



The CAAFI Quarterly

Q4 2022

A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities that occurred October through December 2022. In this issue, we share industry updates and CAAFI team accomplishments.

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

Steve Csonka and the CAAFI Team

Quick Links

⇒ Check out “[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.

Upcoming

⇒ CAAFI Webinars:

- January 25th SAF Grand Challenge Roadmap Progress Update
- February 1st Regional Projects via RBDG and BDOZ
- February 8th SAF Work at Sandia National Lab
- February 15th ASCENT Update

What’s New?

We continue to see significant offtake and commercialization announcements, as well as engagement from new producers.

[Fulcrum Successfully Produced Fuel from Landfill Waste](#)

[Gulfstream, Rolls-Royce Fly on 100% SAF](#)

[Gevo to Provide 10 Million Gallons of SAF to Delta](#)

[Arizona Facility to Make 300 Million Gallons of SAF for United Airlines](#)

[JetBlue and Fidelis Announced MOU for 92 Million Gallons of Blended SAF](#)

[Rolls-Royce, easyJet Successfully Test Use of Green Hydrogen in Jet Engine](#)

[Carbon Engineering Received Investments from Airbus and Air Canada](#)

[Germany Funded Methanol-to-SAF Project](#)

[Global Bioenergies Delivered SAF to French Government for Testing](#)

[India Committed to SAF Blending Mandate](#)

[United to Invest \\$37.5M in Oregon Biofuels Refinery](#)

[JetBlue Signed SAF Agreement with Air Company for 25 Million Gallons Over 5 Years](#)

[Gevo Announced 375 Million Gallons of SAF Supply Agreements](#)

[TotalEnergies Partners with SARIA to Expand SAF Production in France](#)

[Breakthrough Energy Announced \\$50 Million Grant to LanzaJet](#)

[Raven SR and EFT Announced Partnership to Produce SAF](#)

[Korean Air Signed 5-year Deal for SAF with Royal Dutch Shell](#)

[World Energy to Convert Houston Facility to SAF Hub](#)

[Canada Seeking Biomass Supply Chain Project Proposals](#)

[Aemetis Finalized 10 Contracts for Supplying SAF](#)

[Lufthansa Signed MOU with OMV for SAF Supply](#)

[Energy Absolute Facility in Thailand Plans to Produce SAF](#)

[Gevo Broke Ground on SAF Facility in South Dakota](#)

The above are some of the activities that took place in Q4, but many more can be found (e.g. Biofuels Digest, Biofuels International, GreenAir Online, etc.).

Ask CAAFI

Question: What is the FAST-SAF/Tech Program?

Answer: The Inflation Reduction Act (IRA) of 2022 include in Section 40007 the establishment of a new grant program to facilitate aviation decarbonization. The program is to be implemented as a “competitive grant program for eligible entities to carry out projects located in the United States that produce, transport, blend, or store sustainable aviation fuel, or develop, demonstrate, or apply low-emission aviation technologies.”

The FAA Office of Environment and Energy (AEE) is developing the new IRA Section 40007 grant program, to be called Fueling Aviation’s Sustainable Transition (FAST) Sustainable Aviation Fuels and low emission aviation technologies (Tech). The main objective of the program is to make investments that accelerate the production and use of SAF, in support of the SAF Grand Challenge goal of 3 billion gallons of domestic SAF production and use by 2030, to meet U.S. aviation climate goals to reduce carbon emissions from the aviation sector.

Nearly \$300 million in funding is available under the program. \$244.53M for SAF projects and \$46.53M for low-emission aviation technologies. \$5.94M is also available for program oversight.

On December 14, 2022, the FAA hosted a public meeting at the U.S. Department of Transportation’s Headquarters in Washington, DC to introduce and gather feedback on the new program.

The FAA gathered input on the program through January 31, 2023 and plans to issue a Notice of Funding Opportunity (NOFO) in the spring/summer 2023. The first round of grants is intended to be awarded in the fall 2023. It is anticipated that the first round of grants would expend half of the funds available for SAF and all of the funds for Tech. A second round of SAF funds would be awarded in 2024.

Any questions or comments about the program can be emailed to: fast-saftech@faa.gov.

SAF Grand Challenge Update

The agencies participating in the SAF GC are currently involved in two activities of note:

- ⇒ Inventory analysis of existing funded programs and how such efforts can be folded into SGC efforts or form the basis for execution of SGC tasks. Funding will likely be allocated to a broad group of activities that contribute to the roadmap execution, including the following examples already in execution:
 - DOE Award: BETO Scale-Up and Conversion, \$64.7M over 22 projects
 - DOE FOA: Waste Feedstock & Conversion, \$34.5M, in review
 - USDA Award: Climate Smart Commodities, \$2.8B+, 70+ projects, 2 tranches, 14Sep’22
 - USDA RFA: NIFA/AFRI SAS CAPs, \$80M, projects to \$10M, in review
 - DOE/SC/BER FOA: Biosystems Design ... Biofuels, \$1-5M for 6-12 projects
 - RFI: Biomass Conversion R&D and Analysis
 - RFI: Community-Scale Resource and Energy Recovery from Wastes
 - RFI/NOI: BETO Scale-Up and Conversion
 - DOE BERCC Renewals: 2 of 4 centers have SAF-specific thrusts
 - DOT funding in IRA S. 40007
- ⇒ Various of the action areas will likely be executed by Interagency Working Groups. One such group has already been formed as of Aug 2022, the SAF GC Life Cycle GHG Emissions Working Group. This group is working on Roadmap activity PA.1.1. Its MOU indicates: “..., the parties and EPA, along with other relevant agencies, will define and agree on the appropriate science-based methodology for establishing lifecycle emissions reductions, recognizing the need for credibility and taking note of consistency with international criteria, such as those developed at the International Civil Aviation Organization.” This group will provide information to Treasury for assistance in their crafting of regulation associated with the Blender's Tax Credit and Producer’s Tax Credit portions of the IRA.

CAAFI Team Highlights

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 continued level of engagement from the previous quarter, and to help many! We would like to remind any producer of this available resource document: [Guidance for Selling Alternative Fuels to Airlines](#). Additional tools can be found [here](#).

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 at the Frontiers in Energy Research Sustainable Aviation Fuels "Research Topic."

The winter meeting of the ASTM Aviation Fuels subcommittee in Orlando on 5-8 December was led by new chair Mark Rumizen (FAA), with Gurhan Andac (GE) leading the Synthetic Aviation Turbine Fuel section. At the meeting, a significant level of interest in methanol-to-jet pathways was exhibited by several candidate producers resulting in the formation of a new ASTM task force to develop a specification annex. Also, there was interest in expanding the HEFA Annex A2 to allow higher concentrations of aromatics.

ASTM D4054 updates include:

- ⇒ Swedish Biofuels has completed their Phase 1 research report and the final OEM review is nearing completion. It is expected that this new alcohol-to-jet pathway will be submitted for ASTM balloting in late February.
- ⇒ Global BioEnergies has completed their Phase 1 research report and the final OEM review is nearing completion. It is expected that this new alcohol-to-jet pathway will be submitted for ASTM balloting in late February.
- ⇒ 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 completed an initial round of testing at the FAA/ASCENT D4054 Clearinghouse but more testing will be required. A new fuel sample has been submitted for additional Tier 1 and 2 fuel property testing.
- ⇒ OMV Downstream GmbH has formed an ASTM task group and initiated a D4054 Fast Track testing program with the FAA/ASCENT Clearinghouse.

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 finalized and a proposed revised specification is undergoing final editing before being submitted to the OEM team and the ASTM task group members for review. It is expected that the review and continued editing will take some time before the draft D7566 specification revisions are ready for balloting to the ASTM aviation fuel subcommittee.

We continued to see 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. A ballot for incorporation of **co-processing of hydroprocessed biomass** has just been submitted for review by the ASTM membership. That this is the fourth attempt at passing the ballot is evidence of the rigor of the ASTM process. Other task forces have been established to develop specification criteria for **co-processing of 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.

If you have interest in seeing new pathway approval, or simply getting more engaged in the qualification efforts, consider joining ASTM D02 and participating in its activities. The next meeting will be held in Denver, CO on 26-29 June'23.

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 released an updated [set of sustainability criteria](#) available covering the pilot and voluntary phases, now expanded to include carbon capture and sequestration and to address fossil-based lower carbon aviation fuels as well as SAF.

R&D —

- ⇒ The R&D team continues to support the execution of CAAFI's webinar series and coordinates with the CAAFI leadership and certification/qualification teams regarding emerging companies and fuel qualification.
- ⇒ Reach out to [Josh Heyne](#) on CAAFI's R&D team if you have interest in new SAF candidate [pre-screening efforts](#).

State and Regional Projects

CAAFI principals continue to participate in and foster regional development activity, on feedstocks, supply chain analysis & establishment, and with various entities. Stay tuned for an update from ASCENT (likely Q4 CAAFI Webinar) on ways that they can work with customers to provide keys insights and analysis.

The Mid-Atlantic Sustainable Biomass (MASBio) project held their annual meeting in conjunction with the North American Biochar & Bioenergy Conference in West Virginia in August. MASBio is a USDA NIFA AFRI Coordinated Agricultural Project (CAP) grant project. Many sessions during the conference discussed feedstocks that could be grown on reclaimed mine lands to be used for potential SAF biorefineries. There were ample opportunities to network and develop potential partnerships.

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.