



A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities and events that occurred October through December 2021. In this issue, we share industry updates and CAAFI team accomplishments. I also want to make sure you are aware of the following upcoming items:

- Renewable Fuel Standard (RFS) Program: [RFS Annual Rules, Request for Input](#), due on or before 4 Feb
CAAFI notes that this notice addresses RVOs, but some constituents may have overlooked the fact that it also ...“proposes to address the remand of the 2016 standard-setting rulemaking, as well as several regulatory changes to the Renewable Fuel Standard (RFS) program including regulations for the use of biointermediates to produce qualifying renewable fuel, flexibilities for regulated parties, and clarifications of existing regulations.” Please consider providing appropriate feedback to EPA, either individually or through your industry associations.
- [RFA National Ethanol Conference](#), 21-23Mar, New Orleans
- [USDA Ag Outlook Forum](#), 24-25Feb, virtual
- Biofuels International Conference & Expo, Brussels, 15-16 Mar
- [ABLC](#), Washington, DC, 16-18 March, which will have two sessions dedicated to SAF.
- Our own CAAFI Biennial General Meeting, Washington, DC, 1-3 Jun
 - [Register here](#)
 - [Agenda here](#)

We appreciate questions, comments, and suggestions at any time. Enjoy!

Steve Csonka and the CAAFI Team

Quick Links

- ⇒ Checkout “[What’s New](#)” for a brief review of noteworthy SAF news from the last quarter, including funding opportunities.
- ⇒ Go to “[Ask CAAFI](#)”, a segment that highlights and explains relevant topics that impact the SAF industry.
- ⇒ See “[CAAFI Team Highlights](#)” for a snapshot of CAAFI work teams’ projects and progress last quarter.
- ⇒ Jump to “[SAF State and Regional Efforts](#)” for a summary of select deployment projects around the United States.

What’s New?

- [More than 50 Companies Make SAF Usage Pledge](#)
- [Airlines Announce 10-year SAF Agreements](#)
- [London Heathrow Calls for SAF Mandate](#)
- [First Fossil-Free Jet Fuel Made from Carbon Dioxide](#)
- [New SAF Could Reduce Emissions by 68%](#)
- [United Operates First 100% SAF Flight](#)
- [Etihad Claims to Cut Emissions by 72% on Flight](#)
- [Aviation Groups Encourage Increase in Alternative Fuels Program](#)
- [Corporations Create Market for Low-Carbon Technologies](#)
- [New Software Tools to Speed up Biojet Fuel Development](#)
- [Aemetis to Provide 350M Gallons of SAF to OneWorld Alliance](#)
- [British Airways and Phillips 66 to Produce First SAF in the UK](#)
- [Industry Pushing for Government Aid for SAF](#)
- [DFW Received First SAF Delivery in Pilot Project](#)

[Emirates and GE Aviation Sign MOU for 100% SAF Test Flight](#)

[Lufthansa Makes \\$250M SAF Purchase](#)

[Frequent Flyers to be Rewarded by Qantas for Sustainability](#)

Additional information on these news items and additional funding opportunities can be found at caafi.org.

CAAFI Leadership Team and Steering Group members continue to edit and/or contribute to a [Frontiers in Energy Research Sustainable Aviation Fuels “Research Topic.”](#) This collection will be an open-source resource for SAF research and perspectives. Seventeen papers have been published in the special topic so far on a range of topics from feedstocks to process chemistry and from policy to supply chain analyses. Keep an eye on this Research Topic for more papers to be published soon.

Ask CAAFI

Question: What are CAAFI’s goals and priorities for 2022?

Answer: Every year, CAAFI’s leadership steps back and evaluates the accomplishments of the previous year and the opportunities of the new one to guide the ongoing work of CAAFI and the SAF industry.

This year, [CAAFI’s high-level goals and priorities](#) regarding SAF remain unchanged from previous years. They are:

- **Reinforcement of the Value Proposition of SAF:** communications, outreach, stakeholder engagement.
- **Enhancement of the SAF Fuel Qualification Approach:** participating, advising, and facilitating producer engagement in the ASTM qualification process.
- **Alignment of Efforts to Enable Commercial SAF Deployment:** leveraging research, partnering across U.S. government agencies, facilitating partnerships among supply chain stakeholders, and supporting innovative fuel acquisition processes.

- **Implementing and Sharing Best Practices:** provide tools, share best practices and integrate information to support communication and understanding among diverse stakeholders.

With the advent of the U.S. SAF Grand Challenge, the U.S. government is currently working on a SAF Grand Challenge Roadmap that will lay out the current state and future research, analysis, commercial, and policy needs to reach the SAF Grand Challenge Goals of three billion gallons of SAF per year by 2030 and full replacement of petroleum-based jet by 2050. CAAFI anticipates significant activity will be needed to support this SAF Grand Challenge effort. Therefore, drawing on the priorities above, CAAFI will undertake the activities outlined [here](#) in 2022 to support the implementation of the elements that will enable success of the SAF Grand Challenge.

As always, we welcome your feedback and/or comments.

CAAFI Team Highlights

CAAFI hosted the following one webinar during this reporting period:

⇒ Infrastructure Financing Opportunities from U.S. Departments of Energy (DOE) and Agriculture (USDA) presented by Jigar Shah (U.S. DOE) and Mark Brodziski (USDA) on July 28th

⇒ The R&D team presented webinar on the topic [“100% SAF: Highlighting & Exploring Open Questions”](#) on October 6th.

⇒ Dr. Mark Elless (U.S. DOE Bioenergy Technologies Office), Dr. Lynn Wendt (U.S. DOE Bioenergy Technologies Office), and Dr. Matthew Langholtz (Oak Ridge National Lab) gave a combined presentation on the [Feedstock Work at Idaho National Lab and Oak Ridge National Lab](#) on November 17.

Business —

New producers, new suppliers, new customers, and many adjacent participants continue to contact us for guidance and assistance (now on a weekly basis), or asking for introductions to others who can assist with their commercialization efforts. We are very

pleased to see this level of engagement, and to help many! We would like to remind any producer of this available resource document: [Guidance for Selling Alternative Fuels to Airlines](#)

Certification/Qualification —

The work of the Cert/Qual team is aligned with the activities of ASTM's aviation fuel subcommittee the [Aviation Technical Committee of the Coordinating Research Council \(CRC\)](#), and the National Jet Fuel Combustion Program. [It is supported by](#) periodic OEM meetings in the US and UK and various ASCENT projects. The qualification process is described in a recently issued paper "[Qualification of Alternative Jet Fuels](#)". This paper may be found under the Sustainable Aviation Fuels research topic.

D4054 updates include:

- ⇒ Swedish Biofuels is in process of addressing OEM comments to their Phase 1 research report. It is anticipated that the final version of the research report will be ready for ASTM balloting before the June ASTM meeting.
- ⇒ Global BioEnergies has completed D4054 Tier 1 and Tier 2 testing and prepared their Phase 1 research report. The report will be submitted to the OEMs for review in January.
- ⇒ The recent interest in unblended, or 100% SAF has reenergized the Virent SAK D4054 effort. Virent SAK is a pure aromatic stream that when blended with other SPKs such as FT or HEFA will result in a fully formulated fuel. Virent has worked with the OEMs to define the remaining qualification tasks and is now conducting the final round of testing.
- ⇒ Shell IH2: Shell has finalized their D4054 Tier 3 & 4 test plan with the OEMs and is now working with the OEMs to identify test facilities. Shell is also working on scaling up production to supply the necessary quantities of test fuel to conduct the testing.
- ⇒ CSIR – Indian Institute of Petroleum has provided another fuel sample for Tier 1 and 2 fuel property testing.

Other companies that have initiated contact with the ASTM OEM team and have shared preliminary data

include Alder Energy, Prometheus, Green Lizard, REVO International, and OMV Downstream GmbH.

An ASTM task force is continuing its work to develop specification criteria for an unblended (or 100%) alternative jet fuel. The basic format has been defined but additional work is required to finalize the property requirements. It is expected that this effort will take some time before the draft D7566 specification revisions are ready for balloting to the ASTM aviation fuel subcommittee.

We are now also seeing increased engagement from petroleum refiners and suppliers who are interested in increasing the types and maximum blend levels for SAF co-processing at existing refinery installations. ASTM task forces have been established to develop specification criteria for co-processing of hydroprocessed biomass, pyrolysis oil derived from discarded tires, and to increase the current approved 5% limit on co-processing of lipids feedstock to 30%. Note that these specification provisions will be incorporated into the ASTM D1655 conventional jet fuel specification upon approval.

Sustainability —

Most of the effort and focus of the Sustainability team continued to support deliberations of ICAO and its work on CORSIA.

- ⇒ Continued participation in the LCA, sustainability and alternative fuels tracking work in the ICAO CAEP Fuels Task Group (FTG), Working Group 4 (CORSIA), and Sustainability Certification Scheme Evaluation Group (SCSEG).
- ⇒ ICAO approved an [updated set of sustainability criteria](#), with expansion from two Themes to twelve starting in the post-pilot phase.

R&D —

- ⇒ The R&D team submitted a paper to Frontiers in Energy Research entitled "[Perspectives on Fully Synthesized Aviation Fuels: Direction and Opportunities](#)" on the issues, challenges and solutions around using 100% SAF.
 - The paper was published January 24th.
- ⇒ The team also presented [webinar on the topic](#) on October 6th.
- ⇒ The team also kicked off a [webinar series](#)

spotlighting the SAF work being done at U.S. Department of Energy's National Labs.

Feel free to reach out to [Josh Heyne](#) if you have interest in fuel screening efforts.

SAF State and Regional Efforts

◇ Southeast, Appalachian, and Mid-Atlantic Regional Efforts

- Beyond those efforts discussed in previous versions of the Quarterly, CAAFI has also re-engaged with Ohio University, the Southern Ohio Diversification Initiative (SODI), the Ohio Valley Green Energy and Manufacturing (GEM) and other commercialization entities on the concept of redevelopment of the DOE Piketon site, to include SAF interests. Funding is being sought from US Department of Commerce Economic Development Administration Economic Adjustment Assistance, and other programs.

If you are aware of other scenarios that could be appropriate for a regional development effort, please let us know. For more information, see [CAAFI's State Initiatives](#) page.

Please check the [CAAFI website](#) on a regular basis for more detail on pending activities.

Email peter.herzig@dot.gov with any ideas for CAAFI Quarterly items of interest, caafi.org news suggestions, or inquiries about subscription to the CAAFI Membership group.