

## A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities that occurred July through September 2023. 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

- ⇒ [CAAFI will be hiring](#) soon!
- ⇒ 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.
- ⇒ Get updates regarding the "[SAF Grand Challenge](#)".
- ⇒ Go to "[CAAFI Webinars](#)", a segment that highlights and links to webinars that occurred during this period.
- ⇒ 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.

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## Upcoming

- ⇒ CAAFI Webinars:
  - SAF Repository at Paine Field, Nov 2
- ⇒ [Aviation Carbon 2023](#) --- November 6-8, 2023 --- London, UK
- ⇒ [Alternative Fuels and Chemicals Coalition Global Biobased Economy Conference & Exhibit](#) --- November 12-14, 2023 --- Washington, DC/National Harbor, MD
- ⇒ [Waste to Advanced Resources Matter \(WARM\)](#) --- November 15-16, 2023 ---Raleigh, NC

⇒ [ICAO Conference on Aviation and Alternative Fuels \(CAAF/3\)](#) --- November 20-24, 2023 --- Dubai, UAE and ONLINE

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## CAAFI starting hiring process!

With the burgeoning expansion of SAF activity, and the support of various industry entities, CAAFI funding is being expanded, and we envision adding three roles in the fourth quarter this year, at varying experience levels, roughly summarized as follows:

- A ~20 year experienced person to replace our Assistant Director, Chris Tindal, who will be retiring at year's end, and with such person having the necessary experience, capabilities and interest in advancing into the Executive Director role within the next year.
- A ~15 year experienced person focused on Industry Engagement.
- A ~10 year experienced person focused on leading and executing Special Projects.

CAAFI will target filling these roles with independent contractors who contract with CAAFI for specified levels of effort (up to 40 hr work weeks) and duration, but with an expectation of candidate interest in continued engagement on SAF at least through the 2030 timeframe of the first SAF Grand Challenge goal achievement. Rates will be competitive and commensurate with experience and capabilities. CAAFI will have prerequisite experience requirements (including research & development, demonstration & deployment, and day-to-day functioning) in several of the following fields related to SAF: fuel production (specs, testing, quality, & handling, both petroleum and synthetic jet fuels), business development, OEM activity, airline activity, agriculture/feedstocks, supply chain development, bio-chemical and thermo-chemical conversion processes, airport activities dealing with fuel and marketing and communications. If you have interest in pre-positioning yourself with us as we work to finalize our specific experience requirements, qualifications, and responsibilities, please respond with a brief introduction and resume to [info@caafi.org](mailto:info@caafi.org) under the subject line of **CAAFI Roles**. Your inquiries will be treated confidentially. And, if you know someone whom you feel would be a great addition to the work of CAAFI as an independent contractor, feel free to pass

this along to them.

### What's New?

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

[DOE Announced \\$1B in Federal Grants to Scale Direct Air Capture](#)

[ZeroAvia and Airbus Announce Strategic Partnership](#)

[U.S DOE Announced \\$18.6 Million to Support Production of Low-Carbon Biofuels and Bioproducts](#)

[Global Biofuel Alliance Launched](#)

[DOE BETO Announced Funding to Accelerate SAF Technologies](#)

[Twelve Breaks Ground on Moses Lake SAF Facility](#)

[U.S. Government Announced Tax Credit for SAF](#)

[Australia Forms Jet Zero Council and Launches Funding to Support SAF Production](#)

[USDA Agricultural Research Service is Soliciting Stakeholder Input on Setting Research Priorities for its Postharvest Product Quality and New Uses, Including Biorefining](#)

*The above are just some of the activities that took place in Q3, but many more can be found (e.g. [SAF Magazine](#), [Biofuels Digest](#), [Biofuels International](#), [GreenAir Online](#), etc.).*

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### Ask CAAFI

**Question:** What recent federal efforts are supporting the development and commercialization of SAF?

**Answer:** The U.S. Department of Energy (DOE) has released a Request for Information (RFI) to better understand the challenges facing critical elements within SAF supply chains. This seeks input from industry, academia, research laboratories, government agencies, and other stakeholders to identify opportunities to enable the rapid development of effective supply chains capable of meeting the SAF

Grand Challenge goals of at least 3 billion gallons of domestic SAF production per year by the year 2030, and sufficient SAF to meet 100% of aviation fuel demand by 2050. The [SAF Grand Challenge Roadmap](#) provides an outline of actions by U.S. government agencies to support stakeholders in realizing the challenge goals. This RFI seeks input from relevant stakeholders on the roadmap's [SAF supply chains action area](#), which encompasses:

- feedstock production, collection, and distribution to SAF production facilities;
- conversion of feedstock to fuel; and
- transport of finished fuel to the infrastructure required to fuel aircraft.

Responses to this [RFI](#) must be submitted electronically as a Microsoft Word document (.docx) attachment to [SAFSupplyChainRFI@ee.doe.gov](mailto:SAFSupplyChainRFI@ee.doe.gov) **no later than 5:00pm (ET) on November 2, 2023**. For more information on the RFI, view the full solicitation on [Grants.gov](#).

Additionally, the FAA has released a [Notice of Funding Opportunity \(NOFO\) for the Fueling Aviation's Sustainable Transition \(FAST\)](#) grant program. The program will make investments in two areas to accelerate the production and use of SAF in the U.S. (FAST-SAF) and the development of low-emission aviation technologies (FAST-Tech) to support the U.S. aviation goal to achieve net zero GHG emissions by 2050. The FAST-SAF portion will provide \$244.5 million in grants to support the build out of infrastructure projects related to SAF production, transportation, blending, and storage. The FAST-Tech portion will provide \$46.5 million to develop and demonstrate new aviation technologies to improve fuel efficiency and reduce emissions.

Applications are due electronically via [grants.gov](#) by 11:59 p.m. eastern time on November 27, 2023. Additional information can be found on the [FAST Grants website](#).

## SAF Grand Challenge (SAFGC) Update

In addition to the aforementioned DOE RFI, and the FAA NOFO, the agencies participating in the SAFGC are currently involved in multiple activities, e.g.:

- ⇒ The work on Inventory and gaps analysis of existing funded programs and how such efforts can be folded into SAFGC efforts or form the basis for execution of SAF GC tasks, is completed. This work will be summarized in a SAF Roadmap Implementation Framework Report targeted for publication in early 2024, as will a Biomass Supply Chain plan, and the awaited update of the Billion Ton study.
- ⇒ SAFGC metrics tracking plan in development
- ⇒ SAFGC Roadmap Communication and Engagement Strategy in development
- ⇒ LCA IWG continuing to support deliberations on LCA methodology
- ⇒ Some SAFGC implementation measures have also provided updates to various industry events over the last several months.
- ⇒ Integration of Executive Order EO 14081 (Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy) with the work of the SAFGC
- ⇒ The SAFGC Team is preparing summaries to be provided at the upcoming COP28 meeting in Dubai.

## CAAFI Webinars

⇒ Methanol Landscape and the Methanol-to-Jet SAF Pathway – [Webinar Recording](#)

[Methanol-to-Jet About Methanol](#) - Greg Dolan – Methanol Institute

[Methanol-to-Jet \(MTJ\) – ASTM D02.0J AC724 Task Force](#) - Dan Kadlec – ExxonMobil

⇒ [Overview of Sustainable Aviation Fuels \(SAF\) Activities at the Bioenergy Research Centers](#) – [Webinar Recording](#) – Dr. Brian Davison (CBI), Tim Donohue (GLBRC), Dr. Jennifer R. Gottwald (GLBRC), Dr. Andrew Leakey (CABBI), and Dr. Aindrila Mukhopashyay (JBEI)

## CAAFI Team Highlights

### Business —

New producers, new suppliers, new customers, and many adjacent participants continue to contact us for guidance and assistance (continuing on a weekly basis) or asking for introductions to others who can assist with their commercialization efforts. 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](#). We are very pleased to see this continued level of engagement as we are now at more than 190 companies exploring SAF commercialization. Further, our latest roll up of intended U.S. SAF production capacity (with identified offtake partners) exceeds 2.0B gpy by YE 2028, with others working quietly in the background on additional capacity.

### 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 now completed National Jet Fuel Combustion Program. It is also 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 summer meeting of the ASTM Aviation Fuels subcommittee was held in Denver from 26-29 June, where the following qualification activity was announced.

- ATJ-SKA (a mixed alcohols conversion process that includes aromatic content, as championed by Swedish Biofuels) has been qualified as our pending 8<sup>th</sup> pathway;
- IBN-SPK (the olefin iso-butene) is added to ATJ-SPK Annex A5 as a new feedstock;
- Co-processing from hydroprocessed biomass has been approved as the third approach for co-processing in existing refineries.

Final printing in ASTM D7566 and D1655 will likely take several more weeks.

Additional ASTM D4054 updates, many of which will be further discussed at the winter meeting, 04-07 December in New Orleans include:

- ⇒ The Methanol to Jet ASTM task force has been established and meeting to coordinate production of test samples for testing at the D4054 Clearinghouse, some of which have already been delivered to UDRI. Some results will be reviewed in December. A CAAFI Webinar will be held on the topic on 25 July.
- ⇒ 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 is nearing completion of a final round of testing and expects to ballot a new D7566 annex later this year.
- ⇒ OMV Downstream GmbH has formed an ASTM task group to coordinate the development of a D7566 annex and D4054 Fast Track testing of fuel samples from their plastics to jet pathway. Testing is currently in process with the FAA/ASCENT Clearinghouse.
- ⇒ 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.
- ⇒ Council of Scientific and Industrial Research (CSIR): The 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.
- ⇒ Topsoe is working to enable the aviation/ASTM D02.J0 community to evaluate the modest level of aromatic content in their HEFA-SPK conversion technology suite that exceeds the current levels allowed in D7566 Annex A2.

Another ASTM task force is continuing its work to develop specification criteria for an unblended (or 100%) alternative jet fuel. A research report providing supporting technical data is being developed by GE and that report along with the proposed revisions to D7566 was submitted to the OEM team 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. 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. You can also reach you to us at [info@caafi.org](mailto:info@caafi.org) for more information on getting involved.

### 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).

### 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 key insights and analysis.

Previously outlined supply chain building efforts continue in FL and VA. Multiple activities are ongoing in WA state, reflecting the continued building of momentum on SAF that comes from collaboration between exploratory working groups, interested policy makers, academia and industry. Stay tuned for further updates.

The Mid-Atlantic Sustainable Biomass (MASBio) project held their annual meeting on September 11-13 in State College, PA. A thorough update on all of their projects was held along with an extensive student poster session with numerous innovative ideas being displayed. Side meetings to discuss an Industry Consortium and a possible future SAF Workshop were held. MASBio is a USDA NIFA AFRI Coordinated Agricultural Project (CAP) grant project.

As was highlighted above in the recent news, the University of Tennessee won a DOE \$4.5+M award in September. This project seeks to reduce the fertilizer requirement for growing two bioenergy crops (miscanthus and biomass sorghum) in six locations in the southeast United States via application of biochar and poultry litter. The biochar will help to trap additional soil carbon, lower N<sub>2</sub>O emissions, and reduce the overall carbon intensity of this feedstock supply chain. Miscanthus and sorghum are two good feedstocks for producing SAF.

Additionally, several of the [Climate Smart Commodity projects](#) are underway and whose results are expected to accrue to the benefit of the SAFGC.

*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.*

*Email [peter.herzig@dot.gov](mailto: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.*