

# CAAIFI-CORE-JetFuel Cooperation Workshop Sustainability Overview – U.S. April 28, 2016

Nancy Young (A4A/CAAIFI)



# The Environmental Imperative

- \* Overall Objectives for Alternative Fuel Deployment
  - \* Energy Security/Supply Reliability
  - \* Commodity Competitor to Petroleum
  - \* **Environmental Benefit (our focus)**
- \* **Environmental Benefit**
  - \* Potential Life Cycle Greenhouse Gas (GHG) Emissions Improvements
  - \* Potential to Reduce Emissions with Air Quality Impact (special focus on particulate matter/PM)
  - \* Sustainability More Broadly: Do Not Induce Other Environmental Problems
    - \* Water use, land use, food-basket competition, etc.



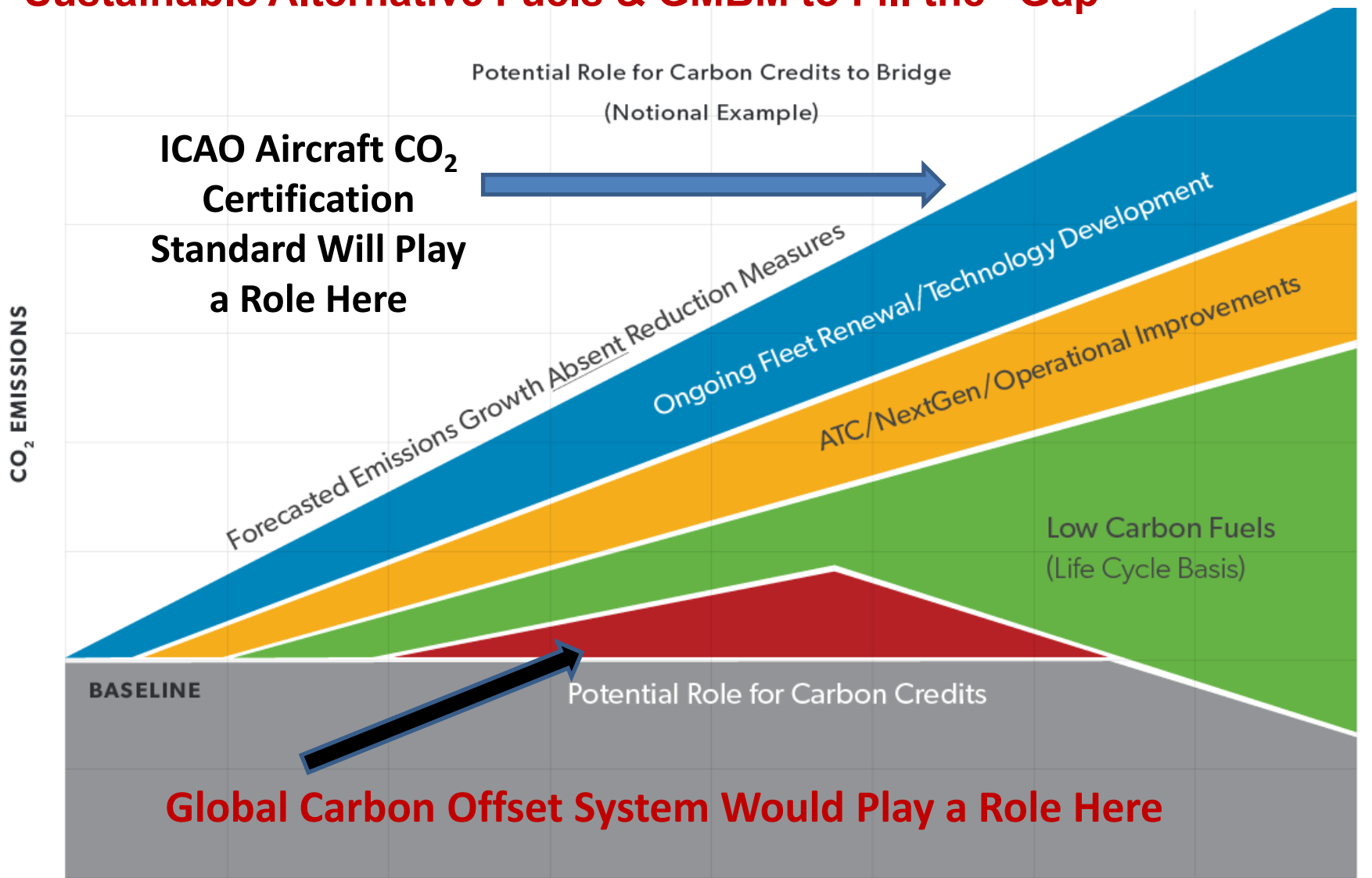
# Aviation's Commitment to Continued and Verifiable GHG Emissions Improvement

- \* Strong Record of Fuel Efficiency & Emissions Savings
- \* The Aviation Industry Has Committed to Aggressive CO<sub>2</sub> Emissions Targets Going Forward



- \* FAA aspirational goal - carbon neutral growth by 2020 compared to 2005
- \* ICAO Has Adopted CNG2020+ Goal
  - \* And, FAA has an aspirational goal - carbon neutral growth by 2020 compared to 2005

# Aviation & Climate Change: Technology, Operations, Infrastructure, Sustainable Alternative Fuels & GMBM to Fill the “Gap”



# Regulatory Sustainability Requirements for Aviation Alternative Fuels in the United States

- \* Only Mandatory Requirement is that the Fuels Be Produced and Deployed Consistent with Federal & State Environmental Requirements
  - \* e.g., the feedstock producers, transporters, facility processing the feedstocks into fuels, etc. must meet Clean Air Act, Clean Water Act, waste management, etc. requirements
- \* U.S. Requirement for Federal/Military Procurement of Alternative Fuels (Including Alternative Aviation Fuels)
  - \* Can only procure alternative fuels with lifecycle GHG emissions better than or equal to conventional fuels (EISA Section 526)
- \* Requirements for Alternative Jet Fuel if the Producer Seeks to Qualify It under the Renewable Fuel Standard (RFS 2)

# RFS2 Environmental Sustainability Requirements

- \* Demonstrated Lifecycle GHG Reduction Compared to 2005 Petroleum Baseline
  - \* 20% (Renewable Fuel), 50% (Advanced Biofuel), or 60% (Cellulosic)
  - \* Indirect Land Use Change (ILUC) included
- \* Cropland must have been cleared prior to December 19, 2007
- \* Feedstocks/pathways for alternative jet fuel must be approved by EPA after LCA analysis

# RFS2-Approved Feedstocks/Pathways for Alternative Jet Fuel

Feedstock	Process Technology
Soybean oil	Hydrotreating
Oil from annual cover crops	
Algal oil	
Biogenic waste oils/fats/greases	
Non-food grade corn oil	
Camelina sativa oil	
Cellulosic biomass from...	Any
Crop residue	
Slash, pre-commercial thinnings and tree residue	
Annual cover crops	
Switchgrass	
Miscanthus	
Energy cane	
Arundo donax	
Napier grass	
Separated yard waste	
Cellulosic components of...	
Separated food waste	
Separated MSW	
Components annual cover crops	
Noncellulosic portions of ...	Any
Separated food waste	
Components annual cover crops	

Source: 40 CFR §80.1426, Table 1

# Some U.S. Alternative Jet Fuel Producers & Purchasers Also Meet Voluntary Sustainability Criteria

- \* A4A Commitment:

**... We seek alternative fuel sources having a reduced emissions profile relative to traditional fuels. We encourage all potential suppliers to work directly through CAAFI to ensure that their alternative jet fuel will meet accepted criteria to be more environmentally friendly than traditional jet fuel, in particular resulting in a reduced emissions profile on a lifecycle basis, without compromising critical uses of relevant feedstocks.**

- \* Members of the Sustainable Fuel Users Group (SAFUG) Sustainability Pledge (e.g., RSB certification)

- \* CAAFI Helps with Information and Tools

- \* Environmental Sustainability Overview & Matrix, see <http://www.caafi.org/information/fuelreadinesstools.html#EnvironmentalSustainability>



# Aviation's Unique Need for Acceptance of GHG LCA & Relevant Sustainability Criteria Across Borders

- \* Obviously, Aircraft Are Mobile Sources that Cross Borders
- \* GHG LCA Methodology Developed under ICAO for Purposes of the Global Market-Based Mechanism (GMBM)
  - \* But also common methods needed for assessing aviation GHG emissions and the role alternative fuels play
- \* ICAO Now Working on Potential Sustainability Criteria Beyond GHG LCA Criteria (CAAFI Members Are Participating in that Process)
  - \* But may also need common approaches for mutual recognition/trade purposes