



August 30, 2019

The Honorable Andrew Wheeler
Administrator, Environmental Protection Agency
Air and Radiation Docket and Information Center
1200 Pennsylvania Avenue NW
Washington, DC 20460

Docket ID No. EPA-HQ-OAR-2019-0136

Dear Administrator Wheeler:

The Biotechnology Innovation Organization (BIO) is pleased to provide comment on the U.S. Environmental Protection Agency's (EPA's) proposed rule on the **Renewable Fuel Standard Program: Standards for 2020 and Biomass-Based Diesel Volume for 2021, Response to the Remand of the 2016 Standards, and Other Changes (proposed rule)**¹.

BIO is the world's largest trade association representing biotechnology companies, academic institutions, state biotechnology centers and related organizations across the United States and in more than 30 other nations. BIO members are involved in the research and development of innovative healthcare, agricultural, and industrial and environmental biotechnology products. In the energy space, BIO represents more than 70 companies leading the development of new technologies for producing conventional and advanced biofuels. Through the application of industrial biotechnology, BIO members are improving conventional biofuel processes, furthering advanced and cellulosic biofuel production technologies, and speeding development of new energy crops.

The Renewable Fuel Standard (RFS) has been a vital tool to BIO's member companies who are leading the development of advanced and cellulosic biofuels. As a market driver providing access to the transportation fuel market, the RFS has spurred research and investment in the development of low-carbon biofuels. The RFS has enabled the United States to become a leader in the development and deployment of new technologies which has led to the growth of the biobased economy, benefitting farmers and commodity producers, helping revitalize rural economies, creating good paying jobs, and fostering energy independence.

¹ U.S. Environmental Protection Agency, Renewable Fuel Standard Program: Standards for 2020 and Biomass-Based Diesel Volume for 2021, Response to the Remand of the 2016 Standards, and Other Changes, EPA-HQ-OAR-2019-0136, 84 Fed. Reg. 36762 (Jul. 29, 2019), (to be codified at 40 CFR Part 80) Available at <https://www.federalregister.gov/documents/2019/07/29/2019-15423/renewable-fuel-standard-program>



Unfortunately, EPA's administration of the program has put the investments made by these companies at risk and threatens to prevent growth in advanced and cellulosic biofuels as the RFS intended. EPA's expansion of granting small refinery exemptions (SRE) retroactively after setting the annual percentage standard ensures that the proposed annual volume obligations will not be met with liquid biofuels, contrary to the statute and congressional intent.

Previous rulemakings setting the annual Renewable Volume Obligations (RVO) have also had a detrimental impact on investment and commercialization of advanced and cellulosic biofuels. EPA's improper interpretation of its waiver authority to make reductions to the annual advanced and total renewable fuel RVOs based on the Agency's proposed interpretation of "inadequate domestic supply" in the proposed 2014 Standards for the Renewable Fuel Standard Program² and the final rules for the Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017 (2016 RFS)³ – along with numerous delays in issuing the RVOs – undercut investment and commercialization of the advanced and cellulosic biofuels industry⁴. Because of the impact EPA's interpretation had on the biofuels industry, the United States Court of Appeals found EPA's decision to reduce total renewable fuel volume requirements through use of "inadequate domestic supply" to be improper in *Americans for Clean Energy v. EPA* (ACE)⁵.

The Court directed EPA to enforce the statutory requirements for the 2016 RFS and increase the volume requirement for total renewable fuel by 500 million gallons. EPA failed to address the ACE court ruling in the Renewable Fuel Standard Program: Standards for 2019 and Biomass-Based Diesel Volume for 2020⁶. Now the EPA is proposing to ignore the ruling in ACE again and not change the 2016 RFS to address the demand destruction created by EPA's past rulemakings⁷.

Innovative biofuel producers are also stymied by EPA's delays in the approval of new advanced and cellulosic biofuel pathways and petitions for production facilities. Along with the issuance of SREs and the failure to address the remand in ACE, these delays are arbitrarily keeping advanced and cellulosic biofuels from reaching the marketplace, hindering the growth of the industry.

² U.S. Environmental Protection Agency, 2014 Standards for the Renewable Fuel Standard Program, EPA-HQ-OAR-2013-0479, 78 Fed. Reg. 71732 (Nov. 29, 2013) Available at <https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-28155.pdf>

³ U.S. Environmental Protection Agency, Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017, EPA-HQ-OAR-2015-0111, 80 Fed. Reg. 77420 (Dec. 14, 2015) Available at <https://www.govinfo.gov/content/pkg/FR-2015-12-14/pdf/2015-30893.pdf>

⁴ Winters, Paul. *Estimating Another Year of Chilled Investment in Advanced Biofuels Due to RFS Uncertainty*. Biotechnology Innovation Organization (BIO), (Jun. 2016) Available at https://www.bio.org/sites/default/files/Estimating_Another_Year_of_Chilled_Investment.pdf

⁵ *Americans for Clean Energy v. EPA*, 864 F.3d 691, 699 (D.C. Cir. 2017) (ACE) Available at [https://www.cadc.uscourts.gov/internet/opinions.nsf/5F1D8BC9815C4C698525816B00543925/\\$file/16-1005-1686284.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/5F1D8BC9815C4C698525816B00543925/$file/16-1005-1686284.pdf)

⁶ U.S. Environmental Protection Agency, Renewable Fuel Standard Program: Standards for 2019 and Biomass-Based Diesel Volume for 2020, EPA-HQ-OAR-2018-0167, 83 Fed. Reg. 63704 (Dec. 11, 2018) Available at <https://www.govinfo.gov/content/pkg/FR-2018-12-11/pdf/2018-26566.pdf>

⁷ 84 Fed. Reg. 36765, 36788 (Jul. 29, 2019)



In finalizing the proposed rule for the 2020 Renewable Fuel Standard (2020 RFS) EPA must create a path forward for advanced and cellulosic biofuel technologies; remand the 500 million gallons for the 2016 RFS; and address the demand destruction caused by expansive retroactive issuance of SREs. As BIO illustrates in its comments below, it urges EPA to resolve these issues and overcome barriers keeping advanced and cellulosic biofuels from accessing the market. This will provide a strong policy and regulatory environment critical to supporting the type of innovation that will help strengthen the biobased economy, create good paying jobs, and support rural economies across the country.

I. Introduction

Due to the RFS, the United States has become the leader in the development of low-carbon biofuels. This policy has been the fundamental driver of investment, development, and growth of the domestic biofuels industry. As a result of this policy, billions of dollars have been invested in new technologies, employing thousands of Americans, often in rural communities across the country. Analysis by Fuels America demonstrates these positive impacts: the RFS has led to \$184.5 billion of economic output, 852,056 jobs, \$46.2 billion in wages, and \$14.5 billion in taxes each year.⁸

a. Economic Importance of the RFS

The economic benefits provided by the RFS are more critical than ever for agriculture and rural America. Net farm income has dropped by nearly half in the past five years, from \$123 billion to \$63 billion.⁹ A Farm Bureau review of Federal Deposit Insurance Corporation (FDIC) quarterly call report data that “[a]s annual average loan delinquency rates have increased for 24 consecutive quarters, so too have farm bankruptcies over the prior 12 months. Through June 2019, and over the prior 12 months, there were a total of 535 Chapter 12 bankruptcy filings, up 13%, or 60 bankruptcies. The number of Chapter 12 filings over the previous 12 months is the highest level since 2012’s 582 filings. The increase in bankruptcy filings is a noteworthy shift given bankruptcy levels fell during calendar year 2018 compared to 2017.”¹⁰

One factor is the ongoing trade tensions. According to FDIC Chairman Jelena McWilliams, the “tit-for-tat tariffs with China ‘certainly’ have negative consequences

⁸ See Fuels America, Fuels America Releases New Footprint Analysis: Renewable Fuel Drives Economic Growth. (Apr. 15, 2014). Available at <https://fuelsamerica.org/resources/fuels-america-releases-new-footprint-analysis/> (providing detailed description of study results, data sources, and methodology).

⁹ Gowen A. Washington Post “LEFT BEHIND: Farmers fight to save their land in rural Minnesota as trade war intensifies.” (Aug. 3, 2019). Available at https://www.washingtonpost.com/classic-apps/left-behind-farmers-fight-to-save-their-land-in-rural-minnesota-as-trade-war-intensifies/2019/08/03/58b67f0b-f964-44a0-9004-674c1ba9553b_story.html

¹⁰ Newton, John. Farm Loan Delinquencies and Bankruptcies Are Rising, Farm Bankruptcy Filing Rise 13%. American Farm Bureau Federation, (Jul. 31, 2018) Available at <https://www.fb.org/market-intel/farm-loan-delinquencies-and-bankruptcies-are-rising>



for banks in farm states.”¹¹ Unfortunately, this is likely to continue with another escalation in the trade war with China responding to another tariff threat by asking state-owned companies to suspend imports of U.S. agricultural products.¹² While addressing trade is beyond EPA’s scope, the actions it has taken with the RFS have undermined a value added market for agricultural producers at this critical time for farmers and rural America.

While there are several factors involved, including the lapse of the tax credit for the biodiesel industry, the demand destruction caused by the expanded issuance of small refinery waivers has had a major impact on the biofuels industry. EPA has granted unprecedented numbers of petitions for 2016 and 2017. 19 of 20 petitions received for 2016, 35 of 37 petitions received for 2017. A dramatic increase from 2013 to 2015 when EPA received a total of 43 petitions and only granted a total of 23.¹³ As a result, prior to the issuance of this proposed rulemaking, nearly 2.6 billion gallons of RFS blending obligations have been eliminated by EPA through increased issuance of exemptions. Assuming all the gallons waived were from ethanol, the potential corn demand lost would be 928.6 million bushels.¹⁴ This uncertainty has caused a decline in biofuel consumption, which declined in 2018 to 14.38 billion gallons from 14.49 billion gallons in 2019, the first year-over-year decline in U.S. ethanol consumption since 1998.¹⁵

Despite the outcry from the biofuels and agricultural industry about the negative impacts these waivers are having on the rural economy, the administration decided to move ahead and grant an additional 31 new refinery exemptions on August 9, 2019.¹⁶ This represents an additional loss of 1 billion gallons of RFS demand and reduced demand for 1.4 billion bushels of corn. Earlier SREs were already taking a toll on the industry. In July Plymouth Energy in Merrill, Iowa announced it was suspending production at its ethanol plant¹⁷ while two biodiesel facilities announced their closure.¹⁸ Since the administration’s August 9th decision to issue more SREs additional plants have announced their closure bringing the total to 15 plants nationwide, while others are scaling back production. This is leading to the

¹¹ Egan, M. CNN Business “Regulator tells CNN Business the trade war is hurting banks in America’s farm states.” (Aug. 2, 2019). Available at <https://www.cnn.com/2019/08/02/business/banks-trade-war-fdic/index.html>

¹² Scott, M., Hamlin, K., and Chen, T. Bloomberg, “China Takes On Trump by Weakening Yuan, Halting Crop Imports” (Aug. 5, 2019) Available at <https://www.bloomberg.com/news/articles/2019-08-05/china-hits-back-at-trump-with-weaker-yuan-halt-on-crop-imports>

¹³ EPA, *Small Refinery Exemptions* (Aug. 5, 2019) Available at <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rfs-small-refinery-exemptions>

¹⁴ Neeley, T. DTN “EPA Grants Five More '17 RFS Waivers About 2.6 Billion Gallons of Biofuels Now Exempted From RFS Requirements.” (Mar. 14, 2019) Available at <https://www.dtnpf.com/agriculture/web/ag/news/business-inputs/article/2019/03/14/2-6-billion-gallons-biofuels-now-rfs>

¹⁵ Fatka, J., Feedstuffs. “EPA’s RFS waivers cut corn demand by 900m bu.” (Mar. 18, 2019). Available at <https://www.feedstuffs.com/news/epas-rfs-waivers-cut-corn-demand-900m-bu>

¹⁶ EPA, *EPA Announces Biofuel and Small Refinery Exemption Priorities* (Aug 9, 2019) Available at <https://www.epa.gov/newsreleases/epa-announces-biofuel-and-small-refinery-exemption-priorities>

¹⁷ Henderson, O., RADIOIOWA. “Iowa ethanol plant temporarily shuts down amid ‘supply-demand imbalance’.” (Jul. 31, 2019). Available at <https://www.radioiowa.com/2019/07/31/145604/>

¹⁸ Lane, J. BiofuelsDigest. “U.S. policy uncertainty forces closure of 2nd biodiesel plant this month: Now, REG’s New Boston plant feels the axe.” (Jul. 24, 2019) Available at <http://www.biofuelsdigest.com/bdigest/2019/07/24/u-s-policy-uncertainty-forces-closure-of-2nd-biodiesel-plant-this-month-now-regs-new-boston-plant-feels-the-axe/>



elimination and consolidation of jobs in rural America which will have a ripple effect throughout the communities they are located.¹⁹ Further these actions will stifle biofuel innovation, jeopardize energy security, and drive down the demand for sustainable solutions that reduce GHG emissions.

A robust RFS can offset these negative trends, but only if obligated parties are required to meet the volume obligations put forward instead of giving unwarranted waivers. A study from Center for Agricultural and Rural Development at Iowa State University found the RFS boosted the value of the U.S. agriculture sector by \$14.1 billion.²⁰ If the RFS continues to ensure growth in the advanced and cellulosic biofuels, the demand for new feedstocks will provide a needed revenue source for producers. The collection of corn stover for cellulosic biofuels could provide farmers on average an additional \$46 per acre.²¹ Greater use of advanced biofuels like butanol, will enable facilities to convert sorghum and corn into a “drop-in” fuel, creating more demand for these commodities.²²

A strong final rule for the 2020 RFS volumes can continue to promote growth of the advanced and cellulosic biofuels industry and support the U.S. agricultural sector during this downturn.

b. Environmental Benefits

The RFS has been critical to driving investment in technologies that have lowered emissions in our transportation system. As BIO pointed out in 2015, over the first 10 years of the RFS, the law’s requirements displaced nearly 1.9 billion barrels of foreign oil and reduced U.S. transportation-related carbon emissions by 589.33 million metric tons.²³ The total reduction in harmful greenhouse gas emissions (GHGs) is equivalent to removing more than 124 million cars from the road over the decade.²⁴ These savings mostly resulted from the increase in the use of conventional biofuels.

¹⁹ Eller, D., Des Moines Register. “A slap in the face’: Trump’s ethanol waivers are sparking rebellion in farm country.” (Aug. 24, 2019). Available at <https://www.desmoinesregister.com/story/money/agriculture/2019/08/25/donald-trump-ethanol-waivers-iowa-farm-country-lose-support-president-election-voters-farmers/2085033001/>

²⁰ Moschini, G., Lapan, H. and Hyunseok, K. “The Renewable Fuel Standard in Competitive Equilibrium: Market and Welfare Effects.” Center for Agricultural and Rural Development, Iowa State University. (Jun. 2017). Available at <https://www.card.iastate.edu/products/publications/pdf/17wp575.pdf>

²¹ POET “Make More Money Per Acre Today.” Available at <http://poet-dsm.com/resources/docs/Make-More-Money.pdf>

²² Environmental Protection Agency, Registration of Isobutanol as a Gasoline Additive, EPA-HQ-OAR-2018-0131, 83 Fed. Reg. 13,460 (proposed March 15, 2018) (to be codified at 40 CFR Part 79), available at <https://www.gpo.gov/fdsys/pkg/FR-2018-03-29/pdf/2018-06119.pdf>

²³ Biotechnology Innovation Organization. “The Renewable Fuel Standard: A Decade’s Worth of Carbon Reductions.” Washington, DC. BIO, Available at <https://www.bio.org/sites/default/files/RFS%2010%20Year%20GHG%20Reductions.pdf>

²⁴ Biotechnology Innovation Organization. “The Renewable Fuel Standard: A Decade’s Worth of Carbon Reductions.” Washington, DC. BIO, Available at <https://www.bio.org/sites/default/files/RFS%2010%20Year%20GHG%20Reductions.pdf>



These environmental benefits were not just identified by BIO's analysis, but by independent federal government analysis as well. For instance, Argonne National Labs Greenhouse Gas Assessment Model (GREET) has found that corn ethanol delivers on average a 34-percent reduction in GHGs over gasoline. These savings result even after penalizing biofuels for both direct and indirect land use change, something petroleum is not penalized for under GREET.²⁵

This spring a U.S. Department of Agriculture (USDA) study showed the significant greenhouse gas benefits of ethanol. The study found GHG emissions from corn-based ethanol are about 39 percent lower than gasoline. The study also states that when ethanol is refined at natural gas-powered refineries, the greenhouse gas emissions are even lower, around 43 percent below gasoline.²⁶

The environmental benefits of biofuels go beyond GHG reductions. Ethanol reduces tailpipe emissions of both hydrocarbons and carbon monoxide, which helps prevent the formation of ground-level ozone. Data from 222 EPA sensing sites show that ozone levels have fallen during the period in which ethanol blending increased. Additional data from the University of Illinois-Chicago show substantial reductions in particulate matter (PM) and benzene with the addition of ethanol. Biofuels' ability to reduce particulate matter in fuels is not limited to ground transportation. Using biofuels to help power jet engines reduces particle emissions in their exhaust by as much as 50 to 70 percent. These findings are the result of a cooperative international research program led by NASA and involving agencies from Germany and Canada.

The environmental benefits of biofuels are leading to rapid growth in the development and deployment of aviation biofuels. Worldwide, flights produced 895 million tons of CO₂ in 2018. The global aviation industry produces around 2 percent of all human-induced CO₂ and is responsible for 12 percent CO₂ emissions from all transport sources. Because of this, the aviation industry has set an ambitious goal to reduce net aviation emissions by 50 percent of what they were in 2005. To achieve this goal, the aviation industry has identified sustainable biofuels as key to the industry meeting its targets.²⁷

These environmental benefits are only to improve as new, low-carbon advanced and cellulosic biofuels come online at commercial scale. Due to the requirements under the RFS, advanced and cellulosic biofuels must achieve greenhouse gas emissions reductions of 50 percent and 60 percent respectively from the baseline of

²⁵ Wang, M., Han, J., Dunn, J., Cai, H. & Elgowainy A. Well-to-wheels energy use and greenhouse gas emissions of ethanol from corn, sugarcane and cellulosic biomass for US use. IOP Science. (Nov. 22, 2012). Available at http://iopscience.iop.org/1748-9326/7/4/045905/pdf/1748-9326_7_4_045905.pdf

²⁶ Lewandowski, J., Rosenfeld, J., Pape, D., Hendrickson, T., Jaglo, K., and Moffroid, K. USDA "The greenhouse gas benefits of corn ethanol – assessing recent evidence." (Mar. 25, 2019) Available at <https://www.tandfonline.com/doi/full/10.1080/17597269.2018.1546488>

²⁷ Air Transport Action Group. Facts & Figures (Oct. 2018) Available at <https://www.atag.org/component/factfigures/?Itemid=>



gasoline. The cellulosic ethanol produced at plants like POET's Project Liberty can drastically reduce emissions by 85 to 95 percent or more.

Advanced biofuels, such as isobutanol are beneficial in helping communities with compliance of environmental regulations. Due to isobutanol's low-blend volatility, it can help the over 300 counties nationwide reach EPA's target for ozone at 75 parts per billion (ppb) and possibly achieve the EPA's Scientific Advisory Board recommendation that the ozone target be lowered to 60 to 70 ppb. Isobutanol also has great potential for improving environmental air quality in the aviation industry. Isobutanol is an ideal platform molecule to produce renewable iso-paraffinic kerosene (IPK), a blendstock for jet fuel. As the airline industry evaluates sustainable alternative fuels to reduce its greenhouse gas emissions profile, while improving local air quality, approval and deployment of isobutanol will allow sustainable alternative aviation fuels to be developed and brought to market.

Biofuels provide a critical solution to mitigating climate change and reducing GHGs in the transportation sector. The RFS is needed to provide market access to these critical technologies. As EPA continues to evaluate the environmental benefits provided by biofuels, it is important the agency survey the full value chain of the industry and recognize the efficiencies and sustainability practices built in by feedstock and biofuel producers to go well beyond the statutes' emissions reduction targets, improve air quality, and protect the soil and water. BIO urges EPA to work collaboratively with the industry in these evaluations, utilize the studies and researchers at other federal agencies, and avoid studies and analysis that use outdated models and information and cherry pick data to get a preferred outcome.

c. Biobased Economy

The economic and environmental benefits of the RFS extend beyond the biofuels sector. Technologies developed because of the RFS have led to the growth and development of the biobased economy. Building on processes learned from biofuels production, BIO's member companies are developing new agricultural and low-carbon feedstocks, industrial enzymes, and biological catalysts for the conversion of biomass into advanced biofuels, alternative jet fuels, renewable chemicals, and biobased products. Biobased production encompasses a complex value chain, from agriculture through the manufacture of consumer goods, that provides an alternative to the petroleum-based value chain and that brings environmental, economic, and other benefits.

The biobased economy can generate new markets for agricultural producers, boost innovation in domestic manufacturing, and stimulate sustainable economic growth. According to the USDA, in 2016, the biobased products industry contributed to 4.65 million jobs across the country, up from 4.2 million in 2014. In addition to the direct jobs created by the industry, growth of the biobased economy reduces the use of fossil fuels and associated greenhouse (GHG) emissions. The report shows



potential reductions of GHG emissions of 60 percent indicating that up to 12 million metric tons of carbon dioxide (CO₂) equivalents may have been reduced in 2016.²⁸

II. Advanced and Cellulosic Biofuel Production

a. Proposed Cellulosic Biofuel Volumes

BIO appreciates EPA proposing to increase cellulosic biofuel volumes to 0.54 billion gallons; 0.12 billion gallons higher than the volumes finalized for 2019. However, BIO believes the final volume for liquid cellulosic biofuel gallons could be higher if EPA takes the appropriate steps to allow new technologies and facilities to come online.²⁹

b. EPA Must Improve the Timing and Efficiency of the Pathway Petition and Part 80 Registration Approval Processes

If EPA moves quickly on approving stalled pathways for new advanced and cellulosic biofuels and registration for corn ethanol facilities that have registered for producing cellulosic biofuel from corn kernel fiber, the final volumes for the 2020 RFS RVOs could be higher. Companies embracing these new technologies need some bureaucratic hurdles lowered in order to truly capitalize on opportunities.

BIO commends EPA staff for their consistent hard work to implement the RFS and realizes that resources are and will likely remain limited. Significant headway has been made in the past year and there are now only 22 pending pathway applications pending.³⁰ However, many of the recent approvals have been conventional ethanol pathways versus new advanced and cellulosic pathways.³¹

Approval of pathways for cellulosic and advanced biofuels would show both developers and investors that there is a path forward for new biofuel technologies. This would help spur commercialization of these technologies by giving producers the confidence they bring their technology to EPA, knowing it will be considered in an efficient process. A streamlined process to pathways is especially significant for new technologies that have yet to be submitted for approval.

EPA should continue to press towards expansion of the RFS program to accommodate as many routes to qualifying renewable fuel as possible. It should allow room for use of technologies and overcome further regulatory barriers to enable new, innovative technologies to make it to the marketplace.

²⁸ Daystar, J., Handfield, R., Golden, J., McConnell, E., & Morrison, B. U.S. Department of Agriculture. "BioPreferred: An Economic Impact Analysis of the U.S. Biobased Product Industry." (Jul. 9, 2019). Available at <https://www.biopreferred.gov/BPRResources/files/BiobasedProductsEconomicAnalysis2018.pdf>

²⁹ 36768-36776

³⁰ EPA, *Pending Petitions for Renewable Fuel Pathways*. (Aug. 5, 2019). Available at <https://www.epa.gov/renewable-fuel-standard-program/pending-petitions-renewable-fuel-pathways>

³¹ EPA, *Approved Pathways for Renewable Fuel*. (Aug. 5, 2019). Available at <https://www.epa.gov/renewable-fuel-standard-program/approved-pathways-renewable-fuel>



EPA should also consider expanding its definition of renewable biomass under the RFS to include trees established from natural regeneration silvicultural systems and process wood residue established from silvicultural systems. Expanding the definition of renewable biomass from naturally regenerated forest land, residues, and byproducts from milled logs and pulpwood type logs would make the U.S. Department of Energy's billion-ton study on biomass feasible.³²

A broader approach to pathways and new feedstocks is a much better fit with the statute's interlocking goals, which include jumpstarting investment, innovation, and job growth in the United States; enhancing energy and national security domestically and abroad; and combating climate change.

c. Corn Kernel Fiber Technologies

BIO disagreed with EPA's decision to stop processing and approving new cellulosic production registration applications for corn ethanol facilities installing technologies to produce cellulosic ethanol from corn kernel fiber; with the last one approved in November 2017. This delay of an already approved technology represents millions of new cellulosic biofuel gallons avoided during 2018 and 2019, which are therefore not being considered as part of the 2020 RVO analysis.

To address this issue, EPA put forward its *Guidance on Qualifying an Analytical Method for Determining the Cellulosic Converted Fraction of Corn Kernel Fiber*.³³ While BIO appreciates EPA efforts to provide clarification to the methods it will accept for determining the cellulosic converted fraction, questions still remain on what methods are acceptable and what are not.

BIO urges EPA to provide clarity to the industry and resume the processing and approving new registration applications to produce qualified cellulosic biofuels, especially those applications proposing to produce the fuel using technology previously approved by EPA. This could increase the final volumes for liquid cellulosic biofuels by tens of millions of gallons in the final rule and provide a value added market for agricultural producers dealing with low commodity prices.

d. Advanced Biofuel Volumes

BIO appreciates EPA proposing to increase advanced biofuel volumes to 5.04 billion gallons; 0.12 billion gallons higher than the volumes finalized for 2019. However, BIO believes the final volume for advanced biofuel gallons could be higher if EPA takes the appropriate steps to allow new technologies and facilities to come online.³⁴

³² U.S. Department of Energy. Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy. (Jul. 2016) Available at https://energy.gov/sites/prod/files/2016/12/f34/2016_billion_ton_report_12.2.16_0.pdf

³³ EPA, *Guidance on Qualifying an Analytical Method for Determining the Cellulosic Converted Fraction of Corn Kernel Fiber* (May 2019). Available at <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100WK94.pdf>

³⁴ 36776-36787



e. Butanol

We appreciate that EPA recognizes that the potential exists for additional volumes of advanced biofuel from sources such as butanol.³⁵ If EPA take certain steps to cut through the regulatory red-tape associated with this fuel, it could result in greater amounts of advanced gallons coming online in 2020.

In BIO's comments³⁶ on EPA's proposed rulemaking for *Modifications to Fuel Regulations to Provide Flexibility for E15 and to Elements of the Renewable Identification Number Compliance System*,³⁷ BIO urged EPA to move quickly on recognizing the benefits of butanol and develop a sub sim to encompass this technology. Providing isobutanol with a Reid vapor pressure waiver will allow greater market access for this advanced biofuel.

Other regulatory barriers that need to be resolved for this fuel to have greater market access include clarifying the Product Transfer Document process to ensure that if isobutanol is not listed as part of each shipment of blend stock for oxygenate blending (BOB), it can still be blended with blend stocks approved for ethanol blending by the blender. Additionally, EPA must provide clarity to fuel vendors that it is possible to add isobutanol blended gasoline to a tank that previously contained ethanol blended gasoline without completely emptying that tank.

Because of isobutanol's unique properties and low vapor pressure, it can be easily added to conventional gasoline. As a "drop-in" fuel, isobutanol can utilize our nation's existing transportation fuel infrastructure. Isobutanol is beneficial in helping communities with compliance of environmental regulations. Ground-level ozone is harmful to breathe and damaging to crops, trees, and other vegetation. Due to isobutanol's low-blend volatility, it can help the over 300 counties nationwide reach EPA's target for ozone at 75 ppb and possibly achieve the EPA's Scientific Advisory Board recommendation that the ozone target be lowered to 60 to 70 ppb.³⁸

Given the potential environmental and consumer benefits, EPA should remove the restrictions on isobutanol to provide greater market access and choice.

³⁵ 36780

³⁶ Batchelor, S. Biotechnology Innovation Organization. Comments on Environmental Protection Agency, Notice of Proposed Rulemaking for Modifications to Fuel Regulations to Provide Flexibility for E15 and to Elements of the Renewable Identification Number Compliance System, EPA-HQ-OGC-2018-0775, 84 Fed. Reg. 10584 (Apr. 29, 2019) Available at https://www.bio.org/sites/default/files/BIO_Comments_EPA_E15_Plan.pdf

³⁷ Environmental Protection Agency, Notice of Proposed Rulemaking for Modifications to Fuel Regulations to Provide Flexibility for E15 and to Elements of the Renewable Identification Number Compliance System, EPA-HQ-OGC-2018-0775, 84 Fed. Reg. 10584 (Mar. 21, 2019), Available at <https://www.epa.gov/renewable-fuel-standard-program/notice-proposed-rulemaking-modifications-fuel-regulations-provide>

³⁸ Ryan, Christopher, et al. "ISOBUTANOL - A RENEWABLE SOLUTION FOR THE TRANSPORTATION FUELS VALUE CHAIN." Gevo (May 2011). Available at <https://static1.squarespace.com/static/50fb1a1fe4b0fa3b92204d53/t/5100bd4ee4b0b2093b3da198/1359002958664/Gevo+NPR+White+Paper+Final.pdf>



f. Aviation Biofuels

We appreciate that EPA recognizes that the potential exists for additional volumes of advanced biofuel from sources such as aviation biofuels.³⁹ This space represents significant potential for growing the advanced biofuel industry and reducing greenhouse gas emissions in the transportation sector.

As the Commercial Aviation Alternative Fuels Initiative (CAAFI) illustrated earlier this year, aviation biofuels are on the cusp of rapid expansion and replication.⁴⁰ Due to robust goals from the aviation industry to reduce emissions by 2050 to 50 percent of its 2005, there have been significant investments and partnerships between airlines, airports, governments, and biofuel producers.

The first flight using blended biofuel took place in 2008. Since then, more than 150,000 flights have used biofuels.⁴¹ This summer, United Airlines made history “with the departure of the Flight for the Planet, the most eco-friendly commercial flight of its kind in the history of aviation. On the Flight for the Planet, United became the first known airline to demonstrate all of the following key actions on a single commercial flight: utilization of sustainable aviation biofuel; zero cabin waste efforts; carbon offsetting; and operational efficiencies.” As part of these efforts, United used a 30/70 blend of low-carbon, sustainable aviation fuel provided by Boston-based World Energy, and traditional jet fuel. The biofuel alone achieves a greater than 60 percent reduction in greenhouse gas emissions on a lifecycle basis compared to traditional jet fuel, and using biofuel is one of the most effective ways an airline can reduce its impact on the environment.”⁴²

With an ever growing number of partnerships there is potential for rapid growth in this sector. However, it is crucial that the EPA continues to be supportive in driving investment and commercialization of aviation biofuels, by ensuring the RFS provides incentives to overcome the costs associated with these new technologies and does not create market distortions or foster uncertainty.

g. Additional Advanced Biofuel Technologies

EPA should take rapid action to clarify that the RFS program’s definition of renewable biomass can accommodate both non-photosynthetic and non-heterotrophic biofuel pathways to increase volumes of advanced biofuels. As BIO submitted back in 2016,⁴³ such a clarification could help prevent avoidable

³⁹ 36780

⁴⁰ Csonka, S. CAAFI, “General Industry Progress Update.” (Apr. 4, 2019) Available at <https://www.biofuelsdigest.com/bdigest/2019/07/29/saf-on-the-cusp-of-rapid-expansion-and-replication-the-digests-2019-multi-slide-guide-to-caafi/>

⁴¹ Le Feuvre, P., IEA Energy Analyst “Commentary: Are aviation biofuels ready for take off?” (Mar. 18, 2019) Available at <https://www.iea.org/newsroom/news/2019/march/are-aviation-biofuels-ready-for-take-off.html>

⁴² United Airlines Press Release. “United Airlines Makes History Flying the Most Eco-Friendly Commercial Flight of its Kind.” (Jun. 5, 2019) Available at <https://hub.united.com/united-most-eco-friendly--flight-2638700079.html>

⁴³ Comment submitted by Brent Erickson, Executive Vice President, Biotechnology Innovation Organization (BIO) on Renewable Fuel Standard Program: Standards for 2017 and Biomass-Based Diesel Volume for 2018 EPA-HQ-



shortfalls in investment in and production of advanced biofuels, which provide substantial greenhouse gas (GHG) emissions reductions from the transportation sector.

III. Addressing the Remand in *Americans for Clean Energy v. EPA*

BIO is disappointed that EPA is proposing to keep the 2016 RVOs despite the D.C. Circuit's mandate in *ACE* that EPA reconsider its decision to lower the renewable fuel standard for that year by 500 million gallons.⁴⁴ As noted earlier in our comments, the Agency's decision to reduce total renewable fuel volume requirements through the improper use of its general waiver authority had a detrimental impact on investment and development of advanced and cellulosic biofuels and undermined confidence in the RFS. Instead of attempting to right the wrong committed in 2016, EPA seems to now be "doubling down," claiming that any approach that requires additional volumes of renewable fuel use would simply be too burdensome on obligated parties. EPA's proposed inaction is arbitrary and capricious and likely will not stand up should it be challenged in court. Therefore, BIO asks that EPA meaningfully reconsider how to add back to the market the 500 million gallons of renewable fuel it wrongly removed in 2016.

IV. EPA's Issuance of waivers for Small Refineries and Small Refiners

EPA's unprecedented issuance of retroactive small refinery waivers (waivers granted after RVOs for that year have been finalized) for 2016 and 2017 coupled with the additional 31 exemptions EPA granted for 2018 have undermined the market for renewable fuels and the renewable fuels program as a whole. As discussed thoroughly in BIO's June 4, 2018 "Petition for Reconsideration of 40 C.F.R. § 80.1405(c), EPA Docket No. EPA—HQ—OAR—2005—0161, promulgated in 75 Fed. Reg. 14,670 (March 26, 2010); Petition for Reconsideration of Periodic Reviews for the Renewable Fuel Standard Program, 82 Fed. Reg. 58,364 (Dec. 12, 2017)" (the Petition),⁴⁵ EPA's recent practice of granting more and more retroactive small refinery exemptions has resulted in over 3.6 billion gallons of renewable fuels lost and annual volume requirements consistently not being met. This after-the-fact constructive reduction in annual volume requirements harms the renewable fuel program and the biofuel industry in the form of reduced blending, diminished demand, and lower prices than would have otherwise existed.

Putting aside the appropriateness of EPA's recent issuance of exponentially increasing retroactive small refinery waivers, it is EPA's obligation to ensure that,

OAR-2016-0004-3601 (Sep. 14, 2016) Available at <https://www.regulations.gov/document?D=EPA-HQ-OAR-2016-0004-3601>

⁴⁴ *Americans for Clean Energy v. EPA*, 864 F.3d 691 (D.C. Cir. 2017) (*ACE*) Available at [https://www.cadc.uscourts.gov/internet/opinions.nsf/5F1D8BC9815C4C698525816B00543925/\\$file/16-1005-1686284.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/5F1D8BC9815C4C698525816B00543925/$file/16-1005-1686284.pdf)

⁴⁵ The Petition was filed by BIO, the Renewable Fuels Association, American Coalition for Ethanol, Growth Energy, National Biodiesel Board, National Corn Growers Association, and the National Farmers Union, collectively the "Coalition."



despite those waivers, annual volume requirements are met. BIO, therefore, reiterates the Coalition's request that EPA reconsider and revise its current Annual Standard Equations in order to set an annual percentage standard that prospectively accounts for lost volumes due to retroactive waivers. We also request that, as EPA proposed in its June 19, 2018 "Revised version of 2019 RVO NPRM," it adjust the final 2020 annual percentage standards to reflect projected small refinery exemptions for compliance year 2020.

V. Conclusion

EPA must remand the 500 million gallons as directed in ACE and end its practice of issuing small refinery waivers. Addressing this problem, along with removing the regulatory red type hindering new advanced and cellulosic biofuel technologies will enable the industry to produce greater volumes of renewable fuels and surpass the volumes in the proposed rule.

Increasing volumes and providing regulatory certainty in the final rule is also vitally important to enable this sector to produce low-carbon biofuels that improve air quality and reduce greenhouse gas emissions. A final RFS with robust volumes and certainty that obligated parties will use liquid gallons of biofuels is also essential to agricultural producers and rural communities who need value added markets for commodities in the face of shrinking foreign markets.

These innovative technologies that have led to the rapid growth of the renewable fuels industry and the biobased economy. This benefits our nation's economic and energy security. We can build on this success with a final rule that truly increases volumes for advanced and cellulosic biofuels.

BIO urges the agency to work with our organization and our member companies to make these recommended changes. The result will bolster agriculture and rural communities, spur the development of new investment, innovation, and job growth; and enhance energy and national security.

We look forward to working with you towards these goals. Thank you for considering these comments.

Sincerely,

A handwritten signature in black ink that reads "Stephanie Batchelor".

Stephanie Batchelor

Vice President
Industrial and Environmental Section
Biotechnology Innovation Organization (BIO)