Sustainable Alternative Jet Fuel

U.S. policies & programs for enabling production and use

CAAFI - CORE-JetFuel Cooperation Workshop
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Bridging Technology’s “Valley of Death”

Chart courtesy of W. Harrison, U.S. Air Force
Barriers to alternative jet fuels in the U.S.

- Feedstock Availability
- Competitive cost for alternative fuel
- Approval of fuels for performance/safety
- Uncertainties in environmental impacts
- Investment in production infrastructure
- Establish supply chains
Types of Policies & Programs

• **Public R&D investments**
  – Funding and/or cost sharing of technology R&D
  – Testing and analysis
  – Analytical tools, planning, studies

• **Public Deployment Policies**
  – Fiscal incentives (tax credits/rebates)
  – Public financing (loans, loan guarantees, grants)
  – Regulations (mandates, quotas)
  – Government (& airline) procurement

• **Coordinating Initiatives**
  – Public Private partnerships (CAAFI, Farm to Fly 2.0)
Addressing U.S. barriers

• Increase feedstock availability
  – R&D on Feedstocks & cost (e.g. Agriculture, Energy grants)

• Reduce fuel costs through R&D investment
  – Improve conversion cost (e.g. Energy, DARPA grants)

• Reduce risks of approval process
  – R&D support for testing of fuels (e.g. FAA, Defense, NASA)
  – Transparent process for certification/qualification

• Reduce uncertainty on environment
  – Improve quantification of benefits
  – Work towards converging standards for crediting
Addressing U.S. barriers

• Increase investment in production
  – Reduce cost & risk of production of feedstock (e.g. Agriculture BCAP, crop insurance programs)
  – Reduce cost to finance first of a kind plants (e.g. loan guarantees by Agriculture and Energy)
  – Direct investment in fuel production (e.g. Navy, Energy, Agriculture Defense Production Act)
  – Provide fuel production incentives (e.g. the U.S. Environmental Protection Agency’s Renewable Fuel Standard)
  – Purchases and off-takes to create market (e.g. Department of Defense, Farm to Fleet and Airlines)

• Establish supply chains
  – Linking up stakeholders for supply (e.g. CAAFI & F2F2)
U.S. complementary programs create a bridge?

Feedstock Production → Feedstock Logistics → Fuel Conversion → Conversion Process Scale-up/Integration → Fuel Testing/Approval → Enable Production → End User/Buyer

Agriculture NIFA Community Ag Program grants
FAA supply chain analysis

Agriculture biomass crop assistance & crop insurance programs
Energy R&D grants

Energy R&D grants

Agriculture & Energy R&D grants
Defense R&D grants

FAA, Defense NASA C/Q Fuel testing
FAA, Defense, NASA Enviro Analysis

Agriculture, Navy, Energy DPA
Agriculture, Energy biorefinery grants, loans
Defense & Airline fuel purchasing/offtake

EPA's RFS
State LCFS

Farm to Fly 2.0 – Agriculture, Energy, FAA & Industry
CAAFI State initiatives
The fuel is petroleum-based, but this agreement is expected to develop a lifecycle for sustainability.

*This agreement is an important milestone for Gulfstream, as it allows us to continue our efforts towards a more sustainable future.*

In 2013, the two companies operated flights in cooperation with GEVO, which is expected to produce 100 million gallons per year by 2025.