

MEMORANDUM OF UNDERSTANDING
SUSTAINABLE AVIATION FUEL GRAND CHALLENGE

Among the
THE U.S. DEPARTMENT OF ENERGY,
THE U.S. DEPARTMENT OF TRANSPORTATION and the
THE U.S. DEPARTMENT OF AGRICULTURE

This memorandum of understanding (MOU) is entered into by and among the United States Department of Energy (DOE), the United States Department of Transportation (DOT), and United States Department of Agriculture (USDA). DOE's authority to enter into this agreement is section 646 of the Department of Energy Organization Act (Pub. L. 95-91, as amended; 42 U.S.C. 7256). DOT's authority to enter is DOT's purpose authority under 49 U.S.C. § 101. USDA's authority to enter into this agreement is USDA's establishment authority under 7 U.S.C. § 2201.

DOE's Office of Energy Efficiency and Renewable Energy (EERE) will serve as the program office responsible for carrying out the goal of the MOU on behalf of DOE; DOT's Federal Aviation Administration Office of Environment & Energy (AEE), in coordination with DOT's Office of the Assistant Secretary for Aviation and International Affairs, will serve as the program office responsible for carrying out the goals of the MOU on behalf of DOT; and the Office of the Secretary will serve as the program office responsible for carrying out the goals of the MOU on behalf of USDA. EERE, AEE, and the USDA Office of the Secretary shall be referred to hereinafter as "Party" or "Parties" as appropriate.

Purpose:

The activities underlying this MOU represent an investment in America that not only reduces our environmental impact, but also supports energy independence and creates jobs in agriculture, forestry, infrastructure, research and development and other areas where America already excels at production. This MOU also supports a just transition of the energy industry to a low carbon future. Environmental responsibility, equity and economic sensibility go hand in hand with this effort.

In recognition of these myriad benefits, DOE, DOT, and USDA are launching a government-wide **Sustainable Aviation Fuel Grand Challenge (the Grand Challenge) to reduce the cost, enhance the sustainability, and expand the production and use of Sustainable Aviation Fuel (SAF) that achieves a minimum of a 50% reduction in lifecycle greenhouse gas (GHG) compared to conventional fuel to meet a goal of supplying sufficient SAF to meet 100% of aviation fuel demand by 2050.**¹ **The Grand Challenge and the increased production of SAF will play a**

¹ Under this MOU, 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.

critical role in a broader set of actions by the United States Government and the private sector to reduce the aviation sector's emissions in a manner consistent with the goal of net-zero emissions for our economy, and to put the aviation sector on a pathway to full decarbonization by 2050. In recognition of the critical role that drop-in synthesized hydrocarbon fuels from waste streams, renewable energy sources or gaseous carbon oxides— or SAF— will play in addressing our climate change crisis and its role for jobs and the economy, the Parties undertake this MOU to ensure the highest level of collaboration and coordination across our Agencies.

Through this MOU, the Parties intend to accelerate the research, development, demonstration, and deployment (RDD&D) needed for innovative solutions and technologies and the policy framework to enable an ambitious government wide commitment to scale up the production of SAF to 35 billion gallons per year by 2050. A near-term goal of 3 billion gallons per year is established as a milestone for 2030.

Actions of the Parties:

Recognizing their mutual interest in (1) reducing the cost of SAF production; (2) enhancing the sustainability of SAF production pathways; and (3) accelerating the scale-up and demonstration of commercial SAF production, the Parties agree to:

1. Set up a joint, executive-level team to develop a framework to implement this MOU, reporting back to the points of contact for each agency within three months. As a part of its work, the executive-level team will empower the SAF Interagency Working Group under the Biomass Research and Development Board established in 2020 by the USDA, DOT/FAA, and DOE to develop a Grand Challenge roadmap strategy within six months. The purpose of the roadmap is to provide details of specific activities that should be undertaken by the Parties to achieve the 2050 goals and interim milestones of the Grand Challenge.
 2. Develop a whole-of-government approach toward achieving the goals of the Grand Challenge; incorporating input from key stakeholders; engaging and coordinating with other government agencies; ensuring alignment of government and industry actions; and coordinating government policies, along with states, Tribes, and local communities, to achieve the goals of the Grand Challenge.
 3. Ensure cross-agency coordination in the formation and execution of RDD&D plans. This includes collaboration on RDD&D, modeling, and analysis to ensure sharing of approaches, tools, assumptions, and insights across agencies' research centers at the DOE National Laboratories, FAA's Center of Excellence for Alternative Jet Fuels and the Environment (ASCENT), and USDA's Agricultural Research Service, Forest Service, and National Institute of Food and Agriculture.
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Responsibilities of the Parties

To achieve the goals of this MOU, the Parties will undertake to:

U.S. Department of Energy	U.S. Department of Transportation	U.S. Department of Agriculture
<ul style="list-style-type: none"> • Continue investments and develop expertise in sustainable technologies to develop cost effective low carbon liquid fuels and enabling coproducts from renewable biomass and waste feedstocks • Continue a significant multi-year SAF scale-up strategy committed to in FY21 • Conduct R&D aimed at creating new pathways toward higher specificity of SAF production • Advance the environmental analysis of sustainable aviation fuels • Collaborate with the U.S. Environmental Protection Agency (EPA) and the Parties on steps to expedite regulatory approvals of new SAF feedstocks that achieve significant lifecycle GHG reductions 	<ul style="list-style-type: none"> • Develop overall strategy to decarbonize aviation • Coordinate ongoing SAF testing and analysis • Work with standards organizations to ensure safety and sustainability of SAF • Continue International technical leadership • Promote end use of SAF • Seek opportunities to support the development of infrastructure and transportation systems that will connect SAF feedstock producers, SAF refiners, and aviation end users • Collaborate with EPA and the Parties on steps to expedite regulatory approvals of new SAF feedstocks that achieve significant lifecycle GHG reductions 	<ul style="list-style-type: none"> • Continue investments and build expertise in sustainable biomass production systems • Decarbonize supply chains • Invest in Biomanufacturing capability and Workforce development • Community and individual education • Provide outreach and technology transfer to producers, processors, and communities to accelerate adoption and participation • Commercialization support • Collaborate with EPA and the Parties on steps to expedite regulatory approvals of new SAF feedstocks that achieve significant lifecycle GHG reductions

Points of Contact

The Parties' points of contact responsible for administration of the MOU are:

- DOE: Valerie Reed, Valerie.Sarisky-Reed@ee.doe.gov
- DOT: Nathan Brown, nathan.brown@faa.gov
- USDA: William Goldner, william.goldner@usda.gov

Additional Terms and Termination

This MOU shall remain in effect until terminated by any Party upon written notice to the other Parties. This MOU in no way restricts any Parties from participating in any activity with other public or private agencies, organizations, or individuals. This MOU is neither a fiscal nor a funds obligation document. Nothing in this agreement authorizes or is intended to obligate the Parties to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value. This MOU is strictly for internal management purposes for each Party. It is not legally enforceable and shall not be construed to create any legal obligation on the part of any Party, including that of a federal contractor. The MOU shall not be construed to provide a private right or cause of action for or by any person or entity. This MOU is subject to, and will be carried out in compliance with, all applicable laws, regulations, and other legal requirements.

Modifications

This MOU may be modified by mutually acceptable written amendments duly executed by authorized officials of DOE, DOT, and USDA.

Entire Agreement

This MOU constitutes the final understanding of all Parties on all subjects contained within it. All prior negotiations, understandings, and agreements are merged into this Agreement

Execution

The Parties have caused this MOU to be executed in three (3) identical originals by their duly authorized representatives and is entered into the date of the last signature below.

Signatures of the Executing Officials and the Date Signed

Approved and Accepted for U.S. Department of Energy



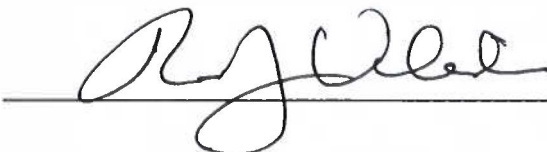
Date: September 8, 2021

Approved and Accepted for U.S. Department of Transportation



Date: September 8, 2021

Approved and Accepted for U.S. Department of Agriculture



Date: 9.8.2021