

## A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities that occurred July through September 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*

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## 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

- ⇒ AFCC 2022 Biobased Economy Conference, 06-08Nov’22, Washington, D.C.
- ⇒ RSB Annual Conference, 28Nov-01Dec, virtual
- ⇒ Stay tuned for notice of a planned workshop with the Department of Transportation (in person and virtual) to discuss the Grant Funding opportunity outlined in section 40007 of the IRA.

## What’s New?

We continue to see significant offtake and commercialization announcements, as well as engagement from new producers. Following are some of the activities that took place in Q3 , but many more can be found (e.g. Biofuels Digest, Biofuels International, GreenAir Online, etc.).

[Delta and DG Fuels Partner to Expand SAF Availability](#)

[Neste and Marathon Partner to Convert Martinez, CA Refinery](#)

[XFuel Secures Investment to Commercialize and Deploy SAF Technology](#)

[Memorandum of Understanding Signed by Sulzer Chemtech and BASF to Advance Renewable Fuels Technology](#)

[Aer Lingus and British Airways to Receive SAF at San Francisco Airport](#)

[SAF Introduced in Oregon](#)

[Red Rock Biofuels Successfully Tested Innovative Technology](#)

[World Energy Announced Launch of Second SAF Facility](#)

[Neste and HELLENIC Enter Into SAF Agreement for Commercial Distribution](#)

[Permanent SAF Supply at French Airport](#)

[Exxon Mobil Successfully Delivered SAF to Airport in Singapore](#)

[Heliogen and Dimensional Energy Announce Collaboration to Produce SAF](#)

[BP Looks to Produce SAF in Australia by 2025](#)

[Gevo and Aer Lingus Sign SAF Offtake Agreement](#)

[Mercedes Announced Investment in SAF](#)

[Royal Air Force Looks to Eliminate Reliance on Fossil Fuels](#)

[Boeing and Alder Fuels Formed Partnership to Expand SAF Production](#)

[Mexico Airline Took First Flight with SAF Supplied by Avfuel and Neste](#)

[Airbus and Six Airlines Set to Discuss Buying Carbon Removal Credits](#)

[Australian Government to Establish Public-Private Partnership to Transition Aviation to Net Zero GHG Emissions](#)

[Neste Signed SAF Deal with Business Aviation Firm](#)

[Fulcrum BioEnergy Completed a \\$20M Equity Investment by SK Innovation](#)

*Additional information on these news items and additional funding opportunities can be found at [caafi.org](http://caafi.org).*

## Ask CAAFI

**Question:** What is the SAF Grand Challenge Roadmap and what does it mean for CAAFI?

**Answer:** On September 23, 2022, the U.S. Department of Transportation's Assistant Secretary for Aviation and International Affairs Annie Petsonk joined U.S. Secretary of Energy Jennifer M. Granholm to release the Sustainable Aviation Fuel (SAF) Grand Challenge Roadmap. The SAF Grand Challenge is a U.S. government-wide approach to work with industry to reduce cost, enhance sustainability, and expand production to achieve 3 billion gallons per year of domestic sustainable aviation fuel production that achieve a minimum of a 50% reduction in life cycle greenhouse gas emissions (GHG) compared to conventional fuel by 2030 and 100% of projected aviation jet fuel use, or approximately 35 billion gallons of annual production, by 2050. The SAF Grand Challenge Roadmap is the outline of U.S. government initiatives and action areas for achieving those ambitious goals.

An interagency team led by DOE, DOT, and USDA worked with the U.S. Environmental Protection Agency, other government agencies, and stakeholders from national labs, universities, nongovernmental organizations, and the aviation, agricultural, and energy industries to develop the SAF Grand Challenge Roadmap Report.

The roadmap lays out six action areas spanning all activities with the potential to impact the SAF Grand Challenge objectives:

1. Feedstock Innovation
2. Conversion Technology Innovation
3. Building Supply Chains
4. Policy and Valuation Analysis
5. Enabling End Use
6. Communicating Progress and Building Support.

We see the SAF Grand Challenge as a key activity area for CAAFI support in the coming years. Going forward, CAAFI participants should expect to see some changes to CAAFI's operations, teams, and guidance documents based on all that is happening with the Grand Challenge, policy support, and commercialization progress – stay tuned.

The DOE SAF Grand Challenge webpage is [here](#) and the Roadmap can be viewed [here](#).

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

## SAF Grand Challenge Highlights

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 BEREC 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 Work Groups. One such group has already been formed as of Aug '22, 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".

Things continued to unfold in an active way at the June ASTM Meeting in Seattle on 27-30 June. ASTM D4054 updates include:

⇒ The chair of the Synthetic Aviation Turbine Fuel (SATF) ASTM section (D02.J6) has transitioned from Mark Rumizen (FAA) to Gurhan Andac (GE). Mark will now take over as chair of the aviation fuel subcommittee at ASTM (D02.J0).

⇒ Swedish Biofuels has completed additional testing in response to the OEM comments and has submitted their final Phase 1 research report to the OEM team. This new alcohol-to-jet pathway will be submitted for ASTM balloting upon completion of this final OEM review.

⇒ Global BioEnergies has completed D4054 testing and their research report has been submitted to the OEM team for final review and approval. ASTM balloting of the D7566 revisions and the research report will occur after completion of the OEM review.

⇒ 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 is being prepared 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 draft version of the proposed revised specification is being developed for review by the OEM team and the ASTM task group members. 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 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. This is the third attempt at passing the ballot for this new co-processing pathway. 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 Orlando, FL on 04-08Dec'22.

### 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 has a [set of sustainability criteria](#) available covering the pilot and voluntary phases.

### R&D —

- ⇒ 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.*

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

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