explained later in this section, we are also electing not to use our general waiver authority under a finding of severe economic harm or severe environmental harm. Regarding the goals of the RFS program, including with respect to domestic production, see our discussion in Section 1.1 of this document.

### **Comment:**

Several commenters suggested that there is not an inadequate domestic supply of advanced biofuels, citing to the meaning of “domestic supply” articulated in *ACE* at 709, and concluding that it must include both biofuels produced in the U.S. and imported biofuels. Some commenters noted that *ACE* construed “supply” to refer to the renewable fuel available to refiners, blenders, and importers, including imports. 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.” Another commenter noted that Congress intended to reduce dependence on foreign petroleum, and not increase dependence on foreign renewable fuel. Some

commenters additionally stated that the goals of the RFS program are best served by reading “domestic supply” to include imports. Commenters pointed to the 4.1 billion gallons of registered BBD production capacity in the U.S. (which could provide over 6.3 billion advanced biofuel RINs) and the global supply of feedstocks as evidence that this standard could be met. Many other commenters suggested that EPA should interpret the undefined term “domestic” within the phrase “inadequate domestic supply” to mean renewable fuel produced domestically, thus excluding imports from any assessment of supply. These commenters suggested that this interpretation would “give meaning” to the use of the word “domestic” and is the best reading of the statute. 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 of these 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 renewable fuel production. Many of the commenters suggested that when looking solely at domestic production, an inadequate domestic supply of renewable fuel exists, and therefore EPA should exercise the waiver.

**Response:**

In this action, we are declining to exercise our discretion to reduce total renewable fuel or advanced biofuel volumes under a finding of inadequate domestic supply.

We recognize that commenters advanced differing interpretations of the statutory term “inadequate domestic supply.” Some commenters claimed that this term refers to only domestically produced renewable fuels, while others claimed that it also includes imported renewable fuels. EPA need not resolve this interpretive question, because under either interpretation we would not find it appropriate to exercise the waiver for two independent reasons.<sup>5</sup>

First, even assuming we were to interpret “inadequate domestic supply” to only comprise domestic production, domestic production may be sufficient to meet the volumes established in this final rule. To begin with, no parties suggested that there was insufficient conventional renewable fuel to meet the implied volume requirement of 15 billion gallons, nor did parties suggest that there was insufficient cellulosic biofuel to meet the cellulosic standard. As we stated in the 2018 rule,

The total domestic production capacity of corn ethanol in the U.S. is about 16 billion gallons, and total production of denatured and undenatured ethanol from these facilities in 2016 exceeded 15 billion gallons. As a result, there does not appear to be an inadequate domestic supply of renewable fuel to satisfy the implied 15 billion gallon conventional renewable fuel volume that results from full

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<sup>5</sup> See 82 FR 58516-17 (December 12, 2017), adopting this approach in the 2018 rule.

application of the cellulosic waiver authority to reduce statutory volume targets for advanced biofuel and total renewable fuel. We note that this assessment does not include imported volumes of fuel, such as conventional biodiesel, which could also be used to satisfy the volume requirements.<sup>6</sup>

For advanced biofuels, the 2019 standard could be satisfied by an increase in domestic production of approximately 700 million RINs, which is about the same as than the greatest year-over-year increase in domestic advanced biofuel production.<sup>7</sup> This type of increase would be difficult, but not impossible for the domestic industry to fulfill. As noted in Section IV of the final rule, we do not believe that feedstock supplies or production capacity would preclude the domestic industry from meeting the standard.

Alternatively, we could interpret “inadequate domestic supply” to comprise both domestic production and imports. Under this interpretation, we would not find there to be an inadequate domestic supply. The domestic production of biofuels, described above, together with imports, described in Section IV of the final rule and Section 4.2 of this document, likely suffice to supply the requisite volumes.

Second, we would decline to exercise our discretion under either interpretation. The statute does not require EPA to reduce volumes upon finding an “inadequate domestic supply,” but instead confers EPA the discretion to do so.<sup>8</sup> In determining whether to exercise our discretion, we may consider, among other things, domestic production, imports, and the size of the carryover RIN bank.<sup>9</sup> As described above, we expect that domestic production and imports likely suffice to supply the required volumes. Moreover, there exists a significant carryover RIN bank that can be used to meet the 2019 volumes were the actual use or production of renewable fuels to fall short.

For each of the above reasons, we are not exercising our discretion to further waive volumes under the inadequate domestic supply waiver authority. We believe the market can and will supply sufficient biofuels to meet the total and advanced standards we are setting in this action.

**Comment:**

Several commenters stated that EPA should look at the statutory volumes to determine whether there is an inadequate domestic supply to meet the statutory volumes.

**Response:**

We do not find that it is required to analyze whether the volumes would result in an inadequate domestic supply by looking at the statutory volumes. As described in Section III of the final rule, we have reduced the volume requirement for cellulosic biofuel to match the volumes we project will be available in 2019, and we have provided the corresponding maximum volume reductions

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<sup>6</sup> See 82 FR 58517 (December 12, 2017).

<sup>7</sup> The highest year over year increase in domestic advanced biofuel production was approximately 740 million RINs from 2015 to 2016.

<sup>8</sup> See CAA section 211(o)(7)(A) (“the Administrator *may* waive...”) (emphasis added).

<sup>9</sup> See *ACE* at 709, 715.

to the statutory targets for advanced biofuel and total renewable fuel that are permitted under the cellulosic waiver authority. It is reasonable, therefore, to assess whether the resulting volumes will give rise to circumstances justifying the use of other waiver authorities to provide further reductions.

However, even if we were to take the commenters' suggested approach of analyzing whether imposition of the statutory volume targets would lead to inadequate domestic supply, we believe it would be reasonable to consider the relationship between renewable fuel volumes and inadequate domestic supply, including the degree of waiver needed to avoid an inadequate domestic supply, before determining whether and how to exercise the waiver. Were we to take this approach we do not believe that the current record would support a finding that applicable volumes lower than those used in the final rule to set the 2019 applicable standards would be necessary to prevent an inadequate domestic supply. In other words, as we have explained above, we do not believe that there is an inadequate domestic supply to meet the volumes established by this action.

**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."

Other commenters suggested that EPA may not consider costs under the "inadequate domestic supply" prong of the general waiver authority. These parties suggested that costs would constitute "demand-side concerns," which the court in *ACE* distinguished from the supply-side constraints EPA could consider under "inadequate domestic supply."

**Response:**

We evaluated the costs of the program in Section V of the final rule, as well as in the context of evaluating whether the standards could lead to severe economic harm in Section 2.1.2 of this document. We found the costs as compared to 2018 to be between \$190 -- \$630 million in 2019 and determined that it was not appropriate to reduce volumes on the basis of severe economic harm.

We are not resolving the interpretive issue of whether we must consider costs in determining "inadequate domestic supply." It is not clear that we can make a finding of inadequate domestic supply based on economic costs alone.<sup>10</sup> But even were we to adopt that interpretation, we would still decline to exercise the inadequate domestic supply waiver. The costs associated with the volumes of renewable fuel we are requiring in this action are not so prohibitive as to constitute its being "unavailable."

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<sup>10</sup> See *ACE* at 712.



## 2.1.2 Severe Economic Harm

Commenters that provided comment on this topic include but are not limited to: 0439, 0522, 0523, 0536, 0539, 0619, 0620, 0622, 0672, 1037, 1041, 1197, 1198, 1274, 1281, 1282, 1283, and 1292.

### **Comment:**

Numerous commenters suggested that the RFS program is imposing severe economic harm on specific industries.

The poultry industry, particularly broiler producers, argued that the RFS program caused severe economic harm by inducing fluctuations in corn prices. This commenter stated that from 2007 to 2013 “at least a dozen poultry companies ceased operations, filed for bankruptcy, or were acquired by another company,” and that these events constituted severe economic harm. This commenter also suggested that an appropriate and predictable waiver would be based on the USDA “stocks-to-use-ratio.”

Some commenters suggested that increasing volumes are causing severe economic harm to ATV and motorcycle users due to increasing ethanol concentrations in gasoline and increased risk of misfueling.

Some commenters suggested that the RFS program is imposing economic harm on merchant refiners and small retailers. For merchant refiners, commenters pointed to the blendwall, high RIN prices, and limited availability of higher level ethanol blends as demonstrating harm. One commenter suggested we should consider significant costs, impacts on small refiners, and changes to energy markets to support a finding of severe economic harm.

One commenter stated that the dramatic changes in energy markets since 2007 have rendered moot most of the goals of the RFS program.

### **Response:**

CAA section 211(o)(7)(A) provides that EPA may grant a waiver based on a determination that implementation of the 2019 RFS requirements would severely harm the economy of a *State, a region, or the United States*. We have previously interpreted this provision in our decisions denying requests to exercise this waiver authority.<sup>11</sup> Based on our interpretation of the statute and the record before us, we decline to exercise our discretion to grant the waiver for multiple reasons. First and generally, while commenters alleged harm to specific industries, they did not demonstrate severe harm to the economy of a State, a region, or the United States.<sup>12</sup> Second, in assessing whether to exercise our discretion to grant a waiver, EPA considers the overall impacts of the 2019 volume requirements, including beneficial impacts on renewable fuel producers, farmers, and other industries. Commenters generally failed to demonstrate that granting a waiver

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<sup>11</sup> See 77 FR 70755 (November 27, 2012); 73 FR 47170-72 (August 13, 2008).

<sup>12</sup> Regardless of whether the statute requires such a showing, EPA would still consider such impacts in deciding whether to exercise our discretion. See 73 FR 47172 (August 13, 2008).

would be appropriate notwithstanding the beneficial impacts of the 2019 volume requirements. Third, as we explain below, even were we to focus on the impacts to particular industries, the commenters did not demonstrate that the 2019 volume requirements would cause severe harm to their industry.<sup>13</sup>

Regarding the poultry industry specifically, the commenter pointed to corn price fluctuations and negative economic impacts on specific poultry companies. However, the commenter did not demonstrate that the 2019 volume requirements, as opposed to other market factors, would cause these economic impacts. *A fortiori*, the commenter did not demonstrate that implementation of the 2019 volume requirements would cause these impacts with a high degree of certainty. Nor did the commenter show that any resulting corn price fluctuations would constitute severe economic harm. We note, however, that in our analysis of previous waiver requests, we found that the applicable standards were only responsible for a very small impact on corn prices.<sup>14</sup> We further note in the memorandum to the docket “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under the General Waiver Authority for the 2019 Final Rule” that the 2019 RFS rule itself is having no impact on overall corn ethanol volumes and therefore on the corn market.

Regarding the suggestion that the USDA “stocks-to-use-ratio” could provide a basis for a waiver, we do not believe that such an approach would be consistent with the criteria under which we are authorized to grant a waiver, as it is not a measure of economic harm.

Regarding potential economic harm to ATV and motorcycle users due to increasing ethanol concentrations in gasoline and increased risk of misfueling, the commenter did not provide data indicating severe economic harm for the use of E10. Also, ethanol blends higher than E10 are not permitted to be used in such vehicles, and we have implemented regulations to help prevent misfueling.

In response to comments that the RFS is causing severe economic harm to merchant refiners, these commenters did not provide any concrete evidence that their financial difficulties are caused primarily or even significantly by the RFS program. In our past assessments of this issue we have concluded that the cost of the RIN is recovered by obligated parties in the revenues received for their petroleum products, and is passed through to consumers in the marketplace and does not represent a net cost to obligated parties.<sup>15</sup> The prices refiners receive for their gasoline blendstocks and diesel fuel have risen in the U.S. to offset their RFS compliance costs.<sup>16</sup> Commenters provided no new credible evidence to indicate that they do not or cannot recover the cost of RINs. Accordingly, we do not believe that the price paid for RINs is a valid indicator of the economic impact of the RFS program on these entities, since a narrow focus on RIN price

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<sup>13</sup> As we explained in our prior decisions, we do not believe it would be appropriate to exercise our discretion based on impacts to a single industry. See 77 FR 70755 (November 27, 2012); 73 FR 47172 (August 13, 2008).

Nonetheless, as we explain in the text, the record does not demonstrate severe economic harm even by that standard.

<sup>14</sup> See, e.g., “Notice of Decision Regarding Requests for a Waiver of the Renewable Fuel Standard,” 77 FR 70752 (November 27, 2012).

<sup>15</sup> 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 and “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 22, 2017.

<sup>16</sup> *Id.*

ignores the fact that these parties are recovering the cost of RINs from the sale of their petroleum products. When the ability for obligated parties to recover the costs associated with acquiring RINs is considered, we do not believe that RIN prices have had a negative economic impact on obligated parties. Moreover, RIN prices have been significantly lower in the second half of 2018 than in recent years, which would also significantly reduce the alleged impacts were obligated parties not be able to pass along their costs. We also recognize that refining margins have decreased in recent years for some market participants,<sup>17</sup> and believe that it is most likely these lower refining margins, rather than any cost associated with the RFS program, that are currently negatively impacting portions of the domestic refining industry.<sup>18</sup>

Even if changing energy markets have “rendered moot most of the goals of the RFS” as some commenters alleged and used this as a means to justify the need for a waiver based on severe economic harm, we do not believe this is a proper justification for use of the waiver authority. While market conditions may have changed over time, we do not believe that the goals of the RFS program are now “moot;” many commenters pointed out that the RFS can still provide incentives to the renewable fuels industry. Moreover, the text of the statute authorizes EPA to waive volumes based on particular statutory findings, not based on commenters’ speculations about the purposes of the RFS.

Regarding impacts on small retailers, we recently found that the RFS program, and specifically the RFS point of obligation, is not harming small retailers (or small and merchant refiners).<sup>19</sup> Commenters did not present new evidence that undermines that finding, and we decline to revisit it in this action. For the reasons we described in that denial and throughout this document, we do not believe that the 2019 rule causes severe economic harm due to impacts on small retailers.

**Comment:**

Some commenters suggested that compliance costs cannot be grounds for waiving volumes, as the RIN market is part of the statutory scheme and is not evidence of severe economic harm.

**Response:**

Compliance costs can be used to make a determination of the economic impact of the applicable standards on a State, region, or the U.S. and therefore could be grounds for waiving volumes. The fact that compliance costs are mediated through the RIN system which was designed to fulfill the statutory requirement for a credit program does not preclude this possibility. However, the available information does not indicate that the 2019 standards would create severe economic harm.

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<sup>17</sup> See, e.g., T. Fitzgibbon, A. Kloskowska, A. Martin, “Impact of low crude prices on refining,” McKinsey & Company Energy Insights. February 2015. and J. Moore, “Refining Margins Are Collapsing, Crude Prices Will Follow,” Seeking Alpha. July 26, 2016. Available Online: <https://seekingalpha.com/article/3991582-refining-margins-collapsing-crude-prices-will-follow>

<sup>18</sup> We also note that individual refiners may have been impacted by factors such as unusually high price spreads between varying types of crude oil from 2011-2014 and the recent legislative changes allowing crude oil exports from the U.S.

<sup>19</sup> See “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 17, 2017.

**Comment:**

Several commenters referred to a study by Energy Ventures Analysis, prepared in the context of the bankruptcy of Philadelphia Energy Solutions Refining and Marketing, LLC (“PESRM”), in support of their claim that the RFS program is imposing economic harm on merchant refiners and small retailers.

**Response:**

We find that the EVA study’s comparison of RIN costs to marginal benefits of increasing ethanol blending above 10% to be a faulty assessment of costs, as it incorrectly assumes that RIN prices represent costs, rather than transfer payments intended to serve as a cross subsidy between renewable fuels and the petroleum based fuels they displace.<sup>20</sup>

The study also uses specific PESRM data to evaluate RIN costs in comparison to crack spreads. This assessment is flawed for two major reasons. As an initial matter, crack spreads are susceptible to many factors outside of the RFS, and thus are a poor comparison point. Additionally, the study’s comparison of RIN prices as a percentage of crack spread is an improper comparison. The authors of the EVA study state that “If sales prices were raised to compensate for increasingly costly RIN obligations, one should expect this percentage to be controlled at a relatively stable and low level.” This is not accurate. If RIN costs were recovered by refiners (and crack spreads were constant), we would expect to see that the RIN obligation as a percent of the crack spread increases as the RIN price increases. For example, if a refiner’s average crack spread was \$0.30 per gallon with no RIN costs, and that refiner recovered 100% of their RIN costs, we would expect the crack spread to remain at \$0.30 whether the per gallon RIN cost increased to \$0.01 per gallon or to \$0.10 per gallon. Thus, contrary to the EVA’s claims, their RIN obligation as a percent of the crack spread would be expected to rise from 0% to 3% to 33% as the RIN price rose in the previous example. Finally, the study notes that for fuel sold at the rack the value of RINs is mostly shared with customers. This statement is consistent with our conclusions that the RIN costs are passed through; the value of the RIN is not kept with either merchant refiners or integrated refiners or unobligated blenders.<sup>21</sup>

**Comment:**

Several commenters supported EPA’s interpretation of the general waiver authority under a finding of severe economic harm as articulated in the 2008 and 2012 waiver denials, including the high bar set by the requirement that the harm must be caused by the RFS program, and that an evaluation must also look at benefits of the RFS program as well, and that any reductions in the volumes would be likely to result in economic or environmental harm.

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<sup>20</sup> For a further discussion of this topic, see “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 17, 2017.

<sup>21</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 and “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 22, 2017.

Several commenters suggested that issuing a waiver under severe economic harm would instead cause harm to the economy, and that compliance costs to refiners are not an appropriate basis for a waiver.

Some commenters suggested that EPA's interpretation of severe economic harm is too restrictive and not supported by the statute. Some commenters stated that EPA need not require showing of harm with a high degree of confidence. These commenters suggested that we could grant a waiver where the RFS program would be a significant factor, and not the sole factor. They also suggested that EPA should not consider benefits of the program in evaluating the waiver.

**Response:**

We believe that under the interpretation of the term "severe economic harm" that we previously set forth, the record for this action would not support a finding that the 2019 volume requirements would cause severe economic harm, and consequently not support our granting of a waiver. However, we also believe that the record for this action would not support granting a waiver even under the interpretations advanced by commenters. That is, we would decline to exercise our discretion to grant a waiver even were we re-interpret the term "severe" as requiring a lesser degree of confidence in the estimation of impacts, require the RFS program to only be a significant contributor to the harm, and not consider the benefits of the program. As discussed above, commenters have not demonstrated that the 2019 volume requirements cause or is a significant contributor of significant harm to an industry, or to a State, region, or the United States. Therefore, we do not find it necessary to assess a possible reinterpretation of the phrase "severe economic harm" at this time.

**Comment:**

Some commenters argued in favor of a high bar for granting a waiver, pointing to several benefits of the RFS program, including that: renewable fuels depress oil prices; renewable fuels provide domestic economic benefits; renewable fuels provide octane benefits; and RIN prices don't harm consumers or oil companies. Other commenters suggested that EPA should consider the compliance flexibilities provided by the CAA and the regulations in evaluating a waiver.

**Response:**

Any such benefits support our decision to not exercise our discretion to reduce the volumes using the general waiver authority.

**Comment:**

A commenter suggested that the declines in RIN values since EPA elected not to use its general waiver authority under a finding of severe economic harm in the 2018 rule further support EPA again declining to use its general waiver authority. They stated that they did not believe circumstances have changed significantly to justify a waiver.

**Response:**

As a cost to refiners that is ultimately passed on to consumers, RIN values are not a direct indicator of the economic impacts of the program. Therefore, changes in RIN values over time cannot be used directly in ascertaining the likelihood of severe economic harm. We generally agree with the commenter that circumstances have not changed so much since 2018 as to warrant a waiver for severe economic harm.

**Comment:**

Some commenters pointed to the bankruptcy of PESRM as evidence of severe economic harm.

**Response:**

We do not find the fact that PESRM filed for bankruptcy to be compelling evidence of severe economic harm. As an initial matter, the refinery had previously been struggling and received some state/local tax breaks and grants in 2012, when Sunoco formed a joint venture with Carlyle Group LP to continue refinery options.<sup>22</sup> Reporting based on PESRM's bankruptcy filings observed that its investor-owners had recently extracted roughly \$594 million in distributions from the company and suggested that it was these corporate payouts, together with poor business decisions, that "left PESRM unable to cover its obligations under [RFS]."<sup>23</sup> Additionally, we note that PESRM has now emerged from bankruptcy and is continuing both operations and compliance with the RFS.<sup>24</sup>

**Comment:**

Several commenters pointed to the Fourth Circuit's decision in *Ergon*, suggesting that the court's decision "invalidate[d] the Burkholder study,"<sup>25</sup> and EPA's practice of granting small refinery exemptions as further evidence of harm to refineries.

**Response:**

Commenters' suggestion that the court decision in *Ergon* invalidated the Burkholder study overstates the Court's conclusion, which was in relation to EPA's consideration of the Ergon West Virginia refinery's specific circumstances. The *Ergon* Court did not, however, deem the

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<sup>22</sup> See <https://www.reuters.com/article/us-philadelphiaenergysolutions-bankruptc/exclusive-philadelphia-energy-solutions-to-file-for-bankruptcy-memo-idUSKBN1FA18P>

<sup>23</sup> See <https://www.reuters.com/article/us-usa-biofuels-pes-bankruptcy-insight/refiner-goes-belly-up-after-big-payouts-to-carlyle-group-idUSKCN1G4011>

<sup>24</sup> See docket for PES Holdings, LLC, 1:18bk10122, ECF Document Nos. 244 (proposed settlement agreement), 347 (United States' motion to approve proposed settlement agreement), 376 (order approving proposed settlement agreement), and 510 (Stipulation between the Debtors and the United States on behalf of the Environmental Protection Agency relating to Renewable Identification Number Retirement Deadlines under Consent Decree and Environmental Settlement Agreement) (Bankr. D. Del.).

<sup>25</sup> 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.

study itself to be arbitrary and capricious. We continue to maintain that the costs of RINs are passed through and that RINs do not represent costs or harm to refiners.

We disagree that EPA's past grant of small refinery exemptions warrants our exercising the severe economic harm waiver. Generally, small refinery exemptions are held to a different standard than a waiver under severe economic harm: the former requires "disproportionate economic hardship" to "[a] small refinery" whereas the latter requires severe economic harm to a State, a region, or the United States. Thus, these two statutory provisions thus entail different considerations, and exercising one authority does not necessarily require us to exercise the other.

First, the terms disproportionate economic hardship and severe economic harm are not synonymous; these two different statutory terms require different showings. As one example, some commenters have argued that refinery closures, or threats of such closures, justify a finding of severe economic harm. However, the Tenth Circuit has held that "disproportionate economic hardship" does *not* "require a threat to a refinery's survival as an ongoing operation."<sup>26</sup> Second, small refinery exemptions are evaluated on a case-by-case basis for a specific refinery and can be granted on the basis of disproportionate economic hardship to that refinery. By contrast, granting a waiver requires a showing of severe economic harm to a State, a region, or the United States. Third, EPA has to date not granted any small refinery exemptions for 2019. Whether a severe economic harm waiver is appropriate in the context of the 2019 volumes, however, depends on the impact of the 2019 volumes, not of prior year volumes. Fourth, we note that EPA has granted small refinery exemptions for disproportionate economic hardship since 2011. Nonetheless, we have consistently declined to waive volumes for severe economic harm during this time.<sup>27</sup> Finally, we have specifically assessed whether we should grant a waiver of the 2019 volumes for severe economic harm to a State, region, or United States. As we explain throughout this section, we do not believe it is appropriate to exercise our discretion to grant such a waiver.

**Comment:**

A commenter suggested that EPA needed to undertake an analysis of harm at the state and regional levels.

**Response:**

While an assessment of harm at the state and regional levels could inform a decision by EPA to exercise its discretion to reduce volumes under the general waiver authority under a finding of severe economic harm, we have not received and are not aware of evidence suggesting that severe economic harm is occurring or may occur in a state or region. Therefore, we do not believe such an assessment would be useful at this time.

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<sup>26</sup> *Sinclair Wyo. Ref. Co. v. EPA*, 874 F.3d 1159, 1161 (10th Cir. 2017).

<sup>27</sup> See, e.g., "Assessment of waivers for severe economic harm or BBD prices for 2018," memorandum to docket EPA-HQ-OAR-2017-0091; 77 FR 70752; 73 FR 47168.

**Comment:**

Commenters suggested that procedurally we could not finalize a waiver without “comprehensive and robust analytical basis” subject to comment.

**Response:**

We are not finalizing a waiver under severe economic harm and thus the fact that we did not provide an analytical basis in the proposal is not at issue.

**Comment:**

Several commenters suggested that EPA should exercise our general waiver authority under a finding of severe economic harm, by looking to the statutory volumes as the baseline for evaluating harm.

**Response:**

We do not find that we are required to analyze whether the volumes would result in severe economic harm by looking at the statutory volumes.

As described in Section III of the final rule, we have reduced the volume requirement for cellulosic biofuel to match the volumes we project will be available in 2019, and we have provided the corresponding maximum volume reductions to the statutory targets for advanced biofuel and total renewable fuel that are permitted under the cellulosic waiver authority. It is reasonable, therefore, to assess whether the resulting volumes will give rise to circumstances justifying the use of other waiver authorities to provide further reductions. However, even if we were to take the commenters’ suggested approach of analyzing whether imposition of the statutory volume targets would lead to severe economic harm, we believe it would be reasonable to consider the relationship between renewable fuel volumes and severe economic harm, including the degree of waiver needed to avoid severe economic harm, before determining whether and how to exercise the waiver. Were we to take this approach we do not believe that the current record would support a finding that applicable volumes lower than those used to set the 2019 applicable standards would be necessary to prevent causing severe economic harm to a State, a region, or the United States.

**Comment:**

A commenter suggested that EPA should waive the standards under a finding of severe economic harm if the standards would exceed the blendwall and result in increased fuel costs. The commenter suggested that this harm would be due to the RFS program. The commenter also suggested that this kind of harm could also meet the other criteria EPA laid out in the 2008 and 2012 waiver denials.

Relatedly, several commenters stated that exceeding the E10 blendwall would 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:**

While some ethanol may be blended at levels above 10% in 2019, EPA does not anticipate that the market will respond to the 2019 volume requirements by blending at such high levels that would result in the harms articulated by the commenter, such as increasing fuel prices. In the past EPA has not seen increasing fuel prices with the implementation of the RFS program, even as fuel blends exceeded 10%.<sup>28</sup> See also responses in Section 5 of this document with respect to other E10 blendwall comments.

**Comment:**

A commenter suggested that the proposed volumes will cause economic harm to obligated parties and consumers as BBD is increasingly expensive with higher demand. Conversely, other commenters stated that advanced biofuels, including BBD, are not causing severe harm to the economy of a state, region, or the United States, and instead provides benefits to the economy including providing jobs and economic impact within the biodiesel industry, as well as support to farmers through demand for soy oil. These commenters also suggested that advanced biofuels help increase competition and energy security which can also reduce shortages and prevent price spikes.

**Response:**

We do not believe that the evidence provided by commenters on BBD prices is sufficient to grant a waiver under severe economic harm. The information provided by commenters is largely qualitative, highlighting the fact that BBD is typically priced above petroleum-based diesel and inferring that this price difference is sufficient to cause severe economic harm. As we explain in Section V of the final rule, we agree that in some cases BBD costs more than petroleum-based diesel. However, this price differential has existed for some time, and has not caused severe economic harm.<sup>29</sup> The commenter has not demonstrated why this type of price differential would cause severe economic harm in 2019. Thus, without any further justification, the statements made by this commenter are insufficient to justify a waiver on the basis of severe economic harm.

Additionally, other comments citing to the benefits of advanced biofuels would also be considered in evaluating whether to grant a waiver under severe economic harm. However, even if we do not consider the benefits of the applicable standards, commenters did not demonstrate sufficient harm to warrant a waiver.

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<sup>28</sup> See “Assessment of waivers for severe economic harm or BBD prices for 2018,” memorandum to docket EPA-HQ-OAR-2017-0091.

<sup>29</sup> See “Assessment of waivers for severe economic harm or BBD prices for 2018,” memorandum to docket EPA-HQ-OAR-2017-0091.

**Comment:**

Some commenters pointed to EPA's past denials of requests for a waiver on the basis of severe economic harm as evidence that there is likewise no severe economic harm now.

**Response:**

We agree that our assessment in the context of the 2018 final rule finding no evidence of severe economic harm is relevant in broad strokes to our consideration of economic harm for the 2019 standards; much of the market circumstances are similar for the two years. However, the 2019 standards include an increase of 630 million gallons of advanced biofuel in comparison to the 2018 standard, thus warranting an update to our consideration of economic harm. As described in Section II.A.2 of the final rule and this section, we have determined that there will be no severe economic harm as a result of the 2019 standards.

**Comment:**

In the past, EPA has sought comment on its interpretation of severe economic harm articulated in its decisions denying waiver request in 2008, and 2012.<sup>30</sup> Some commenters pointed out that in those denial documents, EPA stated that its interpretation was guidance and non-binding, and therefore EPA had the ability to change that interpretation.

**Response:**

In multiple notice-and-comment orders and rulemakings (including those cited by commenters), we have promulgated our interpretation of severe economic harm pursuant to the authority Congress delegated to us to make rules carrying the force of law.<sup>31</sup> We agree, however, with commenters that EPA is not precluded from altering the interpretation of the term "severe economic harm" that it articulated in prior waiver decisions.

**Comment:**

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:**

Commenters did not provide concrete information regarding a possible refinery shutdown or a particular refinery's net compliance costs. If and when we receive a petition for a waiver based

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<sup>30</sup> See 82 FR 46174 (October 4, 2017).

<sup>31</sup> See *United States v. Mead Corp.*, 533 U.S. 218, 221 (2001).

on credible evidence of an expected refinery shutdown or high net compliance costs, we will then evaluate the facts to ascertain whether issuing a waiver would be appropriate.

**Comment:**

A commenter suggested that we should reduce the cellulosic biofuel volume under a finding of severe economic harm if the cellulosic volume cannot be blended into fuel produced by refiners.

**Response:**

We interpret this comment as suggesting that we should reduce the volume of cellulosic biofuel to only the amount of liquid cellulosic biofuel and exclude cellulosic biofuel from biogas, which cannot be blended into petroleum-based fuel produced by crude refiners. We do not find that establishing the cellulosic biofuel standard based on the use of biogas would result in severe economic harm. The standard has been established based on and met by the use of cellulosic biofuel from biogas for many years without evidence of severe economic harm.

Alternatively, this comment may be suggesting that severe economic harm may occur to a refiner if they are unable to blend cellulosic ethanol into their gasoline at levels above the E10 blendwall. We do not find severe economic harm in this case either, as the refiner need not blend the fuel themselves, but can procure RINs to demonstrate compliance.

### **2.1.3 Severe Environmental Harm**

Commenters that provided comment on this topic include but are not limited to: 0539, 0619, 1033, and 1036.

#### **Comment:**

Several commenters suggested that the RFS program provides environmental benefits, including GHG reduction benefits, especially as compared to petroleum-based fuels. Several commenters also pointed to USDA's lifecycle analysis for corn ethanol. Some of these commenters also suggested that in evaluating whether the volumes will cause severe environmental harm, EPA should look at renewable fuels compared to other transportation fuels, which EPA's 2018 Second Triennial Report to Congress did not do. Several commenters stated that farmers are taking steps to improve water quality and habitat and that additional GHG benefits could be possible in the future.

In contrast, other commenters suggested that EPA's 2018 Second Triennial Report to Congress demonstrates environmental concerns regarding soil quality, water quality, air quality, and wildlife habitat. Some commenters noted that the BBD volumes would lead to increased GHG emissions. Several commenters advocated for a comprehensive analysis of severe environmental harm.

#### **Response:**

We have responded to comments about use of the general waiver authority under a finding of severe environmental harm in a docket memorandum entitled "Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority."

## 2.2 Cellulosic Waiver Authority

Commenters that provided comment on this topic include but are not limited to: 0312, 0513, 0539, 0617, 0619, 0620, 0622, 0662, 0672, 0711, 1036, 1037, 1038, 1198, 1201, 1273, and 1292.

### **Comment:**

Several commenters supported EPA's use of the full reduction in advanced biofuels and total renewable fuel under the cellulosic waiver authority. Some parties particularly supported the equal reductions due to the fact that the resulting volume of conventional renewable fuel was in alignment with the volume in the statute. Other commenters suggested that EPA should not allow the backfilling of additional advanced biofuel, not consider the existence of carryover RINs in standard setting, or not increase the standards to account for small refinery exemptions.

### **Response:**

We appreciate the comments in support of our use of the cellulosic waiver authority to its full extent to reduce advanced biofuel and total renewable fuel. We are finalizing that approach. With respect to carryover RINs, however, we note that, consistent with our past practice, we have considered the availability of carryover RINs in making a determination about whether and how to reduce the statutory volume requirements. Further discussion of comments related to carryover RINs and our responses to those comments can be found in Section 2.3 of this document.

### **Comment:**

Some commenters contrasted the decision to utilize the full reduction in cellulosic biofuel to reduce advanced biofuel to EPA's past practice of allowing backfilling of advanced biofuels. They suggested that "without continued growth in advanced RVO the industry will not obtain the level of financial investment required to achieve the long-term goals of the RFS."

Other commenters suggested that EPA should allow for the backfilling of the shortfall in cellulosic biofuel by advanced biofuel or total renewable fuel. A commenter suggested this is particularly appropriate because of the potential for reductions in advanced biofuels from small refinery exemptions.

### **Response:**

We note that the advanced biofuel volume increases in the statute by 500 million gallons for 2019, and therefore this year's annual rule does demonstrate continued growth in the advanced volume.

As explained in Section IV of the final rule and Section 4 of this document, we do not believe it would be appropriate to allow advanced biofuel and total renewable fuel to backfill for missing volumes of cellulosic biofuel in 2019.

## **Comment:**

Commenters argued that we should lessen the exercise of the cellulosic waiver authority commensurate with the volume of small refinery exemptions, including those we granted for 2016 and 2017 and those we anticipate granting in the future. Commenters generally argued that EPA should adjust for exempted small refinery volumes by intentionally drawing down the carryover RIN bank, including in our exercise of the cellulosic waiver authority. Commenters also argued that the cellulosic waiver authority requires small refinery reallocation because other statutory provisions direct EPA to “ensure” that the statutory volumes are met.

## **Response:**

We agree that we may consider exempted small refinery volumes in the exercise of our cellulosic waiver authority.<sup>32</sup> The cellulosic waiver authority grants EPA broad discretion to waive total renewable fuel and advanced biofuel volumes. As explained in Section II.B of the final rule and Section 2.3 of this document, we have carefully considered the carryover RIN bank in the exercise of the cellulosic waiver authority. The carryover RIN bank accounts for previously exempted small refinery volumes (which tend to increase the size of the bank), including the exempted volumes for 2016 and 2017 noted by these commenters.<sup>33</sup> For the reasons stated in Section II.B of the final rule and Section 2.3 of this document, we have decided not to intentionally draw down the carryover RIN bank.

We disagree with comments claiming that EPA is statutorily required to reallocate exempted volumes through drawing down the carryover RIN bank and limiting the exercise of the cellulosic waiver authority. We believe that the statute plainly grants us discretion over whether and how we consider exempted small refinery volumes and the carryover RIN bank in exercising the cellulosic waiver authority.<sup>34</sup> Alternatively, even if the statute is ambiguous, we believe our interpretation is reasonable under *Chevron v. NRDC*.

Beginning with the text of the cellulosic waiver authority, it states that EPA “may” waive the total renewable fuel and advanced biofuel volumes up to the shortfall in cellulosic biofuel production.<sup>35</sup> It does not refer to exempted small refinery volumes, to small refineries generally, or to the carryover RIN bank.<sup>36</sup> To the contrary, the plain text requires another, completely different statutory condition to be met: “[a]ny reduction EPA makes to the advanced biofuel or total renewable fuel volume requirements may not exceed the amount of EPA’s reduction to the cellulosic biofuel volume requirement.”<sup>37</sup> To the extent the statute affords EPA discretion — in stating that EPA “may” waive volumes — it is silent on how EPA is to exercise that discretion. That silence does not impliedly mandate small refinery reallocation through a drawdown of the

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<sup>32</sup> As we explain in Section 8 of this document, however, we believe that other comments relating to small refinery reallocation or our small refinery exemption policies are beyond the scope of this action.

<sup>33</sup> However, Section II.B of the final rule explains why this relationship is not one-to-one.

<sup>34</sup> While we may also consider carryover RINs in exercising our other waiver authorities, we have not exercised any other waiver authority in this action.

<sup>35</sup> See CAA section 211(o)(7)(D)(i).

<sup>36</sup> See *ACE* at 714.

<sup>37</sup> *Id.* at 733.

carryover RIN bank. Rather, it authorizes us to consider the carryover RIN bank in deciding whether and to what extent to exercise our discretion.<sup>38</sup>

The context and structure of the statute support our reading. Commenters' reliance on the "ensure" language of other statutory provisions, such as CAA sections 211(o)(2)(A)(i) and (o)(3)(B)(i), is telling.<sup>39</sup> That language does not appear in the cellulosic waiver authority. Such exclusion was likely intentional, for Congress intended to confer "broad discretion" through the discretionary waiver powers it granted EPA.<sup>40</sup> This discretion provides EPA needed flexibility to respond to unexpected shortfalls in cellulosic biofuel production. Had Congress wanted to mandate reallocation of exempted small refinery volumes through the cellulosic waiver authority, it would have said so. Indeed, Congress explicitly required EPA to make a different adjustment for exempt small refineries.<sup>41</sup> Thus, Congress' omitting to specify the adjustment sought by these commenters is especially telling.

Because the text of the statute is plain, and the statutory scheme is coherent and consistent, we need not consider extra-textual evidence. In any event, the purpose of the statute affirms our reading.<sup>42</sup> Congress enacted EISA "[t]o move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, [and] to protect consumers."<sup>43</sup> As we explain in Section II.B of the final rule and Section 2.3 of this document, preserving the carryover RIN bank ensures liquidity in the RIN market, avoids needless market disruptions and price spikes, protects against market uncertainties, and obviates the need for subsequent EPA waivers actions during the compliance year. These benefits are essential to the smooth operation of the entire RFS program, its ability to incent greater production and use of renewable fuels in the long-term, and consequently to the nation's energy independence and security. They are also immediately relevant to protecting consumers from potential price spikes caused by market illiquidity.

Commenters' view that the we must draw down the carryover RIN bank to account for exempted small refinery volumes would decimate the carryover RIN bank, the vital functions it serves, and Congress' purposes in enacting the RFS program. Several commenters, for example, claimed that EPA should intentionally draw down the carryover RIN bank by the entirety of the 2016 and 2017 exempted small refinery volumes, putatively totaling 2.25 billion RINs, and further draw down the carryover RIN bank by an unspecified volume of anticipated exemptions for 2019. Even assuming contrary to the commenters' position that the latter value is nil, a drawdown of the full 2.25 billion RINs would reduce the current RIN bank by 87%, from an estimated 2.59 to 0.34 billion RINs, which approximates less than 2% of the 2019 total renewable fuel volume.<sup>44</sup>

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<sup>38</sup> Cf. *ACE* at 712-16 (agreeing with this same approach to considering carryover RINs in exercising the general waiver authority (citing *Monroe* at 917)).

<sup>39</sup> Cf. *id.* at 714 (rejecting petitioners' reliance on "ensure" language and upholding EPA's approach to carryover RINs in exercising the general waiver authority).

<sup>40</sup> *Id.* at 733.

<sup>41</sup> See CAA section 211(o)(3)(B)(ii).

<sup>42</sup> Cf. *ACE* at 714.

<sup>43</sup> 121 Stat. 1492.

<sup>44</sup> We acknowledge that it is possible that the market could use more than 19.92 billion gallons of total renewable fuel in 2019. However, we think it is extremely unlikely that the market could use over 2.25 billion more gallons,

This would be the lowest carryover RIN bank since the beginning of the RFS2 program in 2010. With such a small carryover RIN bank, even a small increase in gasoline and diesel usage, or a minute supply disruption, could cause significant fuel price spikes and harm consumers, necessitate subsequent EPA waivers during the compliance year, and generally undermine the regulatory certainty essential to market investments and the RFS program.

Moreover, the commenters' contention that such reallocation is statutorily mandated could eliminate the carryover RIN bank in the long-term. This would undermine the entire RFS program and Congress' purposes in enacting it. We do not believe the statute requires these counterintuitive results. To the contrary, our approach of considering the carryover RIN bank in exercising our discretion "reasonably balances the need to drive growth in the renewable fuel industry with the need to ensure that obligated parties have sufficient flexibility to comply with the statute."<sup>45</sup>

**Comment:**

Some commenters suggested that there was no need make reductions in total advanced biofuel and total renewable fuel to maintain the 15 billion gallons of conventional renewable fuel implied by the statute. Others suggested that EPA is not required to reduce advanced biofuel and total renewable fuel by the same amount (i.e., maintaining 15 billion gallon implied volume of conventional renewable fuel).

**Response:**

We acknowledge that if we made no reductions to advanced biofuel and total renewable fuel using the cellulosic waiver authority, the implied volume requirement for 15 billion gallons of conventional renewable fuel would be maintained. However, as discussed in Section IV of the final rule, we believe that such reductions are warranted.

We acknowledge we are not compelled by the statute to maintain the 15 billion gallon implied volume of conventional renewable fuel. However, as explained in Sections II.A.1 and IV.D of the final rule, we continue to maintain that the best reading of the statute is one that utilizes equal reductions for advanced biofuel and total renewable fuel under the cellulosic waiver authority.

**Comment:**

Several commenters stated that the environmental benefits of renewable fuel should prompt volumes higher than those proposed.

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and we believe establishing the volume as suggested by these commenters would result in a significant and inappropriate drawdown of the carryover RIN bank.

<sup>45</sup> See *ACE* at 715.



**Response:**

We have carefully considered the environmental impacts of renewable fuel in Sections IV and VI of the final rule, Sections 4, 6, and 7.2 of this document, and memoranda to the docket.<sup>46</sup> We do not believe that environmental benefits of biofuel volumes, to the extent they exist, compel a higher volume than the one we are finalizing in this action. We still find that reductions using the full cellulosic waiver authority are appropriate.

**Comment:**

Some commenters suggested that the advanced biofuel and total renewable fuel volumes are too high because the cellulosic biofuel volume is too high, and that EPA should consider an “end-of-year supplemental waiver” if the cellulosic biofuel production falls short of the projection. Another comment suggested EPA should “true-up” the estimate at the end of the year using the cellulosic waiver authority.

**Response:**

Our discussion of the projected volume of cellulosic biofuel can be found in Section III of the final rule and Section 3 of this document. The volume we are finalizing is a projection of production that takes a “neutral aim at accuracy” as required by the court in *API*. Therefore, our reductions to advanced biofuel and total renewable fuel are limited by our reductions in the cellulosic biofuel volume.

As 2019 has not yet passed, commenters’ request that we “true-up” the cellulosic biofuel volume at the end of 2019 are unripe and beyond the scope of this proceeding. To the extent that cellulosic biofuel production actually falls short of production in 2019, and commenters subsequently ask EPA to “true-up” the cellulosic biofuel volume, we will address these concerns at that time.

**Comment:**

A commenter suggested that in setting the cellulosic biofuel standard EPA must be “neutral,” but that some comments in the context of setting the BBD standard indicated that EPA was not neutral.

**Response:**

It was not clear from the information provided by the commenter exactly what was not neutral about EPA’s cellulosic projection. However, the statements about providing space for other advanced in setting the BBD standard are not related to how EPA sets the cellulosic biofuel standard. The cellulosic biofuel standard is set with a “neutral aim at accuracy” in accordance with the D.C. Circuit’s ruling in *API*. That neutral aim is only required when EPA projects

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<sup>46</sup> See “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority” and “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume,” memoranda to docket EPA-HQ-OAR-2018-0167.

cellulosic biofuel under the cellulosic waiver authority. We also note that the statements quoted by the commenter are in the context of setting the 2020 BBD volume, not the 2019 advanced or cellulosic biofuel volumes.

**Comment:**

A commenter suggested that EPA must consider whether or not to reduce advanced biofuel by the full amount of the reduction in cellulosic biofuel, and that EPA did not, and should have reduced advanced biofuel by a lesser amount.

**Response:**

As explained in Section IV of the final rule and Section 4 of this document, we have carefully considered the appropriate reduction in advanced biofuel under the cellulosic waiver authority and has found it appropriate to make the maximum allowable reduction.

## 2.3 Carryover RINs

Commenters that provided comment on this topic include but are not limited to: 0312, 0536, 0539, 0586, 0617, 0619, 0620, 0662, 0672, 0712, 1037, 1041, 1197, 1198, 1273, 1274, 1281, 1282, and 1283.

### **Comment:**

Several commenters expressed their support for EPA's proposed decision to not intentionally draw down the bank of carryover RINs in setting the 2019 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. Several of these commenters also stated that while it may have been EPA's intent not to draw down the carryover RIN bank, such a drawdown was possible given the large increase in the advanced biofuel and total renewable fuel standards.

Conversely, several other commenters stated that the carryover RIN bank is larger than necessary and should be intentionally drawn down 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 and reduces demand and consumption of renewable fuels, particularly cellulosic and advanced biofuels.

### **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 2019, 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 appropriate for EPA to set the volume requirements for 2019 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 2019 annual volume requirements. In *Monroe*, 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 2019, we project that as many as 2.59 billion carryover RINs will be available for compliance. This is approximately 13% of the final 2019 total renewable fuel volume standard and less than the 20% limit permitted by the regulations to be carried over for use in complying with the 2019 standards. Consistent with our past practice, we considered the availability of carryover RINs in making a determination about whether and how to reduce the 2019 statutory volume requirements, and that assessment was properly done in view of the specific circumstances present for 2019. Considering all of the various relevant factors for 2019, 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, and the increased level of the 2018 and 2019 standards, we have concluded that we should not set the volume requirements for 2019 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 2019 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 and use of renewable fuels.<sup>47</sup>

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<sup>47</sup> For more detail on how the rule may impact the production and use of various renewable fuels, see Sections III, IV, and VI of the final rule and “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

As discussed in the 2014-2016 final rule, 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>31F31F</sup><sup>48</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 create further program uncertainty and impede the investment needed for the program to grow. We believe that we should not set the volume requirements for 2019 in a manner that would be expected to require a drawdown in the collective bank of carryover RINs given all of the various relevant factors mentioned above.

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 2019 volumes should be waived consistent with EPA's cellulosic waiver authority. We have set the 2019 advanced biofuel and total renewable fuel volume requirements at a level that is expected to continue to place upward pressure on the production and use 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:**

Two commenters recommended that the carryover RIN bank should consist of at least 14-15% of the projected total renewable fuel volume standard. The commenters stated that a carryover RIN bank of this size is necessary to ensure the stability and liquidity of the RIN market.

Conversely, two other commenters objected to EPA's proposed rationale that carryover RINs should be preserved as a "programmatically buffer" and argued that use of carryover RINs as a "programmatically buffer" is an inaccurate reading of the statute and that allowing RINs to be rolled over from one year to the next violates the statutory limited life on RINs.

**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>32F32F</sup> Indeed, we have consistently considered the carryover RIN bank as a buffer since the 2013 rule.<sup>49</sup> In addition, we established our regulations allowing RINs to be carried over in the RFS2 final rule.<sup>50</sup> EPA did not propose changes to, take comment on, or otherwise reexamine these longstanding legal interpretations and policy approaches, and these comments are therefore beyond the scope of this proceeding.

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<sup>48</sup> See 80 FR 77483-84 (December 14, 2015).

<sup>49</sup> See 78 FR 49820-23 (August 15, 2013).

<sup>50</sup> See 75 FR 14734-35 (March 26, 2010).

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 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.

EPA is not currently in a position to state with specificity the optimal size of the carryover RIN bank. 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. As we have explained, we consider the carryover RIN bank on a case-by-case basis in each annual rule, and the appropriate size of the carryover RIN bank depends on a complex agglomerate of regulatory and market factors that cannot be reduced to a single number. In any event, consistent with the commenters’ request, we are not intentionally drawing down the carryover RIN bank in this action.

**Comment:**

Two commenters stated that any intentional drawdown of the carryover RIN bank would be inconsistent with the statute since it would prevent obligated parties from using RINs that were generated in the previous year. These commenters also stated that such a drawdown would also be inconsistent with EPA’s 20% carryover RIN cap.

**Response:**

Consistent with these commenters’ requests, we did not intentionally draw down the carryover RIN bank in this action. Nonetheless, we believe that we have the authority to intentionally draw down the carryover RIN bank, and that doing so is not inconsistent with the statute or our regulations. CAA section 211(o)(5)(C) states that “A credit generated under this paragraph shall be valid to show compliance for the 12 months as of the date of generation” and EPA gave meaning to this provision by allowing obligated parties to satisfy up to 20% of their RVO using RINs generated during the previous year. There is nothing in the statute or EPA’s regulations that would prevent EPA from intentionally requiring a drawdown of the carryover RIN bank, and in fact EPA did just that in establishing the 2013 standards, an approach that was upheld in *Monroe*. A decision to intentionally draw down the carryover RIN bank does not at all prevent obligated parties from using RINs generated during the previous year, but rather, as discussed earlier, attempts to balance the various objectives of the RFS program. Furthermore, this decision would not be inconsistent with EPA’s 20% carryover RIN cap because it would not further limit an obligated party’s ability to satisfy their RVO using carryover RINs. Carryover RINs are not evenly distributed amongst obligated parties, so while an intentional drawdown of the carryover RIN bank would reduce the overall number of carryover RINs available, the 20% cap applies to individual obligated parties and they would still be able to take full advantage of this flexibility.

Regardless, we did not propose changes to, take comment on, or otherwise reexamine these longstanding legal interpretations and policy approaches, and these comments are therefore beyond the scope of this proceeding.

### 3. Cellulosic Biofuel Standard

#### 3.1 General Comments on Cellulosic Biofuels

Commenters that provided comment on this topic include but are not limited to: 0492, 0535, 0539, 0586, 0672, 1037, 1200, 1285, and 1292.

**Comment:**

One commenter stated that if EPA provided the appropriate market signals through higher required volumes of cellulosic biofuel, then substantial market opportunities for these fuels would arise.

**Response:**

We recognize that higher required volumes for cellulosic biofuels have a positive impact on the market opportunities for producers of these fuels, as well as parties seeking to develop projects capable of producing cellulosic biofuel. Our projection of cellulosic biofuel production in this final rule is an attempt to neutrally project the volume of cellulosic biofuel that will be produced in 2019, as required in the *API* decision. This projection is not only consistent with the direction EPA received from the Court, but we believe it also provides the appropriate market signals for the continued development of cellulosic biofuels. As an example of these market signals, we note that the average 2018 cellulosic (D3) RIN price from January – September 2018 was \$2.40.<sup>51</sup>

**Comment:**

A number of commenters requested that EPA quickly take action on pending facility registration requests and pathway petitions. These commenters often stated that if EPA processed these facility registration requests and pathway petitions more quickly, greater volumes of cellulosic biofuel could be produced. Several commenters stated that EPA's projection of cellulosic biofuel production in 2019 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.). Commenters stated that by including all potential sources of cellulosic biofuel in its projection, EPA would provide the support the cellulosic biofuel industry needs.

**Response:**

We are working as expeditiously as possible, in light of resource constraints and competing priorities, to evaluate all of the facility registration requests and pathway petitions we have received to date. While we recognize the importance of timely evaluations of these requests and petitions, we note that prior to acting on many of these requests there are significant regulatory

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<sup>51</sup> RIN Price information from Argus Media.



and technical issues that must be resolved. We remain committed to working with stakeholders to resolve these issues.

Our projection of cellulosic biofuel production in 2019 includes production volumes from all facilities that are reasonably likely to produce qualifying cellulosic biofuel in 2019. 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 2019. 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 2019, 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 2019. 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.<sup>52</sup> 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 2019. We 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:**

A commenter stated that EPA's delay in processing facility registration requests, along with EPA's failure to include volumes from these facilities in its projection of cellulosic biofuel volume, is sending a negative signal to the market and hindering the production of cellulosic biofuel.

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<sup>52</sup> In the case of the production of cellulosic ethanol from corn kernel fiber, these issues are related to quantifying the volume of ethanol produced from the cellulosic components of the feedstock, rather than other non-cellulosic feedstocks that are being processed simultaneously. We note that until these issues are resolved, these parties may generate conventional (D6) RINs for any ethanol they believe is produced from corn kernel fiber that is simultaneously processed with corn starch.

**Response:**

We recognize the importance of processing facility registration requests in a timely manner. However, as discussed above, in some cases there are significant regulatory and technical issues that must be resolved prior to acting on these facility registration requests.

**Comment:**

A commenter stated that data on cellulosic biofuel RIN generation to date in 2018 indicated that cellulosic biofuel production in 2018 would fall far short of EPA's projection for 2018. This commenter stated that this over-projection in 2018 and previous years meant that it was inappropriate for EPA to propose a higher volume of cellulosic biofuel for 2019.

**Response:**

As discussed in greater detail in Section III of the final rule, our projection of cellulosic biofuel production in 2018 now exceeds the required volume for 2018, rather than falling short as the commenter alleges. Our projection uses additional cellulosic biofuel production data (through the end of September 2018) as compared to the projection made by the commenter (which only used data through the end of June 2018). Our projection also appropriately accounts for the significant seasonal variation in cellulosic biofuel production.<sup>53</sup> Conversely, the commenter's projection does not account for this seasonality (specifically the fact that for many types of biofuels, including cellulosic biofuels, greater volumes of fuel are produced in the latter part of the year than the earlier part of the year), which results in an inappropriately low projection of cellulosic biofuel.

**Comment:**

A commenter stated that EPA must make the data they rely on for the final rule publicly available.

**Response:**

All data and information used in developing our projections of cellulosic biofuel have been included in the docket for this action. With the exception of information that is covered by copyright or is claimed as CBI, all of the data and information is available to the public through regulations.gov. Further, we updated our public website in September 2018 to provide additional RFS data, including data on monthly RIN generation by D-code and fuel type, on an ongoing basis.<sup>54</sup>

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<sup>53</sup> For more detail on our current projections of cellulosic biofuel production, including how we accounted for the seasonality of production, see "Calculating the Percentile Values Used to Project Liquid Cellulosic Biofuel Production for the 2019 FRM," memorandums from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2018-0167 and "November 2018 Assessment of Cellulosic Biofuel Production from Biogas (2019)" memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2018-0167.

<sup>54</sup> See <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rins-generated-transactions>

**Comment:**

A commenter claimed that EPA issued 353 million CWCs in 2015 and 2016, 311 million CWCs in 2017, and that if EPA's approach to CWCs remains unchanged it will issue 381 million CWCs in 2019. The commenter stated that the issuance of CWCs was creating an over-supply of cellulosic biofuel RINs, and that this was having a negative impact on the cellulosic biofuel industry.

**Response:**

The commenter vastly over-states the number of CWCs issued by EPA. Total CWC purchases were approximately 12.5 million in 2015, 33.2 million in 2016, and 11.8 million in 2017.<sup>55</sup> Many of these CWC purchases were the result of a shortfall in cellulosic biofuel production relative to the volumes projected by EPA. Such shortfalls meant that the market as a whole could not satisfy the cellulosic biofuel standard based solely through RINs generated from cellulosic biofuel produced in a given year, but had to rely on waiver credits to compensate for the shortfall in production.<sup>56</sup> We estimate that there are currently only 1.4 million 2017 cellulosic carryover RINs available for use towards the 2018 compliance year.<sup>57</sup> This data, along with the high market price for D3 and D7 RINs (which averaged \$2.39 in 2018 through the end of September),<sup>58</sup> strongly suggest that CWCs are not resulting in an oversupply of cellulosic RINs, and are not having a significant negative impact on the market for cellulosic biofuels. In fact, the CWC price established by the formula in the statute appears to be setting the price for cellulosic RINs in the market, providing a stable market price for the cellulosic biofuel industry on which to base their planning and investments.<sup>59</sup>

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<sup>55</sup> See public data on CWC purchases on EPA's website: <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/cellulosic-waiver-credits-purchased-annually>

<sup>56</sup> We note that the number of CWCs purchased each year was greater than the shortfall in cellulosic biofuel production, as some obligated parties chose to hold excess cellulosic RINs for use in the following year.

<sup>57</sup> The calculations performed to estimate the number of cellulosic carryover RINs currently available can be found in the memorandum, "Carryover RIN Bank Calculations for 2019 Final Rule," available in docket EPA-HQ-OAR-2018-0167.

<sup>58</sup> Average D3 RIN prices calculated from EPA data, available at: <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rin-trades-and-price-information>

<sup>59</sup> The CWC price for 2018 is \$1.96, while the average advanced biofuel RIN prices in 2018 (through September) was \$0.53. The sum of these two prices (\$2.49) is similar to the average price of a cellulosic biofuel RIN (\$2.39).

## 3.2 Methodology for Projecting Volumes

Commenters that provided comment on this topic include but are not limited to: 0620, 0671, 0672, 0697, 1037, 1197, 1282, and 1285.

### Comment:

Multiple commenters stated that EPA should base its projection of cellulosic biofuel in 2019 at the production rate achieved in the most recent 3 months for which data are available (e.g., the projection for 2019 should be equal to RIN generation from these fuels during the last 3 months for which data are available multiplied by four). These commenters suggested that this approach would result in a more accurate projection of cellulosic biofuel production.

### Response:

Projecting production of cellulosic biofuel 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 2018) through the end of 2019. Projecting production of cellulosic biofuel in this manner is also inconsistent with the observed monthly production volumes of these fuels, which are generally increasing over the past three years.<sup>60</sup> For example, had this methodology been adopted in the 2018 final rule, it would have resulted in a projection of 249 million gallons of cellulosic biofuel in 2018.<sup>61</sup> This is far lower than our projection of cellulosic biofuel in the 2018 final rule (288 million gallons), as well as our current projection for actual cellulosic biofuel production in 2018 based on data through September 2018 (320 million gallons). 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 2019.

### Comment:

Multiple commenters stated that EPA should consider available carryover RINs in establishing the required volume of cellulosic biofuel for 2019.

### Response:

Under the cellulosic waiver authority, EPA is required to reduce the applicable volume of cellulosic biofuel to the projected volume of cellulosic biofuel production in 2019, not to the number of RINs projected to be available. Moreover, several policy and programmatic considerations favor our approach over the commenters’. Increasing the required volume of cellulosic biofuel for 2019 by the number of carryover 2018 cellulosic RINs projected to be available for use in 2019 may benefit cellulosic biofuel producers, but conversely could harm obligated parties if some of the obligated parties acquire cellulosic biofuel RINs in excess of

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<sup>60</sup> For monthly RIN generation totals for cellulosic biofuel see “Monthly RIN Generation of Cellulosic Biofuel (D3+D7),” memorandum from Dallas Burkholder to EPA Docket EPA-GQ-OAR-2018-0167.

<sup>61</sup> This number is calculated based on 62.3 million RINs generated from July – September 2017, the most recent data available at the time the analyses for the 2018 final rule were completed.

their RVO. Thus, this approach would disincentivize obligated parties from acquiring cellulosic biofuel RINs in excess of their RVO. The willingness of obligated parties to acquire RINs in excess of their RVO is an action that benefits cellulosic biofuel producers. It would be further complicated by the significant uncertainty surrounding the number of 2018 cellulosic carryover RINs that will be available for compliance with the 2019 volume obligations. Finally, we note that the average price for 2018 cellulosic RINs through September 2018 (\$2.39)<sup>62</sup> does not indicate that the availability of carryover cellulosic RINs are having a negative impact on cellulosic RIN or cellulosic biofuel prices. See Section II of the final rule and Section 2.3 of this document for further discussion of carryover RINs.

**Comment:**

A commenter stated that EPA had not sufficiently adjusted its methodology to account for its over-projection of cellulosic biofuel in 2017. The commenter stated that EPA must “go back to the drawing board” to improve the accuracy of our projections and ensure a neutral projection.

**Response:**

As discussed in further detail in Section III of the final rule, our over-projection of cellulosic biofuel in 2016 and 2017 was primarily the result of over-projecting the production of CNG/LNG derived from biogas. In response to this over-projection, we developed an entirely new methodology, adopting an industry-wide projection methodology in the 2018 and 2019 rules rather than the facility-by-facility projection methodology used in 2016 and 2017. This methodology appears to have resulted in a much more accurate projection for CNG/LNG in 2018. Indeed, we currently project actual use of CNG/LNG derived from biogas in 2018 to slightly exceed that projected in the 2018 final rule. We therefore believe it is appropriate to continue to use this methodology in 2019, as we continue to assess the accuracy of this new methodology over multiple years. While the changes to the percentile values used to project liquid cellulosic biofuel from the calculated ranges, and the way these percentile values were calculated, from 2017 to 2018 were more modest, we note that we did adjust the percentile values used to project production of liquid cellulosic biofuel based on historical data, and that these adjustments similarly appear likely to result in more accurate projections in 2018.

**Comment:**

A commenter stated that EPA’s proposed cellulosic biofuel volume represented at 32.3% increase from the required volume in 2018 and claimed that this increase was unsupported and inappropriately aspirational. The commenter further claimed that increases of this magnitude were not supported by the historical record.

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<sup>62</sup> Average D3 RIN prices calculated from EPA data, available at: <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rin-trades-and-price-information>. The theoretical maximum price for a cellulosic RIN in 2018, calculated as the sum of the CWC price for 2018 (\$1.96) and the average price of an advanced biofuel RIN through September 2018 (\$0.53) is similar to the average cellulosic biofuel RIN price for 2018 through September 2018.

**Response:**

We disagree with the commenter's characterization of our proposed volume of cellulosic biofuel as unsupported and aspirational. The only supporting evidence the commenter cites in support of their claim are EPA's over-projections from previous years and the growth rate necessary to achieve the proposed volume of cellulosic biofuel for 2019. The data used by EPA to project cellulosic biofuel production in 2019, as well as the methodology used to project the production of liquid cellulosic biofuels and CNG/LNG derived from biogas are presented in detail in Section III of the final rule and the supporting memos. As discussed in the previous response, we made significant changes in the 2018 final rule to our projection methodology in response to our over-projection of cellulosic biofuel in 2016 and 2017. Under that methodology, which we continue to use in this final rule, we expect to have slightly under-projected cellulosic biofuel in 2018. We further note that according to the commenter's own calculations, actual production of cellulosic biofuel increased by 36.2% from 2015 to 2016, and 32.2% from 2016 to 2017. The commenter's projected growth rate from 2017 to 2018 (-12%) is an artifact of an inappropriately pessimistic methodology for projecting cellulosic biofuel production through the end of 2018 and is inconsistent with EPA's current projection of cellulosic biofuel production for 2018 (see Section III of the final rule for our projection of cellulosic biofuel production through the end of 2018). These historical growth rates, while not sufficient on their own to support the volume we are finalizing for 2019, suggest that the growth we are projecting from 2018 to 2019 is not unprecedented, but rather in line with the growth rates observed in previous years. In fact, our current projected growth rate of 28.5% from 2017 to 2018 continues to support significant growth rates.

**Comment:**

A commenter stated that EPA's proposed volume of cellulosic biofuel was unrealistic, improperly aspirational, and not supported by real world historical data.

**Response:**

For this final rule we have used the same general methodology as in the proposal (with updated data through September 2018). This methodology appropriately uses historical data, for example in calculating the percentile values used to project liquid cellulosic biofuel volumes and the growth rate for volumes of CNG/LNG derived from biogas. The basis for the commenter's statements appear to be EPA's over-projections of cellulosic biofuel in 2016 and 2017, as well as our projection of cellulosic biofuel in 2018 relative to the required volume in 2018. We recognize that in 2016 and 2017 we over-projected cellulosic biofuel production. In response, we adjusted our projection methodologies, adjusting the percentile values used to project liquid cellulosic biofuel and switching from a facility-by-facility approach for projecting CNG/LNG from biogas to an industry-wide projection approach. The commenter's projection of cellulosic biofuel production for 2018 is inappropriately low, as it does not account for the seasonality in the production of CNG/LNG derived from biogas, a trend that has been observed over the past several years. Our projection of cellulosic biofuel production in 2018, which relies on data through September 2018 and accounts for the seasonality of production, exceeds the required volume for 2018 by a small margin (see Section III of the final rule). Thus, the historical data

supports the use of this projection methodology in 2019, as the same general methodology produced a reasonably accurate projection for 2018.

**Comment:**

A commenter stated that EPA's history of missed projections justifies lowering the cellulosic biofuel volume from the proposal.

**Response:**

As discussed in greater detail in Section III of the final rule, we recognize that the projection methodology we used in 2016 and 2017 resulted in projections that were greater than actual cellulosic biofuel production in these years. We therefore adjusted the projection methodology for liquid cellulosic biofuels and adopted a new, industry-wide projection methodology for CNG/LNG derived from biogas for 2018 and used generally the same projection methodology for 2019. The cellulosic biofuel projection for 2018 using this new methodology appears likely to have resulted in a reasonably accurate projection of cellulosic biofuel for 2018 (one that is likely to be slightly less than actual production in 2018), and therefore is reasonable to use to project cellulosic biofuel production in 2019 for this final rule.

**Comment:**

A commenter stated that the cellulosic RIN market was non-competitive, and therefore EPA should err on the side of caution in projection cellulosic biofuel production for 2019.

**Response:**

We have not seen any evidence of the claims made by the commenter that the market for cellulosic RINs is non-competitive. From January through August 2018, approximately 235 million separated D3 RINs have been traded.<sup>63</sup> In years in which EPA reduces the required volume of cellulosic biofuel we also make CWCs available at a price calculated according to a formula in the statute. These CWCs serve to control the price of cellulosic RINs, as obligated parties can purchase a CWC and an advanced biofuel RIN instead of a cellulosic biofuel RIN. This provides protection in the market from non-competitive behaviors. Finally, we note that EPA is charged with making a neutral projection of cellulosic biofuel production, notwithstanding potential concerns over the non-competitive nature of the cellulosic RIN market.

**Comment:**

A commenter characterized EPA's projection methodology as one that considers only gallons produced in prior years. The commenter encouraged EPA to use a forward-looking, rather than a backward-looking methodology for establishing the cellulosic biofuel volume in the final rule.

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<sup>63</sup> Data from EPA's public RIN Trades and Price Information website: <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rin-trades-and-price-information>

**Response:**

We disagree that the methodologies used to project cellulosic biofuel production in 2018 and 2019 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 2019. We also note that we are unaware of any suitable alternatives to using historical data to calculate these values. Alternatives suggested by commenters, such as simply using the volume projections from potential producers or using the same percentile values as in 2016 and 2017, have both been shown 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 2019. The percentile value is applied to a potential production range that 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 2019 is higher than the volume we currently expect will be produced in 2018, as well as the required volume of cellulosic biofuel in 2018. The methodologies used in this final rule reflect EPA’s best efforts to neutrally project cellulosic biofuel production in 2019 and should therefore provide the appropriate incentives for growth and investment in the cellulosic biofuel industry.

**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:**

We do 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. Further, we note that if carryover RINs were included in the “roll over” or “true up” calculation, this would effectively disincentivize obligated parties for acquiring excess cellulosic biofuel RINs in previous years. Finally, the commenter’s approach appears inconsistent with the statutory directive to establish cellulosic biofuel volumes and standards by November 30 of the preceding year.<sup>64</sup> Given the inherent uncertainties associated with projecting cellulosic biofuel production, the commenter’s approach would seem to require EPA to issue a new rulemaking after every year to “roll-over” or “true-up” the volume requirement, effectively nullifying the timeframe established by Congress.

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<sup>64</sup> See CAA sections 211(o)(7)(D)(i) and (o)(3)(B)(i).

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

Commenters that provided comment on this topic include but are not limited to: 0312, 0539, 0586, 1037, 1200, 1282, and 1292.

#### **Comment:**

A commenter stated that EPA should assess the accuracy of the proposed production methodology based on all available data from 2018.

#### **Response:**

We have assessed the accuracy of the projection methodology for cellulosic biofuel in the 2018 rule. This assessment can be found in Section III of the final rule. We have determined that this methodology appears likely to produce a reasonably accurate projection of cellulosic biofuel production in 2018, and thus continues to be appropriate for use in this final rule.

#### **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 3.2 of this document, EPA's methodology for projecting volumes of liquid cellulosic biofuels uses data from previous years (including 2016 -2018) 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 2019, to neutrally project likely production of liquid cellulosic biofuel in 2019. While we recognize the maturation of the cellulosic biofuel industry, we have not yet seen a consistent trend in the production of cellulosic biofuel relative to the cellulosic biofuel producer's projections that would justify using percentile values that differ from those calculated based on historical data. We will continue to monitor the accuracy of the methodologies we used to project cellulosic biofuel production and anticipate adjusting the methodology as appropriate in future years.

#### **Comment:**

Multiple commenters stated that EPA should increase its projection of cellulosic biofuel production by 50 million gallons to account for increased adoption of the conversion of corn kernel fiber to cellulosic ethanol at existing corn ethanol plants.

**Response:**

As discussed in greater detail in Section 3.1 of this document, we do not believe it would be appropriate to project cellulosic biofuel production in 2019 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 unlikely that facilities that are not currently registered to generate cellulosic RINs for ethanol produced using these technologies will successfully complete facility registration in a timeframe that would enable them to generate an appreciable number of cellulosic RINs in 2019. Our cellulosic biofuel production projections for 2019 do, however, include volumes from all facilities currently registered to generate cellulosic ethanol from corn kernel fiber.

**Comment:**

A commenter stated that EPA's projection methodology for liquid cellulosic biofuels transposes a facility's lack of production in prior years to future years. The commenter stated that this methodology inappropriately expects facilities to produce cellulosic biofuel before these volumes are included in the cellulosic biofuel volume requirements. Similarly, another commenter stated that EPA's methodology for calculating a percentile value using historical data inappropriately assumes the industry's past determines its future.

**Response:**

In projecting liquid cellulosic biofuel production for 2019, we use historical production of liquid cellulosic biofuels in two ways. First, production of liquid cellulosic biofuel in the most recent 12 months for which data are available forms the low end of our projected production range for liquid cellulosic biofuels. Second, we calculate the percentile values used to select likely production volume from within a projected range of production volumes based on actual production in previous years (2016-2018) relative to the projected ranges for these years. We believe these uses of historical data are appropriate. The production of liquid cellulosic biofuels has increased year over year each year since 2014, suggesting that cellulosic biofuel produced in the preceding 12 months is a reasonable estimate for the low end of a range of potential production of these fuels in 2019. Actual production from within a range of projected values in previous years can also be reasonably expected to inform production from within a range of projected values in a future year, if the methodology for calculating the ranges is consistent.

We further note that a key factor in our projection methodology, for both facilities with and without previous consistent production of cellulosic biofuel, is the expected production volumes from the facilities themselves in the year in which we are projecting cellulosic biofuel volume. These projected production volumes from the facilities themselves are generally used as the high end of the projected production range. While many of these facilities would prefer for EPA to simply use their projections as our neutral estimate of projected production (instead of as the high end of our projected production range), this would be inappropriate as their projections have consistently proven to be overly optimistic in previous years. Contrary to the claims of the commenter, we do not expect or require a cellulosic biofuel production facility to produce a volume of fuel before that volume is considered in our projection for the following year. This

can be seen most clearly in the fact that our projection of liquid cellulosic biofuel for 2019 (20 million gallons) is higher than our projection of cellulosic biofuel in 2018 (14 million gallons) based on data through September 2018. Our projections for 2019 also include facilities that have not yet produced consistent commercial scale volumes of cellulosic biofuel.

**Comment:**

A commenter stated that EPA should assess potential liquid cellulosic biofuel production on a facility-by-facility basis, rather than grouping facilities and using a single percentile value for each group.

**Response:**

We disagree that projecting precise production volumes from individual facilities would result in a more accurate overall cellulosic biofuel production projection. In previous years (2011-2013) we have 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, we have requested volume projections from project developers and these estimates have consistently proven to be overly optimistic. In recent years we have considered many additional factors that could be used to temper the projections we receive from the industry, yet the accuracy of the production estimates provided by project developers have not significantly improved. Thus, even after considering these additional factors and the individual company projections, we don't believe a facility-by-facility method would be neutral or accurate. While we believe 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 as we are not able to sufficiently evaluate the many complex and inter-related factors that are likely to affect future production at each facility. 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 2019.

**Comment:**

A commenter stated that EPA had not provided sufficient justification for changing the methodology used to project cellulosic biofuel in 2015 and 2016, noting that this methodology had resulted in both under-projecting actual production (2015) and over-projecting actual production (2016).

**Response:**

While it is true that we under-projected the production of cellulosic biofuel produced in 2015 and over-projected the production of cellulosic biofuel produced in 2016, we note that we over-projected the production of liquid cellulosic biofuel each year from 2015-2017 (see Section III of the final rule for more detail on our projections relative to actual cellulosic biofuel production). These consistent over-projections resulted in adjustments to the methodology for the 2018 rule. These adjustments appear to have resulted in a more accurate projection of liquid cellulosic

biofuel production in 2018, and therefore have once again been used to project the production of liquid cellulosic biofuel for 2019.

**Comment:**

A commenter stated that data from 2018 should be considered when calculating percentile values used to select a projected volume from within the range of potential volumes for 2019. This commenter also stated that EPA should include data from 2015, and that not doing so would be arbitrary, as this year used the same methodology as 2015 and its inclusion would be advantageous to cellulosic biofuel producers.

**Response:**

We have included data from 2018 in our consideration of calculating the percentile value used to select a projected volume from within the range of potential volumes for 2019, as requested by the commenter. We have not included data from 2015 to calculate the percentile values. Contrary to the commenter's statement, our projection methodology for 2015 was substantially different than the methodology in 2016, as we only projected volumes for the last quarter of 2015 (since data was available for the first three quarters when we finalized the 2014-2016 rule), while we projected volume for the entire year in 2016. We also note that inclusion of 2015 would not be expected to significantly change the percentile values used to project cellulosic biofuel production in 2019. While the commenter is correct that overall cellulosic biofuel production exceeded our projection in 2015, liquid cellulosic biofuel production was lower in 2015 than we projected.

**Comment:**

A commenter stated that EPA should increase its projection of cellulosic biofuel production for 2019 to account for cellulosic RINs that could have been generated in 2018 if EPA had approved pending facility registration requests more quickly.

**Response:**

We are required by the statute to set the 2019 cellulosic biofuel volume requirement at the volume projected to be produced in 2019. It would not be reasonable to increase the 2019 cellulosic biofuel volume requirement to account for fuel that could have been produced in 2018 but was not, especially as doing so would effectively increase the number of cellulosic RINs that must be retired in 2019 without any corresponding increase to the number of RINs available for compliance. As discussed further in Section 3.1 of this document, there are significant regulatory and technical issues that must be resolved prior to acting on many of these pending facility registration requests.

**Comment:**

A commenter stated that EPA should treat producers of cellulosic ethanol from corn kernel fiber as a separate group of facilities, with a higher percentile value used to project a likely production volume from the projected range.

**Response:**

We have reviewed past data on actual production from facilities producing cellulosic ethanol from corn kernel fiber relative to the range of projected volumes. The percentile value that would have resulted in an accurate production projection from the projected range for these facilities did not differ significantly enough from the group of facilities with similar production history to warrant a separate group of facilities with a higher percentile value.

**Comment:**

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

**Response:**

We recognize 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.

### **3.2.2 Methodology for Projecting Cellulosic Biogas Volumes**

Commenters that provided comment on this topic include but are not limited to: 0313, 0492, 0591, 0663, 0671, 0697, 1040, 1266, 1267, 1277, and 1292.

#### **Comment:**

Several commenters supported EPA's methodology for projecting production of CNG/LNG derived from biogas, as well as the growth rate used to project this production in the proposal.

#### **Response:**

In this final rule, we have used the proposed methodology to project the production of CNG/LNG derived from biogas in 2019. We have updated the growth rate using additional available data, and the growth rate in this final rule remains similar to the growth rate in the proposal.

#### **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 2019. 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 that EPA increase the volume further to account for new facilities.

#### **Response:**

We disagree that the industry-wide projection methodology used in this final rule does not adequately account for new facilities that may begin producing CNG/LNG derived from biogas in 2019. The growth rate used to project the production of CNG/LNG derived from biogas in 2019 includes consideration of 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 we 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:**

A commenter stated that EPA should use a forward-looking, facility-by-facility projection approach to projecting production of CNG/LNG derived from biogas in 2019. The commenter stated that this approach would better account for new projects that are currently in development.

**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, we made adjustments to the methodology used to project production of CNG/LNG derived from biogas to project cellulosic biofuel production for 2018.

**Comment:**

A commenter stated that production of CNG/LNG derived from biogas is on track to meet the projected volume for 2018.

**Response:**

We have projected the production of CNG/LNG derived from biogas in 2018 based on data through September 2018. This projection is presented in Section III of the final rule. We currently expect production of CNG/LNG derived from biogas in 2018 to exceed the volume we projected in the 2018 final rule.

**Comment:**

One commenter supported the proposed methodology but raised concerns that that using a historic growth rate to project the production of CNG/LNG derived from biogas in 2019 would leave few opportunities for new projects without risking over-production, which could have negative impacts on the RIN price.

**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 2019 and in future years. Using a historic growth rate to project likely production volumes of CNG/LNG derived from biogas in 2019 is a neutral projection methodology expected to result in a reasonably accurate projection of the volume of these fuels that will be produced in 2019. We note that this projection methodology results in a cellulosic biofuel volume requirement for 2019 that is significantly higher than both the required volume for 2018, and the volume of cellulosic biofuel currently projected to be produced in 2018 based on data through September 2018. This projection provides adequate opportunity for new facilities without the risk of overproduction of cellulosic biofuel. In the event cellulosic biofuel does exceed our projections, the growth rate used in the following year's rulemaking would be higher as a result, and the RINs generated for excess volume can be used towards an obligated party's compliance obligation in the following



year. Accurately projecting the volume of CNG/LNG derived from biogas that will be produced should provide the appropriate market demand for these fuels.

**Comment:**

A commenter stressed the importance of a consistent and predictable projection methodology for CNG/LNG derived from biogas.

**Response:**

We understand the benefits of a consistent and predictable projection methodology to the industry. However, these benefits must be balanced with EPA's obligation to neutrally and accurately project cellulosic biofuel production. Based on data through September 2018 the projection methodology for CNG/LNG derived from biogas used in the 2018 final rule appears to have resulted in a reasonably accurate projection, and this is appropriate for use in this final rule. We will continue to monitor the accuracy of this methodology and anticipate that we will make adjustments as appropriate.

**Comment:**

A commenter stated that EPA's starting point for applying the calculated growth rate should be the last full year for which EPA has data, rather than the volume of CNG/LNG derived from biogas projected to be produced in 2018 in the 2018 final rule.

**Response:**

We agree with this comment. In this final rule, we have applied the calculated growth rate to the number of 2017 RINs produced for CNG/LNG derived from biogas that were available to be used by obligated parties to demonstrate compliance with the annual standards. This is the most recent year in which complete data are available. We have applied the growth rate to the number of available 2017 RINs generated for CNG/LNG derived from biogas as data from this year allows us to adequately account for not only RIN generation, but also for RINs retired for reasons other than compliance with the annual standards. While more recent RIN generation data is available, the retirement of RINs for reasons other than compliance with the annual standards generally lags RIN generation, sometimes by up to a year or more.<sup>65</sup> Using data for the number of 2017 RINs for CNG/LNG derived from biogas that were available for compliance as our starting point allows us to start from a year in which we have complete data. We further note that using actual data for 2017 RINs as a starting point for our projection results in the same projection for 2019 as using a projection of production of CNG/LNG derived from biogas in 2018 from November 2017, as the 2017 data is the basis for projecting the production of CNG/LNG derived from biogas in both 2018 and 2019.

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<sup>65</sup> We note that we do not ignore this more recent data, but rather use it to calculate the year-over-year growth rate used to project the production of CNG/LNG derived from biogas in 2019.

**Comment:**

A commenter stated that the amount of CNG/LNG used as transportation fuel should not be considered a factor that could potentially constrain the production of cellulosic biofuel for CNG/LNG derived from biogas in the RFS program. The commenter also claimed that EPA's projection of the amount of CNG/LNG used as transportation fuel in 2019 was inadequately explained.

**Response:**

As the commenter notes, while we estimated the quantity of CNG/LNG expected to be used as transportation fuel in 2019, this estimate did not constrain our projection of CNG/LNG derived from biogas projected to be produced in 2019. However, we continue to believe that the volume of CNG/LNG used as transportation fuel is an important consideration in our projection. In order to generate RINs in the RFS program, producers of CNG/LNG derived from biogas must be able to demonstrate that the fuel is used as transportation fuel. Given the plethora of other uses for natural gas, this is an important issue. CNG/LNG derived from biogas that is used for non-transportation fuel purposes cannot generate RINs. Therefore, the quantity of CNG/LNG used as transportation fuel is a key consideration in projecting the amount of qualifying cellulosic biofuel that will be produced for CNG/LNG derived from biofuel. We also disagree with the commenter's claim that we have inadequately described our estimate of the amount of CNG/LNG used as transportation fuel in 2019. Our proposal clearly stated that this estimate was based on EIA's STEO. The conversion factors used to convert billion cubic feet per day (the units projected in EIA's STEO) to ethanol-equivalent gallons (or RINs) are shown in the preamble of both the proposal and this final rule. While the commenter disagreed with one of the conversion factors used, we note that the difference between the conversion factor used by EPA and the high end of the preferred range offered by the commenter differed by less than 5% (and the low end of the range offered by the commenter differed by less than 0.5%). We welcome any additional data the commenter may have related to the use of CNG/LNG as transportation fuel as we consider future rulemakings.

**Comment:**

A commenter supported EPA's recognition of the production of CNG/LNG derived from biogas as a mature industry.

**Response:**

We continue to believe that the market for CNG/LNG derived from biogas is mature, and that an industry-wide projection methodology is therefore appropriate.

**Comment:**

One commenter mentioned that recent actions by the state of California should be considered in EPA's projection of CNG/LNG derived from biogas, and that consideration of these incentives could support higher volumes of cellulosic biofuel.

**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 2019. We note that the cellulosic biofuel volume in this final rule is significantly higher than the required volume of cellulosic biofuel for 2018. We further acknowledge that production of CNG/LNG is likely to increase in future years due to a variety of incentives at the state and national level. We believe that our methodology for projecting production of CNG/LNG derived from biogas appropriately reflects that growth that can be expected not only due to the incentives available through the RFS program, but also the growth that can be expected in 2019 due to state incentives, such as those available in California, as both state and federal incentives have influenced the growth rate in CNG/LNG derived from biogas in previous years.

**Comment:**

A commenter stated that EPA's projection of CNG/LNG derived from biogas does not take into account EPA's own projection of CNG/LNG used as transportation fuel.

**Response:**

Valid RINs can only be generated for CNG/LNG used as transportation fuel if it can be demonstrated that this fuel is derived from qualifying sources (such as landfill biogas, biogas from a wastewater treatment facility, etc.). It is therefore highly unlikely that parties will be able to generate RINs for all of the CNG/LNG used as transportation fuel in the U.S. in 2019. The volume of CNG/LNG used as transportation fuel is therefore an estimate of the maximum amount of CNG/LNG derived from biogas that could be produced in 2019 if all of the CNG/LNG used as transportation fuel was sourced from qualifying cellulosic feedstocks, rather than a projection of the amount of RIN-generating CNG/LNG derived from biogas that will be produced and used as transportation fuel.

**Comment:**

A commenter stated that EPA should use the most recent data available to re-calculate the year-over-year growth rate for CNG/LNG derived from biogas in the final rule.

**Response:**

We have used the most recent data available (through September 2018) to re-calculate the growth rate for CNG/LNG derived from biogas.

### **3.3 Proposed Cellulosic Biofuel Standard**

Commenters that provided comment on this topic include but are not limited to: 0316, 0493, 0532, 1197, 1200, 1265, 1266, and 1277.

#### **Comment:**

Multiple commenters stated that EPA should approve facility registrations for parties intending to produce cellulosic ethanol from corn kernel fiber and electricity produced from cellulosic biomass that is used as transportation fuel. These commenters stated that EPA should increase its projection of cellulosic biofuel for 2019 to account for fuel produced from these facilities.

#### **Response:**

As discussed in greater detail in Section 3.1 of this document, there are a number of significant regulatory and technical issues that must be resolved before we can act on these registration requests. We do not believe it is likely that these issues will be resolved in time for these facilities to produce appreciable volumes of cellulosic biofuel in 2019. It would therefore be inappropriate to include production from these facilities in our projection of cellulosic biofuel for 2019.

#### **Comment:**

Multiple commenters supported EPA's proposed volume for cellulosic biofuel for 2019 (381 million gallons). Similarly, a commenter suggested that EPA increase our projection of cellulosic biofuel for 2019 slightly to 386 million gallons. One commenter requested that EPA keep the annual standard setting process on schedule and set the cellulosic biofuel requirements in a predictable manner.

#### **Response:**

In this final rule we have used the same general methodology as in the proposal to project cellulosic biofuel production in 2019 and have incorporated the most recently available data in our projection. We have once again finalized this rule by the statutory deadline of November 30. While the projection in this final rule is slightly higher than the volume from the proposal (as well as the volume suggested by the commenter), we believe this volume is justified based on the data available since our proposal.

#### **Comment:**

A commenter stated that a total of 150-200 million additional gallons of cellulosic biofuel could be produced in the next 3-5 years if EPA finalized the proposed REGS Rule.

**Response:**

At this time, we do not anticipate that significant portions of the REGS Rule will be finalized by 2019. There are significant outstanding regulatory and technical issues that must be resolved prior to the finalization of many of the changes proposed in the REGS Rule. Even if this rule were to be finalized, parties intending to use the new pathways or regulatory provisions would have to complete a registration process with EPA prior to producing RIN generating biofuel. Finally, it is unlikely that the cellulosic biofuel volumes that the commenter suggested could be produced in the next 3-5 years would be produced in 2019, as we expect that the vast majority of this production is likely to occur in the later years.

**Comment:**

A commenter stated that EPA's cellulosic biofuel projection was too high, and that EPA should err on the side of caution in establishing the cellulosic biofuel volume for 2019.

**Response:**

As discussed throughout Section III of the final rule and Section 3 of this document, we believe our projection of cellulosic biofuel is a neutral projection of the volume of cellulosic biofuel likely to be produced in 2019. We note that our projection of cellulosic biofuel production is required to be neutral, and an intentionally conservative projection (erring on the side of caution) would contradict the *API* ruling that our projection is to be a neutral aim at accuracy.

## **4. Advanced Biofuel**

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

EPA did not receive any comments on this topic.

## 4.2 Attainable and Reasonably Attainable Volumes of Advanced Biofuel

Commenters that provided comment on this topic include but are not limited to: 0535, 0620, 0672, and 1041.

### **Comment:**

One commenter stated that the proposed advanced biofuel volume requirement of 4.88 billion gallons could not be met with renewable fuel used in 2019 since it is 590 million gallons higher than the 2018 standard. To comply, obligated parties will need to use carryover RINs.

### **Response:**

The commenter did not directly address the assessment of attainable and reasonably attainable supply that was provided in the proposal, but instead relied on the implication that an increase over the previous year's requirement, which they deem to be aggressive, is inappropriate. While they do cite a projected shortfall in the supply of BBD in the early part of 2018, our assessment of 2018 supply (including additional data beyond that cited by the commenter) indicates that the market is on target to reach the 2018 requirements. Given the increase in BBD use in 2018 compared to 2017, and historical annual rates of increase, we continue to believe that 2.8 billion gallons of BBD can be attained in 2019. In combination with cellulosic biofuel and projected volumes of imported sugarcane ethanol and other advanced biofuel, we continue to believe that 4.92 billion gallons of advanced biofuel is an appropriate volume requirement for 2019 that can be attained without the need for carryover RINs.

### **Comment:**

One commenter stated that EPA's proposed estimate of reasonably attainable volumes of advanced biofuel for 2019 did not adequately account for the high cost and uncertainty related to imported biofuels.

### **Response:**

The proposal explicitly took into account the uncertainty associated with imports of advanced sugarcane ethanol in making a proposed determination that 100 million gallons was reasonably attainable in 2019. While in recent years actual import volumes have been below this level, in the past they have been much higher. We indicated that our proposal took into account both the historical variability and the fact that the higher proposed advanced biofuel volume requirement would create some incentive for increased imports in 2019. The commenter did not provide any credible argument for why the proposed assessment was inadequate. Further explanation of our assessment of imported sugarcane ethanol, including consideration of trends in 2018, can be found in Section IV.B.1 of the final rule.

The proposal included a review of historical imports of BBD in its assessment of the volumes that were attainable in 2019, and in this context the variability in imports was explicitly acknowledged:

Volumes of imported advanced biodiesel and renewable diesel have varied significantly from year to year, as they are impacted both by domestic and foreign policies, as well as many economic factors. (83 FR 32043, July 10, 2018)

We accounted for the variability in BBD imports in the context of our review of the total volumes of BBD actually used in previous years, as total use is a function of domestic production, imports, and exports. Again, the commenter did not provide any credible argument for why the proposed assessment was inadequate.

While we did not assess costs for imports independently from the costs for domestic BBD, we did consider costs in our proposed determination of 4.88 billion gallons of advanced biofuel. More specifically, we discussed the role of costs in our proposed determination to use the full reduction available under the cellulosic waiver authority. However, we did not find a reasonable basis for an additional reduction to the advanced biofuel volume requirement using the severe economic harm prong of the general waiver authority as discussed further in Section 2.1.2 of this document.



## 4.2.1 Imported Sugarcane Ethanol

Commenters that provided comment on this topic include but are not limited to: 1196, 1267, and 1286.

### **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 likely a factor in the volume of ethanol that Brazil exports to the U.S., and the RIN value is affected by the advanced biofuel standard. However, recent data on imports of sugarcane ethanol into the U.S. suggest that the correlation between ethanol imports and the applicable standards under the RFS program is uncertain and 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 both 2016 and 2017, EPA assumed that 200 million gallons of sugarcane ethanol would be imported. In reality, only 34 million gallons was imported in 2016 and only 77 million gallons was imported in 2017, and the majority of these volumes were imported into California presumably to fulfill the requirements of the LCFS program.<sup>66</sup> We note that total ethanol exports from Brazil decreased between 2015 and 2017 despite increasing international demand and increasing advanced biofuel requirements under the RFS program.<sup>67</sup> 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.

### **Comment:**

One commenter stated that the advanced biofuel standard should be set at 10.5 billion gallons, and that Brazil would respond by significantly increasing its exports of sugarcane ethanol to the U.S.

### **Response:**

As discussed in Section IV of the final rule, we believe that 4.92 billion gallons of advanced biofuel is attainable in 2019, though not reasonably attainable; we expect the market to respond with some degree of feedstock and/or foreign advanced biofuel diversion to meet it. An advanced biofuel volume requirement of 10.5 billion gallons would be more than double the level we are finalizing and would require an extreme assortment of changes to both domestic and international biofuel production and distribution to be attained, if indeed it is even possible. Even

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<sup>66</sup> “Ethanol imports into California,” available in docket EPA-HQ-OAR-2018-0167.

<sup>67</sup> “UNICA data on ethanol exports 9-18-18,” available in docket EPA-HQ-OAR-2018-0167.

if all domestic biodiesel production capacity were fully operational, providing 4.1 billion gallons or 6.4 billion RINs (as discussed in Section IV.B.2 of the final rule), and even if the maximum historical Brazilian exports of about 1.35 billion gallons (achieved in year 2008) were sent entirely to the U.S. in 2019, it is extremely unlikely that 10.5 billion gallons could be achieved. Moreover, such volumes would be accompanied by significant and disruptive shifts in food/feed markets. Given the poor response of Brazilian ethanol imports to the RFS volume requirements in previous years as discussed in the previous response, we do not believe that sufficient Brazilian ethanol could be imported to permit 10.5 billion gallons of advanced biofuel to be reached in 2019.

**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 2019. This same commenter stated that 2 billion gallons of sugarcane ethanol was achievable in 2019 based on the imported volumes in September 2008.

**Response:**

As discussed in previous annual standard-setting rules, 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 2019; 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 2019, 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 do not believe that extrapolating a single month's import volume from ten years ago to a full year of imports for 2019 is reasonable. The market conditions in the U.S. and Brazil with regard to ethanol production and use were significantly different in 2008 compared to today, and international demand for ethanol has increased significantly during that time as well. Ethanol exports from Brazil are also seasonal due to the harvest cycle, with September being the month of highest historical exports.<sup>68</sup> This fact similarly makes it inappropriate to extrapolate from September exports to total annual exports.

A comparison of past projections of potential imports of sugarcane ethanol from stakeholders with actual imports highlights the fact that those projections have been significantly overestimated. For instance, in response to the proposal for the 2016 standards, UNICA suggested that Brazil could supply 2 billion gallons in 2016.<sup>69</sup> In reality, only 36 million gallons were exported to the U.S. In response to the proposal for the 2017 standards, UNICA suggested

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<sup>68</sup> "UNICA data on ethanol exports 9-18-18," available in docket EPA-HQ-OAR-2018-0167.

<sup>69</sup> "Comments from UNICA on 2014-2016 proposal," available in docket EPA-HQ-OAR-2018-0167.

that Brazil could supply up to 1 billion gallons in 2017. In reality, only 77 million gallons were exported to the U.S.<sup>70</sup> This commenter has not provided any information indicating why its projections for 2019 would be more accurate than in past years, and has not pointed to any new circumstance expected to occur in 2019 that would increase imports of sugarcane ethanol into the U.S.

Finally, we note that we have set the volume requirement for advanced biofuel in previous years with the intention of providing opportunities for advanced biofuels such as imported sugarcane ethanol to help meet the applicable standards. The non-BBD, non-cellulosic portion of the advanced volume requirement was 530, 969, and 852 million gallons in years 2016, 2017, and 2018, respectively. Nevertheless, imports of sugarcane ethanol filled only a small portion of that opportunity.

**Comment:**

One commenter stated that some ethanol is imported into the U.S. for the production of non-fuel ethyl tertiary butyl ether (ETBE). Since this ethanol is already being imported into the U.S., it could easily be diverted to help meet the advanced biofuel volume requirement.

**Response:**

The fact that sugarcane ethanol is being imported for the production of non-fuel ETBE does not mean that it is available for use as an advanced biofuel under the RFS program since it is fulfilling an existing market for ETBE. Diversion of imported sugarcane ethanol away from this market would most likely be disruptive and costly to accommodate, and these facts create resistance to such diversion. More importantly, the commenter provided no information to indicate that such diversion has occurred in the past despite the fact that the advanced biofuel standard has increased over time.

**Comment:**

One commenter stated that the data cited by EPA on sugar demand and its potential impacts on ethanol production in Brazil was outdated, and that more recent data demonstrates that sugar demand and prices will not hinder ethanol exports from Brazil to the U.S.

**Response:**

In May 2018, USDA reported that worldwide sugar production had recently increased in the 2017/2018 and 2018/2019 marketing years in comparison to previous years.<sup>71</sup> Combined with larger sugar stocks, the result has been lower worldwide sugar prices in 2017 and 2018 in comparison to 2016.<sup>72</sup> However, information from UNICA indicates only a moderate increase of about 2% in ethanol production for 2017/2018 in comparison to 2016/2017.<sup>73</sup> Moreover, total

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<sup>70</sup> “Comments from UNICA on 2017 proposal,” available in docket EPA-HQ-OAR-2018-0167.

<sup>71</sup> “Sugar - World Markets and Trade May 2018,” USDA, available in docket EPA-HQ-OAR-2018-0167.

<sup>72</sup> “Commodity Market Outlook - April 2018,” World Bank Group, available in docket EPA-HQ-OAR-2018-0167.

<sup>73</sup> “UNICA data on ethanol production 9-18-18,” available in docket EPA-HQ-OAR-2018-0167.

sugarcane ethanol production in 2017/2018 is lower than levels in both 2014/2015 and 2015/2016. Based on this more recent information, there is no indication that exports of sugarcane ethanol from Brazil to the U.S. in 2019 are likely to be substantially higher than they have been in recent years.

**Comment:**

One commenter noted that the implied volume requirement for non-cellulosic, non-BBD advanced biofuel in the proposal was 1.34 billion gallons. Meeting this volume with imported sugarcane ethanol would require volumes nearly twice that of the historical high of 681 million gallons in 2006, and many times higher than imports in more recent years. Given the constraints associated with the E10 blendwall, imports of sugarcane ethanol would also displace corn-ethanol.

**Response:**

As discussed in Section VI of the final rule, we believe that BBD use in excess of the BBD volume requirement is likely to fill most of the need for advanced biofuel that is not required to be cellulosic biofuel or BBD. We have determined that the necessary volumes of BBD are attainable for the advanced biofuel volume requirement that we are finalizing.

## **4.2.2 Biodiesel and Renewable Diesel**

### **4.2.2.1 General Comments on Advanced Biodiesel and Renewable Diesel**

Commenters that provided comment on this topic include but are not limited to: 0531, 0672, 1041, 1197, 1267, and 1277.

#### **Comment:**

A commenter supported EPA's concerns with regards to the potential negative impacts related with feedstock diversion and substitution. The commenter stated that any volume of advanced biodiesel and renewable diesel above 2.03 billion gallons (including the proposed volumes for BBD and advanced biofuel) would result in some degree of feedstock diversion and substitution.

#### **Response:**

EPA shares the commenter's concerns over the potential negative impacts related to feedstock diversion or substitution. However, as discussed in greater detail in Section IV of the final rule, we believe a volume of 2.61 billion gallons of advanced biodiesel and renewable diesel is reasonably attainable in 2019. We believe this commenter significantly under-estimates the domestic production of these fuels in 2018, as well as the current and projected volumes of imported biodiesel and renewable diesel. The biggest difference between the commenter's calculations of the volume above which feedstock diversion was likely to occur and EPA's "reasonably attainable volume" was the commenter did not include any volume of imported renewable diesel, nor did the commenter account for growth in the volume of imported biodiesel from countries other than Argentina and Indonesia observed over the past year. The lack of inclusion of imported renewable diesel appears to be an oversight on the part of the commenter, as the commenter used EIA data for imports of "biomass-based diesel" in 2017 from countries other than Argentina and Indonesia to calculate a volume of imported biodiesel. However, unlike EPA, EIA does not include renewable diesel in their "biomass-based diesel" category, instead using the term "other renewable diesel" for this fuel. The commenter further assumed that biodiesel imports in 2018 and 2019 would be equal to biodiesel imports from countries other than Argentina and Indonesia in 2017. As discussed in Section IV of the final rule, this has not been the case, as imports from other countries have been increasing since the tariffs on biodiesel from Argentina and Indonesia were announced. The commenter also does not include increases in non-food grade corn oil in their estimate, and projects increasing consumption of vegetable oils in the food market. While these decisions differ from those made by EPA, they do have a much smaller impact on the calculated "reasonably attainable" volume of advanced biodiesel and renewable diesel.

#### **Comment:**

A commenter stated that advanced biodiesel and renewable diesel production is only on pace to reach 1.94 billion gallons in 2018. The commenter stated that EPA should reduce the required volume of advanced biofuel accordingly, accounting for no more than 2.85 billion RINs from advanced biodiesel and renewable diesel in 2019.

**Response:**

The commenter takes an overly pessimistic view of both the potential for domestic production of advanced biodiesel and renewable diesel, as well as potential imports of these fuels. Based on data through September 2018, we currently expect domestic production of advanced biodiesel and renewable diesel to reach approximately 2.15 billion gallons in 2018, rather than the 1.94 billion gallons projected by the commenter. Similarly, we currently project imports of advanced biodiesel and renewable diesel to reach approximately 0.37 billion gallons, none of which is expected to be from biodiesel imported from Argentina and Indonesia. Even assuming advanced biodiesel and renewable diesel exports remain at 150 million gallons, the supply of advanced biodiesel and renewable diesel (including both domestic production and imports) would have to increase by approximately 0.43 billion gallons from 2018 to 2019 to reach the volume projected for 2019. As discussed in greater detail in Section IV.B.3 of the final rule, we believe these volumes are attainable. We further note that reductions to the advanced biofuel volume below the level in this final rule would require the use additional waiver authorities (beyond the cellulosic waiver authority), and we do not believe that exercise of these authorities to further reduce volumes is warranted (see Section 2.1 of this document for a further discussion of the general waiver authority).

**Comment:**

A commenter characterized the level of advanced biodiesel and renewable diesel EPA projected would be needed to meet the proposed advanced biofuel requirement (2.8 billion gallons) as unattainable. The commenter stated that reaching this volume of advanced biodiesel and renewable diesel would require 100% utilization of domestic capacity for these fuels and zero exports. The commenter further stated that it was irrational for EPA to count on significantly higher production of advanced biodiesel and renewable diesel than in previous years and no exports of these fuels. Finally, they stated that EPA could not finalize the proposed volumes if there were substantial doubt as to whether the volumes were reasonably attainable.

**Response:**

As discussed in further detail in Section IV of the final rule, EPA has determined that the volume of advanced biofuel in this final rule (4.92 billion gallons), as well as the volume of advanced biodiesel and renewable diesel projected to be used to meet this volume (2.8 billion gallons) are attainable. Contrary to the commenters statements, domestic production of biodiesel and renewable diesel is projected to increase significantly from 2017 to 2018, based on data through September 2018. We believe it could increase by a similar amount from 2018 to 2019. Doing so would not result in a 100% utilization rate of existing biodiesel and renewable diesel facilities (see Section 4.2.2.2 of this document for a further discussion of the domestic production capacity for advanced biodiesel and renewable diesel), nor would it require that exports of these fuels cease. We also note that while our projection of the reasonably attainable volume of advanced biodiesel and renewable diesel (2.61 billion gallons) is lower than the volume of these fuels projected to be supplied to meet the advanced biofuel volume for 2019 (2.8 billion gallons), we have concluded that 2.8 billion gallons of these fuels is attainable. We further note that reductions to the advanced biofuel volume below the level in this final rule would require the use

of additional waiver authorities (beyond the cellulosic waiver authority), and we do not believe that exercise of these authorities to further reduce volumes is warranted (see Section 2.1 of this document for a further discussion of the general waiver authority).

**Comment:**

A commenter stated that EPA's proposed advanced biofuel volume equated to a de facto 3.25 billion gallon mandate for advanced biodiesel and renewable diesel.

**Response:**

The commenter's statement assumes that the entire proposed volume for advanced biofuel (4.88 billion gallons) is satisfied with advanced biodiesel and renewable diesel. This is unreasonable, as it assumes no cellulosic biofuel or other advanced biofuels are supplied. As discussed in Section IV of the final rule, EPA projects that 2.8 billion gallons of advanced biodiesel and renewable diesel will be used to meet the advanced biofuel volume.

**Comment:**

A commenter stated that the proposed advanced biofuel volumes amounted to a de facto mandate for imported biodiesel and renewable diesel, as domestic production could not reach the levels projected to be used to meet the advanced biofuel volume.

**Response:**

We disagree that the advanced biofuel volume in this final rule is a de facto mandate for imported biodiesel and renewable diesel. As discussed in Section IV of the final rule, sufficient domestic production capacity and feedstocks exist to enable domestic producers of biodiesel and renewable diesel to supply the volume of these fuels projected to be used to meet the advanced biofuel standard (2.8 billion gallons). While we expect that some volume of imported advanced biodiesel and renewable diesel will be used in 2019, this is likely due to the lower cost of importing these fuels rather than an inability for the domestic producers to supply the projected volumes. We also note that imported biofuels, including advanced biodiesel and renewable diesel, increase the energy security of the U.S., which is a goal of the RFS program.

**Comment:**

A commenter stated that the most viable option to meet the "other advanced" volume (the difference between the advanced biofuel volume and the cellulosic biofuel and BBD volumes) is additional BBD.

**Response:**

EPA's projections of the types of advanced biofuels most likely to be used to meet the advanced biofuel volume can be found in Table IV.B.3-1 in the final rule. While we expect the majority of the "other advanced" volume to be met with advanced biodiesel and renewable diesel, we also

project smaller but significant volumes of other advanced biofuels, including sugarcane ethanol, naphtha, and domestic advanced ethanol, to be supplied in 2019.

**Comment:**

A commenter stated that data suggested the market was on track to supply the required volume of advanced biofuel for 2018.

**Response:**

EPA data supports the commenter's statement that the use of advanced biofuel as transportation fuel, heating oil, or jet fuel in the U.S. is on track to meet the required volume for 2018.



#### **4.2.2.2 Domestic Production Capacity**

Commenters that provided comment on this topic include but are not limited to: 0530, 0532, 0711, and 1286.

##### **Comment:**

A commenter stated that the production capacity for biodiesel and renewable diesel is sufficient to produce sufficient volumes of these fuels to enable a higher volume of advanced biofuel than proposed (4.88 billion gallons).

##### **Response:**

We acknowledge that the production capacity of advanced biodiesel and renewable diesel exceeds the volume of these fuels we project will be used to meet the advanced biofuel volume in this final rule. However, as discussed in further detail in Section IV of the final rule, EPA believes that other factors, such as the availability of feedstocks and the cost of advanced biofuels should also be considered when establishing the advanced biofuel volume.

##### **Comment:**

Multiple commenters stated that production capacity is not a limiting factor to the production of advanced biodiesel and renewable diesel. Some also noted that the domestic production capacity for biodiesel and renewable diesel is increasing. One commenter stated that they expected the production capacity for renewable diesel to expand by to 285 million gallons in 2018, and to 515 million gallons by 2020/2021. Another commenter provided a list of anticipated biodiesel production capacity expansions.

##### **Response:**

We recognize the potential for the expansion of biodiesel and renewable diesel production capacity in future years. As discussed in greater detail in Section IV of the final rule, we do not expect the production capacity of these fuels to limit their production in 2019 or 2020.

##### **Comment:**

A commenter stated that EPA should rely on EIA's estimate of domestic biodiesel production capacity (2.4 billion gallons).

##### **Response:**

We do not believe it would be appropriate to use EIA's estimate of biodiesel production capacity as the limit of the volume of advanced biodiesel and renewable diesel that can be produced domestically. First, this estimate does not include the production capacity of renewable diesel production facilities, whether these are stand-alone production facilities or facilities that co-process renewable and petroleum based feedstocks. Second EIA's estimate includes only

facilities that produced biodiesel in a given month. We do not believe it is appropriate to categorically exclude biodiesel facilities that did not produce in a given month from our calculation of the domestic production capacity. We finally note that EIA's estimate does not include facilities that may begin operating in later in 2018 or in 2019. Regardless, as discussed above, we believe that production capacity is only one of many factors that is important in assessing potential volumes.

### 4.2.2.3 Potential Imports

Commenters that provided comment on this topic include but are not limited to: 0530, 0531, 0662, 0672, 1277, and 1286.

**Comment:**

A commenter suggested that EPA should expect imports of 164 million gallons of advanced biodiesel and 222 million gallons of renewable diesel based on data through June 2018.

**Response:**

These import volumes are very similar to those projected by EPA for 2018 based on data through September 2018 (discussed in greater detail in Section IV of the final rule). We note that we expect imports of these fuels to continue to increase through 2019.

**Comment:**

A commenter stated that they expect only 102 million gallons of imported BBD in 2018 and 2019 due to tariffs of biodiesel from Argentina and Indonesia. Another commenter stated that imports of biodiesel are less than half what they were in 2017, and that EPA should therefore not include any imports of biodiesel when determining the advanced biofuel volume.

**Response:**

In projecting advanced biodiesel and renewable diesel imports for 2018 and 2019 the commenter relied on import data from EIA for imports for countries other than Argentina and Indonesia. The commenter did not account for imported volumes of advanced renewable diesel, nor did the commenter account for the potential for growth in imports from countries not impacted by the tariffs. EPA's projection of the volume of advanced biodiesel and renewable diesel for 2018 and 2019, which are discussed in greater detail in Section IV of the final rule, account for these factors. As a result, they are significantly higher than the volume projected by this commenter. For similar reasons, we do not believe it would be appropriate to ignore the potential for imported volumes of advanced biodiesel and renewable diesel when determining the advanced biofuel volume for 2019.

**Comment:**

A commenter stated that the lower volumes of imported biodiesel and renewable diesel (due to tariffs on biodiesel imported from Argentina and Indonesia) could result in distribution challenges due to the fact that imported biodiesel and renewable diesel are generally supplied closer to population and demand centers on the coasts, while much of the domestic biodiesel and renewable diesel production is located farther these population and demand centers.

**Response:**

We recognize that changing sources of biodiesel and renewable diesel to include greater volumes domestically produced fuels and lower volumes of imported fuels has an impact on the distribution and use of these fuels. However, based on the available data through September 2018 these potential distribution challenges do not appear to be limiting the domestic production and use of biodiesel and renewable diesel. The increase in the volume of domestic biodiesel and renewable diesel that EPA projects will be used to meet the advanced biofuel in 2019 (300 million gallons) is similar to the projected increase in the supply of these fuels from 2017 to 2018 based on data through September 2018, and significantly lower than the one-year increases observed in some previous years. We therefore do not expect that the distribution of biodiesel and renewable diesel will constrain the supply of these fuels in 2019 (see Section IV of the final rule for a further discussion of the projected increase in these fuels in 2019 relative to observed increases in previous years).

**Comment:**

A commenter stated that tariffs on imported biodiesel do not constrain the potential supply of imported biofuels, rather they simply impact the price. Another commenter similarly noted that these tariffs have no impact on the ability for the domestic industry to increase the supply of advanced biodiesel and renewable diesel.

**Response:**

We recognize that, strictly speaking, the tariffs do not impact the availability of biofuel, as the price for these fuels could rise high enough to overcome the impact of the tariffs. However, we note that increasing the supply of biofuel in this manner (importing biofuels at elevated prices due to the tariffs) does significantly increase the cost of these fuels. In determining the advanced biofuel volume for 2019, EPA has considered the relatively high cost of advanced biofuels. While biodiesel imports from Argentina and Indonesia may technically be available, their cost would be significantly higher than the cost projected by EPA in Section V of the final rule. We therefore do not believe it would be reasonable to increase the advanced biofuel volume for 2019 on the basis of these fuels. We do, however, believe that domestic production of biodiesel and renewable diesel, as well as imports of these fuels from countries not effected by the tariffs, can increase in 2018 and 2019, and likely will do so in response to the advanced biofuel volume established in this rule (see Section IV for a further discussion of EPA's projections of advanced biodiesel and renewable diesel domestic production and imports in 2018 and 2019).

#### **4.2.2.4 Availability of Advanced Biodiesel and Renewable Diesel Feedstocks**

Commenters that provided comment on this topic include but are not limited to: 0221, 0389, 0522, 0530, 0531, 0535, 0539, 0591, 0619, 0620, 0660, 0662, 0664, 0711, 1033, 1036, 1039, 1202, 1277, and 1286.

##### **Comment:**

A commenter stated that in recent years prices for many agricultural commodities have fallen, while production of these agricultural commodities has increased and idled cropland has increased. The commenter stated that increasing biofuel production could increase demand for crops and lead to increased crop production and higher prices for agricultural commodities.

##### **Response:**

EPA is aware of the trends discussed by the commenter; however, we note that these trends have occurred during a time of significant expansion of biofuel production, and crop production and agricultural commodity prices are a function of many different factors. As discussed in greater detail in this section, and in a memorandum to the docket,<sup>74</sup> the vegetable oils used for advanced biofuel production are generally byproducts and/or coproducts of crops primarily grown for other markets (such as livestock feed). We therefore do not expect that a higher advanced biofuel volume would necessarily result in increased production of oilseeds such as soybeans or canola.

##### **Comment:**

Multiple commenters noted that China has recently imposed tariffs on soybeans produced in the U.S. Many suggested that soybean exports were likely to decrease as a result of these tariffs, and that these soybeans could be used to produce additional volumes of biodiesel.

##### **Response:**

Our consideration of the expected impacts of these tariffs on feedstocks for advanced biodiesel and renewable diesel can be found in Section IV of the final rule.

##### **Comment:**

A commenter stated that biodiesel production does not rely only on soybean oil or canola oil, and that EPA should consider the expected increase in non-vegetable oil feedstock for biodiesel production.

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<sup>74</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

**Response:**

EPA's projection of the reasonably attainable volume of advanced biodiesel and renewable diesel in 2019 was not based solely on vegetable oils, but also considered potential increases in other feedstocks such as distillers corn oil and waste oils and greases. Our projection of the reasonably attainable volume of these fuels includes increased production of distillers corn oil. As discussed in further detail in Section IV of the final rule, while we acknowledge that additional volumes of waste oils and greases could theoretically be collected, the projected prices for vegetable oils suggests that this is unlikely in 2019. This conclusion is further supported by the results of the WAEES model.

**Comment:**

Multiple commenters stated that soybean production is driven by demand for protein and/or animal feed. Many stated that increased demand for vegetable oil to produce biodiesel and renewable diesel would not lead to additional production of soybeans.

**Response:**

As discussed in Section IV of the final rule and in a memorandum to the docket,<sup>75</sup> EPA has concluded that increased demand for vegetable oils are unlikely to lead to greater production of advanced biofuel feedstocks, such as soybeans and canola.

**Comment:**

Many commenters stated that the production of advanced feedstocks is projected to grow. Multiple commenters stated that the global demand for protein is expected to increase in future years, and that this would lead to the increased production of soybeans and the increased availability of soybean oil that could be used to produce higher volumes of biodiesel and renewable diesel. Some commenters stated that yields of oilseed crops are expected to increase. Other commenters stated that USDA currently projects significant growth in the stocks of all major crops used for biofuels (including corn and soybeans). Commenters also noted increased vegetable oil extraction and waste oil and grease collection as potential supplies of advanced feedstocks.

**Response:**

As discussed in greater detail in Section IV of the final rule, EPA has used projections from USDA's most recent WASDE report (September 2018) to project the increase in vegetable oil production in the U.S. in 2019. We believe this report reasonably projects the likely increases in vegetable oil production, which could be used as a feedstock for producing biodiesel and renewable diesel. The WASDE report does project increasing production of soybean oil in the U.S. in 2019, and we have reflected this projected increase in our assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel for 2019. Increasing the quantity

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<sup>75</sup> "Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority," memorandum to docket EPA-HQ-OAR-2018-0167.

of soybean oil that is used to produce biodiesel and renewable diesel at a rate greater than the increase in vegetable oil production is highly likely to result in the diversion of these feedstocks from other industries that are currently using them. While we recognize that additional volumes of waste oils and greases (such as used cooking oil) could theoretically be collected, we do not believe it is likely that significantly higher volumes of these feedstocks will be collected, as prices for vegetable oils (which directly impact the price for products such as yellow grease and used cooking oil) are expected to be lower in 2019 than in recent years.

**Comment:**

Multiple commenters noted that soybean oil prices are currently lower than in recent years. These commenters state that the declining prices for soybean oil demonstrate that production of biodiesel and renewable diesel is not causing problematic shortages in the feedstock markets.

**Response:**

We recognize that prices for soybean oil, as well as other vegetable oils and feedstocks that can be used to produce biodiesel and renewable diesel are lower than in previous years. This price reduction appears to be primarily the result of a significant increase in the production of vegetable oils over this time. While production of soybean oil and other advanced feedstocks have increased in recent years, production of palm oil has also significantly increased over this time period. Since, as noted by several commenters and discussed in Section IV of the final rule and in a memorandum to the docket,<sup>76</sup> vegetable oils that can be used to produce advanced biodiesel and renewable diesel are generally a byproduct or coproduct of crops primarily grown for other purposes, increased demand for vegetable oil is unlikely to result in the increased production of advanced feedstocks. Palm oil, conversely, is the primary product of palm plantations and generally has a lower cost of production than other vegetable oils. Thus, while increases in the production of biodiesel and renewable diesel beyond the levels in this final rule may not cause problematic shortages of vegetable oils, they would likely result in increased global palm oil production.<sup>77</sup> We further note that despite these price decreases, biodiesel and renewable diesel continue to have a significantly higher cost than petroleum based diesel.

**Comment:**

Multiple commenters stated that the increase in the amount of soybean oil used to produce biodiesel and renewable diesel was not causing a diversion of soybean oil from other uses. Multiple commenters also argued that regulation of hydrogenated oils by the FDA was causing a decrease in the quantity of soybean oil used in food markets, and that biodiesel and renewable diesel was providing a market for these oils.

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<sup>76</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

<sup>77</sup> If biodiesel and renewable diesel production ultimately results in the increased production of palm oil, it is expected to have fewer environmental benefits. See the draft GHG assessment of palm oil biodiesel and renewable diesel at 77 FR 4300 (January 27, 2012).

**Response:**

We recognize that the FDA regulations, along with broader market factors resulted in significant decreases in the quantity of soybean oil used in food markets from 2005 to 2012. However, comments submitted to EPA suggests that while the use of soybean oil in food markets in the U.S. declined from 2005 through 2012, use of soybean oil in food markets was fairly consistent from 2012 through 2018, and is expected to increase in future years.<sup>78</sup> The FDA regulations are therefore unlikely to result in a decrease in the use of soybean oil in the U.S. food market (and subsequent increase in the amount of soybean oil that could be used to produce biodiesel and renewable diesel) in 2019.

**Comment:**

A commenter stated that history has shown that increasing demand for advanced feedstocks has resulted in innovation, and the availability of cheaper feedstocks that are easier to obtain. The commenter cites the increased production of distillers corn oil as an example.

**Response:**

Production of distillers corn oil has increased in recent years, as noted by the commenter, and this feedstock has generally been cheaper than soybean oil, which is the predominant feedstock used to produce biodiesel and renewable diesel in the U.S. However, we do not believe that this increase in distillers corn oil production is exclusively, or even primarily, the result of demand for advanced biodiesel and renewable diesel driven by the RFS program. Rather, the increase in distillers corn oil production was the result of increasing production of corn ethanol in the U.S., combined with the development of cost effective technologies to recover distillers corn oil from the distillers grain coproducts produced from these corn ethanol production facilities. The development of this extraction technology was driven by the economic incentives to obtain the maximum value for the coproducts from these facilities. While the production of advanced biodiesel and renewable diesel likely contributed to the demand for distillers corn oil, other industries, such as the livestock feed and oleochemical industries, likely would have provided an incentive for the increased production of distillers corn oil in the absence of demand from the biodiesel and renewable diesel industries. Finally, we note that while there may be a few exceptions that are the result of local market conditions, it is reasonable to expect that any industry, including the biodiesel and renewable diesel industry, will first use the cheapest available feedstocks, and that increased production will therefore result in higher marginal prices. Thus, higher production volumes of biodiesel and renewable diesel would generally require the use of more expensive feedstocks and/or processing technologies. The commenter has not presented compelling evidence as to why this general economic principle would not apply to biodiesel and renewable diesel.

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<sup>78</sup> See NBB comments on the 2019 proposal (Docket Item No. EPA-HQ-OAR-2018-0167-0711 Attachment 3).



**Comment:**

A commenter stated that while feedstock switching may impact the prices of feedstocks, it does not impact the supply of feedstocks that could be used to produce advanced biodiesel and renewable diesel.

**Response:**

We recognize that concerns over the impacts associated with feedstock switching do not impact the total quantity of feedstocks that could theoretically be used to produce advanced biodiesel and renewable diesel. However, as discussed in greater detail in Section IV of the final rule, producing advanced biodiesel and renewable diesel from feedstocks that are diverted from other uses not only has potentially higher costs than the feedstocks currently being used to produce biodiesel and renewable diesel, but also is likely to have lesser environmental benefits than fuels produced from feedstocks that are coproducts or byproducts of other industries. These are appropriate factors for EPA to consider in determining the extent to which to use our cellulosic waiver authority to reduce the advanced biofuel volume for 2019.

**Comment:**

A commenter stated that EPA's proposed advanced biofuel volume, along with the tariffs on imported biodiesel from Argentina and Indonesia, would result in greater use of domestic feedstocks to produce biodiesel and renewable diesel.

**Response:**

We acknowledge that the increase in the advanced biodiesel volume for 2019 will likely result in an increased use of domestic feedstocks, such as vegetable oils and waste oils and greases, that can be used to produce biodiesel and renewable diesel. We also expect that imports of biodiesel and renewable diesel from countries not impacted by these tariffs will increase. We note that the market is currently on track to meet the volume of advanced biodiesel and renewable diesel projected to be used to meet the advanced biofuel volume in 2018 without any imported biodiesel from Argentina or Indonesia. As further discussed in Section IV of the final rule, much of the expected increase in the use of feedstocks for advanced biodiesel and renewable diesel production is expected to be supplied by increased production and/or recovery of domestic feedstocks.

**Comment:**

A commenter raised concern about the use of distillers corn oil as a biodiesel feedstock, stating that the extraction of distillers corn oil for use as a feedstock for biodiesel and renewable diesel made the distillers grains less viable as feed for broilers, and thus had a negative impact on the poultry industry. Another commenter similarly requested that EPA not include increased distillers corn oil in our projection of the reasonably attainable volume of advanced biodiesel and renewable diesel, since for some types of livestock, additional sources of energy would have to be supplied if distillers corn oil was extracted from distillers grains. A third commenter stated

that removing distillers corn oil from distillers grains only changes its nutritional profile and depending on the species to which the distillers grain is fed it may increase the digestibility of this feed.

**Response:**

We recognize that the extraction of corn oil from distillers grains impacts the nutritional profile of the distillers grain as animal feed, and that the impact of these changes can vary by industry. It is likely that distillers grains from which oil has been extracted will be used to feed animals where the lower energy content of the de-oiled distillers grains has a positive impact, or where any negative impact is minimal. We note, however, that our projected increase in the use of distillers corn oil for animal feed in 2019 is relatively small (15 million gallons). Further, the extraction of distillers corn oil would likely increase regardless of advanced biofuel volumes for 2019 as the extraction of distillers corn oil is primarily driven by other economic factors, such as corn ethanol producers seeking to produce high value co-products and worldwide demand for corn ethanol in excess of RFS volumes. In sum, we do not believe that the advanced biofuel volume for 2019 will harm the livestock industry due to its potential effects on the distillers corn oil market.

**Comment:**

A commenter stated that increasing ethanol production would lead to an increase in the availability of distillers corn oil in future years.

**Response:**

EPA recognizes that increasing corn ethanol production would likely lead to an increase in the availability of distillers corn oil, however we do not expect that higher RFS standards would result in higher domestic corn ethanol production. Corn ethanol production in the U.S. currently exceeds the implied volume of conventional biofuel in this final rule (15 billion gallons) and is driven by demand for ethanol as an economical blending component in E10 blends and demand for ethanol in the export market. We expect a small increase in the production of distillers corn oil in 2019 due to relatively small increases in the adoption rate of corn oil extraction technology and an increase in the yield of distillers corn oil extracted at existing facilities as the technology improves. Additional growth due to expansion in corn ethanol production is possible but would be driven by export demand apart from the RFS.

**Comment:**

A commenter stated that EPA's concerns about feedstock diversion were unfounded, and that growth in the supplies of potential advanced biodiesel and renewable diesel feedstocks will outpace demand for these feedstocks in 2019.

**Response:**

As discussed in greater detail in Section IV of the final rule, EPA has projected the growth of various advanced biodiesel and renewable diesel feedstocks, including vegetable oil, distillers corn oil, and waste oils and greases. The data reviewed by EPA does not support the commenter's statement that there will be a significant over-supply of these feedstocks in 2019.

**Comment:**

A commenter stated that in EPA's assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel, EPA had not accounted for an increase in the quantity of vegetable oils used in food. Other commenters stated that EPA had not accounted for projected increases in animal fats due to increased meat consumption.

**Response:**

We recognize that our projection of the reasonably attainable volume of advanced biodiesel and renewable diesel does not account for every factor that could impact the availability of feedstocks that could be used to produce advanced biodiesel and renewable diesel. We have attempted to account for the primary sources of feedstock, including production of virgin vegetable oils and increased production of distillers corn oil, and have generally assumed that consumption of these feedstocks in markets other than renewable fuel will not change appreciably from 2018 to 2019. We have also considered the likelihood of increased recovery of waste fats, oils and greases and determined that this source of feedstock is unlikely to increase appreciably in 2019. While there are factors that are not accounted for in our assessment, such as those noted by commenters above, the impact these factors are expected to have on the total availability of feedstocks that could be used to produce advanced biodiesel and renewable diesel are highly uncertain and are expected to be small. We further note that some of these factors, such as the potential for increased use of vegetable oils in the food market, are expected to decrease the availability of feedstocks while others, such as increased availability of animal fats due to increased meat consumption, are expected to increase the supply of feedstocks. On balance, these factors are not expected to have a significant impact on our assessment of the reasonably attainable volume of advanced biodiesel and renewable diesel, nor would a slightly higher or lower estimate of the reasonably attainable volume of these fuels result in a different advanced biofuel volume for 2019.

**Comment:**

Multiple commenters stated that the proposed advanced biofuel volume would have a number of negative impacts, including increased imports of soybean and palm biodiesel, feedstock switching leading to increased palm oil production, higher costs to obligated parties (which would be passed on to consumers), and worse environmental results. Another commenter supported EPA's statements that a large increase in the use of biodiesel would likely result in significant displacement of existing feedstock uses.

**Response:**

As discussed in Section IV of the final rule, EPA acknowledges that the advanced biofuel volume in this final rule will likely result in some degree of feedstock switching, which could lead to an increased demand for palm oil and/or petroleum products on other markets. We also recognize that advanced biofuels, including advanced biodiesel and renewable diesel, have significantly higher costs than the petroleum based fuels they replace, and therefore requiring greater volumes of these fuels increases the cost of the RFS program to society. However, as noted in the final rule, EPA has reduced the advanced biofuel volume for 2019 by the maximum amount allowable using the cellulosic waiver authority. Further reductions would require the use of an additional waiver authority. We do not believe the use of this authority to further reduce the advanced biofuel (or total renewable fuel) volumes for 2019 is appropriate at this time (see Section II of the final rule and Section 2 of this document for a further discussion of EPA's waiver authorities).

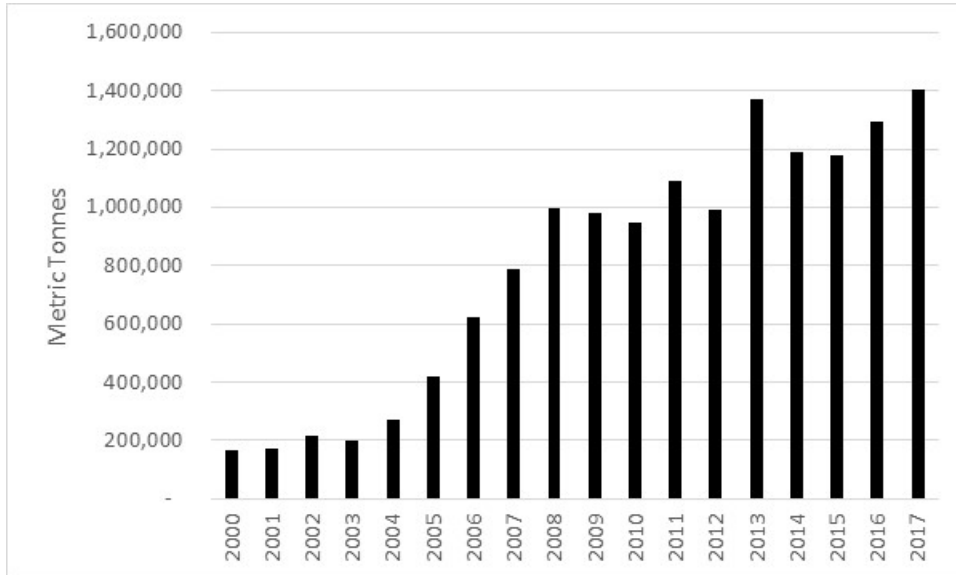
**Comment:**

A commenter stated that EPA's concerns — that markets currently using feedstocks that could be used to produce advanced biodiesel and renewable diesel would switch to using palm oil if demand for these feedstocks in the biodiesel and renewable diesel industry increased — were not supported. The commenter further stated that there was no evidence that increased advanced biofuel production would lead to diminishing benefits.

**Response:**

EPA has not tracked the use of individual feedstocks year-by-year to determine the degree to which other markets have switched from using advanced feedstocks as demand for these feedstocks to produce biodiesel and renewable diesel has increased. However, we note that imports of palm oil to the U.S. have increased dramatically in recent years, during the same time period in which domestic consumption of advanced biodiesel and renewable diesel has also increased dramatically. While there may be multiple reasons for the increase in palm oil imports, including the FDA regulation of hydrogenated oils in food markets, this provides evidence that a likely result of increasing demand for advanced feedstocks in the biodiesel and renewable diesel industry can, and likely has, resulted in an increased use of palm oil in other markets. As noted in Section IV of the final rule, advanced biodiesel and renewable diesel produced from feedstocks that had previously been used in other industries are expected to have reduced benefits as these industries rely on increasing volumes of palm oil.

### Palm Oil Imports (2000-2017)



Source: USDA Foreign Agriculture Service

**Comment:**

A commenter stated that the global supply of vegetable oil, cited by EPA in the proposal, is not a relevant factor to the advanced biofuel volume for 2019, as it is not practical for the global vegetable oil production to be used to produce biodiesel.

**Response:**

The use of the entire global supply of vegetable oil to produce biodiesel and renewable diesel is not feasible. Moreover, even if the entire supply could hypothetically be used to produce biodiesel and renewable diesel, such production would have significant negative impacts. The 2019 rule volumes, however, require the use of only a small fraction of this global supply, especially after accounting for the volumes of biodiesel and renewable diesel produced from feedstocks other than virgin vegetable oils. As we explain in Section IV of the final rule, we believe that this limited use is attainable. The significantly larger global supply only further confirms that, with the right incentives in place, the advanced biofuel volume in this rule for 2019 is attainable.

**Comment:**

Multiple commenters stated that feedstock availability will not constrain biodiesel production.

**Response:**

As discussed in Section IV of the final rule, we have determined that there are sufficient available feedstocks to produce the volume of advanced biodiesel and renewable diesel we have

projected will be used to meet the advanced biofuel volume for 2019. We also recognize that additional volumes of these fuels could be produced but are not requiring the use of additional volumes of advanced biofuel due to concerns related to the high costs and the diminishing benefits associated with increasing volumes of these fuels.

**Comment:**

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

**Response:**

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

**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 2019. 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 2019.

**Comment:**

A commenter stated that any impact a higher advanced biofuel volume would have on the global market for edible oils would be so minimal that it should not be considered. The commenter also stated that due to excess biodiesel production capacity, any increase in the advanced biofuel volume would result in increased biofuel production, rather than increased consumption of palm oil and/or petroleum products.

**Response:**

We recognize that any impact on global edible oil prices that resulted from a higher advanced biofuel volume are likely to be modest. Nevertheless, due to the large volume of vegetable oil consumed globally, even modest price impacts can result in significant overall costs. We further note that our concerns over the higher costs of a higher advanced biofuel volume are not primarily related to the impact of a higher standard on global vegetable oil prices, but rather the high cost of advanced biofuels relative to the petroleum fuels they displace. Finally, while we acknowledge that there is significant excess biodiesel production capacity, both domestically and globally, we believe the primary reason these facilities are not producing greater volumes of fuel is that they cannot do so economically. Increasing demand for advanced biodiesel and renewable diesel in the U.S. will only result in increased global production of these fuels if the incentives for advanced biodiesel and renewable diesel in other countries are sufficient to drive this production. Otherwise these fuels (or alternatively the feedstocks used to produce them) will simply be diverted to the U.S. and will be replaced with cheaper alternatives such as palm oil or petroleum based fuels.

**Comment:**

One commenter stated that higher requirements for biodiesel and renewable diesel provide a higher value market for renewable oils (such as vegetable oils and distillers corn oil). Some commenters claimed that higher standards could drive higher oil extraction or waste collection rates.

**Response:**

The final 2019 standards will already provide a high value market for vegetable oils and other feedstocks that can be used to produce advanced biodiesel and renewable diesel. EPA is aware that even higher prices for these feedstocks could result in the additional production or collection of oils such as distillers corn oil or used cooking oil, or alternatively lower prices for the non-vegetable oil products of oilseed production such as animal feed. 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:**

A commenter stated that increasing volumes of rendered feedstocks are being used to produce biodiesel and renewable diesel as U.S. renderers have lost international market share due to foreign government restrictions and increased palm oil production.

**Response:**

EPA recognizes that biodiesel and renewable diesel provide an important market for rendered feedstocks, however as discussed in Section IV of the final rule, we expect growth in the quantity of these feedstocks used to produce biodiesel or renewable diesel in the future to be limited. We note that these comments support EPA's concerns that increased production of advanced biodiesel and renewable diesel may be enabled by increased palm oil production.

**Comment:**

A commenter stated that Congress intended for the RFS to be a market forcing mechanism, and that it would necessarily disrupt markets for fuels and feedstocks. The commenter stated that EPA should not use these disruptions as a reason to establish lower advanced biofuel volumes.

**Response:**

Congress clearly intended the RFS program to increase the production and use of renewable fuels in the U.S. No commenter provided any credible evidence, however, indicating that Congress intended renewable fuels to be produced from feedstocks already being used in other industries, or the concomitant higher costs and lower GHG and energy security benefits associated with such diversions. Nor did any commenter provide credible evidence that Congress even considered these factors in establishing the statutory volume targets through 2022. Congress did, however, clearly give EPA broad discretion as to the factors to consider when using the cellulosic waiver authority to reduce the advanced biofuel and total renewable fuel volumes. Consistent with the 2017 and 2018 annual rules, we believe that the potential diversion of feedstocks and/or biofuels, along with the high costs of advanced biofuels and the expected diminishing benefits of higher volumes of these fuels, is a sufficient basis for reducing the advanced biofuel and total renewable fuel volumes by the same amount as the cellulosic biofuel volume in 2019.

**Comment:**

A commenter stated that production of biodiesel and renewable diesel, including the production of biodiesel and renewable diesel from soybean oil, had increased by a greater amount from 2016/2017 to 2017/2018 than projected by EPA in our 2018 final rule. This commenter stated that this data supported the fact that biodiesel and renewable diesel production can and likely would exceed EPA's projection in the 2019 proposal.

**Response:**

Our proposal explicitly acknowledged that biodiesel and renewable diesel production can exceed our calculated "reasonably attainable" volume, and likely would do so in response to the volumes in the 2019 rule. For the reasons discussed in greater detail in Section IV of the final rule, we do not believe that it would be appropriate to increase the required volume of advanced biofuel in 2019 or BBD in 2020. Finally, we note that while the biodiesel production increases cited by the commenter were greater than the increase in the reasonably attainable volumes in the



2018 final rule, the numbers cited by the commenter and the projected increase in the 2018 final rule were similar.

#### **4.2.2.5 Impact of Tax Credit**

Commenters that provided comment on this topic include but are not limited to: 0660, 0662, and 1286.

##### **Comment:**

Multiple commenters 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 commenters 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. These 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 2019. 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. Ultimately, however, whether or not the tax credit is renewed for 2019 does not have a material impact on the advanced biofuel volume in this rule. As discussed in Section IV of the final rule, we have decided to reduce the advanced biofuel volume by the maximum amount allowable. The status of the tax credit could have an impact on the cost of biodiesel and renewable diesel to consumers, and the high costs of advanced biofuels are one of the reasons we have decided to reduce the advanced biofuel volume by the maximum amount allowable. However, EPA is primarily concerned in the high societal costs of advanced biofuels, which are not impacted by the status of the tax credit, as tax credits merely shift who in the marketplace pays the high cost of the advanced biofuel. Tax credits can result in significant transfer payments between parties, but they do not eliminate or reduce societal costs. In any event, as we explain in Section IV.B.3 of the final rule, the status of the tax credit does not affect our projection of the reasonably attainable volume of advanced biodiesel and renewable diesel, or our conclusion that 2.8 billion gallons of advanced biodiesel and renewable diesel is attainable.

##### **Comment:**

A commenter stated that EPA's conclusion that the status of the tax credit can impact the supply of advanced biodiesel and renewable diesel is not supported by the data. This commenter claimed that the data illustrate that it is the RFS volumes, rather than the tax credit, this is the primary driver for the supply and demand of biodiesel.

##### **Response:**

EPA continues to believe that both the RFS program and the federal tax credit have an impact on the supply and demand of biodiesel and renewable diesel in the U.S. While both of these programs provide financial incentives for the production and use of biodiesel and renewable

diesel, they are different in significant ways. The federal tax credit provides a guaranteed value (historically \$1 per gallon) to parties that blend biodiesel and renewable diesel, while the RFS program allows producers or importers of biodiesel and renewable diesel to generate RINs that can be sold at the market price. We recognize that these incentives can and often are complimentary, however under some circumstances a guaranteed price may be more effective at incentivizing the production and use of these fuels, especially when the price of RINs are low. Furthermore, the federal tax credit provides an incentive for the advanced biofuel standard to be met with biodiesel and renewable diesel at the expense of other advanced biofuels that do not benefit from the tax subsidy. Ultimately, however, the status of the tax credit has not had a significant impact on the volume of advanced biofuel established in the rule for 2019.

**Comment:**

A commenter stated that EPA should assume that the biodiesel tax credit will be extended, as it has been reinstated each year in the past.

**Response:**

The biodiesel tax credit has been applicable each year, proactively in some years and retroactively in others. We do not, however, believe that this is a sufficient basis for assuming that the tax credit will continue indefinitely in its current form. As noted above, the status of the tax credit has not had a significant impact on the volume of advanced biofuel established in the rule for 2019.

### **4.2.3 Other Advanced Biofuel**

EPA did not receive any comments on this topic.

### **4.3 Advanced Volume that Can Be Supplied and Used**

Commenters that provided comment on this topic include but are not limited to: 0530.

#### **Comment:**

One commenter stated that the goals of the RFS program would best be met by setting the advanced biofuel volume requirement at 5 billion gallons for 2019, while another commenter stated that at least 5.3 billion ethanol-equivalent gallons of advanced biofuel can be supplied and used in 2019.

#### **Response:**

The commenter pointed to biodiesel and renewable diesel production capacity as primary reasons that 5.3 billion gallons can be supplied and used in 2019. We do not believe that using production capacity alone is an appropriate way to determine the volumes that are attainable, as the cellulosic waiver authority permits us to consider a wide variety of factors, and indeed we have done so in making a determination to reduce the advanced biofuel volume requirement for 2019 by the full amount permitted under that authority as discussed in Section IV of the final rule.

An advanced biofuel volume requirement of 5.3 billion gallons would represent an increase of about 0.4 billion gallons in comparison to the 4.88 billion gallons we proposed. This increase would most likely be filled with BBD; instead of the 2.8 billion gallons of BBD that we estimated would be needed to meet an advanced biofuel volume requirement of 4.88 billion gallons, nearly 3.1 billion gallons of BBD would need to be used. As discussed more fully in Section 4.2.2 of this document, we do not believe BBD use in excess of 2.8 billion gallons would be appropriate to require as it would increase the likelihood for feedstock/fuel diversions, higher costs, and reduced GHG benefits due to increases in the use of palm oil to backfill for diverted soy oil. Moreover, while we made a proposed determination that 2.8 billion gallons of BBD is attainable, we also acknowledged that a lesser volume of 2.61 billion gallons would be reasonably attainable. Even so, we did not propose further reductions in the advanced biofuel volume requirement because we determined that the increased costs associated with 2.8 billion gallons of BBD did not constitute severe economic harm. See Section 2.1.2 of this document for further discussion of severe economic harm.

## 4.4 Proposed Advanced Biofuel Requirement

Commenters that provided comment on this topic include but are not limited to: 0389, 0493, 0531, 0532, 0539, 0586, 0591, 0619, 0660, 0671, 0672, 0711, 0712, 1036, 1039, 1196, 1202, 1271, and 1286.

### **Comment:**

One commenter stated that the advanced biofuel volume requirement should be reduced from the proposed level of 4.88 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 2019, 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 2019. Further reductions would require the use of the general waiver authority, and it does not permit 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 severe economic harm. See Section 2.1 of this document for further discussion of these waiver authorities.

### **Comment:**

Some commenters believed that the proposed volume of 4.88 billion gallons for advanced biofuel was too high. One stated that the 2019 level should be 4.18 billion gallons, as the 2.8 billion gallons of BBD assumed in support of the 4.88 billion gallon proposal would cause significant market disruption and GHG impacts. Another stated that the 2019 level should be 3.11 billion gallons, based on lower volumes of cellulosic biofuel and all forms of non-cellulosic advanced biofuel.

**Response:**

We do not believe that the suggested volumes would be appropriate. Not only are they significantly lower than the volume we have determined to be 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 as described more fully in Section 2 of this document. See also discussion of the cellulosic biofuel volume requirement in Section 3 of this document.

**Comment:**

One commenter stated that the 2019 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 2019 includes a consideration of the volume of BBD that is attainable. As described in Section IV of the final rule, our analysis concluded that significantly more than 2.1 billion gallons of BBD - 2.8 billion gallons - is in fact attainable in 2019. As described in Section VI of the final rule setting the 2018 standards and the 2019 BBD volume requirement, 2.1 billion gallons of BBD is not the most that could be expected to be supplied in 2019, but rather is a level that provides support to the BBD industry while simultaneously providing an opportunity for other advanced biofuels to compete with BBD under the advanced biofuel standard.

**Comment:**

One commenter stated that the proposed advanced biofuel volume requirement of 4.88 billion gallons exceeds actual domestic production and would require an increase in imports.

**Response:**

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 attainable and appropriate given a consideration of costs and other factors.

We do not believe it would be appropriate to base the 2019 volume requirement for advanced biofuel on actual volumes produced domestically in the past. The largest historical level of domestic advanced biofuel production was 3.07 billion RINs in 2017.<sup>79</sup> Reducing the 2019 advanced biofuel volume requirement to this level would require use of the general waiver authority. As discussed in Section 2.1 of this document, we have determined that this would not be appropriate.

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<sup>79</sup> “2017 supply 3-13-18,” available in docket EPA-HQ-OAR-2018-0167.

We also do not believe it would be appropriate to base the 2019 volume requirement for advanced biofuel on actual volumes produced domestically in 2018, for four reasons. First, this approach would require an extrapolation of production for the first part of the year to the end of 2018. Any extrapolation will be uncertain due to seasonal variability and other unpredictable factors, and thus would introduce uncertainty into the determination of the applicable 2019 volume requirement. Second, production volumes must be adjusted for RINs made invalid for any reason (such as those listed in 40 CFR 80.1431). Since some RINs are not determined to be invalid for many months after their generation, basing the 2019 standard on 2018 domestic production would likely be biased high. Third, actual production in 2018 is not, by itself, indicative of the production that is attainable in 2019 or the costs of 2019 production. Fourth, as discussed in Section 2.1.1 of this document in relation to our inadequate domestic supply waiver authority, we do not believe that the available information and evidence warrants the exclusion of imports in the determination of the volume requirements for 2019.

**Comment:**

Several commenters stated that the advanced biofuel standard for 2019 should be higher than 4.88 billion gallons because there exists sufficient biodiesel production capacity and sufficient feedstocks to reach a higher level.

**Response:**

We acknowledge that total domestic production capacity for biodiesel and renewable diesel is considerably higher than actual production in recent years (as discussed further in Section 4.2.2.1 of this document), and that sufficient feedstocks exist to permit an advanced biofuel volume requirement higher than 4.92 billion gallons to be reached in 2019. However, as volume requirements increase, so also do the challenges associated with meeting those volume requirements. We believe that it is important to take these challenges into account when making a determination of the appropriate volume requirements to set. Moreover, we have the authority under the cellulosic waiver authority to consider factors other than production capacity and the total amount of qualifying feedstock that is produced. As described in Section IV of the final rule, we have taken into account the increased potential for feedstock/fuel diversions as volumes increase, the higher costs, and the reduced benefits. Based on these additional considerations, we determined that an advanced biofuel volume requirement resulting from the full use of the cellulosic waiver authority is appropriate.

**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. Another commenter stated that the refusal to partially backfill for the shortfall in cellulosic biofuel, EPA is missing an opportunity to maximize the benefits of advanced biofuels for Americans as envisioned by Congress.



**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, including whether to maximize certain benefits. In addition to assessing 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. The commenter's expressed concerns about future investments and job creation were not supported with any data or analysis. However, despite potential impacts in these areas, in making a determination not to allow advanced biofuel to partially backfill for the shortfall in cellulosic biofuel, 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 was ignoring the intent of Congress to increase biofuel volumes in deciding not to backfill any portion of the cellulosic biofuel shortfall, and that any consideration of the potential diversion of feedstocks is inconsistent with Congressional intent.

**Response:**

While Congressional intent can be inferred from the fact that the statutory volume targets increase every year, the statute does not establish Congressional intent as the singular consideration that should drive the determination of applicable volume requirements. On the contrary, Congress also explicitly provided mechanisms for reducing those volume targets where factors other than Congressional intent can be considered. The cellulosic waiver authority which Congress established provides EPA with broad discretion in the factors it may consider, and thus diversion of feedstocks and the attendant impacts on other markets, GHG emissions, and costs are valid considerations.

**Comment:**

Several commenters stated that EPA had not considered whether more than 4.88 billion gallons of advanced biofuel was attainable, but instead had simply proposed to set the 2019 advanced biofuel volume requirement at the minimum permitted under the cellulosic waiver authority.

**Response:**

Section IV of the proposal 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 4.92 billion gallons of advanced biofuel were attainable in 2019, but not reasonably attainable. That is, 4.92

billion gallons could be produced and used in 2019 with some degree of feedstock switching and/or diversion of foreign-produced advanced biofuel to the U.S. Volumes above 4.92 billion gallons may also be attainable, though with increasing levels of feedstock switching and/or diversion of foreign-produced advanced biofuel to the U.S. Thus, attainability is not the sole criterion on which we make our determination under the broad discretion provided under the cellulosic waiver authority. In addition to feedstock switching and foreign fuel diversions, we also considered additional factors such as costs and benefits. As a result, we determined that the volume requirement that was both attainable and appropriate to require was 4.92 billion gallons, the lowest level permitted under the cellulosic waiver authority.

**Comment:**

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

**Response:**

The commenter did not provide any data or analysis to support the foregone benefits claimed. 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 likelihood for feedstock/fuel diversions, increased costs, and market disruption associated with each increment of advanced biofuel, factors that we are legally permitted to consider under this authority.

**Comment:**

One commenter stated that there is no need to set the advanced biofuel volume requirement below 10.5 billion gallons, representing a 20% reduction from the statutory target. This commenter stated that such a level could be reached because there are sufficient sugarcane ethanol and carryover RINs, and because Equivalence Values could be based on GHG reductions instead of energy equivalence.

**Response:**

A volume requirement of 10.5 billion gallons is far higher than the level we believe can be attained in 2019. Even if all of the suggested avenues for meeting such a volume requirement were pursued to the maximum extent, we do not believe that 10.5 billion gallons could be reached. In addition, we do not believe that the suggested avenues would be appropriate. See also the response to a previous comment in Section 4.2.1 of this document on an advanced biofuel volume requirement of 10.5 billion gallons.

As described in Section 4.2.1 of this document, the annualized volume of the highest month of sugarcane ethanol imports is only about 2 billion gallons, and moreover we do not believe that such a level can be reached in 2019. As discussed in Section IV.B.1 of the final rule, we believe that 100 million gallons is a reasonable estimate of the volume that could be imported in 2019.

As described in Section II.B of the final rule, we do not believe it would be appropriate to intentionally draw down the bank of carryover RINs as a means for increasing the advanced biofuel volume requirement.

Finally, changing the basis for Equivalence Values is outside the scope of this rulemaking.

**Comment:**

One commenter stated that regardless of the applicable volume requirement for advanced biofuel, the actual volume requirement is unknown due to the existence of small refinery exemptions.

**Response:**

The applicable percentage standards with which obligated parties must comply remains unchanged in the event that one or more small refinery exemptions is approved after those percentage standards are established. Thus, apart from small refineries that receive an exemption, the volume requirements for each obligated party are known once the percentage standards are established. See Section 8.2 of this document for further discussion of small refinery exemptions.

**Comment:**

One commenter stated that costs are not an appropriate factor for consideration in setting the advanced biofuel volume requirement and requested a return to the earlier years in the program when EPA assessed potential available supply.

**Response:**

Under the cellulosic waiver authority, EPA has wide discretion in the factors it may consider. Therefore, costs are a valid consideration. As discussed at 83 FR 32047 of the proposal, we have considered costs in previous years, though we placed a greater emphasis on costs for the 2018 standards final rule and again for the proposed 2019 standards. We have considered potential available supply in every year that we have set annual standards.

**Comment:**

One commenter stated that EPA's use of "attainable" versus "reasonably attainable" does not provide sufficient clarity to the market to understand its implementation of the program.

**Response:**

The terms "attainable" and "reasonably attainable" were defined in the proposal at 83 FR 32039 in terms of our assessment of the potential for market disruptions and higher costs resulting from increasing volume requirements. We discussed these factors at length in the proposal, particularly in regard to the volumes of BBD that would be needed to reach the advanced biofuel volume requirement that would result from the full use of the cellulosic waiver authority.

## 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: 0523, 0539, 0619, and 1278.

##### **Comment:**

One commenter alleged that the *ACE* decision had ruled that EPA cannot consider demand-side factors when making a determination about whether any of the statutory targets can be met. But, the commenter noted that has EPA continued to consider demand-side factors in a docket memorandum entitled “Market impacts of biofuels in 2019.”

##### **Response:**

The Court’s ruling specifically indicated that EPA cannot consider demand-side factors in determining inadequate domestic supply under the general waiver authority. However, EPA did not propose reductions using inadequate domestic supply. EPA is permitted to consider demand-side factors under the cellulosic waiver authority. We may also consider demand-side constraints in evaluating how the market might respond to the proposed volume requirements as we do in the market impacts memorandum.

##### **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, by “constraints” we do not mean a firm barrier but rather the transition from mild resistance (if any) below 10% ethanol to more significant obstacles above 10% ethanol. Moreover, these constraints do not have the same significance at all levels above 10% ethanol. This gradual nature of the impacts of the constraints is due to the fact that small increases in 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 2019 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 recent years additional biodiesel and renewable diesel, together with smaller increases in E15 and E85, have provided additional biofuel volumes in excess of the E10 blendwall.

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 2019 timeframe as other commenters have suggested. The final 2019 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 in the absence of increases in non-ethanol biofuels are not achievable in 2019.

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 or the RFS program that requires the use of ethanol. The advanced biofuel and total renewable fuel standards can and have been met with other biofuels as well, especially biodiesel and renewable diesel. 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.

**Comment:**

One commenter stated that E10 should not be used as a point of reference in EPA's determination of reasonably attainable volume. Instead, EPA should use E15 as the point of reference to demonstrate EPA's commitment to the intent of Congress to increase volumes.

**Response:**

EPA has not arbitrarily chosen E10 as a point of reference in its assessments. As described above, E10 is merely a level of ethanol blending that marks the transition from mild resistance (or no resistance) below 10% ethanol to more significant obstacles above 10% ethanol. This is a market reality that EPA has identified and considered in its assessment of how the market might respond to the applicable standards. The use of E15 as a point of reference would not change the reality of the constraints associated with the E10 blendwall.

**Comment:**

One commenter stated that exceeding the blendwall will mean higher costs and harm to the economy, and that refiners unable to acquire sufficient RINs will face fines or will be forced to reduce their obligation by reducing production of gasoline and/or diesel for domestic use.

**Response:**

As discussed in Section 5.1.2 of this document, the U.S. exceeded the E10 blendwall in both 2016 and 2017, but there has been no indication of harm to the economy as a result, and commenters provided no evidence of such harm to the economy in those two years. Similarly, commenters provided no evidence that exceeding the blendwall in those years precluded refiners from acquiring sufficient RINs so as to face fines, or induced refiners to reduce the production of gasoline or diesel for domestic use. Since our assessment of the market impacts of the final 2019 volume requirements presumes that the ethanol concentration will be no higher in 2019 than it was in 2017, concerns about potential impacts on the economy of exceeding the E10 blendwall are unwarranted.<sup>80</sup>

Our determinations about the market's ability to use biofuels — that 4.92 billion gallons of advanced biofuel is attainable in 2019 and that the market can make available 19.92 billion gallons of total renewable in 2019 — mean that we expect there will be a sufficient number of valid RINs available for all obligated parties to comply with the applicable standards. Moreover, as we discuss in Section II.B of the final rule, to the extent the market falls short of using these volumes, obligated parties can rely on the carryover RIN bank to satisfy their obligations. Other compliance flexibilities, such as the carryforward deficit provision and small refinery exemptions, also exist. As a result, we do not expect any obligated parties to be unable to acquire sufficient RINs for compliance.

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<sup>80</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

## 5.1.2 Exceeding the E10 Blendwall

Commenters that provided comment on this topic include but are not limited to: 0617, 0672, 1196, 1201, 1267, 1271, and 1273.

### **Comment:**

A number of commenters, particularly refiners, argued that the 2019 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, 2017, and 2018 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 concentration was 10.02% in 2016 and 10.13% in 2017. Moreover, despite concerns raised by those advocating 9.7% ethanol, there is no indication that exceeding the blendwall in 2016 or 2017 created severe economic harm for any State, region, or the U.S., which would be necessary to support use of the general waiver authority to lower the statutory volume targets down to such a level.

While we agree that use of E15 and E85 in 2019 cannot enable the market to achieve the statutory target for total renewable fuel, they can make meaningful contributions in 2019. The final 2019 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 and 2017 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 exceeding a poolwide national average ethanol concentration of 10% would cause catastrophic downstream consequences.

### **Response:**

As discussed above, the U.S. exceeded a poolwide national average ethanol concentration of 10% in both 2016 and 2017. Commenters did not provide any information or data indicating that such ethanol levels caused problems in distribution, blending, or dispensing of gasoline, and we are not aware of any such problems.

Importantly, the RFS program does not require the use of ethanol, and thus downstream parties will only distribute and blend ethanol into gasoline to the degree that doing so provides an advantage to them relative to other options for compliance, including biodiesel and renewable diesel.

**Comment:**

One commenter stated that since most cars can use E15, EPA should not treat the E10 blendwall as insurmountable.

**Response:**

While we have approved the use of E15 in 2001 and newer model year vehicles, auto manufacturers generally only warrant much more recent model year vehicles for the use of E15, and some not at all. Regardless, as discussed in Section 5.1.1 of this document, EPA does not treat the E10 blendwall as insurmountable. Instead, the E10 blendwall marks the transition from mild resistance to increases in ethanol use to more significant obstacles to increases in ethanol use. E15 and E85 can both contribute to poolwide exceedances of the E10 blendwall. See Sections 5.1.6 and 5.1.7 of this document for additional discussion of these two higher ethanol blends.



### **5.1.3 Domestic Production Capacity**

Commenters that provided comment on this topic include but are not limited to: 1292.

**Comment:**

One commenter stated that since current corn-ethanol production capacity is over 16 billion gallons and significant volumes have been produced and exported, there is no need to reduce the volume requirement for conventional renewable fuel.

**Response:**

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 2019. 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.

### 5.1.4 Refiner Responsibilities to Expand Ethanol Use

Commenters that provided comment on this topic include but are not limited to: 0539.

#### **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. Another commenter stated that the petroleum industry's unwillingness to offer higher level ethanol blends must not be taken as evidence that the RFS2 is unworkable.

#### **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. We do believe that the RFS program has been working as intended to expand the use of renewable fuel despite the slower-than-expected rate of increase in the use of higher ethanol blends.

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 this 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.

### 5.1.5 E0

Commenters that provided comment on this topic include but are not limited to: 0667, 0672, 1029, and 1035.

#### **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.

#### **Response:**

None of the information cited by commenters represented E0 sold at retail, and it 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 on E0 sales trends at one chain of retail stations, or data on E0 use in Iowa, to the nation as a whole. Data provided on E0 sold from terminals was not accompanied by any verifiable information on whether that E0 is actually used as E0 in vehicles or, instead, subsequently blended with ethanol.

More importantly, as we explain Section IV.D of the final rule, in exercising our cellulosic waiver authority and establishing the 2019 standard for total renewable fuel, we did not rely on any estimate of the volume of any particular ethanol blend or E0 used in 2019. Nonetheless, we do provide a description of the ways in which the market could make 19.92 billion gallons of total renewable fuel available in 2019 in a memorandum to the docket.<sup>81</sup> As detailed in that memorandum, we do not believe that a precise estimate of the volume of E0 sold at retail is necessary to determine how the market might respond to the volume requirements we establish. Instead, it is the poolwide average ethanol concentration that is more pertinent as it takes into account E0, E15, and E85 volumes in the aggregate while being essentially independent of total gasoline demand. Thus, while the market has offered and may continue to offer E0, it is not necessary for us to project a specific volume of E0 use in order to determine that the 2019 standards can be met.

#### **Comment:**

One commenter stated that EPA continues to falsely claim that only 200 million gallons of E0 has been used in the past. Another commenter stated that recent data from the Iowa Department of Revenue shows that Iowans alone bought approximately 200 million gallons of E0 in 2017, so the volume of E0 used by the whole country must be much higher than 200 million gallons.

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<sup>81</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

**Response:**

EPA does not believe that total E0 use in previous years was 200 million gallons and has never made such a claim. 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 engine damage following phase separation of the water and fuel, which is of greater likelihood with ethanol blends than with E0.<sup>82</sup>

In any event, in this action we are not assuming that the market will use no more than 200 million gallons of E0. Indeed, we are not making any projection of the volume of E0 that will be used in 2019, or justifying this action based on a specific volume of E0. Instead, we have estimated total ethanol consumption in 2019 based on the 2017 poolwide ethanol concentration of 10.13% which inherently includes some E0, as well as some E15 and E85.

**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.

**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.<sup>83</sup> Comments from refiners in response to the 2019 proposal did not provide any new or different information that would change our conclusions with regard to that 3% estimate. Regardless, as described throughout this section, we are not basing the 2019 standards on any particular ethanol concentration.

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<sup>82</sup> See 81 FR 89775-76; “Estimating E0 use in recreational marine engines,” memorandum from David Korotney to docket EPA–HQ–OAR–2015–0111.

<sup>83</sup> See 80 FR 77462; see also 81 FR 89776.

**Comment:**

One commenter stated that many boaters want E0, and EPA should account for that fact when establishing the volume requirements.

**Response:**

As we explain in Section IV.D of the final rule, in exercising our cellulosic waiver authority and establishing the 2019 standard for total renewable fuel, we did not rely on any estimate of the volume of any particular ethanol blend used in 2019. Nonetheless, we did provide a description of the ways in which the market could make 19.92 billion gallons volume of total renewable fuel available in 2019 in a memorandum to the docket.<sup>84</sup> In addition, we note that the RFS program does not preclude the sale of E0. The market will supply E0 so long as there is demand for it.

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<sup>84</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

### 5.1.6 E15

Commenters that provided comment on this topic include but are not limited to: 0539, 0672, 1197, 1201, 1271, and 1292.

#### **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 stated that “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. Parties storing ethanol in underground tanks in concentrations greater than 10% are required to 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 to be no less protective of human health and the environment. These requirements are designed to protect against equipment failure that could lead to leaks and to satisfy insurance requirements. The use of any equipment to offer E15 that has not been demonstrated to 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. In sum, even if retailers’ installed tanks are technically compatible with E15, the ability of those retailers to sell E15 may be significantly limited by the ability to demonstrate such compatibility.

#### **Comment:**

One commenter stated that retailer concerns about liability for misfueling of pre-2001 vehicles or nonroad engines with E15 are baseless since EPA regulations address this issue.

#### **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 help ensure that misfueling does not occur. However, some retailers will continue to have concerns about potential liability associated with vehicle

owners misfueling their vehicles and engines, and as a result may view the potential for misfueling as a disincentive to install or upgrade equipment to offer E15.

Since the RFS program does not require the use of E15 or ethanol in any form, retail station owners are not required to offer E15. Thus, concerns on the part of retailers about misfueling liability, warranted or not, may constrain the growth of 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, whether it is a new station or existing station modification, 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>85</sup>

**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, the market can supply these fuels. Moreover, E15 is not permitted to be used in motorcycles nor any nonroad engine, and retail pumps must be labelled to help ensure that misfueling does not occur.

**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

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<sup>85</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%.

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. Moreover, the implied volume requirement for conventional renewable fuel in 2019 will be the same as it was for 2018 at 15 billion gallons. Insofar as the implied volume requirement for conventional renewable fuel is the primary driver for ethanol use, the 2019 standards would provide no more incentive for the use of E15 than the 2018 standards.

**Comment:**

One commenter stated that by not projecting the volume of E15 that is reasonably attainable, EPA has neglected to make a determination that the proposed volume of total renewable fuel is reasonably attainable.

**Response:**

As we explain in Section IV.D of the final rule, in exercising our cellulosic waiver authority and establishing the 2019 standard for total renewable fuel, we did not rely on any estimate of the volume of any particular ethanol blend used in 2019. Nonetheless, we did provide a description of the ways in which the market could make 19.92 billion gallons volume of total renewable fuel available in 2019 in a memorandum to the docket.<sup>86</sup> As detailed in that memorandum, we do not believe that a precise estimate of the volume of E15 sold at retail is necessary to determine how the market might respond to the volume requirements we establish. Instead, it is the poolwide average ethanol concentration that is more pertinent as it takes into account E0, E15, and E85 volumes in the aggregate while being essentially independent of total gasoline demand.

**Comment:**

One commenter stated that EPA failed to consider the small number of retail stations offering E15 and the small number of vehicles warranted to use E15.

**Response:**

We did not discuss these issues in the proposal because we were not making a projection of E15 sales volumes for 2019. We do not believe that any consideration of the number of retail stations offering E15 or the number of vehicles warranted to use E15 would have changed our proposal or the approach we have taken in the final rule.

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<sup>86</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.



**Comment:**

One commenter stated that E15 sales volumes cannot increase fast enough to have a significant impact on the volume requirements.

**Response:**

As stated earlier, we did not project specific volumes of E15 that would be used in 2019, but instead relied on an estimate of the poolwide average ethanol concentration for 2019, based on that from 2017. As a result, there is no reason why E15 volumes would have to increase noticeably in 2019 to meet the 19.92 billion gallon volume requirement.

### 5.1.7 E85

Commenters that provided comment on this topic include but are not limited to: 0672, 1197, and 1292.

**Comment:**

A number of commenters pointed to examples of retailers who have discontinued offering E85 due to low sales as a reason that E85 cannot be relied upon to increase ethanol consumption.

**Response:**

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 2019 compared to previous years. Regardless, we are not relying on any particular volume of E85 use to support the 2019 standards, as described above.

**Comment:**

Commenters representing ethanol interests generally stated that an E85 price discount significantly higher than energy parity is achievable, and that it will occur if EPA increases the volume requirements.

**Response:**

Commenters provided no new analysis of the future E85 price discount that would occur under the influence of higher RFS volume requirements, but instead pointed to analyses presented in response to the proposal for previous annual standard-setting rulemakings. Responses to those analyses can be found in the response to comments document for the 2018 RFS standards rulemaking.<sup>87</sup>

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 primarily through the use of non-ethanol renewable fuels such as biodiesel and renewable diesel as has occurred historically. Regardless, we are not relying on any particular volume of E85 use to support the 2019 standards, as described above.

**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.

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<sup>87</sup> "Renewable Fuel Standard Program - Standards for 2018 and Biomass-Based Diesel Volume for 2019: Response to Comments." December 2017. EPA-420-R-17-007.

**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, as described in Section 5.1.1 of this document, a memorandum to the docket describing potential market impacts of the applicable 2019 standards, and in previous annual rulemakings.<sup>88</sup> 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 2019 primarily through E15 and/or E85, or through non-ethanol renewable fuels such as biodiesel and renewable diesel. Notably, the market has demonstrated a stronger preference for increases in biodiesel and renewable diesel rather than increases in ethanol as the standards have increased over the last several years.

**Comment:**

One commenter stated that the available data on E85 sales volumes versus price discount between E85 and E10 is not valid because it occurred when RFS standards were not high enough to push E85 sales significantly. The commenter argued that although EPA's analysis concluded that the correlation between E85 sales volumes and E85 price discount compared to E10 was essentially linear, EPA should reject that analysis because the underlying data is not valid. Instead, the commenter claimed that 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, which would include a strongly nonlinear correlation with accelerating E85 sales volumes as the price discount increases.

**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>89</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 nonlinear correlation based on economic theory is a more appropriate basis than a linear correlation derived from the analysis of data. Our analysis included an investigation into nonlinearity in the region surrounding the energy parity point.<sup>90</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. Moreover, our analysis of the E85 market concluded that the full value of the RIN

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<sup>88</sup> "Updated market impacts of biofuels in 2019," memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

<sup>89</sup> "State E85 Sales and Price Data," Excel file available in docket EPA-HQ-OAR-2016-0004.

<sup>90</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."

was generally not transmitted to retail E85 sales prices, most likely as a result of the current lack of competition at the retail level.<sup>91</sup> Therefore, assumptions that might be made based on economic theory in a competitive market do not hold under current circumstances.

We note that the correlations at issue were not used in making projections of reasonably attainable ethanol volumes for 2019. We are not relying on any particular volume of E85 use to support the 2019 standards, as described above.

**Comment:**

One commenter stated that EPA failed to consider the small number of flex-fueled vehicles (FFV) that can use E85.

**Response:**

We did not discuss this issue in the proposal because we were not making a projection of E85 sales volumes for 2019. We do not believe that any consideration of FFVs would have changed our proposal or the approach we have taken in the final rule.

**Comment:**

One commenter stated that by not projecting the volume of E85 that is reasonably attainable, EPA has neglected to make a determination that the proposed volume of total renewable fuel is reasonably attainable.

**Response:**

As we explain Section IV.D of the final rule, in exercising our cellulosic waiver authority and establishing the 2019 volume requirement for total renewable fuel, we did not rely on any estimate of the volume of any particular ethanol blend used in 2019. Nonetheless, we did provide a description of the ways in which the market could make 19.92 billion gallons volume of total renewable fuel available in 2019 in a memorandum to the docket.<sup>92</sup> As detailed in that memorandum, we do not believe that a precise estimate of the volume of E85 sold at retail is necessary to determine how the market might respond to the volume requirements we establish. Instead, it is the poolwide average ethanol concentration that is more pertinent as it takes into account E0, E15, and E85 volumes in the aggregate while being essentially independent of total gasoline demand.

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<sup>91</sup> “An Assessment of the Impact of RIN Prices on the Retail Price of E85,” memorandum from Dallas Burkholder, available in docket EPA-HQ-OAR-2018-0167.

<sup>92</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

### **5.1.8 Other Comments Related to Ethanol**

Commenters that provided comment on this topic include but are not limited to: 1197.

#### **Comment:**

One commenter stated that the RFS program has no impact on ethanol use. E10 would be used without the RFS program, and the volume requirements have little impact on the use of higher ethanol blends such as E15 and E85.

#### **Response:**

In a memorandum to the docket, we acknowledge that E10 would likely continue to be used if the RFS program were eliminated in the future.<sup>93</sup> With regard to higher ethanol blends such as E15 and E85, we acknowledge that growth has been slow and is unlikely to accelerate in the near future, but it is likely that the growth that has occurred has been influenced by the RFS program.

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<sup>93</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

## **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: 0442, 0662, and 1277.

#### **Comment:**

A commenter stated that biodiesel is incompatible with some elements used in home heating oil equipment. The commenter raised similar concerns about the stability of biodiesel, stating that biodiesel should not be stored for longer than six months before use, and therefore should not be used in heating oil applications.

#### **Response:**

Biodiesel is chemically distinct from petroleum based diesel fuel, and thus may not be compatible with some of the materials used in certain home heating oil equipment, especially at high level blends. Similarly, biodiesel and biodiesel blends may have a shorter “shelf life,” than petroleum diesel and may not be appropriate for applications where the fuel may be stored for long periods of time. We note, however, that the industry continues to take actions to address this concern through the use of fuel additives. In any event, the advanced biofuel volume established in this rule does not require heating oil to contain biodiesel. We believe the volumes established in this rule can be supplied, while still allowing for sales of petroleum based heating oil that does not contain biodiesel in situations where biodiesel is not compatible with home heating oil equipment.

#### **Comment:**

A commenter raised concerns over observed corrosion in oil tanks. The commenter suggested that this corrosion could be linked to increased use of biodiesel and suggested that EPA should not require the increased use of biodiesel until this issue was better understood.

#### **Response:**

We are aware of the commenter’s concerns related to corrosion in oil tanks. The exact cause(s) of this corrosion is still a matter of industry study and evaluation, and it would be inappropriate at this point in time to conclude that biodiesel is a primary contributor to this corrosion. Moreover, we have exercised the maximum extent of our discretion to reduce volumes under the cellulosic waiver authority. As we explain in Section 2 of this document, we do not believe that further reductions under our other waiver authorities are warranted.

#### **Comment:**

A commenter stated that all diesel fuel infrastructure is certified to store blends of up to 20% biodiesel, and that infrastructure was not a factor that would limit the use of biodiesel in 2019.

**Response:**

EPA does not expect that infrastructure compatibility with biodiesel blends will limit the use of biodiesel in the U.S. in 2019.

**Comment:**

A commenter stated that there was no “biodiesel blendwall,” and that their association members commonly blend biodiesel at a 10% rate.

**Response:**

EPA is aware that many diesel retailers often sell biodiesel blends at levels above 5% biodiesel. Other retailers, including many large truck stops that sell significant quantities of diesel fuel, often sell fuel blends up to and including 20% biodiesel. While fuel blends containing higher levels of biodiesel may not be appropriate for use in all diesel engines or in cold weather, we do not expect, based on recent market activity, that these concerns will limit the use of biodiesel in the U.S. in 2019.

**Comment:**

A commenter stated that they had made substantial investments in biodiesel infrastructure in response to the RFS program, and that without the RFS requirements it would not be financially viable to continue selling biodiesel.

**Response:**

We recognize that many parties have made significant investments to produce, distribute, and use biofuel blends. We believe that the 2019 RFS volumes finalized in this rule provide the appropriate incentives for the continued production, distribution, and use of biofuel in 2019. We note that both the advanced biofuel volume and the total renewable fuel volume, which are the primary drivers of biodiesel use, are higher for 2019 than in 2018.

## 5.2.2 Vehicles That Can Use It

Commenters that provided comment on this topic include but are not limited to: 0662.

### **Comment:**

A commenter stated that nearly all over the road trucks are warranted to run on biodiesel blends of up to 20%, and that this factor would not constrain the use of biodiesel in 2019. Another commenter stated that over 82% of diesel vehicles produced today are approved for use with B20 biodiesel blends, and that over 90% of the OEMs in the medium and heavy-duty truck market support the use of B20 blends.

### **Response:**

While EPA continues to note that there are a significant number of vehicles for which biodiesel blends above B5 are not recommended (particularly older 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 2019.

### **Comment:**

A commenter stated that the use of renewable diesel has been approved for airline use, and that the approval of renewable diesel (which qualifies as BBD) in the airline industry will increase the demand for these fuels.

### **Response:**

We recognize that the approval of renewable diesel for use in the aviation sector represents a new potential market for this fuel. However, as stated in Section IV of the final rule and Sections 4 and 5 of this document, we do not expect that demand for BBD, particularly renewable diesel, will limit the production and use of BBD in 2019.



### **5.2.3 Cold Temperature Impacts**

Commenters that provided comment on this topic include but are not limited to: 0442.

**Comment:**

A commenter raised concerns that heating oil purchased in the summer could have cloud point issues in the winter months, especially in situations where the heating oil is stored outside.

**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 note, however, that the advanced biofuel volume established in this rule does not require heating oil to contain biodiesel. We believe the volumes established in this rule can be supplied, while still allowing for sales of petroleum based heating oil that does not contain biodiesel in situations where heating oil blended with biodiesel may not be appropriate.

## **5.2.4 Production Capacity**

Commenters that provided comment on this topic include but are not limited to: 0530, 0532, 0711, 1041, 1286.

A number of commenters discussed the production capacity for biodiesel and renewable diesel. These comments were generally focused on the ability of the market to supply sufficient volumes of advanced biodiesel and renewable diesel to satisfy the advanced biofuel volume for 2019. Responses to comments addressing biodiesel and renewable diesel production capacity can be found in Section 4.2.2.2 of this document.

### **5.2.5 Feedstock Availability**

Commenters that provided comment on this topic include but are not limited to: 0531, 0664, and 0711.

A number of commenters discussed the availability of feedstocks that can be used to produce biodiesel and renewable diesel. These comments were generally focused on the availability of feedstocks that could be used to produce advanced biodiesel and renewable diesel to satisfy the advanced biofuel volume for 2019. Responses to comments addressing biodiesel and renewable diesel production capacity can be found in Section 4.2.2.4 of this document.

## **5.2.6 Imports of Conventional Biodiesel and Renewable Diesel**

EPA did not receive any comments on this topic.

### **5.2.7 Consumer Response**

EPA did not receive any comments on this topic.

## 5.2.8 Total Volume Achievable

Commenters that provided comment on this topic include but are not limited to: 0620, 1036, and 1267.

This section includes comments related to the total volume of biodiesel and renewable diesel achievable in 2019. 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 2020, see Section VI of the final rule and Section 6 of this document.

### **Comment:**

Multiple commenters stated that EPA's projection that 3.2 billion gallons of biodiesel and renewable diesel would be used to meet the total renewable fuel volume was unrealistic. One commenter stated that only 1.15 billion gallons of biodiesel and renewable diesel were produced in the first half of 2018. Another commenter noted the current absence of the biodiesel tax credit, which they claimed would make achieving a supply of 3.2 billion gallons of biodiesel and renewable diesel even more difficult and requested that EPA exercise the general waiver authority to reduce the total renewable fuel volume.

### **Response:**

EPA disagrees with commenters that 3.2 billion gallons of biodiesel and renewable diesel (including both advanced and conventional biodiesel and renewable diesel) could not be supplied to the U.S. in 2019. First, we note that the commenters projection of the volume of these fuels is overly pessimistic. Based on data through September 2018 and taking into account the seasonality of the supply of biodiesel and renewable diesel, we currently expect that approximately 2.6 billion gallons of biodiesel and renewable diesel will be supplied in 2018. Further support for this projection is found in a memorandum to the docket.<sup>94</sup> In addition, as discussed in further detail in Section IV of the final rule, we project that a volume of 2.8 billion gallons of advanced biodiesel and renewable diesel is attainable in 2019. We have not, however, calculated the maximum reasonably achievable volume of advanced biodiesel and renewable diesel for 2019, which would be higher than the attainable volume of 2.8 billion gallons. Even if additional volumes of advanced biodiesel and renewable diesel are not available, significant volumes of conventional biodiesel and renewable diesel are produced globally and could be used to supply the total renewable fuel volume for 2019.

Finally, we note that because we have used the cellulosic waiver authority to reduce the advanced biofuel and total renewable fuel volumes by the maximum amount, further reductions to the total renewable fuel volume would require the use of an additional waiver authority. As we explain in Section II of the final rule and Section 2 of this document, we do not believe exercise of our other waiver authorities is warranted.

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<sup>94</sup> "Projecting Advanced Biofuel Production and Imports for 2018 (November 2018)" Memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2018-0167.

**Comment:**

A commenter stated that EPA should reduce the total renewable fuel volume to a level that does not result in the diversion of vegetable oils from existing uses (including use in food markets) which they claim would result in increased production of soybeans or palm oil.

**Response:**

EPA recognizes the potential negative impacts of increasing the production of biodiesel and renewable diesel by diverting feedstocks used to produce these fuels from other markets. This is one of the reasons cited by EPA in reducing the advanced biofuel and total renewable fuel volumes by the maximum amount using the cellulosic waiver authority. Further reductions to the advanced biofuel and/or total renewable fuel volumes would require the use of another waiver authority. As we explain in Section II of the final rule and Section 2 of this document, we do not believe exercise of our other waiver authorities is warranted.

## 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: 0531, 0672, and 1197.

#### **Comment:**

One commenter stated that the total renewable fuel volume requirement for 2019 should be 17.37 billion gallons.

#### **Response:**

A total volume requirement of 17.37 billion gallons is below the lowest volume permitted under the cellulosic waiver authority, which is 19.92 billion gallons in the final rule.<sup>95</sup> As discussed in Section II.A.2 of the final rule and Section 2 of this document, we have made a determination that additional reductions below 19.92 billion gallons are not warranted for 2019. Moreover, this commenter's suggested volume of 17.37 billion gallons is premised on a poolwide concentration of 9.7% ethanol. As described in Section 5.1.2 of this document, we believe that this is inappropriate.

#### **Comment:**

One commenter stated that the total renewable fuel volume requirement should be 19.18 billion gallons, comprised of 4.18 billion gallons of advanced biofuel and 15 billion gallons of conventional renewable fuel. This commenter stated that the 2.8 billion gallons of BBD assumed in support of the 4.88 billion gallon proposal would cause significant market disruption and GHG impacts.

#### **Response:**

We do not believe that the suggested volumes would be appropriate. Not only are they significantly lower than the volume we have determined to be 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 justified under the general waiver authority as described more fully in Section 2 of this document.

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<sup>95</sup> If this commenter's preferred cellulosic biofuel volume requirement of 222 mill gal were used, the lowest permissible volume under the cellulosic waiver authority would be 19.72 bill gal.



**Comment:**

One commenter stated that EPA's analysis of the attainability of 19.88 billion gallons in the proposal was inadequate, and that EPA must take into account the difficulty in consuming increased volumes of ethanol.

**Response:**

The commenter appears to make the assumption that an increase in the volume requirement for total renewable fuel will necessarily require an increase in U.S. ethanol consumption. However, historically this has not been the case; the market has demonstrated a stronger preference for increases in biodiesel and renewable diesel rather than increases in ethanol as the standards have increased over the last several years.

In a memorandum to the docket, we did provide a discussion of the ways in which the market could make available the proposed volume of 19.88 billion gallons of total renewable fuel. An updated version of that memorandum describes how the market could make available the final volume of 19.92 billion gallons of total renewable fuel.<sup>96</sup> These memoranda recognize that consumption is the primary constraint on the amount of ethanol used in the U.S. We also discussed the attainability of advanced biofuel in detail in Section IV of both the proposal and the final rule. In addition, we note that we reduced total and advanced biofuel volumes by the maximum amount allowed under the cellulosic waiver authority. Further reductions to the advanced biofuel or total renewable fuel volumes would require the use of another waiver authority. As we explain in Section II of the final rule and Section 2 of this document, we do not believe exercise of our other waiver authorities is warranted.

**Comment:**

One commenter stated that the proposed volume requirement for total renewable fuel would put refinery jobs at risk.

**Response:**

The commenter provided no analyses to support this comment. As exports of refined petroleum products have been increasing steadily since 2011 at the same time that the RFS volume requirements have increased, there is little evidence to suggest that the RFS program has resulted in a loss of refining industry jobs.<sup>97</sup> See also Section 2.1.2 of this document, where we discuss severe economic harm, including alleged harms associated with the refining industry.

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<sup>96</sup> "Updated market impacts of biofuels in 2019," memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

<sup>97</sup> "Historical exports of petroleum products," available in docket EPA-HQ-OAR-2018-0167.

**Comment:**

One commenter stated that the volume requirement for total renewable fuel should be higher than 19.88 billion gallons to promote energy independence, GHG reductions, and rural economic development.

**Response:**

Under our interpretation of the cellulosic waiver authority, articulated in past annual rules and repeated in Section II.A.1 of the final rule, we believe that advanced biofuel and total renewable fuel should be reduced by the same amount. As a result, a higher volume of total renewable fuel would result only if we allowed some advanced biofuel to backfill for the shortfall in cellulosic biofuel. However, as described in Section IV of the final rule and Section 4 of this document, we do not believe that this would be appropriate. While an advanced biofuel volume higher than 4.92 billion gallons may be attainable, we do not believe that doing so would be appropriate given the higher costs, increased frequency of feedstock and fuel diversions, reduced GHG and energy security benefits, and potential market disruptions that would likely result.

### 5.3.2 Conventional Renewable Fuel / Corn-Ethanol “Mandate”

Commenters that provided comment on this topic include but are not limited to: 0493, 0522, 0539, 0586, 0620, 1033, 1035, 1036, 1041, 1201, and 1267.

#### **Comment:**

Several commenters stated that the implied volume requirement for conventional renewable fuel should be set at a level reflecting a nationwide average gasoline ethanol concentration of 9.7%. Another commenter stated that doing so would protect small retailers. Yet another stated that an implied volume requirement for conventional renewable fuel of less than the proposed 15 billion gallons would address EPA’s acknowledgment of the environmental harm caused by corn ethanol.

#### **Response:**

These comments conflate the implied conventional renewable fuel volume requirement with ethanol. The two are not the same, as described in the next response. As discussed further in a memorandum to the docket,<sup>98</sup> the market has historically made available, and will likely make available in 2019, significant volumes of non-ethanol conventional renewable fuel, primarily but not limited to biodiesel. Moreover, as described in Section 5.1.2 of this document and the memorandum to the docket, the market achieved 10.13% poolwide ethanol concentration in 2017. We believe that E15 and E85 can continue to supplement E10 to reach at least the same level. 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 2019. If more advanced biofuel volumes are used than required by the 2019 standard, then less than 15 billion gallons of conventional biofuel will be needed to meet the total renewable fuel standard.

Retailers are not required to offer higher level ethanol blends such as E15 and E85 but can offer them if they provide an economic advantage. Moreover, the applicable standards do not require the use of ethanol at all, and there is no way to set the standards in such a way as the guarantee that the market will not exceed 9.7% ethanol. Finally, as we further explain in our recent denial of petitions to revise the point of obligation and in Section 2.1.2 of this document, we do not believe that the RFS program causes economic harm to small retailers.<sup>99</sup>

The proposal did not address the environmental impacts of corn ethanol, though they have been addressed in other EPA reports. As discussed further in a memorandum to the docket,<sup>100</sup> and in Section 2.1.3 of this document, we have made a determination that alleged potential environmental impacts were not severe, and thus do not warrant any reductions under the general waiver authority.

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<sup>98</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

<sup>99</sup> “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 17, 2017.

<sup>100</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

**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. As we discuss in Section IV.B.1 of the final rule, 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.

**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, supply of E15 will increase and supply of E0 will decrease, both of which are a problem for boaters.

**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. The market will supply E0 if there is demand for it, and EPA regulations are designed to prevent misfueling of marine engines with E15. See also Section 5.1.6 of this document.

**Comment:**

One commenter supported the proposed 15 billion gallon implied volume requirement for conventional renewable fuel because it provides support for the infrastructure needed for higher ethanol blends.

**Response:**

While the implied volume requirement for conventional renewable fuel does not require the use of ethanol and need not be met exclusively with ethanol, it may provide some incentive to retailers to expand offerings of higher level ethanol blends. For purposes of evaluating the market impacts of the applicable 2019 standards, however, we determined that the market could

make available the total renewable fuel volume required by this action with a poolwide average ethanol concentration equivalent to that in 2017: 10.13%.

**Comment:**

One commenter stated that there is sufficient conventional renewable fuel to reach 15 billion gallons, while several others stated that there is insufficient ethanol to reach 15 billion gallons.

**Response:**

It is inappropriate to base the determination of the appropriate implied volume requirement for conventional renewable fuel on ethanol alone since there are several non-ethanol conventional renewable fuels that qualify as conventional renewable fuel. Thus, while it is unlikely that ethanol use could reach 15 billion gallons in 2019, we have determined that there are sufficient volumes of conventional biodiesel and other conventional renewable fuels available to permit an implied volume requirement for conventional renewable fuel of 15 billion gallons to be reached.

**Comment:**

One commenter stated that EPA had considered the constraints of the E10 blendwall for advanced biofuel but not for conventional renewable fuel.

**Response:**

The constraints associated with efforts to exceed the E10 blendwall apply to total ethanol, not to advanced biofuel or conventional renewable fuel specifically. In a memorandum to the docket, we did discuss the total volume of ethanol that the market could use in response to this action.<sup>101</sup> That discussion included a consideration of different potential consumption levels of E15 and E85. We did not, however, rely on that analysis in deciding to exercise the maximum reductions permitted under the cellulosic waiver authority. Further reductions to the advanced biofuel or total renewable fuel volumes would require the use of another waiver authority. As we explain in Section II of the final rule and Section 2 of this document, we do not believe exercise of our other waiver authorities is warranted.

**Comment:**

One commenter stated that EPA should reduce the implied volume requirement for conventional renewable fuel to 14 billion gallons and increase the advanced biofuel volume requirement to generate more GHG benefits.

**Response:**

While we have the authority to reduce the advanced biofuel volume requirement by less than the reduction in cellulosic biofuel, permitting some advanced biofuel to backfill for the shortfall in

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<sup>101</sup> “Updated market impacts of biofuels in 2019,” memorandum from David Korotney to docket EPA-HQ-OAR-2018-0167.

cellulosic biofuel, we have determined that it would not be appropriate to do so based on a consideration of costs, and the potential for increases in feedstock/fuel switching, associated market disruptions, and reduced GHG and energy security benefits.

Moreover, reducing the implied volume requirement for conventional renewable fuel to 14 billion gallons while simultaneously increasing the advanced biofuel volume requirement above the proposed level of 4.88 billion gallons could not be accomplished under the cellulosic waiver authority. As discussed in Section II.A.1 of the final rule, we continue to believe that the statute is best interpreted to require equal reductions in both advanced biofuel and total renewable fuel under the cellulosic waiver authority. To accomplish what this commenter has suggested would require that we reduce both advanced biofuel volume and total renewable fuel by less than the reduction in cellulosic biofuel, and then reduce total renewable fuel further using the general waiver authority. However, we do not believe that such a reduction could be justified under the general waiver authority, as discussed in Section II.A.2 of the final rule and in Section 2.1 of this document.

**Comment:**

One commenter stated that EPA should limit the required volume of corn ethanol because of its adverse impacts on the environment and food security.

**Response:**

As discussed above, this comment conflates corn-ethanol with the implied volume requirement for conventional renewable fuel. Moreover, while corn-ethanol is currently the predominant form of conventional renewable fuel, further reduction of the 2019 biofuel volumes is unlikely to impact corn ethanol production in U.S., and consequently unlikely to limit any related environmental or food security impacts.<sup>102</sup>

**Comment:**

One commenter stated that corn ethanol produces very little benefit compared to its cost, and that EPA should instead be promoting cellulosic and advanced biofuels. Another commenter stated that EPA should be supporting cleaner advanced biofuels to reverse the environmental damage from ethanol.

**Response:**

The structure of the applicable standards that Congress established does not require that we make tradeoffs between conventional renewable fuel and advanced/cellulosic biofuels. Instead, we can and have considered them separately. For instance, we have set the cellulosic biofuel volume requirement at the level that represents the projected volume available, and the advanced biofuel volume requirements at a level that reflect a consideration of what can be produced and imported, costs, and other factors such as feedstock and fuel diversions. Under our long-standing

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<sup>102</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

interpretation that advanced biofuel and total renewable fuel should be reduced by the same amount under the cellulosic waiver authority, we then considered whether additional reductions in total renewable fuel, which would affect only the implied conventional renewable fuel volume requirement, were warranted under the general waiver authority. As discussed in Section II.A.2 of the final rule, we have determined that the criteria for further reductions have not been met.

### **5.3.3 Other Comments Related to the Determination of Standards**

EPA did not receive any comments on this topic.



## 6. BBD Volume for 2020

### 6.1 General

Commenters that provided comment on this topic include but are not limited to: 0389, 0442, 0530, 0531, 0532, 0535, 0591, 0620, 0660, 0711, 1033, 1039, 1201, 1202, 1267, 1269, 1272, 1277, and 1286.

#### **Comment:**

One commenter suggested that based on the number of small refinery exemptions granted for 2020, and changed gasoline demand, the 2020 BBD volume may be binding.

#### **Response:**

Because all of the standards, including BBD and advanced biofuel, are calculated based on a percentage of an obligated parties' gasoline and diesel production, any effects on the aggregate use of renewable fuel due to small refinery exemptions would result in proportional effects on the use of both advanced biofuel and of BBD. Thus, as long as EPA establishes a 2020 BBD volume that is less than the 2020 advanced biofuel volume, the BBD volume would likely not be binding. We explain this further in Section VI of the final rule.

#### **Comment:**

Some commenters suggested that we should support renewable diesel over biodiesel due to implications for home heating equipment.

#### **Response:**

We recognize some of the advantages of renewable diesel, but also note that the statutory definition of BBD includes both biodiesel and renewable diesel.<sup>103</sup> Accordingly, Congress directed EPA to establish a single standard for BBD, including both biodiesel and renewable diesel. The statute does not contemplate a separate standard for renewable diesel. With regard to the technical issues raised for home heating oil, see our response in Section 5 of this document. In any event, EPA does not mandate the use of renewable diesel or biodiesel in home heating equipment, and this action does not limit the market's ability to use either fuel or other fuels in home heating equipment.

#### **Comment:**

Some commenters supported our proposed volume, which grows the BBD volume by 330 million gallons to 2.43 billion gallons in 2020. Some commenters also suggested EPA could

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<sup>103</sup> The statutory definition of biomass-based diesel refers to a diesel fuel substitute produced from nonpetroleum renewable [resources](#) that meets the registration requirements for fuels and fuel additives established by EPA under section 7545. Both biodiesel and renewable diesel meet this definition.

support further growth in the BBD industry. Some commenters suggested EPA should set the BBD standard higher, including greater than 2.88 billion gallons. Some pointed to the attainable volume of advanced biodiesel and renewable diesel (2.8 billion gallons) as an appropriate volume for the BBD standard. Others suggested EPA should not set the standard higher than 2.1 billion gallons due to cost concerns.

**Response:**

Our discussion of the BBD volume for 2020, including our consideration of volumes both higher and lower than the volume in this final rule can be found in Section VI of the final rule and a memorandum to the docket.<sup>104</sup>

**Comment:**

A commenter suggested that the 2020 BBD standard may become binding if EPA resets the advanced volume to equal to the 2020 BBD volume.

**Response:**

While the 2020 BBD volume could become binding if EPA were to reset the advanced volume to be equivalent to the 2020 BBD volume, this is something we will consider as we evaluate potential volumes in the context of the rulemaking establishing the 2020 advanced biofuel standard. In addition, as we explain in Section VI of the final rule, even though we are not establishing the 2020 advanced biofuel volume requirement as part of this rulemaking, we expect that, as in the past, the 2020 advanced volume requirement will be higher than the 2020 BBD requirement, and, therefore, that the BBD volume requirement for 2020 would not be expected to impact the volume of BBD that is actually produced and imported during the 2020-time period.

**Comment:**

Some commenters suggested we should set the BBD standard to reflect domestically produced biodiesel, for which annual production has not exceeded 1.6 billion gallons. These commenters also suggested that the interaction between the 2020 advanced biofuels volume, which would be determined in the forthcoming reset rulemaking, and the 2020 BBD volume warrants consideration of a lower BBD volume due to the nested nature of the standards.

Other commenters suggested that EPA should set a BBD standard that does not increase over the 2019 BBD standard.

**Response:**

We are aware of the interaction between the 2020 BBD and the reset advanced biofuel volume, and this will be something we consider in the context of the reset rule.

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<sup>104</sup> “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume.” memorandum from EPA Staff to EPA docket EPA-HQ-OAR-2018-0167.

We do not believe that it would be appropriate to set the BBD standard to only reflect domestic production of BBD. The RFS program contemplates the use of imported biofuel and does not discriminate against such imports.<sup>105</sup> Given that imported biofuels can be used to satisfy the renewable fuel standards, it is appropriate for EPA to consider their availability in setting the BBD standard. We have also historically considered the availability of imported biofuels in the exercise of our discretionary waiver authorities. See, e.g., Section IV of the final rule (in exercising the cellulosic waiver authority, considering imports of advanced biodiesel and renewable diesel) and Section 2.1.1 of this document (considering imports in declining to exercise the general waiver authority).

**Comment:**

A commenter suggested that we should reduce the BBD standard due to increased GHG emissions from BBD.

**Response:**

EPA determined in the 2010 RFS2 rule that biodiesel and renewable diesel made from certain qualifying feedstocks meets the statutorily required 50% lifecycle GHG reduction to qualify as BBD. We did not reopen this issue in this proceeding, and thus lifecycle GHG analyses of BBD are beyond the scope of this rule. We did, however, consider the impacts on climate change in setting the BBD standard as described in the docket memorandum “Statutory Factors Assessment for 2020 Biomass-Based Diesel.” While the market is meeting the advanced biofuel standard primarily with advanced biodiesel and renewable diesel, we have set the BBD standard at a lower level to preserve space for other advanced biofuels, which must also meet a 50% GHG reduction threshold and which could have greater GHG benefits than BBD.

**Comment:**

Several commenters stated that EPA cannot set the 2020 BBD volume requirement based on an anticipated approach to setting the 2020 advanced biofuel requirement in the future.

**Response:**

We disagree. As we explain in Section VI of the final rule, we believe it is appropriate to consider the advanced biofuel volume in setting the BBD volume. In addition, since 2016 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.

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<sup>105</sup> See, e.g., CAA section 211(o)(5)(A); 40 CFR 80.1426.

**Comment:**

Several commenters stated that BBD had grown beyond the mandate put in place by Congress and advocated for a reduced BBD standard for 2020. Their arguments for reducing BBD volumes focused on feedstock diversion leading to an increased demand for 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 increased competition for feedstock which could result in exacerbation of social or environmental problems associated with expansion of palm oil production. However, at this time, we do not believe that the 2020 BBD volume requirement of 2.43 billion gallons will lead to such a result. We note that in exercising our broad discretion under the cellulosic waiver authority to establish the advanced biofuel volume requirement for 2019, 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). Specifically, we found that the market can reasonably attain 2.61 billion gallons of advanced biodiesel and renewable diesel in 2019, with minimal feedstock and fuel diversions. For similar reasons, we expect that the market can use at least 2.43 billion gallons of BBD in 2020 with minimal or no diversions.

We do not believe establishing a lower 2020 BBD volume will reduce costs. As we explain in Section VI of the final rule, the use and production of BBD is driven by the advanced biofuel volume, not the BBD volume.

We agree that we should allow for competition and innovation in the advanced biofuel industry for the development of more environmentally beneficial fuels. As we explain in Section VI of the final rule and a memorandum to the docket,<sup>106</sup> we have intentionally preserved a significant space for other advanced biofuels to facilitate this.

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<sup>106</sup> “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume.” memorandum from EPA Staff to EPA docket EPA-HQ-OAR-2018-0167.

## **6.2 Supporting the BBD Industry**

Commenters that provided comment on this topic include but are not limited to: 0530, 0591, 0664, 0711, 1039, 1269, and 1272.

### **Comment:**

Some commenters suggested that the 14-month lead time for setting the BBD standard provides a unique signal to producers and investors and allows the market certainty about the amount of BBD required and time for investments to meet the standard. They suggested this incentive justifies a higher BBD volume. They also suggested that because of the 14-month lead time provided in the statute, the BBD volume should be used to drive BBD use, rather than the advanced standard.

### **Response:**

This comment is responded to in Section VI of the final rule.

### 6.3 Ensuring Opportunities for Other Advanced Biofuels

Commenters that provided comment on this topic include but are not limited to: 0530, 0591, 0711, 1277, and 1286.

#### **Comment:**

A commenter suggested that the goal to ensure opportunities for other advanced biofuels is not required by the statute and is ineffective.

Another commenter suggested that instead of setting a lower BBD standard for 2020 to preserve space for advanced biofuels, EPA could allow for a higher advanced volume when it determines the advanced biofuel volume for 2020 to create space for other advanced biofuels. They suggested that EPA should look at the statutory factors and determine the volume that is warranted under those without consideration of other advanced biofuels.

#### **Response:**

While ensuring opportunities for other advanced biofuel is not required by the statute, we disagree that it is ineffective. The statutory volumes for BBD and advanced biofuel in 2011 and 2012 appear to reflect a desire by Congress to preserve space for advanced biofuels other than BBD. As we explain in Section VI.B of the final rule, since 2011, EPA has consistently preserved space for other advanced biofuels. This has historically allowed for other advanced biofuels to be used to meet the advanced standard. As we explain further in a memorandum to the docket,<sup>107</sup> these other advanced biofuels may have more beneficial impacts when considering some of the factors articulated in CAA section 211(o)(2)(B)(ii), and in the long term, we believe it is appropriate to continue to allow for space for their use. 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 consider the nested nature of the RFS requirements when determining the appropriate volume requirement for BBD. 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 the 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 and 2019 and are raising it again to 2.43 billion gallons for 2020.

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.

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<sup>107</sup> “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume.” memorandum from EPA Staff to EPA docket EPA-HQ-OAR-2018-0167.

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 2020 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 advanced 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 2.43 billion gallons for BBD in 2020 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.

In response to comments that EPA could set a higher advanced volume in 2020 to create space for other advanced biofuels rather than setting a lower BBD standard, we do not believe that this approach would be appropriate. Because other advanced biofuels currently take up a small portion of the market, it is the market signal that we are preserving space for these fuels that allows for their use while also ensuring that we are not setting a standard that cannot be met. If we were to take the commenter's approach, we could potentially end up setting an advanced biofuel volume that could not be met because the other advanced biofuels may not end up being available to meet the standard in 2020. Our approach allows for development of other advanced biofuels, or additional BBD if those fuels do not appear in the market.

Regarding commenters' suggestion that we should set the BBD volume without considering the relationship between BBD and other advanced biofuels, we disagree. The statute directs EPA to review "the implementation of the program" as well as to consider the impacts of "renewable fuels." "[T]he program" refers to the RFS program, and both "the program" and "renewable fuels" generally include advanced biofuels. In establishing the BBD volume, the advanced biofuel volume part of "the program" and "renewable fuels" is both relevant and important. As we explain in this document and in Section VI of the final rule, BBD use and production has historically been driven by the advanced biofuels standard. This is an important market reality. Thus, in reviewing the program and analyzing the statutory factors, as they apply to BBD, we reasonably consider the relationship between BBD and advanced biofuels.

**Comment:**

A commenter suggested that there is not a need to grow the space reserved for other advanced biofuels.

**Response:**

The non-cellulosic advanced biofuel volume increases by 500 million gallons in 2019. In this action setting the 2020 BBD volume, EPA is raising the BBD volume by the entirety of that 500 million increase (330 million gallons of BBD, after applying the 1.5 equivalence ratio). Thus, we are allocating the 500 million-gallon increase in advanced biofuels to BBD, as opposed to creating greater space for other advanced biofuels.

We acknowledge that the 500 million-gallon increase in the non-cellulosic advanced biofuels volume occurs in 2019, not in 2020. Nonetheless, we believe that increasing the 2020 BBD volume by 330 million gallons, equivalent to the 500 million-gallon increase in the 2019 advanced volume, is appropriate for three reasons. First, EPA previously established the 2019 BBD volume in the 2018 final rule at the same volume as in 2018 (2.1 billion gallons). EPA's decision not to increase the 2019 BBD volume in the 2018 final rule, in combination with the 500 million gallons increase in the 2019 advanced biofuel volume in this rule, results in a significant increase in the opportunity for other advanced biofuels in 2019. As discussed in greater detail in Section IV of the final rule, we expect that the supply of other advanced biofuels will still fall short of the space allowed for it in 2019. We believe it therefore is appropriate to increase the BBD volume, as even after the increase in the BBD volume we anticipate there will be sufficient incentives for other advanced biofuels to compete. Specifically, we note that in 2018, our standards preserved an 852 million-gallon space for other advanced biofuels, while we only expect 121 million gallons of such biofuels to be supplied. This space increases by 500 million gallons in 2019 (to a total of 1.35 billion gallons). Given the limited availability of other advanced biofuels, we do not believe this additional 500 million-gallon space is needed to incent the development of other advanced biofuels.

Second, given the 14-month statutory lead time for setting the BBD volume compared to the 1-month statutory lead time for the advanced biofuel volume, the 2020 BBD volume is the earliest available opportunity for us to adjust the BBD volume in light of the 2019 advanced biofuel volume. We believe it is appropriate for us to do so at this first opportunity.<sup>108</sup> Simultaneously raising both the 2019 non-cellulosic advanced biofuels volume and the 2020 BBD volume signals to the market EPA's intent to preserve sufficient space, without undue increases, for other advanced biofuels over time.

Finally, we recognize that the space for other advanced biofuels in 2020 will ultimately depend on the 2020 advanced biofuel volume. While EPA is not establishing the advanced biofuel volume for 2020 in this action, we anticipate that the non-cellulosic advanced biofuel volume for 2020, when established, will be greater than 3.65 billion gallons (equivalent to 2.43 billion gallons of BBD, after applying the 1.5 equivalence ratio). This expectation is consistent with our actions in previous years. Accordingly, we expect that the 2020 advanced biofuel volume, together with the 2020 BBD volume established in this action, will continue to preserve a considerable portion of the advanced biofuel volume that could be satisfied by either additional gallons of BBD or by other unspecified and potentially less costly types of qualifying advanced

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<sup>108</sup> We do not believe that it would be appropriate to reconsider to 2019 BBD volume in this action for many reasons. For example, doing so would generate significant regulatory uncertainty and amount to reconsidering the standard outside of the timeframe provided for by the statute, see CAA section 211(o)(2)(B)(ii).



biofuels. To the extent that the 2020 advanced biofuel volume is less than 3.65 billion gallons or otherwise insufficient to preserve the gap for other advanced biofuels, we will consider these factors in the rulemaking establishing the 2020 advanced biofuel standards.

**Comment:**

Some commenters supported EPA's approach to leaving space for non-BBD advanced biofuels because this encourages the development of other technologies that could produce or increase volumes of other advanced biofuels.

**Response:**

EPA agrees with these commenters; this is one of the reasons we have left space for other advanced biofuels as described in Section VI of the final rule, and in the docket memorandum "Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume."

## **6.4 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: 0672.

#### **Comment:**

We received a comment that suggested that because several of the factors articulated in CAA section 211(o)(2)(B)(ii)(I)–(VI) refer to domestic impacts, EPA should only consider domestic volumes of fuel when setting standards. They suggest that EPA should not consider imports when setting volumes.

#### **Response:**

While some of the statutory factors do include domestic impacts, we do not believe that it would be appropriate to only include domestic volumes when setting the standards. Both imported and domestically-produced BBD qualify for the standard, and we believe it is appropriate to consider both types when setting the standard.

## **6.4.2 Consideration of the Review of the Program to Date**

EPA did not receive any comments on this topic.

### 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: 0528, 0586, 1029, 1033, 1036, and 1202.

#### **Comment:**

Several commenters asked the agency to use the severe environmental harm prong of the general waiver authority to address environmental impacts associated with biofuels.

#### **Response:**

For a discussion of severe environmental harm under the general waiver authority please see the docket memorandum entitled “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority.”

#### **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, air quality, and water supply. For example, several commenters associate agricultural run-off from corn production and the resulting harmful algal blooms in the Gulf of Mexico with the RFS program. Several commenters expressed concerns about habitat loss and degradation due to the extensification and intensification of biofuel crop production, especially in the Prairie Pothole region. Many of these commenters also raised concerns regarding deforestation in countries such as Argentina and Indonesia, from any potential increases in demand for palm and soy oils. Some commenters also raised concerns about the air quality impacts associated with biofuels.

#### **Response:**

Analyses completed in 2011 and updated in 2018 suggest that some of the environmental impacts from increased corn and soy production is associated with biofuels.<sup>109,110,111</sup> As described in the 2018 Second Triennial Report to Congress, there is more evidence of negative environmental impacts associated with land use change and biofuel production than there was suggested in 2011.<sup>112</sup> However, the magnitude of the effect from biofuels is still unknown and

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<sup>109</sup> U.S. EPA. December 2011. Biofuels and the Environment: First Triennial Report to Congress. EPA/600/R-10/183F.

<sup>110</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>111</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

<sup>112</sup> Since 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

has not been quantified to date. Furthermore, the more recent scientific literature cited in the 2018 Second Triennial Report to Congress continues to support the conclusion from the 2011 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. 113-114

We further note that, as discussed in the docket memo entitled “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under the General Waiver Authority for 2019 Final Rule,” we determined that the 2019 RFS standards are not expected to increase the cultivation of corn or oilseed crops in the U.S., because the production of these feedstocks will be driven by other factors in 2019. In addition, the 2019 RFS standards do not require, authorize, fund or carry out the production of any specific biofuel or crop. For further details, please see the above referenced docket memo.

While some commenters believe 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 requires deciphering many layers of causation that when considered together make attribution to the RFS program difficult.<sup>115</sup> As described in detail in the 2018 Second Triennial Report to Congress, connections between biofuel production and environmental impacts is an active area of research for many environmental endpoints such as GHGs, water quality, and land use change. While no definitive conclusions have been made regarding RFS-caused environmental impacts,<sup>116</sup> 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:**

Several commenters stated that the use of biofuels, notably ethanol, has air quality benefits including reductions in PM, CO, benzene, and unburned hydrocarbons when compared to petroleum.

**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

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([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 Conservation Reserve Program (CRP) ([Morefield et al. 2016](#)), and for corn/soybean farms ([Wallander et al. 2011](#)).

<sup>113</sup> U.S. EPA. December 2011. Biofuels and the Environment: First Triennial Report to Congress. EPA/600/R-10/183F.

<sup>114</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

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.<sup>117</sup>

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>118</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 NO<sub>x</sub> is slightly detrimental.<sup>119</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>120</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.

More recently, the 2018 Second Triennial Report to Congress found that emissions of NO<sub>x</sub>, SO<sub>x</sub>, CO, VOCs, ammonia (NH<sub>3</sub>), and particulate matter can be impacted at each stage of biofuel production, distribution, and usage. These impacts depend on feedstock type, land use change, and feedstock production practices. Ethanol from corn grain has higher emissions across the life-cycle than ethanol from other feedstocks, and ethanol facilities relying on coal have higher air pollutant emissions than facilities relying on natural gas and other energy sources, although coal-fired plants account for a small fraction of overall production. Only limited data exist on the impacts of biofuels on the tailpipe and evaporative emissions of Tier 3 light-duty vehicles and light-duty vehicles using advanced gasoline engine technologies to meet GHG emissions standards. Comprehensive studies of the impacts of biofuels on the emissions from advanced light-duty vehicle technologies, similar in scope to previous studies of such impacts on Tier 2 vehicles, would improve understanding.<sup>121</sup> Heavy-duty diesels without catalysts were found to have lower PM emissions and slightly higher NO<sub>x</sub> emissions with a B5 (5%) biodiesel/diesel blend. However, at this time there are insufficient data to determine an effect on catalyst-equipped diesel engines. The magnitude, timing, and location of emissions changes can have complex effects on the atmospheric concentrations of criteria pollutants (e.g., ozone (O<sub>3</sub>) and PM<sub>2.5</sub>) and air toxics, the deposition of these compounds, and subsequent impacts on human and ecosystem health. We further discuss air quality impacts in a memorandum to the docket.<sup>122</sup>

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<sup>117</sup> See 75 FR 14803-08 (March 26, 2010) and Chapter 3.4 of the RFS2 RIA (EPA-420-R-10-006).

<sup>118</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-7 and 3.2-8.

<sup>119</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-9.

<sup>120</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-2 and 3.2-3.

<sup>121</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

<sup>122</sup> "Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume." memorandum from EPA Staff to EPA docket EPA-HQ-OAR-2018-0167.

## 6.4.4 Energy Security Impacts

Commenters that provided comment on this topic include but are not limited to: 0619, 0620, 0672, and 1277.

### **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 2020 BBD RVO reduces U.S. oil imports and contributes to U.S. energy independence and security. One commenter suggested that fuel diversity will be critical for the U.S.'s transportation sector and argued that the U.S. needs to promote "drop in" renewable fuels to replace diesel fuel, which is used mainly in the heavy-duty vehicle sector of the U.S. economy. Two commenters pointed out that the RFS requirements are being met with significant renewable fuel imports as a share of net total renewable fuel supplies available. They suggested that U.S. biodiesel and renewable diesel imports available for meeting the RFS requirements increased from 44 million gallons in 2011 to 655 million gallons in 2017, with imports of biodiesel from Argentina and Indonesia accounting for a majority of the imports. According to the commenters, the increase in imports of biodiesel is undermining the RFS's statutory goals of energy security and energy independence.

### **Response:**

Assuming that the current tariffs in place on biodiesel from Argentina and Indonesia are unchanged, EPA does not project any imported biodiesel from Argentina and Indonesia in the near term (i.e., 2019 or 2020) (see Section IV of the final rule for our projection of advanced biodiesel and renewable diesel that could be supplied to the U.S. in 2019). However, we note that imports of biodiesel and renewable diesel from other countries not impacted by the tariffs (such as Canada and countries in the European Union) have increased in recent years.

The wider use of renewable fuels such as BBD, as well as other advanced biofuels, both domestically produced and imported, improves the U.S.'s energy security position. The possibility of foreign oil supply disruptions represents an energy security issue for the U.S. and could result in increased fuel costs for consumers. Such disruptions may largely stem from potential actions that restrict the supply of oil by significant key market participants, such as OPEC, or from wars or other sudden geo-political 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. Since potential biofuel supply disruptions are likely to be uncorrelated with oil supply shocks, increases in biofuels to meet the RFS, both domestically produced and imported, will provide energy security benefits. While imports of biodiesel reduce the U.S.'s energy independence by marginally increasing the U.S.'s reliance on foreign sources of energy, this needs to be balanced with the energy security benefits and other statutory factors set forth in CAA section 211(o)(2)(B)(ii)(I)-(VI) in determining the 2020 BBD volume

requirement. For more discussion on this topic see Section 7.1.2 of this document and a memorandum to the docket.<sup>123</sup>

We believe our final 2020 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.

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<sup>123</sup> “Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume.” memorandum from EPA Staff to EPA docket EPA-HQ-OAR-2018-0167.



## 6.4.5 Expected Rate of Production of Biofuels

Commenters that provided comment on this topic include but are not limited to: 0591, 0620, 0660, 0672, 0711, 1041, and 1277.

### **Comment:**

Multiple commenters stated that production capacity was unlikely to limit the production of biodiesel and renewable diesel. One commenter cited the domestic production capacity reported by EPA (4.1 billion gallons) to support their comments. Others pointed to BBD capacity as high as 3 billion gallons within the U.S.

### **Response:**

EPA does not expect that production capacity will limit the production of biodiesel and renewable diesel in 2019 or 2020.<sup>124</sup>

### **Comment:**

A commenter stated that tariffs on biodiesel imported from Argentina and Indonesia will result in far fewer imports of biodiesel from these countries.

### **Response:**

EPA does not project any imported biodiesel from Argentina and Indonesia in 2019 or 2020 (see Section IV of the final rule for our projection of advanced biodiesel and renewable diesel that could be supplied to the US in 2019). However, we note that imports of biodiesel and renewable diesel from other countries not impacted by the tariffs (such as Canada and countries in the European Union) have increased in recent years.

### **Comment:**

A commenter stated that the current absence of the biodiesel tax credit would likely result in decreased production of biodiesel and renewable diesel.

### **Response:**

As discussed in Section IV of the final rule, production of biodiesel and renewable diesel has generally increased since 2011 despite the biodiesel tax credit only being available retroactively in several of these years. While increases in production have been larger in years where the tax credit is available prospectively, this is not a necessary condition for increasing production of biodiesel and renewable diesel. For example, domestic production of advanced biodiesel and renewable diesel is expected to increase by 320 million gallons from 2017 to 2018 despite the

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<sup>124</sup> See Section IV of the final rule and “Biodiesel and Renewable Diesel Registered Capacity (May 2018)” Memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2018-0167 for EPA’s estimate of biodiesel and renewable production capacity.

absence of the tax credit in 2018. We projected that the incentives provided by the RFS program will be sufficient to incentivize the volumes of BBD projected in this rule for 2019 and 2020.

**Comment:**

Multiple commenters cited the high production of BBD in the fourth quarter of 2017 as evidence that higher production of BBD is possible in 2019 and 2020. Some commenters claimed that the production achieved in this quarter (670 million gallons) was evidence that production could reach at least 2.7 billion gallons annually, while one commenter claimed even higher volumes were possible.

**Response:**

We do not believe it is appropriate to assume that the highest production rate achieved over three months of the year can be sustained for a full year. For example, if production of BBD in a quarter were increased by drawing down feedstock supplies or storing excess production that could not be distributed or used during that time period it is unlikely that this higher production rate could be sustained over the long term. We recognize the potential for increased production of BBD in 2018 and 2019 and have projected that production of BBD will continue to grow in these years. We do not, however, think that it is appropriate to project production in 2019 or 2020 by simply multiplying the volume produced in a recent quarter by four. As we explain in Section IV of the final rule, the production and availability of BBD depends on many complex regulatory and market factors.

**Comment:**

Multiple commenters stated that EPA should only consider domestically produced BBD in setting the BBD volume for 2020. One commenter further stated that the 2020 BBD volume was unreasonably high, and it would require a nearly 30% increase from domestic BBD production in 2017 (1.88 billion gallons).

**Response:**

As discussed in Section 6.4.1 of this document, we do not believe that the statutory factors constrain EPA to considering only domestically produced BBD when establishing the BBD volume. However, even were we to only consider domestically produced BBD, we also disagree with the commenter that 2.43 billion gallons of BBD in 2020 is unreasonably high. Based on data through September 2018, we currently project that domestic BBD production will be approximately 2.15 billion gallons in 2018, approximately 320 billion gallons higher than in 2017. If this growth rate continues through 2019 and 2020, domestic BBD production in 2018 would exceed the 2.43 billion gallon volume established in this rule for 2020.

**Comment:**

A commenter stated that some volume of BBD may be used in marine fuel, especially with the January 1, 2020 compliance date for the 0.5% sulfur IMO standard. Any RINs generated for BBD used as marine fuel would not be available for compliance with the RFS obligations.

**Response:**

As the commenter notes, as directed in EISA, fuel used as marine fuel does not qualify in the RFS program. Because of the financial incentive provided by RINs, we do not think that significant volumes of BBD will be used in marine fuel in 2020 (since in doing so parties would forgo any RIN incentives). We therefore do not expect that the IMO standard will have an appreciable impact on the availability of BBD in the transportation fuel market.

**Comment:**

A commenter stated that they supported EPA's proposed BBD volume for 2020.

**Response:**

EPA is finalizing the proposed 2020 volume for BBD in this rule, based on a review of the implementation of the RFS program to date, an analysis of the statutory factors specified in CAA section 211(o)(2)(B)(ii)(I)–(VI), and a review of the comments on the proposal.

#### **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: 0591 and 1277.

##### **Comment:**

One commenter stated that other countries are currently using biodiesel blends in rates up to 10%, and implied that higher volumes would not negatively impact infrastructure in the U.S.

##### **Response:**

We are aware that biodiesel blends up to and exceeding 10% are regularly used in other countries as well as in some parts of the U.S. While higher level biodiesel blends may not be appropriate for use in all engines and in cold weather, we do not expect that biodiesel and renewable diesel that meets the relevant fuel quality specifications will negatively impact the fuel delivery infrastructure in the U.S., nor do we expect that the use of biodiesel and renewable diesel will be limited due to constraints on the fuel delivery infrastructure in 2020.

##### **Comment:**

A commenter stated that the BBD volume for 2020 should protect investments of parties who have invested in infrastructure to distribute and use biodiesel, as well as incentivizing additional investment in infrastructure needed to expand the use of BBD.

##### **Response:**

We believe that the BBD volume we are finalizing in this rule for 2020 (2.43 billion gallons), along with the advanced biofuel volume we are finalizing for 2019 (4.92 billion gallons) provide the appropriate incentives for both the existing infrastructure and future infrastructure investment. We note that these volumes are both substantially higher than the volumes established in the 2018 final rule (2.10 billion gallons of BBD in 2019 and 4.29 billion gallons of advanced biofuel in 2018).

## 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: 0620, 0662, and 1197.

### **Comment:**

Multiple commenters stated that BBD is generally more expensive than petroleum-based diesel fuel. Several commenters stated that EPA should lower the BBD volume for 2020 to reduce these costs. Another commenter stated that because BBD was more expensive than petroleum diesel a high BBD volume requirement was necessary to ensure the use of BBD.

### **Response:**

While we do not anticipate that the 2020 BBD volume will directly impact the volume of BBD used in the U.S. in 2020 (since the volume of this fuel will be driven by the advanced biofuel standard), 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 2019 and 2020. 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 2020 BBD standard in this final rule is appropriate in light of the statutory direction in EISA.

In Section V of the final rule, we provide an illustrative cost estimate for soybean oil biodiesel. We estimate the difference in the price of biodiesel and petroleum-based diesel fuel on an energy-equivalent basis. 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 cost 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 2020, they are informative for 2020.

### **Comment:**

One commenter 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.

### **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 due to

subsidies at the time for an individual that purchases the fuel. Instead, the relevant costs of producing, distributing, and blending are the costs that we consider.

#### **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: 0389, 0514, 0522, 0619, 0621, 0664, 0711, and 1202.

##### **Comment:**

Numerous commenters suggested that increasing the 2020 BBD RFS volumes would provide employment opportunities and increase income in rural areas. For example, one commenter pointed out that the BBD industry supports 64,000 U.S. jobs throughout its supply chain, and for every additional 500 million gallons of domestic production, the industry would provide an additional 13,000 jobs. Another commenter suggested that increased demand for biodiesel, increases the use of methanol used to produce biodiesel. This commenter suggested that increases in methanol production results in more employment in this industry. Another commenter suggested that increased use of soybean oil to make BBD benefits livestock production by improving the margins for soybean processing and lowering the cost of soy meal used for livestock feed. The commenter cited a 2015 analysis by Informa Economics that showed biodiesel resulted in lower feed costs for U.S. livestock producers that ranged from \$21 to \$42 per ton, totaling \$5.9 to \$11.8 billion in total value.<sup>125</sup> One commenter suggested that the increase in distillers' corn oil production to meet the BBD standard from defatting DDGS has reduced the benefits of DDGS in broiler feed. According to this commenter, prior to the RFS, up to 90% of broiler production in the U.S. used some DDGS at an inclusion rate of up to 8%. Last year, only about 60% of broiler production included some DDGS in the rations with average inclusion rates at 5% lower.

##### **Response:**

As we explain above in this section and in Section VI of the final rule, the BBD standard is nested within the advanced biofuel standard, and the use and production of BBD is driven by the advanced biofuel volume, not the BBD volume. Consequently, changes to the BBD standard itself will not impact rural employment, or livestock economics.

Furthermore, as discussed in in a memorandum to the docket, soy is grown primarily for high protein animal feed, independent of biodiesel demand.<sup>126</sup> Nevertheless, EPA recognizes that greater use of biodiesel may have economic impacts that benefit specific sectors of the U.S. agricultural sector and have adverse effects on other portions of the U.S. agricultural sectors (e.g., the poultry industry). Given the many market factors influencing the poultry industry (i.e., broiler production), discerning the impacts attributable to the near term RFS annual volumes on broiler production can be challenging. However, we do not believe that these potential impacts warrant a higher or lower BBD standard. For example, greater use of biodiesel may result in more employment in the biodiesel industry but at the expense of employment in industries that

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<sup>125</sup> Informa Economics; Impact of the U.S. Biodiesel Industry on the U.S. Soybean Complex and Livestock Sector; March 2015.

<sup>126</sup> "Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority," memorandum to docket EPA-HQ-OAR-2018-0167.

produce other (i.e., non-BBD) advanced biofuels. We believe our final 2020 BBD volume requirement continues to provide support for continued rural economic development, employment and incomes while striking the appropriate balance between providing a market environment where the development of other advanced biofuels is incentivized and 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. For more discussion on this topic see Sections 7.1.5, 7.1.6, and 7.1.7 of this document.

**Comment:**

A commenter stated that increasing the BBD volume for 2020 to 2.8 billion gallons would have little to no impact on feedstock prices. The commenter cited the results of the WAEES model to support their claims.

**Response:**

Because we anticipate that 2.8 billion gallons of advanced biodiesel and renewable diesel will be used to meet the advanced biofuel volume in 2019, it is unlikely that increasing the BBD volume for 2020 to 2.8 billion gallons would have an appreciable impact on BBD availability or the feedstocks used to produce these fuels. However, as discussed in Section VI of the final rule, increasing the BBD volume for 2020 would reduce the opportunity for other advanced biofuels to compete for market share within the advanced biofuel category, and would likely negatively impact investment in the development of these fuels.



## 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: 0531, 0594, 0711, 1037, 1278, and 1286.

#### **Comment:**

Two commenters asserted that EPA should account for the cost savings of adding BBD to the U.S. fuel supply. One commenter submitted a study by WAAES that provided estimates that increased worldwide volumes of biodiesel, and U.S. total biodiesel volumes, have resulted in decreases in the world price of diesel fuel in the short to medium term by roughly 9.3% and 1.8%, respectively. WAAES assumes that wholesale price changes in diesel prices from increased volumes of biodiesel are passed through to retail diesel prices. The commenter also cited estimates in EPA's RFS2 RIA that predicted that "[t]he addition of biodiesel, renewable and cellulosic diesel fuel is estimated to reduce the cost of diesel fuel by \$8.5 billion in the year 2022 or save 12.0 cents per gallon."<sup>127</sup>

#### **Response:**

The commenter raises the issue of how diesel prices will be altered by a change in biodiesel use (i.e., the cross-price elasticity of demand for diesel fuel from an increase in biodiesel use). There is only limited research estimating this cross-price elasticity. For example, one of the papers that WAAES cites, by Dahl, states: "Technical changes along with numerous country policies have encouraged fuel switching, most often away from gasoline toward diesel fuel, but sometimes towards natural gas or biodiesel. These policies substantially changed demand patterns. I was not able to find consistent evidence of cross-price elasticities to measure the effect of these policies."<sup>128</sup> The other paper that the commenter cites, by Edelenbosch et al., uses estimates from integrated assessment models to derive estimates of diesel price changes from greater biodiesel use.<sup>129</sup> The assumed price elasticities in integrated assessment models can vary widely in terms of the quality of their empirical estimates and the degree to which the empirical estimates have been peer reviewed. As a result, the conclusions of the WAAES study are somewhat speculative.

Further, EPA believes that the potential increased volume of BBD as a result of the 2019 annual RFS is too modest in relationship to the diesel fuel market to result in a discernible impact on U.S. diesel prices. The commenter is looking at much larger changes in BBD when finding a significant impact of BBD on diesel prices. For example, the commenter referenced a 9.3%

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<sup>127</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. 821.

<sup>128</sup> Dahl, C. (2012). "Measuring global gasoline and diesel price and income elasticities." *Energy Policy*, 41 2-23.

<sup>129</sup> Edelenbosch, O., Vuurne, D., Bertram, C., Carrar, S., Emmeling, J., Daly, H., Kitous, A., McCollum, D. and Failali, S. "Transportation fuel demand responses to fuel prices and income projections: Comparison of Integrated Assessment Models." *Transportation Research Part D*. 55, 310-327.

decrease in the global price of diesel as a result of increased total production of biodiesel worldwide. This 9.3% decrease in world diesel prices is based upon a change of 9.6 billion gallons of total global production of BBD, 2.2% of global diesel supply in 2017 (adjusted on an energy equivalent basis). The 1.8% decrease in the price of diesel fuel that the commenter referenced is a result of a change in total U.S. biodiesel production of 2.9 billion gallons, roughly 0.7% of 2017 global diesel supply. Similarly, the RFS2 RIA examined a RFS fuel scenario where BBD increased by roughly 6.6 billion gallons.

By way of comparison, EPA's illustrative cost analysis of the RFS 2019 advanced standard is based on an increase in BBD of roughly 321 million gallons (in diesel energy-equivalent gallons). This increase in biodiesel is only 0.07% of 2017 world diesel production. When changes in BBD production are relatively modest in comparison to diesel supply worldwide, as they are with the 2019 RFS advanced standards, EPA does not believe that there would be a discernible impact on U.S. diesel prices. Also, the assumption that wholesale changes in diesel prices will be completely passed through to retail diesel prices is not well supported.

**Comment:**

One commenter stated that EPA improperly uses processing costs that represent a variety of different biodiesel feedstocks, rather than one specifically for soybean oil in its illustrative costs calculations for representing the cost of biodiesel production. The commenter asserted that feedstocks other than soybean oil tend to have higher processing costs. As a result, the commenter contended that EPA's estimate of processing costs to produce BBD are overstated.

**Response:**

EPA provides a range of costs of producing BBD from soy oil in its illustrative cost estimates. The latest available data from EIA's Monthly Biodiesel Production Report summarizes the feedstock inputs to biodiesel production that were used in July 2018. Approximately 58% of the mass of feedstocks used to make BBD during that month was from soybean oil in the U.S.<sup>130</sup> We continue to believe that the most significant marginal supply of biodiesel to meet the 2019 RFS advanced standard will be from soybean oil feedstock, as the remaining growth potential in the supply of other existing feedstocks is somewhat limited. Thus, we believe that using soy oil feedstock as a representative feedstock provides reasonable estimates of the cost of producing BBD.

EPA provides a range of cost estimates that is intended to be a reasonable bracket of the costs of producing BBD. To calculate this range, we considered two cost estimates. For the first cost estimate, we use per-gallon cost estimates from the University of Missouri, Food and Agricultural Policy Research Institute (FAPRI-Missouri) March 2018 U.S. Baseline Briefing Book.<sup>131</sup> They estimate variable BBD production costs (i.e., processing costs) of \$0.53 per-gallon, net of the co-product (e.g., glycerin) value for 2019. FAPRI-Missouri also includes average net operating returns to pay back the capital used to produce biodiesel of \$0.42 per-

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<sup>130</sup> "Monthly Biodiesel Production Report." September 28, 2018. U.S. EIA  
<https://www.eia.gov/biofuels/biodiesel/production/table3.pdf>

<sup>131</sup> <https://www.fapri.missouri.edu/wp-content/uploads/2018/03/2018-Baseline-Outlook-1.pdf>

gallon in 2019. For the second cost estimate, we use a forecast of average biodiesel variable cost projections of \$0.50/gallon previously obtained from the NBB.<sup>132</sup> In this second case, we assumed that there are no capital costs associated with the biodiesel plant (i.e., average net operating returns are zero). This would be a reasonable assumption if the biodiesel plant is an older plant and the capital costs have already been amortized. The two estimates of combined processing costs and capital costs for BBD have a range of \$0.45/gallon (\$0.95/gallon for FAPRI-Missouri and \$0.50/gallon for NBB). EPA believes that the range of combined processing cost and net operating returns likely captures the lower estimate of processing cost estimates from excluding other feedstocks that the commenter expressed concerns about. The commenter did not provide EPA with new processing cost information and based upon the record before us, we believe that we our cost estimates are reasonable.

In any event, even were EPA to adopt the approaches to cost recommended by these commenters, it would make no difference to the outcome of this action. In exercising our cellulosic waiver authority, EPA considered a number of factors including the high costs of advanced biofuels. Even under the approaches suggested by commenters, the cost of BBD would remain significantly higher than the cost of diesel, continuing to warrant the same outcome under the cellulosic waiver authority.

**Comment:**

One commenter pointed out that EPA only estimates the costs of producing BBD considering soybean oil as its feedstock. The commenter asserted that BBD will be produced from a variety of different feedstocks (e.g., canola oil, corn oil from DDGS, yellow grease) that taken together account for a greater share of the feedstock market for BBD than soybean oil. The commenter asserted that many of the feedstocks other than soybean oil have lower costs than soybean oil. By only considering soybean oil as a feedstock, the commenter suggested that EPA overstated feedstock costs to make BBD.

**Response:**

EPA only provided illustrative costs of producing BBD considering soybean oil as its feedstock. EPA recognizes that a variety of feedstocks are currently used to make BBD and could also be used to provide extra BBD to meet the 2019 RFS advanced standards. The latest available data from EIA's Monthly Biodiesel Production Report summarizes the feedstock inputs to biodiesel production that were used in July 2018. Approximately 58% of the mass of feedstocks used during that month was from soybean oil in the U.S.<sup>133</sup> However, we continue to believe that the most significant marginal supply of biodiesel to meet the 2019 RFS advanced standard will be from soybean oil feedstock, as the remaining growth potential in the supply of other existing feedstocks is limited.

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<sup>132</sup> Presentation to EPA: Analysis of Cost of Carbon Reduction January 27, 2014. NBB did not provide data on processing costs that was specific to soybean oil-based biodiesel.

<sup>133</sup> "Monthly Biodiesel Production Report." September 28, 2018. U.S. EIA <https://www.eia.gov/biofuels/biodiesel/production/table3.pdf>

**Comment:**

Several commenters stated that while EPA provides illustrative cost estimates for the 2019 RFS rule, it does not account for the benefits (e.g., energy security (i.e., the ability of renewable fuels to protect consumers from oil price swings, avoided military costs from protecting access to foreign oil supplies), air quality impacts, GHG impacts etc.) in its rulemaking. Other commenters stated that EPA does not undertake a complete cost analysis for the 2019 RFS rule, since EPA does not account for factors such as infrastructure costs and investment impacts. Another commenter stated that EPA's illustrative cost estimates do not account for all of the costs of using biofuels. Some of the costs that the commenter lists are damages to small engines, increases in GHG emissions, impacts on sensitive lands, such as grasslands which are converted to corn and soybean fields. Another commenter suggested that subsidies, mandates and fuel infrastructure grants have been used to help the biofuels industry. This commenter suggested that consumers have spent an average of \$5.4 billion a year on the RFS BBD mandate.

**Response:**

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. In this action, EPA provided only an illustrative cost analysis for the rule and did not try to estimate benefits. As further explained in a memorandum to the docket,<sup>134</sup> EPA continues to believe that long-term costs and benefits of the RFS program are not well suited to being analyzed on a piecemeal annual basis. EPA has not undertaken an analysis of the total costs of the RFS BBD standards. EPA has considered the cost of using biodiesel to meet the increased advanced biofuel volume for 2019 in our illustrative cost calculations. However, EPA does not separately include the cost of meeting the BBD volumes established in our annual rule (in this rule, the BBD volume for 2020) for two reasons. The first reason is that the rule only establishes a required volume for 2020, it does not set percentage standards that apply to obligated parties. The second reason is that the BBD standards are not binding. For example, in the 2018 final rule we established the BBD volume for 2019 at 2.1 billion gallons. But in this rule, we project that the market will supply approximately 2.8 billion gallons of BBD to meet the advanced biofuel volume for 2019. Thus, there is no cost to meeting the BBD volume requirement for 2019 (and we anticipate there will similarly be no cost to meeting the BBD volume for 2020).

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<sup>134</sup> "Cost Impacts of the Final 2019 Annual Renewable Fuel Standards," Memorandum from Michael Shelby, Dallas Burkholder, and Aaron Sobel available in docket EPA-HQ-OAR-2018-0167.

## 7.1.2 Energy Security

Commenters that provided comment on this topic include but are not limited to: 1037, 1286, and 1292.

### **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 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. Refinery capacity utilization remains at high levels. 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. Commenters also suggested that renewable fuels provide a hedging function and diversify fuel supplies in U.S. motor fuel markets, helping to moderate motor fuel prices while shielding U.S. consumers from potential world oil price spikes. Further, commenters suggested that potential foreign oil supply disruptions are a major energy security issue that could raise the cost of fuels to U.S. consumers, and that these disruptions might stem from possible actions that restrict the supply of oil by significant key market participants such as OPEC, from wars, or other sudden geopolitical events.

### **Response:**

The production of renewable fuels supports one of the goals of the RFS program by improving the U.S.'s energy independence and security through diversification of U.S. transportation fuels and displacement of imported petroleum. Renewable fuels that displace petroleum are less likely to be subject to periodic supply disruptions (i.e., significant crop yield changes principally due to weather related events) than petroleum. Also, supply disruptions in renewable fuels from weather events are not likely to be correlated with oil supply disruptions, which are usually triggered by geopolitical events. Additional details on the energy security benefits associated with the full implementation of the RFS program are included in the March 2010 final RFS2 rulemaking.<sup>135</sup> For more discussion on the energy security impacts of renewable fuels, see Section 6.4.4 of this document.

### **Comment:**

One commenter suggested EPA include an assessment of avoided military costs when undertaking an analysis of the energy security benefits of renewable fuels. The commenter suggested that EPA should include the cost to the American taxpayer of maintaining military support for petroleum supply channels. The commenter cites cost estimates ranging from \$166.3 billion to \$304.9 billion.<sup>136,137</sup> The commenter also cited EIA petroleum import data for 2017

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<sup>135</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006.

<sup>136</sup> Dancs, A., Dollars & Sense. 2010. "The True Cost of Oil".

<http://www.dollarsandsense.org/archives/2010/0510dancs.html>

<sup>137</sup> IAGS. October 2003. "NDCF report: the hidden cost of imported oil." <http://www.iags.org/n1030034.htm>

which shows that the U.S. imported 1.74 million barrels per day of crude oil from Persian Gulf countries.<sup>138</sup> Accordingly, the commenter stated that for every \$100 billion dollars that the U.S. spends on protecting Persian Gulf oil supplies, \$3.75 is added to the cost of a gallon of diesel fuel.

**Response:**

As explained in Section 7.1.1 of this document, we have not estimated the energy security benefits of this action. In addition, we note that assessing the military component of the energy security cost of using imported petroleum fuels has two major challenges: attribution and incremental analysis. The attribution challenge is to determine which military programs and expenditures can properly be attributed to oil supply protection, rather than some other geopolitical or economic objective. The incremental analysis challenge is to estimate how much the petroleum supply protection costs might vary if U.S. oil use were to be reduced or eliminated. Since military forces are multi-purpose and fungible to a great extent across theaters and missions, and because the U.S.'s military budget is presented along regional accounts rather than by mission, the allocation of military costs to particular missions is not clear.

**Comment:**

One commenter suggested that increased use of corn ethanol will increase fossil fuel use, since fossil fuels are required to make ethanol. Increase fossil fuel use, the commenter suggests, reduce the U.S.'s energy security.

**Response:**

While many corn ethanol plants use fossil fuels as an energy source, the ethanol produced reduces the need for fossil fuels in transportation fuel in the U.S. In the RFS2 final rule, EPA's lifecycle analysis found that, depending on the technologies and energy source used, corn ethanol could achieve a 20% reduction in lifecycle GHG emissions.<sup>139</sup> This evaluation considered fossil fuels used to produce ethanol.

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<sup>138</sup> EIA. 2018. "How much petroleum does the United States import and export?" <https://www.eia.gov/tools/faqs/faq.php?id=727&t=6>

<sup>139</sup> See 75 FR 14670 (March 26, 2010).

### 7.1.3 Impacts of Standards on RIN Prices

Commenters that provided comment on this topic include but are not limited to: 1037 and 1197.

#### **Comment:**

A commenter stated that the RFS program is designed to allow higher RIN prices to provide the incentives for increased biofuel production and use.

#### **Response:**

The RFS program established a market-based system wherein the value of RINs generated for qualifying renewable fuels helps to provide the necessary incentives to increase the production and use of these fuels. In some cases, such as ethanol blended as E10, no financial incentives are necessary (the relatively low cost of ethanol when compared to gasoline and the octane value of the ethanol already provide sufficient incentive) for renewable fuels to be produced and used. In other cases, such as biodiesel, the financial incentives provided by the RIN value can make biodiesel production and use economical, despite the relative high cost of production of these fuels. We note, however, that the RIN value is not unlimited in its ability to increase the production and use of renewable fuels. This is especially true in cases where commercial scale production of renewable fuels is not yet technically viable (as for many liquid cellulosic biofuels) or where retail markets for renewable fuel blends are not competitive (as for E85 and other higher level ethanol blends).<sup>140</sup>

#### **Comment:**

A commenter stated that if EPA does not lower the total renewable fuel volume (and the implied volume for conventional renewable fuels) the price for D6 RINs will rise to the price of D4 RINs, resulting in excessive costs for refiners.

#### **Response:**

In previous years we have observed time periods when the price of D6 RINs was approximately equal to the price of D4 RINs. This is generally the case when the cost of the marginal gallon of conventional renewable fuel is equal to or higher than the cost of the marginal gallon of BBD. In these cases, excess volumes of BBD (beyond what is needed to satisfy the BBD and advanced biofuel volumes) are supplied to help meet the total renewable fuel volume. It is possible that these market circumstances may occur in 2019, especially if sales of higher level ethanol blends continue to be modest. We do not, however, believe that higher D6 RIN costs (or RIN costs more generally) will result in excessive costs to refiners. EPA has examined the available market data and concluded that refiners recover the cost of the RINs they acquire through the higher market prices for the petroleum fuels they produce which reflect RIN prices.<sup>141</sup> The potential for higher

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<sup>140</sup> See "An Assessment of the Impact of RIN Prices on the Retail Price of E85," memorandum from Dallas Burkholder to EPA Docket.

<sup>141</sup> See "Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," EPA-420-R-17-008, November 2017.

RIN costs, therefore, does not constitute severe economic harm to refiners (or the state or regions in which refineries are located), and is not a sufficient basis for reducing the total renewable fuel volume for 2019 using the general waiver authority. For a further discussion of the general waiver authority, see Section II of the final rule and Section 2 of this document.

**Comment:**

A commenter stated that the effects of a RIN “price cap” would be devastating to rural America, and that there was no way to cut, cap, or eliminate RINs without impacting homegrown fuel.

**Response:**

EPA did not propose to cap the price of RINs, nor are we finalizing a RIN price cap in this rule.

**Comment:**

A commenter stated that EPA’s proposed volumes would mandate renewable fuel in amounts over the E10 blendwall, and that this would drive up RIN prices. The commenter stated that these higher RIN prices would in turn have a negative impact on refiners.

**Response:**

While the volumes in this final rule exceed the volume of ethanol that can be blended into gasoline at a 10% blend rate, we note that none of the RFS volume requirements specifically require the use of ethanol. RIN prices are impacted by a large number of factors, including commodity prices (such as the price of corn, vegetable oil, crude oil, etc.) and market expectations about the future of the RFS program. We do not believe it is possible to reliably predict the impact of this final rule on RIN prices in 2019. Further, in the context of evaluating a petition for rulemaking to change the point of obligation in the RFS program, EPA evaluated these claims that high RIN prices negatively impacted refiners (specifically merchant refiners) using the available market data. We determined that while refiners acquire RINs at a significant expense, these refiners are able to recover the cost of acquiring RINs through the prices of the gasoline and diesel fuels they sell.<sup>142</sup> Thus higher RIN prices are not expected to negatively impact refiners generally, nor any specific category of refiners.

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<sup>142</sup> See “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” EPA-420-R-17-008, November 2017.



## 7.1.4 Impacts of Standards on Retail Fuel Prices

Commenters that provided comment on this topic include but are not limited to: 0662, 1197, and 1201.

### **Comment:**

A commenter stated that fuel markets, especially diesel fuel markets, are very competitive. To compete and maintain market share, diesel fuel retailers must pass through the value of the RIN to fuel consumers. Another commenter stated that large retailers are using RIN profits to subsidize lower fuel prices and drive out their smaller competitors. This commenter stated that while large refiners are able to pass through their costs to acquire RINs, refiners are not passing the RIN value on to small retailers.

### **Response:**

EPA has examined the available market data and concluded that, with the exception of very low volume fuels (such as E85) where the retail market is non-competitive, the value of the RIN is being passed on to consumers in the price of both E10 and diesel fuel.<sup>143</sup> Our conclusions are consistent with both commenters' descriptions of parties that realize income from the sale of RINs and use the income from RIN sales to enable lower prices for the gasoline and diesel fuels they sell. These actions by large retailers (using the value of the RIN to subsidize fuel prices for fuel blends containing renewable fuels) are the precise actions the RFS program was intended to promote. While we do not have information on the comparative margins between larger retail chains and smaller retailers, the terminal level pricing data that EPA has analyzed clearly demonstrates that the RIN value is being reflected in the wholesale price of E10 and diesel fuel (with the possible exception of the very small volume fuels - like E85 - noted above). Therefore, the refiners costs are passed through to all parties that purchase fuel at terminals, whether these parties are small or large retailers.

### **Comment:**

A commenter stated that there is no correlation between RIN prices and the use of E85, E15, or the rate at which ethanol is blended into the gasoline pool. The commenter claimed that this demonstrated that higher RIN costs are not effective at incentivizing the market to increase the blending of ethanol beyond the E10 blendwall. Given that RIN prices are allegedly ineffective in incenting increased ethanol use, the commenter argued that EPA should further reduce the total renewable fuel volume.

### **Response:**

There are a number of factors that impact the relative pricing of E10, E15, and E85. It is unreasonable to expect a strong correlation between the RIN price and the price and/or sales

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<sup>143</sup> See "Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," EPA-420-R-17-008, November 2017.

volumes of these fuels, as this ignores other important factors such as the cost of production of gasoline and ethanol, ethanol's octane value for E10, and ethanol's lower energy content for E85. The incentives provided by RINs can and are incentivizing renewable fuels. However, the situation for ethanol is fairly unique. For ethanol sold as E10 blends, no RIN incentive is necessary, as ethanol's cost and octane value provide sufficient incentive, and the energy content loss of ethanol is not readily apparent to the consumer. However, this is not the case for ethanol blended into gasoline above 10%. For ethanol blended in gasoline above 10%, the lack of additional octane value (due to the fact that blendstocks that can take advantage of the high-octane value of ethanol when blended above 10% are not commercially available), the cost of additional RVP control (in the case of E15), and the lower energy content (in the case of E85) reduce ethanol's economic value. More importantly, however, is the fact that most retail stations do not have the infrastructure necessary to sell gasoline containing greater than 10% ethanol. This can result in non-competitive pricing behavior, especially for the relatively few retail stations selling E85. As a result, higher RFS standards generally result in greater use of biodiesel and renewable diesel, rather than ethanol, as it has generally been more cost effective to increase the use of these fuels as transportation fuel in the U.S. At the same time U.S. ethanol production has continued to increase to support exports and ethanol blending abroad.

EPA has examined market data and found that, all else equal, a higher RIN price results in a lower retail price for E85.<sup>144</sup> We have similarly determined that a larger discount for E85 relative to gasoline results in increased sales of E85.<sup>145</sup> However, we acknowledge that even when the combination of gasoline prices, ethanol prices, and RIN prices suggest favorable economics for higher level ethanol blends such as E85, sales volumes of these fuels have been very small. This is likely due to a number of factors specific to higher level ethanol blends, including a relatively small number of retail stations offering them, the generally non-competitive market, the relatively small number of vehicles that can use these fuels, and unfamiliarity of consumers with these fuels (see our response in Section 7.1.3 of this document).

Despite these relatively small sales volumes of higher level ethanol blends, we disagree with the commenter that this justifies a reduction to the total renewable fuel volume for 2019. The purpose of the RFS program is to increase the production and use of renewable fuels, including non-ethanol biofuels. Higher RIN prices have been very effective at increasing the use of non-ethanol renewable fuels, such as biodiesel, renewable diesel, and CNG/LNG derived from biogas, which are not limited by the E10 blendwall. Finally, we note that any further reductions to the total renewable fuel volume (beyond those made using the cellulosic waiver authority in this final rule) would require the use of the general waiver authority. As discussed in greater detail in Section II of the final rule and Section 2 of this document, we have determined that it would not be appropriate to reduce the total renewable fuel volume for 2019 using the general waiver authority.

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<sup>144</sup> "Updated Assessment of the Impact of RIN Prices on the Retail Price of E85," Memorandum from Dallas Burkholder to EPA Docket EPA-HQ-OAR-2018-0167.

<sup>145</sup> "Updated correlation of E85 sales volumes with E85 price discount," memorandum from David Korotney to EPA docket EPA-HQ-OAR-2018-0167.

## 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: 0221, 0522, 0539, and 0586.

### Comment:

Numerous commenters addressed the impact of the RFS on agricultural commodities and prices (e.g., corn, soybeans) and various intermediate products such as soybean meal, a feed co-product that results from the soybean oil extraction process. Most 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. One commenter asserted that maintaining an implied volume for conventional renewable fuel at 15 billion gallons provides a firm base of support for ethanol production and corn prices.

Numerous commenters point out that agricultural commodities are currently in relative abundance. For example, one commenter pointed out that, following global trends, crop prices in the U.S. have been decreasing in recent years.<sup>146</sup> Using a USDA (2018) database, the commenter presented information that prices received for many agricultural crops in the U.S. have declined between 2011 (one year before the severe drought in 2012) and 2017. For example, for corn: from \$6.02/bushel in 2011 to \$3.36/bushel in 2017, a 44% reduction; for soybeans from \$12.50/bushel in 2011 to \$9.39/bushel in 2017, a 25% reduction; for sorghum from \$10.70/hundredweight (cwt) in 2011 to \$5.45/cwt in 2017, a 49% reduction. The commenter suggested that observed price decreases show that crop supplies in the U.S. have grown faster than their demands in recent years, suggesting that extra crop supplies could be used to make renewable fuels.

Another commenter pointed out that the current downturn in U.S. agricultural commodity prices is projected to lead to a fairly significant decline in farm income in the U.S. agricultural sector. The commenter cited a USDA Economic Research Service report that estimates that net U.S. farm income is forecast to decline \$5.4 billion (8.3%) between 2017 and 2018 (in inflation-adjusted (real) 2018 dollars). If realized, this would be the lowest real-dollar level since 2002. Real net cash farm income is forecast to decline \$6.7 billion (6.8%) in 2018, and this would be the lowest real-dollar level since 2009.<sup>147,148</sup>

According to several commenters, the potential of a trade war and resulting retaliatory tariffs on U.S. agricultural products could further contribute to declining U.S. agricultural commodity prices and U.S. farm income. According to one commenter, the trade war is already having an

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<sup>146</sup> Commenter's calculation based on USDA Quick Stats, 2018.: <https://quickstats.nass.usda.gov/>

<sup>147</sup> USDA Economic Research Service "2018 Farm Sector Income Forecast." (February 2018).

<https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast>

<sup>148</sup> Net cash farm income encompasses cash receipts from farming as well as farm-related income, including government payments, minus cash expenses. Net farm income is a more comprehensive measure that incorporates noncash items, including changes in inventories, economic depreciation, and gross imputed rental income of operator dwellings.

impact on the U.S. agriculture sector. The commenter referred to a 10-year projection for the U.S. agricultural sector released by the USDA in early 2018.<sup>149</sup> The report projected that there would be strong global demand for U.S. soybeans. However, this projection is being revised as strong global demand for U.S. soybeans is not anticipated to materialize. In response to U.S. duties placed on foreign steel, aluminum, and other products, many countries that import U.S. agricultural commodities have placed retaliatory tariffs on U.S. agricultural goods. The evolving trade war, and general abundance of agricultural commodities in general, is projected to result in declines in the prices of key U.S. agricultural commodities. Also, according to one commenter, China has not purchased significant volumes of U.S. sorghum since February 2018. In 2017, China bought about \$839 million worth of U.S. sorghum. In part, because of reduced Chinese purchases of sorghum, U.S. sorghum prices have declined.<sup>150</sup> Given the recent agricultural commodity production patterns and the current low agricultural commodity prices, numerous commenters argued that this is the time to increase the demand for U.S. agricultural commodities with higher RFS annual volumes.

### **Response:**

This action only reduces the volume requirements under the cellulosic waiver authority due to a shortfall in the production of cellulosic biofuels. As a result, the volumes being finalized in this action represent the full implied statutory volumes of conventional renewable fuels and non-cellulosic advanced biofuels required by the statute which are sourced from the agricultural commodities highlighted by the commenters. (For more discussion on this topic see Section 6.4.8 of this document.) EPA recognizes that major U.S. agricultural commodity prices have declined over the last five years and that U.S. agricultural commodity prices are projected to decline in the near term. For example, for soybeans, prices have fallen significantly, with March 2019 U.S. futures prices at \$8.58/bushel.<sup>151</sup> Also, corn futures prices have fallen as well, with March 2019 U.S. futures prices at \$3.57/bushel.<sup>152</sup> However, what the impact of the RFS program has been, in reality over the last decade, is less than clear as evidenced by the data cited by the commenters. That is, despite significant increases in the RFS, the price of agricultural commodities has decreased. Moreover, as we explain in a memorandum to the docket, we believe that this action has no effect on the cultivation of corn and soybeans.<sup>153</sup>

### **Comment:**

One commenter argued for reductions in 2019 RFS annual volumes because of the adverse impacts higher agricultural commodity prices would have on the poultry industry. This commenter pointed out that the more corn oil that is extracted from DDGS to make biodiesel for the RFS program, the less useful the DDGS become as a feed ingredient for poultry production.

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<sup>149</sup> Office of the Chief Economist, World Agricultural Outlook Board, USDA. “USDA Agricultural Projections to 2027.” (Feb. 2018) [https://www.usda.gov/oce/commodity/projections/USDA\\_Agricultural\\_Projections\\_to\\_2027.pdf](https://www.usda.gov/oce/commodity/projections/USDA_Agricultural_Projections_to_2027.pdf)

<sup>150</sup> Hirtzer, M., Polansek, T. Reuters “Over sorghum salad, U.S. farmers and Chinese buyers chew on trade.” (July 20, 2018). <https://www.reuters.com/article/usa-trade-china-sorghum/over-sorghum-salad-u-s-farmers-and-chinese-buyers-chew-on-trade-idUSL1N1UF1DP>

<sup>151</sup> <https://www.cmegroup.com/trading/agricultural/grain-and-oilseed/soybean.html>

<sup>152</sup> <https://www.cmegroup.com/trading/agricultural/grain-and-oilseed/corn.html>

<sup>153</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

The resulting DDGS after the corn oil is extracted have a different nutritional profile: there is a higher concentration of protein and fiber commensurate with the reduction in fat and energy content. According to the commenter, prior to the use of corn oil to meet the RFS volumes, up to 90% of broiler production used some DDGS at an inclusion rate of up to 8%. Last year, only about 60% of broiler production included some DDGS in the rations with average inclusion rates at 5% or lower.

**Response:**

Demand for corn oil used in biodiesel production in 2019 is not expected to increase significantly as a result of this rule compared to last year. While the non-cellulosic advanced biofuel volume is increasing commensurate with the statutory increase, it reflects the maximum use of the cellulosic waiver authority and cannot be lowered further without the use of our general waiver authority. As discussed in Section II of the final rule and Section 2 of this document, we have determined that it would not be appropriate to exercise the general waiver authority. Further, corn ethanol supply, from which corn oil is a byproduct, is being driven by U.S. and foreign demand for corn ethanol well in excess of, and independent of the RFS program. Given the many market factors influencing broiler production, discerning the impacts attributable to the 2019 RFS annual volumes on broiler production can be challenging. For more discussion on this topic see Section 6.4.8 of this document and a memorandum to the docket.<sup>154</sup>

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<sup>154</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

## 7.1.6 Rural Economies

Commenters that provided comment on this topic include but are not limited to: 1292.

### **Comment:**

Commenters suggested that renewable fuels have stimulated substantial economic development in rural midwestern areas of the U.S. and provided various other economic benefits. One commenter suggested that more than 90% of ethanol production is in the Midwest. The commenter provides an estimate that the biofuels industry employs 105,000 employees, of which about 34,500 employees work in the corn ethanol fuels sector. The commenter cited a USDA study showing that 32% of the total change in employment is in counties in the U.S. where new ethanol plants are established.<sup>155</sup> The timeframe for the USDA study was 2000-2008.

### **Response:**

EPA has not undertaken a detailed analysis of the impacts of the 2019 annual RFS standards on U.S. farm incomes or rural development. Based on the analysis EPA did for the March 2010 RFS2 final rule, we stated that increases in renewable fuels as a result of the RFS program should generally boost U.S. farm income and promote rural development.<sup>156</sup> Moreover, as we explain in a memorandum to the docket, we believe that this action has no effect on the cultivation of corn and soybeans, or on the production of corn ethanol.<sup>157</sup> In any event, this action only reduces the volume requirements under the cellulosic waiver authority due to a shortfall in the production of cellulosic biofuels. As a result, the volumes being finalized in this action represent the full implied statutory volumes of conventional renewable fuels and non-cellulosic advanced biofuels required by the statute. For more discussion on this topic see Section 6.4.8 of this document.

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<sup>155</sup> Brown, J., *et al.* USDA. "Emerging Energy Industries and Rural Growth." Economic Research Report No. 159 November 2013.

<sup>156</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006.

<sup>157</sup> "Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority," memorandum to docket EPA-HQ-OAR-2018-0167.

### 7.1.7 Jobs and Profitability of Biofuel Producers

Commenters that provided comment on this topic include but are not limited to: 0221, 0514, 0621, and 0664.

#### **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). According to one commenter, biodiesel has revitalized many rural areas in Iowa. As an example, the commenter pointed to Western Dubuque, a town of 900 people, where biodiesel production employs 24 employees full-time, with wages and benefits totaling \$1.6 million. Much of the income from the workers at the biodiesel plant is spent in the local town, spurring more spending and employment in the town, according to the commenter. Most of these 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 2019 annual RFS standards on the renewable fuel industries and their input suppliers. However, as we explain in a memorandum to the docket, we believe that this action has no effect on corn ethanol production.<sup>158</sup> In any event, this action only reduces the volume requirements under the cellulosic waiver authority due to a shortfall in the production of cellulosic biofuels. As a result, the volumes being finalized in this action represent the full implied statutory volumes of conventional renewable fuels and non-cellulosic advanced biofuels required by the statute. Relative to the 2018 RFS, this action maintains an implied volume of 15 billion gallons of conventional renewable fuel, and effectively maintains the same level of demand for corn ethanol. This action also increases the implied non-cellulosic advanced volume by 500 million gallons (from 4 billion to 4.5 billion gallons), thereby increasing the demand for the use of soy oil for biodiesel, the demand for other feedstocks used to make biodiesel (e.g., canola), as well as the demand for sugarcane used to make ethanol, to fulfill the advanced biofuel standard. The increase in demand for advanced fuels, such as BBD, will likely increase the profitability of advanced fuel producers such as biodiesel producers.

While the comments on employment and profitability may 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 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

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<sup>158</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

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.

**Comment:**

Numerous commenters suggested that the RFS requirements, by increasing compliance costs which results in high RIN prices, are reducing the profitability of oil refiners and leading to employment losses. Some commenters pointed to the PES bankruptcy as an example of employment losses as a result of the RFS program

**Response:**

EPA previously assessed claims by refiners that RIN prices are costs for certain refiners, and that high RIN prices threaten the viability of some refiners. After reviewing the available market data, EPA concluded that RIN costs are recovered by refiners, and thus do not have the negative impacts that these commenters claim.<sup>159</sup> EPA separately assessed a report by EVS submitted by comments which claimed that high RIN prices negatively impacted PESRM. Our assessment of this report can be found in Section 2 of this document.

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<sup>159</sup> See “Denial of Petitions for Rulemaking to Change the RFS Point of Obligation,” November 17, 2017.



## 7.2 Environmental Impacts and Considerations

### 7.2.1 GHG Impacts

Commenters that provided comment on this topic include but are not limited to: 0528, 0531, 0539, 0586, 0619, 1033, 1036, 1195, 1196, 1202, 1285, and 174856.

#### **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 pointed to GHG reduction benefits from replacing petroleum-based gasoline with cornstarch-based ethanol asserted by a report by ICF, contracted by USDA.<sup>160</sup> That report allegedly found greater GHG reductions from corn biofuels than EPA's analysis in the March 2010 RFS2 final rule.

Multiple commenters directed EPA to a report commissioned for the European Commission by the International Institute for Applied Systems Analysis (IIASA) and Ecofys, suggesting that biodiesel produced from soybean oil could result in lifecycle GHG emissions 2-3 times greater than petroleum diesel due largely to land-use changes as modeled by the global recursive dynamic partial equilibrium model, GLOBIOM.<sup>161</sup>

Several commenters also cited various, different conclusions for reductions in GHG emissions from biofuels based on the work of Argonne National Lab's GREET model,<sup>162</sup> and related work conducted with authors from Purdue University and USDA.<sup>163</sup>

Based on this information, multiple commenters requested that EPA update its LCA modeling in order to reflect new data and information. One commenter requested that EPA adopt GREET's GHG analysis results.

#### **Response:**

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.

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<sup>160</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>161</sup> Hugo Valin, et al., "The Land Use Change Impact of Biofuels Consumed in the EU: Quantification of Area and Greenhouse Gas Impacts," August 27, 2015, [https://ec.europa.eu/energy/sites/ener/files/documents/Final%20Report\\_GLOBIOM\\_publication.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/Final%20Report_GLOBIOM_publication.pdf)

<sup>162</sup> Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET). Argonne National Laboratory, DOE. <https://greet.es.anl.gov>

<sup>163</sup> Rui Chen et al., "Life Cycle Energy and Greenhouse Gas Emission Effects of Biodiesel in the United States with Induced Land Use Change Impacts," *Bioresource Technology* 251 (March 1, 2018): 249–58, <https://doi.org/10.1016/j.biortech.2017.12.031>

**Comment:**

One commenter asserted that palm oil imports to the U.S. have gone up “concomitantly” with increased use of soybean oil feedstock for biodiesel production through means of feedstock switching. The commenter asserted that palm oil production is strongly associated with peat drainage, deforestation, and high GHG emissions from land use change.

**Response:**

EPA does not dispute the possibility that increased biodiesel production could result in impacts leading to increased competition for feedstock, possibly exacerbating social and environmental problems associated with expansion of palm oil production. This is one of the reasons we articulate in Section IV of the final rule and Section 4 of this document for not allowing the reduction in cellulosic biofuel to be backfilled with other advanced biofuel. While definitive conclusions have not been made regarding RFS-related impacts on palm oil imports, the potential for impacts remains an area of interest and EPA continues to review data and track the science in this area.

## 7.2.2 Air Quality

Commenters that provided comment on this topic include but are not limited to: 0528 and 1036.

### **Comment:**

Several commenters stated that the air quality impacts of the standards were mixed, with some asserting that the air quality impacts of biofuels were positive while others asserted that they were negative.

### **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.<sup>164</sup>

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>165</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>166</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.

More recently, the 2018 Second Triennial Report to Congress found that emissions of NO<sub>x</sub>, SO<sub>x</sub>, CO, VOCs, ammonia (NH<sub>3</sub>), and particulate matter can be impacted at each stage of biofuel production, distribution, and usage. These impacts depend on feedstock type, land use change, and feedstock production practices. Ethanol from corn grain has higher emissions across the life-cycle than ethanol from other feedstocks, and ethanol facilities relying on coal have higher air pollutant emissions than facilities relying on natural gas and other energy sources, although coal-fired plants account for a small fraction of overall production. Only limited data exist on the impacts of biofuels on the tailpipe and evaporative emissions of Tier 3 light-duty vehicles and light-duty vehicles using advanced gasoline engine technologies to meet GHG emissions standards. Comprehensive studies of the impacts of biofuels on the emissions from advanced light-duty vehicle technologies, similar in scope to previous studies of such impacts on Tier 2 vehicles, would improve understanding.<sup>167</sup> Heavy-duty diesels without catalysts were

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<sup>164</sup> See 75 FR 14803-08 (March 26, 2010) and Chapter 3.4 of the RFS2 Regulatory Impact Analysis (EPA-420-R-10-006).

<sup>165</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-7 and 3.2-8.

<sup>166</sup> U.S. EPA. February 2010. RFS2 Regulatory Impact Analysis. EPA-420-R-10-006. Table 3.2-2 and 3.2-3.

<sup>167</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

found to have lower PM emissions and slightly higher NO<sub>x</sub> emissions with a B5 (5% biodiesel/diesel blend. However, at this time there are insufficient data to determine an effect on catalyst-equipped diesel engines. The magnitude, timing, and location of emissions changes can have complex effects on the atmospheric concentrations of criteria pollutants (e.g., ozone (O<sub>3</sub>) and PM<sub>2.5</sub>) and air toxics, the deposition of these compounds, and subsequent impacts on human and ecosystem health.

### 7.2.3 Water Quality and Quantity

Commenters that provided comment on this topic include but are not limited to: 0528, 0586, 1029, 1033, and 1036.

#### **Comment:**

One commenter suggested that soil and water quality benefit from biofuels production because sustainable agricultural production practices are utilized by feedstock and biofuel producers.

#### **Response:**

EPA acknowledges that impacts to water and soil quality can be mitigated during feedstock production when agricultural best management practices are widely employed and encourages their use.<sup>168</sup>

#### **Comment:**

Several commenters highlighted concerns with growing corn, including: the relatively high use of water, fertilizer and pesticide runoff, impacts on aquifers, and increasing number of algae blooms. For example, several commenters associate agricultural run-off from corn production with the RFS program and harmful algal blooms in the Gulf of Mexico. Other commenters emphasized protection of soil quality, source waters, groundwater and aquifers from exploitation and contamination. One commenter raised specific concerns with the water quality of Lake Erie and the Chesapeake Bay that the group traces back to runoff from corn production. One commenter asked the agency to evaluate water quality impacts from the proposed volumes.

#### **Response:**

EPA has previously recognized the potential impacts on water use and water quality from row crops, especially corn and soy. These impacts were assessed in RFS2 and the 2011 First Triennial Report to Congress, which qualitatively assessed both potential impacts and opportunities for mitigation.<sup>169</sup> The 2018 Second Triennial Report to Congress found more evidence of negative environmental impacts associated with land use change and biofuel production than there was in 2011.<sup>170</sup> However, the magnitude of the effect from biofuels is still unknown and has not been quantified to date. Furthermore, the 2018 Second Triennial Report to Congress found that the scientific literature continues to support the conclusion from the 2011 First Triennial Report that biofuel production and use can be achieved with minimal environmental impacts if existing conservation and best management practices for production are widely employed. EPA supports the growing adoption of mitigation techniques such as no till

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<sup>168</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

<sup>169</sup> U.S. EPA. December 2011. Biofuels and the Environment: First Triennial Report to Congress. EPA/600/R-10/183F.

<sup>170</sup> U.S. EPA. June 2018. Biofuels and the Environment: Second Triennial Report to Congress. EPA/600/R-18/195.

farming and better control of fertilizer usage, and notes that further technical information on this complicated set of issues would be helpful.

While these potential impacts remain an area of interest, we do not believe that the record warrants a different approach for this action.<sup>171</sup>

**Comment:**

One commenter stated that the RFS program and a higher BBD standard protects water quality and enhances compliance with the Clean Water Act by increasing the amount of used cooking oil, grease, and fats collected by renderers at food service establishments such as restaurants. The commenter suggested that increasing the collection of cooking oil, grease, and fats at restaurants and other business establishments would reduce the amount of cooking oil, grease, and fats channeled into sewer systems and water treatment plants.

**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 comment.

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<sup>171</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

## 7.2.4 Ecosystems, Wildlife Habitat, and Conversion of Wetlands

Commenters that provided comment on this topic include but are not limited to: 0528, 1033, and 1036.

### **Comment:**

Several commenters raised general concerns about the loss of habitats, including wetlands, forests, and grasslands, due to the expansion of crops that could be used to produce biofuels. For example, several commenters expressed concerns about habitat loss and biodiversity degradation due to extensification and intensification of such crop production, especially the production of corn and soy. Many of these commenters also raised concerns regarding deforestation in countries such as Argentina and Indonesia, from any potential increases in demand for palm and soy oils (i.e., food-based oils).

### **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 of this document and in a memorandum to the docket entitled “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under the General Waiver Authority for 2019 Final Rule,” we determined that the 2019 RFS standards are not expected to increase the cultivation of corn or oilseed crops in the U.S., because the production of these feedstocks will be driven by other factors in 2019. In addition, the 2019 RFS standards do not require, authorize, fund, or carry out the production of any specific biofuel or crop. Furthermore, 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.

### **Comment:**

Several commenters mentioned impacts on insects and birds or 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:**

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 explained in a memorandum to the docket and Section 6.4.3 of this document, we do not believe

that any effects on listed species, critical habitat, or land use conversion can be attributed to this action, or that this action causes severe environmental harm.<sup>172</sup>

**Comment:**

Several commenters called on EPA to implement the land conversion protections contained in EISA. Several commenters claimed that the aggregate compliance approach does not meet the land protection mandate in the statute.

**Response:**

These comments are beyond the scope of this rulemaking. In this rulemaking, EPA did not propose changes to, take comment on, or otherwise reexamine our aggregate compliance policy, which was established in the March 2010 RFS2 final rulemaking.<sup>173</sup>

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<sup>172</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

<sup>173</sup> See 40 CFR 80.1454(g); 75 FR 14670, 14691 *et seq.*



## 7.2.5 Endangered Species Act

Commenters that provided comment on this topic include but are not limited to: 0528, 1033, and 1036.

### **Comment:**

Several commenters mentioned impacts on listed, threatened, or endangered species that commenters linked to the RFS program, specifically corn, palm oil, and soy oil production, and called on the agency to act on consultation requirements under Section 7 of the Endangered Species Act. One commenter also suggested that implied impacts to endangered species from biofuels constitutes severe environmental harm and therefore the agency should exercise the general waiver.

### **Response:**

As explained in a memorandum to the docket and Section 6.4.3 of this document, we do not believe that any effects on listed species, critical habitat, or land use conversion can be attributed to this action, or that this action causes severe environmental harm.<sup>174</sup>

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<sup>174</sup> “Endangered Species Act No Effect Finding and Determination on Severe Environmental Harm under General Waiver Authority,” memorandum to docket EPA-HQ-OAR-2018-0167.

## **8. Percentage Standards**

### **8.1 General Comments on the Percentage Standards**

EPA did not receive any comments on this topic.

## 8.2 Accounting for Small Refinery Hardship Exemptions

Commenters that provided comment on this topic include but are not limited to: 0166, 0271, 0289, 0312, 0435, 0472, 0491, 0513, 0514, 0517, 0521, 0523, 0527, 0529, 0530, 0535, 0536, 0539, 0586, 0591, 0619, 0620, 0621, 0662, 0665, 0669, 0670, 0672, 0683, 0711, 1037, 1038, 1039, 1040, 1041, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1202, 1269, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1281, 1282, 1283, 1284, 1285, and 1292.

### Comment:

Many commenters stated that EPA has a statutory obligation to more appropriately account for small refinery exemptions. These commenters argued that by not accounting for small refinery exemptions that are granted after the annual percentage standards are established, EPA is failing to “ensure” that the renewable fuel volume requirements are met, pursuant to CAA sections 211(o)(2)(A)(i) and (o)(3)(B)(i). Several commenters also stated that not accounting for small refinery exemptions reduces overall biofuel demand and hurts rural America. Commenters generally requested that EPA reallocate the 2.25 billion RINs that would have otherwise been retired for RFS compliance in 2016 and 2017, along with developing a mechanism to account for exemptions that are granted in future years. Commenters suggested several options for accounting for such exemptions, including:

- A revised interpretation of the term “projected” in the percentage standards equations in 40 CFR 80.1405(c) to mean the number small refineries that EPA expects to grant an exemption to (rather than the number of small refineries that have already been issued an exemption).
- Adjusting the percentage standards mid-year after small refinery exemptions have been granted.
- Adjusting the percentage standards based on the adjustments provision in CAA section 211(o)(C)(ii).

Other commenters, however, stated that EPA should not reallocate small refinery exemption volumes. Many of these commenters stated that such reallocation would not be fair to other obligated parties that had complied with their obligations. These commenters also argued that there is, in fact, nothing to reallocate since these exemptions do not impact biofuel blending or cause demand destruction. Several commenters also argued that EPA does not have the statutory authority to reallocate these volumes, as the statute is written in such a way that it only allows for downward adjustments.

### Response:

These comments are beyond the scope of this rulemaking. In this rulemaking, we did not propose changes to, take comment on, or otherwise reexamine (collectively “reopen”) these issues relating to the reallocation of exempt small refinery volumes. Specifically, we did not reopen the regulatory formula used to set the percentage standards and to reallocate exempted small refinery volumes, its interpretation of that formula or its policies relating to small refinery reallocation, or its interpretation of CAA section 211(o)(3)(C)(ii). We determined our legal, technical, and policy

approach to these issues many years ago, and have simply applied our longstanding regulations and policies in this action.<sup>175</sup> We also note that we have addressed and rejected many of the commenters' concerns in prior rulemakings.<sup>176</sup>

**Comment:**

Commenters argued that EPA should account for small refinery exemptions by raising the RVOs through reduced use of the cellulosic waiver authority.

**Response:**

As discussed in Section II of the final rule and Sections 2.2 and 2.3 of this document, we do not believe it is appropriate to intentionally draw down the carryover RIN bank and limit the exercise of our cellulosic waiver authority.

**Comment:**

Many commenters requested that EPA provide transparency on how the small refinery exemption program is being implemented, what the standards are for granting an exemption, and which refineries are receiving exemptions.

**Response:**

Outside of this rulemaking proceeding, we have recently taken steps to provide additional transparency on small refinery exemptions, including publishing regularly-updated information on its website as to the number of petitions it has received, the number of exemptions granted, and the volume of exempted RVOs from these exemptions. This information can be found at <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rfs-small-refinery-exemptions>.

**Comment:**

Many commenters expressed overall opposition to the implementation of the small refinery exemption program. Many commenters requested that no exemptions should be granted retroactively after the compliance date has passed. Other commenters requested that all exemptions for a given compliance year must be granted before the volume standards for that year have been established, as that way they would be accounted for in the applicable percentage standards for that year.

Several commenters stated that EPA should not grant any small refinery exemptions since no refinery suffers disproportionate economic hardship. These commenters stated that because RIN

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<sup>175</sup> See 40 CFR 80.1405(c) (regulatory formula); 75 FR 14716-17, 14867; 75 FR 76804 (small refinery reallocation); 75 FR 14717 (interpretation of CAA section 211(o)(3)(C)(ii)).

<sup>176</sup> See 77 FR 1340 (January 9, 2012); see also 75 FR 14717 (March 26, 2010); 75 FR 76804 (December 9, 2010), 78 FR 49825 (August 15, 2013), 80 FR 77511 (December 14, 2015), 81 FR 89800 (December 12, 2016), and 82 FR 58523 (December 12, 2017).

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.

Several commenters also stated that in order to receive an “extension” of its exemption, a refinery must have received the exemption continuously since the original exemption for all small refineries expired in 2010.

One commenter suggested that a small refinery exemption should only apply to the total renewable fuel standard and not the cellulosic and advanced biofuel standards.

One commenter expressed support for EPA’s implementation of the small refinery exemption program and that EPA should continue issuing exemptions.

One commenter requested that small blender-refiners should also be eligible for small refinery exemptions.

**Response:**

These comments are beyond the scope of this rulemaking. In this rulemaking, we did not propose changes to, take comment on, or otherwise reexamine the manner in which small refinery hardship petitions are evaluated. These topics are not further addressed in this document.

## **9. Other Comments**

### **9.1 Dates/Deadlines**

EPA did not receive any comments on this topic.

## **9.2 Statutory and Executive Order Reviews**

EPA did not receive any comments on this topic.

### 9.3 Beyond the Scope

Commenters that provided comment on this topic include but are not limited to: 0312, 0313, 0316, 0413, 0434, 0439, 0492, 0493, 0517, 0528, 0529, 0530, 0532, 0534, 0535, 0539, 0586, 0591, 0619, 0620, 0621, 0660, 0662, 0665, 0669, 0671, 0672, 0673, 0711, 1029, 1033, 1035, 1036, 1037, 1041, 1194, 1195, 1196, 1198, 1266, 1267, 1271, 1273, 1274, 1277, 1280, 1281, 1282, 1283, 1284, 1285, and 1292.

#### **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 adjusting equivalence values, removing the obligation on exported renewable fuel, and modifying the aggregate compliance provision
- Updates to EPA's lifecycle analyses and modeling of market responses to strong RVOs and RIN prices
- Treatment of CWCs
- Changes to the point of obligation for the RFS program and claims that EPA must evaluate the point of obligation in each annual rulemaking
- Suggestions for new RIN-generating pathways including renewable electricity and hydrogen
- Impacts of ethanol on engines
- Extending the 1 psi RVP waiver for E15
- Changes to the E15 misfueling mitigation plans
- Changes to RVP and PTD requirements for biobutanol
- Potential future RFS rulemakings such as the "reset rule" or an action to address the remand of the 2016 RFS standards
- Provisions proposed in the REGS Rule, including biointermediates
- Mandates and specifications for high octane gasoline
- Vehicle certification fuel
- "Substantially similar" assessments of transportation fuels
- Vehicle fuel economy standards and measurement practices
- Flex fuel vehicle credits
- Controls on mobile source air toxics and toxic components of gasoline

#### **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.