

Sustainable Alternative Jet Fuels

U.S. Vision & Approach

ICAO Sustainable Aviation Fuels Workshop

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Federal Aviation
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Outline

- **Alternative Fuel Principles**
- **U.S. Approach**
- **U.S. Activities**
- **Recent U.S. Developments**
- **The Challenge Ahead**
- **Next Steps**



Alternative Fuels Principles

- **Fuels must be drop in, have equivalent safety and better environmental performance**
- **Government role addressing key barriers**
- **Enable all possible fuels that meet criteria**
- **Work through Public-Private Partnerships**
- **Address whole supply chain-- broad array of agencies and stakeholders involved**
- **Leverage expertise and programs nationally and internationally**
- **Enable aviation as a lead user of alternative fuels**



U.S. Approach

- **Sustainable Alternative Fuels are key to meeting U.S. aviation environmental goals**
- **FAA Goal: 1 Billion gallons by 2018**
- **Government role to address key barriers**
 - Foster research
 - Share information
 - Bridge chasm from development to deployment



U.S. Activities

- Information exchange & coordination of effort
- Fuel R&D and testing
- Facilitating Fuel Approval
- Environmental sustainability
- Production Economic & Scenario Analysis
- Feedstock R&D and production
- Fuel production
- Implementation tools for airports



Recent U.S. Developments

- **FAA funds alternative fuels testing under CLEEN program (Jun 2010)**
- **U.S. Department of Agriculture (USDA), Air Transport Association (ATA), Boeing Farm to Fly Partnership (Jul 2010)**
- **FAA and USDA agree to work on feedstock development (Oct 2010)**
- **U.S. – Brazil Partnership (Mar 2011)**
- **Paris Air Show Alternative Aviation Fuels Showcase (Jun 2011)**



Recent U.S. Developments

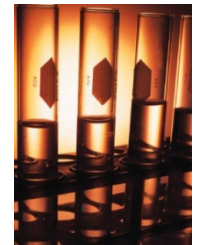
- **ASTM International Approval of biofuel (July 2011)**
- **USDA, U.S. Department of Energy (DOE) & Navy \$510M commitment to advanced biofuel production (Aug 2011)**
- **DOE \$4M grants to Virent and Lanzatech for jet fuel process development (Aug 2011)**
- **U.S. – Australia Cooperation Agreement (Sep 2011)**
- **U.S. Air Force announces tests of alcohol to jet fuel (Sep 2011)**
- **USDA \$131M for 5 regional biofuel feedstock development efforts (Sep 2011)**



The Challenge Ahead

Make sustainable alternative fuels commercial

- Foster development and production of feedstocks for aviation biofuels
- Support development, testing and approval of additional sustainable alternative fuels
- Quantify environmental impacts
(Air quality, lifecycle greenhouse gases and sustainability)
- Create production infrastructure



Some Next Steps

Development and production of appropriate feedstocks for aviation biofuels

- **USDA investments in feedstock R&D & production**
- **FAA-USDA feedstock readiness tool implementation**
- **Share lessons learned with international partners**

Development, testing and approval of additional sustainable alternative fuels

- **FAA, DoD testing programs for alcohols, pyrolysis, sugars**
- **DOE fund jet biofuel process development**
- **Share test plans and data with international partners**



Some Next Steps (continued)

Accurately quantify environmental impacts

- Sustainability criteria studies
- Improve lifecycle greenhouse gas modeling
- Engagement of stakeholders (CAAIFI)
- NASA high altitude emissions measurements

Investment in production infrastructure

- USDA, DOE & Navy Defense Production Act
- USDA Biorefinery Assistance Program
- Regional efforts by U.S. States

Share lessons learned internationally

