

February 4, 2022

U.S. Environmental Protection Agency
EPA Docket Center
Docket ID No. EPA–HQ–OAR–2021–0324
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Renewable Fuel Standard (RFS) Program: RFS Annual Rules, Docket ID No. EPA–HQ–OAR–2021–0324

Dear Administrator Regan:

On behalf of the Advanced Biofuels Association (ABFA), thank you for the opportunity to comment on EPA's proposed Renewable Volume Obligation (RVO) standards for 2020-2022 and the additional regulations EPA is proposing to finalize with this rulemaking.

I. Introduction

ABFA is a 501(c)6 non-profit trade association founded in 2007 representing forty-four companies from the U.S. and around the world who are stakeholders in the biofuels industry. ABFA represents all sustainable aviation fuel (SAF) currently in production in the United States, adding to our membership's world-wide annual production exceeding five billion gallons of renewable diesel, biodiesel, renewable gasoline, and renewable heating oil.

It is paramount that the EPA return the RFS program to solid footing, both in terms of establishing the standards and providing certainty in the policy directions that set the markets ability to comply. The Agency's second significant regulatory delay over the last five years postponing issuance of the annual RVO standards have had *significant* financial and planning impacts on existing and emerging biofuels markets.

Without regulatory certainty, markets - including obligated parties, producers, and suppliers - have been left to hazard guesses about supply and demand, and compliance obligations – all during one of the most challenging times in recent history due to the global pandemic. Overlay the additional uncertainty regarding years of unresolved determinations on small refinery exemptions (SREs) and other major policy uncertainties, and they were left with increasingly untenable decisions. The market atmosphere was highly volatile and significantly impacted the costs to comply with the RFS program, reflected in the prices of Renewable Identification Numbers (RINs) and ongoing market swings. Without clarity and certainty as called for in the RFS statute, the market rumors and government vagueness has wreaked havoc on our industry, disrupting its stability and ability to plan and invest.

ABFA recognizes the last two years' challenges, both the COVID pandemic and EPA regulatory uncertainty, have affected all parties. It is necessary to take this into consideration when establishing the RVOs both retrospectively and prospectively. That considered, it is vital to now provide certainty, applying legally guided and appropriate policy directives.

EPA must evaluate the massive reduction in gasoline and aviation fuel demand, and appropriate rebooting of the renewable fuels market as it emerges from the pandemic. While diesel fuel production and consumption were reduced, the delta was marginal compared to that in the gasoline pool. Indeed, both the biomass-based diesel (BBD) and advanced pools are success stories from the last two years, exceeding the

standards EPA had established and actually counterbalancing what would have been an even greater shortfall in the conventional category.

As the BBD and advanced pools held up the volumes, their success also lowered the carbon emissions in the market overall; these fuels are indeed the better performing fuels in this regard. Qualifying under the advanced criteria, these fuels deliver 50% carbon emissions reductions, and even those from grandfathered facilities exceed the minimum 20% reduction in the conventional pool while also supporting overall compliance.

Fortunately, our industry continues to evolve both technologically and commercially. As we continue to grow and diversify our markets, many of ABFA's members are seeking to utilize new feedstocks and apply net zero principles across the feedstock-to-fuel value chain, looking to significantly exceed the minimum carbon reduction requirements set forth by the RFS statute. Congress mandated one billion gallons of biomass-based diesel, but today the market has tripled that goal, and is poised to further double it in the coming years. Congress intended U.S. advanced fuel consumption to reach 21 billion gallons by 2021. While that goal has yet to be achieved in the cellulosic category, the biomass-based diesel pool and the total advanced pool have exceeded the original intentions and are poised to continue to grow over the coming decade.

To be successful, ABFA believes the EPA must follow the law governing the RFS program in application while also setting defensible standards. The intent of the program from its creation was to build an advanced lower carbon biofuels industry. The first step toward this end, in our view, is to ensure the Agency's process more directly aligns with and sets standards according to the actual volumes of fuels made and used in the U.S. fuels market. The standards should represent the actual number of gallons consumed irrespective of the type of product or feedstock they represent; the market will make the most efficient and economical decisions that support achieving the standards on a categorical basis. This noted, in line with Congressional intent, EPA should ensure fuels that can be distributed with existing infrastructure are valued appropriately under the RFS program.

This law was, and still is, intended to accomplish two primary objectives – both the environmentally-conscious outcome of reducing greenhouse gas (GHG) emissions and to provide more diverse and plentiful domestic energy resources to promote national security. EPA must recalibrate the program to ensure these goals remain the program's top priorities and promulgate future standards with these objectives in mind.

EPA's upcoming “set” rulemaking process (setting the program for 2023 and beyond) supports that recalibration and can play a significant role in expediting the transition to a lower carbon future for liquid transportation fuels. We specifically note the Agency’s references to set in several sections in the proposed rule, all pointing to the statutory intent of support increasing volumes of renewable fuels and, in particular, furthering the RFS program's direction under the Clean Air Act for 2023 and beyond. The Agency acknowledges its intent to support and enable the potential positive impacts on factors such as “climate change and energy security” in this proposal.

It is further noted that the current proposed volumes for 2022 are based on EPA's “assessment of the ability for the RFS program to incentivize increased production and use of renewable fuels.” ABFA supports this approach and encourages EPA to keep these considerations at the forefront in order to achieve significant GHG emissions reductions from the liquid transportation fuel sector. We look forward to in-depth dialogue and engagement with EPA during this SET process, including the opportunity to detail for the Agency ABFA’s general "Framework", which is an approach for the future allowing increased focus on incentivizing advanced fuels production and use under the RFS program.

Additionally, ABFA encourages the Agency to consider adopting better carbon management and evaluation systems, net zero concepts, an updated lifecycle methodology and models, and ensuring fuels exceeding the RFS's threshold carbon reduction requirements are given higher value (several metrics can be considered in this calculation). It is essential that EPA's carbon reduction models reflect the best science available, avoid politics at all costs, provide the best possible data, and offer as much certainty as possible.

Finally, we thank the Agency for your efforts to address the use of bio-intermediates under the RFS. We strongly support this effort and make specific comments that support finalization and justification of a more flexible, less restrictive approach that reflects the realities of the market and its supply chain.

The remainder of our comments will specifically respond to the proposal's request for comments and our high-level concerns with what has been proposed.

II. Renewable Volume Obligations and Standards for 2020, 2021 and 2022

As stated in the overview, we stipulate that the last two years have presented challenging and exigent circumstances that require a thoughtful response. We generally support EPA's legal analysis that under the statute the Agency can exercise the "Reset" authority in accordance with CAA section 211 (o) (7)(F). This authority provides you with the ability to "reset" the volume targets by waiver if the targets exceed the actual volume thresholds per the conditions in that section. We recognize that in 2020 and 2021 the volumes of renewable fuels blended declined because of the Covid-19 pandemic making it difficult to meet the statutory volumes for certain categories. Nevertheless, the volumes that were achieved under that rule were supported by the growth of volumes in the Advanced and Biomass Based Diesel pools as well as some growth in the Cellulosic pool.

Regarding a significant legal and policy issue, ABFA is very concerned with the precedent the Agency may set by retroactively lowering volumes, particularly after the 2020 volumes were set by final rule in 2019. If you choose to finalize the revised 2020 volumes under that authority, we strongly encourage you *not* to do so in any future rulemaking.

While we acknowledge the once-in-a-lifetime COVID-19 pandemic has created many unique challenges regulatorily and in the market, the upcoming SET process for 2023 and beyond does provide the opportunity to avoid such volatile approaches going forward. We further recognize and support the importance of a solvent RIN bank and that this action intends to support this solvency as a primary goal. Indeed, solvency should remain a goal for all post-2023 regulation. Additionally, given the retroactive approach for 2020 and the Agency recognizing the importance and necessity of a solvent RIN bank, we strongly suggest the Agency temporarily relax the RIN rollover cap for both 2021 and 2022. We suggest the rollover allowances be increased to 40% for 2021 and 30% for 2022. This approach would allow the market to recalibrate and support the overall compliance goals of this program.

With regard to small refinery exemptions (SREs), ABFA has been intimately involved in the SRE discussion since 2010. In 2018, ABFA legally challenged the Agency's authority to expand the opportunity for small refineries/small refiners to submit exemption requests beyond those approved under the original authority and approval process. At the time of that challenge, ABFA recognized the continued need, under law, to allow and support exemptions to those entities who qualified for consideration of exemptions under the conditions set forth in the law. At this point in the program, it may be questionable as to whether Congress intended continuation of these extensions. While we recognize the Agency issued, under separate cover and process, a proposal to deny all past and current SRE requests, it remains unclear as to how the Agency will address SREs in establishing the standards going forward. At this time, we assume that the

approach used in the 2019 final RVO rule will not apply going forward and the exemption reallocations for the standards set for 2020 are being addressed through the “Reset” authority for the 2020 volumes.

Regarding three specific actions, ABFA supports application of the phased remand volumes and adjusting the equivalence value for Biomass Based Diesel to 1.55, however we question why the Agency has yet to at least propose the BBD volumes to 2023. These volumes, by law, are supposed to be set at least 14 months in advance. Nowhere in this proposal does the Agency address this requirement. At minimum, we believe the Agency should establish a range of projections for this category so the industry can have some level of certainty for what the standard will be.

ABFA offers the following comments pertaining to the 2022 BBD and total Advanced Standards: In the rulemaking, EPA has proposed to set the Biomass Based Diesel Standard at 2.76 billion gallons for 2022. In addition, EPA proposed that the total Advanced Standard be set at 5.77 billion RINs. Data on available feedstocks and production support a much higher number, up to 7 billion RINs. In the fall of 2021, in the leaked document that was validated as EPA-generated, the Agency itself initially intended to propose an advanced number for 2022 of 6.77 billion RINs. The facts could support raising the total advanced standard to at least that initially proposed in the Agency’s draft document.

As we move forward, ABFA’s membership alone accounts for 5 billion gallons of renewable diesel production to be online by the end of 2024. With new facilities continuing to come online, while recognizing some lag is inevitable before full production numbers may be met, these announced facilities are moving rapidly towards production. This is an area of remarkable success for the advanced biofuels industry. It is also a terrific opportunity for this Administration to achieve significant carbon reduction from the distillate side of the transportation market. We encourage you to take these data, signals, and efforts into consideration when setting a final number for both the advanced and biomass-based diesel pools.

In an effort to provide analytical support to the Agency in making final volumetric decisions pertaining to the availability of feedstocks -- particularly the availability of fats, oils and greases -- our Association commissioned a study from a reputable global analytics firm, LMC International, to provide a view of the status of global volume of these feedstocks. ABFA has already shared the results of this study with the Agency. This study looked out to 2030 and beyond in terms of the ability to produce biodiesel, renewable diesel and SAF. We have attached in Appendix A the summary results of the study and are open to facilitating follow-up conversations on the study's findings with the authors at LMC.

Proposed Volume Requirements (Billion RINs)

	2020	2021	2022
Fuel Category			
Cellulosic Biofuel	0.51	0.62	0.77
Biomass Based Diesel	2.43	2.76	2.76
Advanced Biofuels	4.63	5.20	5.77
Total Renewable Fuel	17.13	18.53	20.77
Supplemental Standard	n/a	0.25	0.25

Advanced Gallons and RINs Summaries

EMTS RIN Generation Report (Rounded)

	2020	2021
Domestic Bio Diesel RINs	2.7	2.5
Domestic RD	0.8	1.3
Foreign Imported Bio Diesel	0.204	0.311
Foreign imported RD	0.6	0.66

EMTS: D4 Gallons

	2020	2021
Domestic Biodiesel gallons	1.819	1.3
Domestic RD gallons	0.480	0.77
Imported Biodiesel gallons	0.2	0.2
Imported RD gallons	0.3	0.4

EMTS D4 and D5 RINs

	2020	2021
Total D 4 RINs – Domestic and Imported	4.4	4.8
Total EMTS D5 RIN Generation	0.335	0.225

EMTS Combined D4 and D5 RINs

	2020	2021
Total of D5 and D4 RIN Generation (Domestic and Imported)	4.735	5.025

III. 2023 RFS Program: The SET Process

While we recognize the 2023 and beyond standards (SET) will be addressed in a forthcoming proposal, in this proposal, there were several references to the SET, and we think it is important to provide some response to those statements.

The Agency must recognize the opportunities and significant potential in the SET process to enhance the RFS program’s ability to deliver more carbon reduction. Last year, ABFA proposed consideration of a “Framework” for all potential liquid and gaseous transportation fuels as a means of phasing in more renewable content into every gallon of transportation fuels. As innovative technologies come online and the types of feedstocks expand moving forward, this would allow the markets to reach greater blending limits and much deeper carbon reductions – all under the existing laws and authorities available to the Agency.

As you know, many of these renewable fuels can be used neat or blended at elevated levels. In some cases, the neat fuels can meet the same ASTM standards or can be blended and can maintain the necessary ASTM and Agency specifications of the blended fuels. Renewable products, like renewable diesel and renewable

aviation fuels (SAF) compare directly to that of traditional diesel, aviation fuel and heating oil. We believe the program can encourage a future where, at minimum, a gallon of gasoline or jet fuel is a 30% or 50% blend of a renewable component with a 50%, 60% or even greater carbon reduction when compared to fossil-based fuels.

With adoption of net zero ambitions, many new facilities would come online with net zero emissions. One of ABFA's members has already proposed such a facility in South Dakota. Additionally, four of our large refining members have officially announced their intention to achieve net zero by 2050.

We believe the SET process allows EPA the flexibility to consider rewarding more value (i.e., RIN credits or some other metric) to fuel producers that exceed minimum carbon reductions. This feat can be achieved in several ways, including facility design, process systems, and energy sources to be net zero and lower carbon indexed fuels. Offering companies that produce better performing fuels extra economic support through the selected metric valuations will act to “incentivize” use of better performing feedstocks, conversion technologies and fuels – all supporting the overall goals of the program.

Some argue EPA should also consider raising the volumes to include jet fuel as part of the annual obligations to account for increasing production of Sustainable Aviation Fuel (SAF). ABFA is refraining from commenting on that issue today, but wanted to recognize the full argument to consider the entire range of options. Once a commercial threshold volume of fuel is met, EPA could then account for the appropriate volume in the mandated calculations. This approach might assist in jump-starting the SAF industry.

In addition, EPA should consider setting RVO mandates for more than one year. The inconsistency and regulatory uncertainty of the program over the last decade has slowed its ability to influence the development and expansion of the market.

We are prepared to discuss in-depth a set of principles and option sets for addressing these topics under our Framework, and encourage the Agency to consider our proposals as it moves forward with the SET rulemaking proposal.

Additionally, our Association has adopted a set of "Principles for Low Carbon Fuel Policy" attached in Appendix B. These principles, which ABFA's members spent six months openly and constructively debating prior to adoption, are a starting place for a longer and broader conversation on how to deliver more carbon reduction from our transportation fuels in the future. The exercise's purpose was to create an open, transparent framework from which to engage -- delivering a globally-minded policy solutions to encourage the development and use of low carbon fuels.

As the world grows and people continue to move around it, we will undoubtedly need an “all of the above” approach to carbon reduction; there will be no silver bullet. EPA’s regulatory mission and expertise will be essential in how the United States navigates the nation’s path forward on this matter.

We look forward to working closely, openly, and thoughtfully with the Agency and other stakeholders and decision-makers on a policy framework grounded in science with up-to date lifecycle GHG models and focused on driving GHG emissions reductions in transportation by providing the regulatory certainty needed to incentivize the production of lower carbon fuels. This will be essential if we are to have governments and private industry work together to solve the climate challenge.

SET provides that opportunity, and ABFA and its individual members welcome engagement from the Agency to design and implement a program that fully supports the intended goals of the Clean Air Act.

IV. Biointermediates

Throughout the discussion on Biointermediates in the Proposed Rule, EPA highlights the enormous potential of cellulosic biofuels. EPA states that implementation of the Biointermediate provisions will facilitate the growth of cellulosic fuels, “required under the RFS” program, by reducing capital costs and by providing an effective pathway for the conversion of biointermediates to cellulosic biofuels. EPA also states that it continues to review comments to “consider how best to develop and implement a program that would allow for the production, transfer, and use of biointermediates to produce renewable fuel under RFS.” While the objectives for the Biointermediates provisions are laudable, and ABFA fully supports EPA’s objective to thereby facilitate the growth and further commercialization of cellulosic and advanced biofuels, it is the view of many of our members that some of the provisions actually unnecessarily complicate and serve as serious impediments to the production and growth of cellulosic and advanced fuels from Biointermediates.

With respect to the Biointermediates provisions of the proposed Rule, we have divided our general comments into four categories in response to the particular content and proposals that specifically relate to the proposed rule and may impede progress and create unintended barriers to entry of those parties working in these technology sectors.

- A. Definition of Biointermediates
- B. Limiting the Transfer from a Biointermediate Production Facility to a Single Renewable Fuel Production Facility
- C. Mandatory QAP/EMTS Compliance Design
- D. Selection of the Appropriate Yield Methodology for Co-processing, specifically FCC co-processing

A. Definition of Biointermediates

Many of our members have specific issues with how the Agency has proposed to revise the definition of renewable biomass. Those issues further complicate and create problems as they apply to the definition of biointermediates.

Multiple Use Cases

For example, the second bullet (2) of the Biointermediates definition is problematic since a biointermediate must not “*meet the definition of renewable fuel in this section and RINs were not generated for it as a renewable fuel in its own right.*” In cases where the properties of a potential biointermediate product are such that it can be used either directly as renewable fuel (and thereby generate RINs) or as a biointermediate, it would be disqualified for consideration as a Biointermediate under the RFS. Unfortunately, there are many cases in commercial practice where a renewable product could be used, as produced, as either a renewable fuel or a biointermediate. Several examples can be pointed to for both diesel and gasoline fuels.

In one case, a diesel fuel blending component or product could be upgraded to fungible diesel or sustainable aviation fuel (SAF). A pyrolysis oil could be intended either for use as a renewable heating oil (a renewable fuel) or as a biocrude biointermediate for cracking of hydro-processing operations. Another such example is undenatured ethanol, which the Agency intends to designate as a biointermediate. Our members are providing very specific comments on their concerns with the direction the Agency is taking in such cases.

Furthermore, the current regulations allow biointermediate fuels to generate a RIN for both space heating and cooling purposes. This definition would take away the current afforded RIN and reduce the ability to lower the CI index of these products. The heating oil industry is already pursuing a future of low carbon

heating oils. This is counterproductive and an arbitrary decision that does not support the goals of the program.

ABFA believes the RFS program should avoid protectionism. No certain components of the industry, nor any one technology, nor any one feedstock should be favored over another. However, this could be easily addressed through batch designation for the product to be used either as a fuel or as a biointermediate at the time of production and transport / transfer.

FFAs

We would also like to place greater context around the definition of biointermediates relating to Free Fatty Acids (FFA). We urge EPA to define a biointermediate as a material that has been through chemical alteration at a facility other than the renewable fuel production facility. Only FFAs derived from acidulated soap stocks and other chemically altered FFAs such as acid oils would be biointermediates. Other FFAs, like those from fractionation, should not be biointermediates since they are generated from a physical separation process and do not undergo intentional chemical alteration.

FFAs derived from qualified feedstocks listed on Table 1 in 80.1426 that do not come from chemical alteration should qualify for RIN generation even if processed at a different facility. This definition would exclude palm oil FFA since palm oil is excluded from Table 1. Fatty Acid Distillate (FAD) would fall into the FFA category using this proposed definition for FFA and biointermediates. However, the FAD separation from the received feedstock is a change to the physical form of the feedstock fed into it and is not a substantial change nor a chemical change. Based on these facts, FAD should not be classified as a biointermediate.

Other Issues

The Agency must not be overly restrictive of the ability to produce and unreasonably limit transfers of biointermediate feedstocks. EPA should fully understand the ramifications of such actions prior to creating unintended consequences that adversely impact production and use of advanced renewable fuels. Further, we do not believe now is the time to try and thread the needle on energy content in renewable biomass and other issues involved in this specific sector. Time will enlighten what will emerge. Little is currently running under these circumstances, so limiting flexibility through overly restrictive regulations is not appropriate. ABFA has always contended the Agency had the authority to allow the production and use of biointermediate feedstocks under the existing regulatory framework and contends it still does. Constraining feedstocks and partial conversion of feedstocks through this regulation is not only unnecessary, but counter to what the goal of this regulation should be. If the Agency does not reevaluate and modify some of the provisions they propose, then they should consider going back to what ABFA proposed years ago -- utilizing the part 80 registration process as a case-by-case approach to addressing the unique situations that may present additional concerns or barriers that are not yet averted. In the end the big picture should evaluate the carbon index score of the feedstock, facility, and fuel, which might argue for a different result rather than the one you are proposing for consideration.

Another example includes a variety of renewable fuel products, such as biodiesel and ethanol (particularly those that are now blended with conventional transportation fuels), or pyrolysis oils, which can be used directly as renewable fuels, but which could also be delivered as biointermediates to other upgrading and conversion operations. Such operations could include Fischer Tropsch synthesis (to produce gasoline, diesel &/or SAF products), renewable hydrogen production, and renewable natural gas production, all of which would qualify as conventional & fully fungible fuel products. The current wording precludes the use of such renewable fuel products as biointermediates in these cases, likely unintentionally. There are simple

solutions to classify a “renewable fuel” as a “biointermediate” while preventing RIN fraud, including the use of product transfer documents and affidavits, as is currently practiced for the generation of heating oil RINs from pyrolysis heating oils. Additionally, the QAP provisions can certainly be tailored to account for such circumstances.

B. Limiting the Production of Biointermediates to a Single Facility

The lack of optionality for biointermediate producers is incredibly limiting to business models, since a biointermediate product may be suitable for multiple upgrading pathways and, as discussed above, could be used directly as a renewable fuel in some cases. The biointermediate production facility must be able to respond to seasonal demand for such diverse end-uses as well as to optimal pricing for different end-uses.

Furthermore, it is highly likely that the biointermediate production facility and the upgrading facility will be independently owned and operated, and both enterprises must have the freedom to secure other customers and suppliers if there are any disruptions at one facility or the other.

EPA acknowledges that this restriction is being proposed to address concerns that invalid and/or fraudulent RINs could be generated. We believe this can be mitigated with many of the other safeguards that EPA is proposing (e.g., mandatory QAP and increased recordkeeping requirements by biointermediate producers).

Furthermore, EPA should allow for the possibility of an intermediate facility between the initial facility that converts the renewable biomass feedstock to a biointermediate and the final facility that converts the biomass to a renewable fuel. We envision situations where an intermediate facility will be necessary to further process the biointermediate to, for example, deoxygenate, before the biointermediate will be suitable for processing into a renewable fuel at another facility. We would expect that EPA would require all facilities in the chain to participate in the QAP program. We believe that participation in the QAP program will ensure the integrity of the RINs.

C. Mandatory QAP

Our Association understands the concern over the potential for double counting of RINs and supports EPA's mandatory QAP requirement. However, ABFA encourages EPA to be more transparent regarding QAP protocols and the timelines for which producers can expect EPA to respond to QAP protocol applications. Further, we suggest that EPA not require all related facilities use the same QAP provider. That is an unnecessary restriction, and there may be benefits in terms of independence in allowing the facilities to each choose their own – EPA approved – QAP provider. Requiring that both the biointermediates production facility and the facilities that receive the bio intermediates participate in the QAP program is sufficient to address EPA’s concerns about RIN fraud. RIN fraud is the reason the QAP program was created, and EPA created a robust program to address that issue. EPA should rely on that program, have confidence in the protocols of the program, and not restrict the number of facilities that can receive the biointermediates from the biointermediate production facility.

While ABFA fully supports rapid implementation of the biointermediate provisions, ABFA members have some general and specific questions regarding how the compliance systems are set up and what specifically will be required for producers and other supply chain participants in the EMTS. If the Agency makes requested and appropriate changes to the provisions proposed under the biointermediate provisions, it is our hope that EMTS will be able to accommodate those adjustments or changes -- if not immediately, then soon after the rule is finalized. We want to ensure the Agency’s goal of implementing these provisions within 60 days can be achieved.

D. Selection of the Appropriate Yield Methodology for Co-processing

The entire purpose of addressing biointermediates through regulation is to afford a more diverse mix of feedstocks and conversion technology applications, thereby increasing potential production of additional and meaningful volumes. For example, options utilizing co-processing afford the opportunity to produce significant volumes of lower cost fuels in the future. Both currently qualified feedstocks and potential additional future qualified feedstocks present meaningful opportunity to produce advanced drop-in fuels and fuel components.

The Department of Energy (DOE) has identified an entire array of feedstocks, including wood residues and municipal solid waste, for use in future production. The RFS statute carefully spoke to all these potential feedstocks, attempting to create a robust volume of cellulosic and advanced fuels from a diverse range of feedstocks for the future. Co-processing affords stakeholder groups the opportunity to convert feedstocks more efficiently and economically into qualified and, in most cases, fully fungible drop-in fuels.

Removal of the biointermediates regulatory impediment, coupled with flexible and supportable co-processing allowances, allows other feedstock and technology groups to compete from the more level playing field in regard to capital investment. Now, Congress is considering separate tax credits for SAF / jet fuels. The future of both new feedstocks and volumes of SAF are extremely important, and we must understand the implications of being overly restrictive of co-processing at this time.

As the Agency looks to finalize decisions on determining the biogenic portion of finished fuels, particularly those renewable fuels resulting from the coprocessing of renewable and non-renewable feedstocks, the Agency should not restrict the application of any potential verification methodology. There are multiple testing and validation approaches, including an input energy Equivalency Value methodology, which should remain fully viable with the appropriate analytics that support them.

For example, recent biocrude FCC co-processing work conducted jointly by three National Laboratories (NREL, PNNL & LANL) has demonstrated “at least 80% biogenic carbon is incorporated” into FCC co-processed fuels with biocrude additions up to 10%. One of our members has observed that when the yields of renewable transportation fuels (as determined by NREL/Petrobras mass balance models and using the biogenic incorporation assumptions of the above National Laboratories) are reduced using the 80% incorporation factor, the resultant calculated RIN values are still, on average, much greater than the RIN values calculated by the Equivalency Value.

Such an adjustment (reduction) demonstrates that the adoption of an energy Equivalency Value method would further mitigate the concern by EPA that mass balance methodologies could overestimate biogenic carbon in co-processed renewable transportation fuels (noting that scientific literature demonstrates that mass balance still remains as the most accurate and reliable yield methodology for biocrude FCC co-processing). These and other methods, including the assorted opportunities cited in the proposal, can and should be allowed for validation under the program depending on the specific conversion circumstances.

The RFS program, originally established under the Energy Policy Act of 2005 and expanded under the Energy Independence and Security Act of 2007, identified the needs for energy independence and security and reducing GHG emissions as its core intents.

Since then, both the reduction of petroleum consumption and the adoption of independent and potentially domestically supplied energy sources through the use and conversion of renewable feedstocks have grown in support of these goals. Feedstocks, including feedstocks like biocrude co-processed with petroleum-based feedstocks or used in the conversion of petroleum-based feedstocks, represent a key avenue to

achieving the desired outcome under the Act. It is with this in mind that biointermediate feedstocks utilized under the co-processing pathway to produce the fuels should be counted in respect to the petroleum-based carbon being displaced.

As we move forward in an effort to utilize liquid transportation fuels, we must allow the adaptation of the markets to create new opportunities for the use of hydrogen and the use of renewable power to deliver carbon reduction in places that were not originally considered. For example, the ability to utilize green hydrogen in a refinery is a major opportunity for carbon reduction irrespective of the energy density of the feedstock. Limiting the options at this point are contrary to the Administrations pledge to reach net zero by 2050.

V. Conclusion

ABFA member companies will be submitting, under separate cover, additional specific comments related to many sections of the proposal. We refer the Agency to their comments to ensure that additional and individual details associated with the proposal are taken into consideration as you finalize this rule.

The focus and approach ABFA members have taken in responding to the Agency's proposed standards is twofold: first, to address at a high level, the key areas the Agency needs to address as it moves to make final the volumes and other regulatory actions in this rulemaking; and second, to identify several key areas of significant opportunity and focus the Agency must consider as it moves to SET the next phase of the program for 2023 and beyond.

As always, we welcome the opportunity for additional engagement on this rule and to support making the best decision as the Agency moves toward finalizing the actions contained in it.

With Regards,



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On behalf of ABFA Member Companies



 **The Outlook for Global Lipid Feedstocks
to 2030**

Prepared for:

**Advanced Biofuels Association
Washington, DC**

February 2022

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The Outlook for Global Lipid Feedstocks to 2030

Rationale for the Study

- Demand for biofuels globally is growing strongly, particularly for biomass-based diesel, as countries aim to meet environmental goals.
- The Advanced Biofuels Association has set a goal for the U.S. to reach 21 billion gallons of biomass-based diesel (BBD) to replace fossil fuels by 2040.
- To reach this goal means 9 billion gallons of BBD by 2030.
- **The critical question: *Will there be enough lipid feedstock to meet this demand?***
- The ABFA commissioned LMC International¹ to forecast the outlook for supply of lipid feedstocks to determine their ability to meet the ABFA's goal.

Lipid supply outlook to 2030

LMC International forecasts total global lipid supply to increase from 246 million metric tons in 2020 to 330 million metric tons in 2030. We include all lipid sources² in our analysis to form a full picture of the global market. (Diagrams 1-3)

In 2030, this volume of lipids will be the equivalent of 93 billion gallons of renewable diesel (RD), if all global lipids are converted to RD. (Diagram 1)

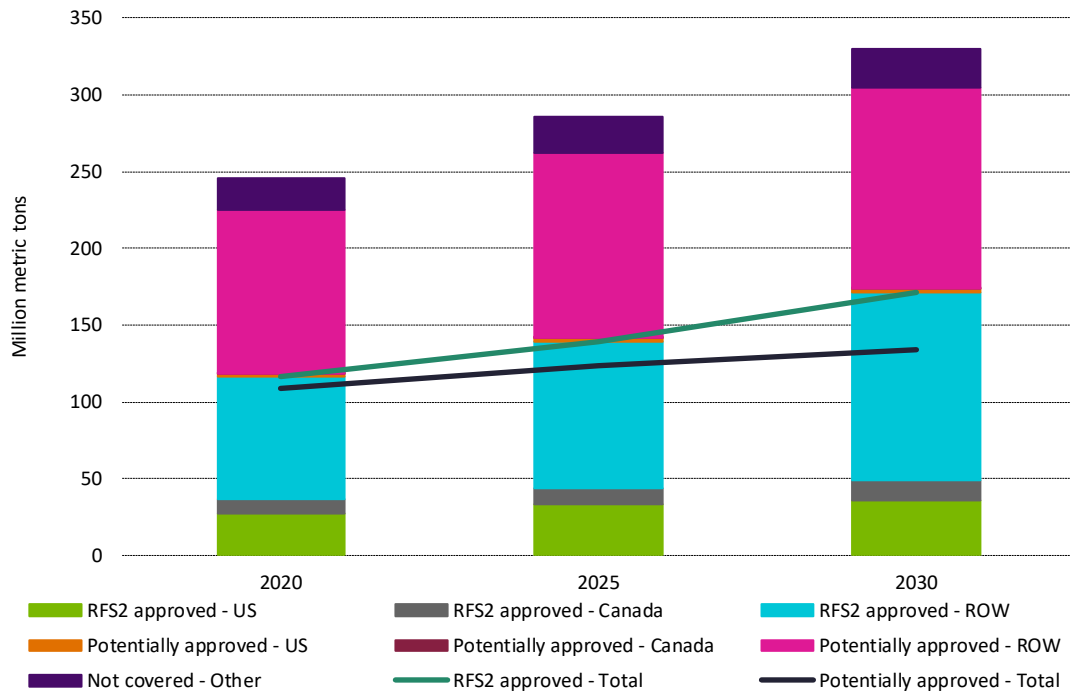
- Of this total, **RFS-approved feedstocks** are rising by 55 million metric tons to 171 million metric tons in 2030.
This is equivalent to **48 billion gallons** of RD in 2030.
- **Potentially approved feedstocks** are rising by 25 million metric tons to 134 million metric tons in 2030.
This is equivalent to **38 billion gallons** of RD.
- **Other oils**² are rising by 4 million metric tons to 25 million metric tons in 2030.
This is equivalent to **7 billion gallons** of RD.

Note: It is important to include both RFS-approved and other lipid sources, as our objective is to look at demand for lipids from all end uses from all countries. So, to exclude a source of supply would create a false deficit.

¹ LMC International is a consulting firm specializing in global economic and market analysis of agricultural feedstocks and their major end products, with a special focus on biofuels.

² Other oils includes oils such as palm that are not RFS-approved and are ruled out of several biofuel policies, but that are a significant source of vegetable oil for a range of end uses around the world. We include more niche or specialty oils, too, in our total, although they are not analyzed in detail.

Diagram 1: Global oils and fats supply forecast to 2030



ROW: Rest of world.

Diagram 2: U.S. feedstock supply forecast to 2030 – by feedstock

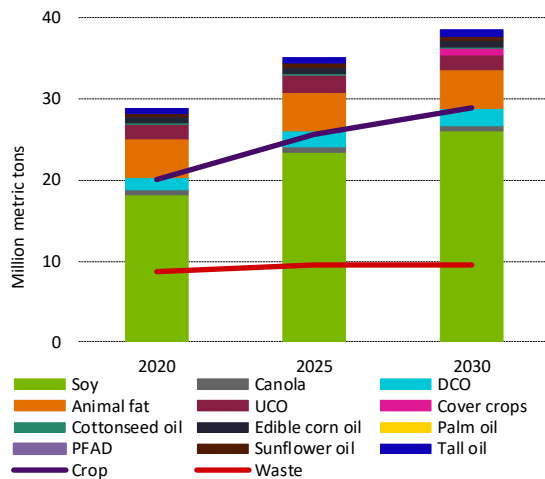
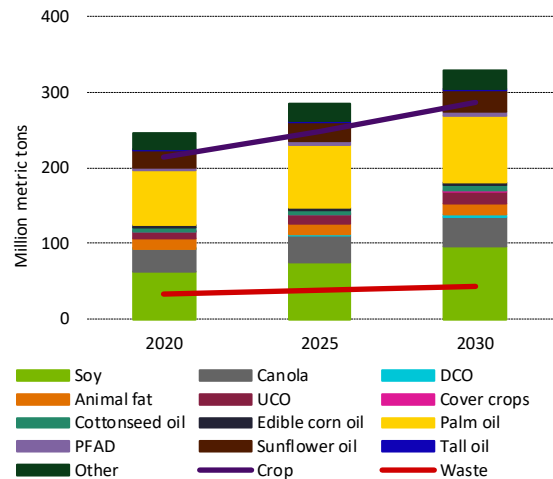


Diagram 3: Global feedstock supply forecast to 2030 – by feedstock



Note: All vegetable oil supplies shown are presented on an oil-in-seed basis for both historical and forecast figures. This shows the volume of oil present in the seeds/beans in the country of growth. We do not look here at where crushing has occurred or will occur. As such, while not all soybeans will be crushed in the U.S., the proportion is expected to rise as crushing capacity continues to expand.

In the U.S.

- Soy oil has the most potential for growth in the U.S. We forecast volumes in terms of oil-in-seed. If more beans are crushed locally, that could increase available oil supplies compared to current U.S. production.³
- Waste oils have only limited potential for increased growth in the U.S., as collection and extraction rates are already high.

Outside North America

- There is greater potential for growth in waste oils supply in countries with less developed collection networks. These supplies could be even higher than assumed in our forecasts, if prices are high enough to incentivize collection/extraction.
- Palm oil is a significant source of lipid supply to the world market, and has not been approved as a feedstock for the Biomass-based Diesel program in the United States. However, palm oil growth is set to slow and other oils will make up a growing proportion of the market.

Lipid demand to 2030

To assess whether the U.S. will be able to meet the ABFA goal, we take a tiered approach.

1. First, we remove the supply needed to meet demand from non-biofuel end uses (food, feed and oleochemicals). These end uses are inelastic – the need for them is relatively fixed and is not impacted by price.

It is important to note that our analysis allows fully for food requirements before evaluating the feedstock supply for biofuels.

2. Then, we remove the demand from biofuels in four other markets with strong biofuel policies. (This is arguably overly conservative in that the U.S. might well come 2nd in line for feedstocks, after the EU, not 5th. In addition, of course, if policies in the U.S. change, the relationship with other markets with biofuels policies could change.)
3. The remaining volume is then compared to the required volume needed to meet ABFA's U.S. biofuel target.

³ In recent years around 11 million metric tons (24 billion lbs) of soybean oil were produced in the U.S., around half of the total potential volume if all beans were crushed domestically. A significant amount of crushing capacity is currently under construction in the region which should allow crushing to expand in coming years, increasing the volume available domestically.

In 2030, demand for lipids in non-biofuel end uses plus biofuels in the four countries outside of the U.S. with strong environmental biofuel policies is set to rise to 260 million metric tons. This leaves close to 71 million metric tons available for use in the U.S. (as well as other countries), equivalent to 20 billion gallons of RD.

- Global demand for non-biofuel end uses (food, feed and chemicals) is forecast to rise from 168 million metric tons in 2020 to 208 million metric tons in 2030.
- Demand for lipids from biofuels in the four key biofuel consuming countries is forecast to reach 51 million metric tons in 2030, up from 24 million metric tons in 2020 (assuming all biomass-based diesel fuels are made solely from lipids).

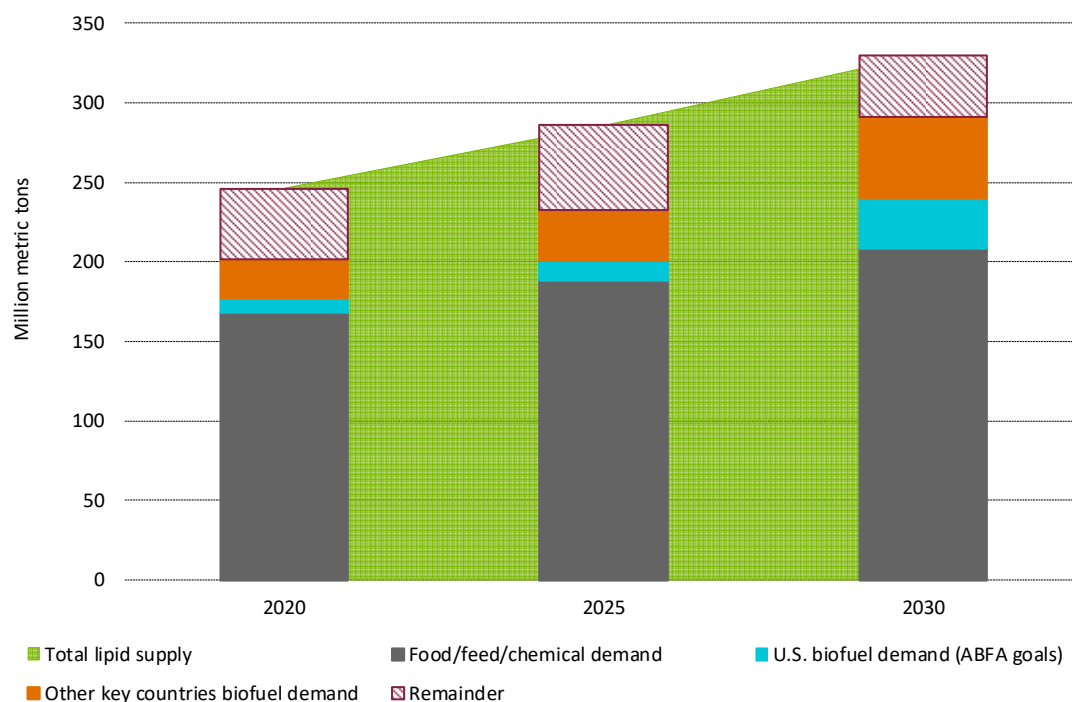
Conclusions

To meet the ABFA goal of 21 billion gallons of biomass-based diesel in 2040, we estimate that consumption will need to reach close to 9 billion gallons in 2030.

If all of this volume is produced from lipid feedstocks, it will require 32 million metric tons of lipids.

To 2030, feedstock supplies available for use in the U.S. are more than enough to meet our forecast demand, *after accounting for food.*

Diagram 4: Global lipid market forecast to 2030, supply vs. demand



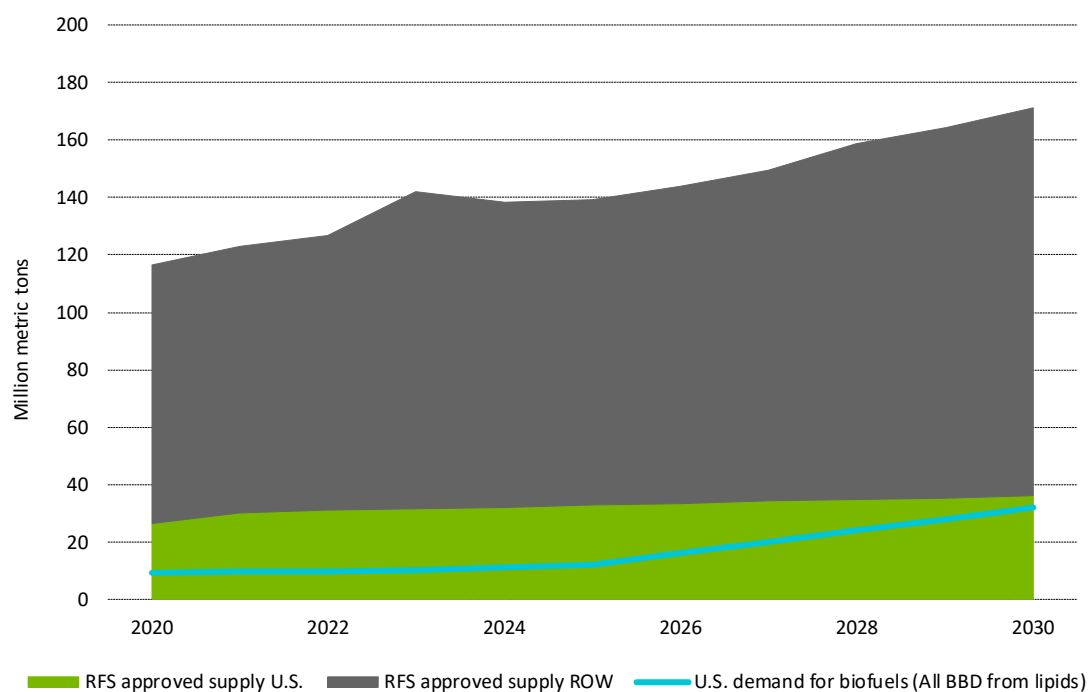
In the long term, other technologies will need to progress to produce increasing volumes of sustainable aviation fuel (SAF) to allow for the ambitious growth targeted in the U.S. and around the world.⁴

U.S. supply of RFS-approved feedstocks

Currently, U.S. demand for lipid feedstocks for biofuels can be met easily by U.S. oils supply, taking just over one-third of the total in 2020.⁵

By 2030, U.S. biofuel use will require close to 90% of total U.S. supply of RFS-approved feedstock.

Diagram 5: RFS-approved feedstock supply vs. demand for lipids for U.S. biofuels



⁴ The exact amount of lipids required will depend on the type of biomass-based diesel produced, the feedstock, and the technology used, as conversions vary with each factor. Our estimate of lipid demand is based on LMC’s assumptions of the progression of biodiesel (BD), renewable diesel (RD) and SAF. The conversion factors assumed are:

BD: 1.05 mt lipids per 1 mt of BD, 299.2 gals per mt

SAF: 1.4 mt lipids per 1 mt of SAF, 348.2 gals per mt

RD: 1.2 mt lipids per 1 mt of RD, 339.3 gals per mt

⁵ In 2020 3 billion gallons of BBD were produced and imported into the U.S. based on EPA RIN data (EMTS), of this total around 40% came from soybean oil, 8% from canola oil 16% from waste oils and fats and the remainder from other feedstocks.

Principles for Low Carbon Fuel Policy

Advanced Biofuels Association
December 2, 2021

ABFA supports advancing policies to address America's largest source of GHG emissions

Objectives: Promote policies to drive America's energy transition to carbon neutral transportation

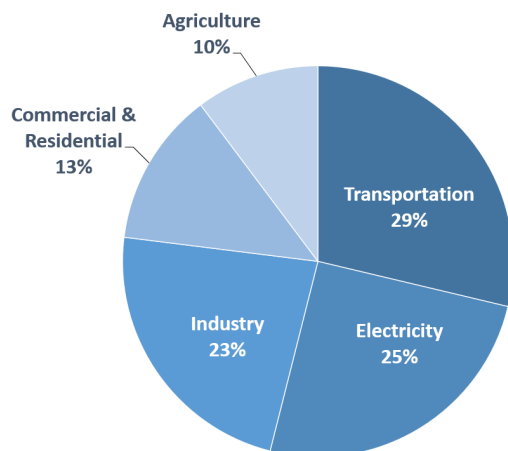
Scope: The full supply chain of inputs, processes, or fuels (inclusive of electricity) produced and used in the American transportation sector

Goal: Seek to find common ground among a broadly inclusive group representing all forms of transportation fuel used or produced in America to promote effective, harmonized policies to maximize efficiency, and long-term predictability.

Method: The diversity of perspectives represented in the group will make total consensus elusive. That will not prevent action consistent with the will of the majority of member companies

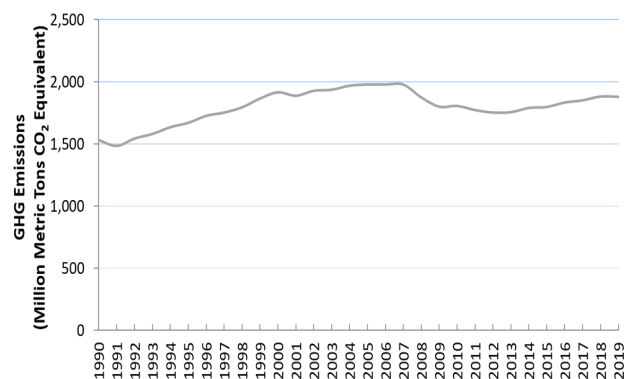
Values: Our potential for effectiveness lies in our broad representation. Debate should be conducted openly and respectfully in an environment of trust. We will respect and be efficient with the use of each other's time

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2019



U.S. Environmental Protection Agency (2021). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019

Greenhouse Gas Emissions from Transportation, 1990-2019



ABFA supports an approach that is grounded in principles

Guideposts: Data driven, politically feasible, legally sound, market neutral, solving for efficiency, cost, and transition toward carbon reduction.

Balanced: Policies must drive innovation and investments in all fuel sectors and provide a long term market signal within the bounds of feasibility

Consistent: Measurements and scoring must be consistent across all sectors

Dynamic: Best and most recent information must be closely monitored and updated to reflect ever changing realities

Phased: Targets should be set for long term predictability to drive progress from well established baselines

Comprehensive: Apply obligations to the broadest feasible array of fuel sectors

Flexible: Allow for broadest array of means possible to meet obligations inclusive of credit trading to promote optionality, risk mitigation, efficiency, and innovation

ABFA supports science-based, data-driven LCI accounting methodology

Inclusive: CI LCA methodology to be established by regulators with broad stakeholder input

Broad: Carbon reductions from feedstock and technology innovations, process improvements, and other fuel characteristics should be included regardless of sector or source

Fair: Measurement of reductions must be applied consistently

Timely: Monitoring and verification services should be provided by regulated 3rd party vendors to address regulator capacity constraints

Current: Periodic review of models and methodology to be performed to capture continuous improvements with evaluation schedules established and adhered to

Transparent: Updated analytical models to be peer reviewed and revised as applicable

Funded: Process to be fully funded through appropriations and or user fees

Endorsed By

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