



# Commercial Aviation Alternative Fuels Initiative

*Supporting solutions for secure and sustainable aviation*

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## CAAFI Defines Approach to Alt Fuel Greenhouse Gas Well to Wake Assessments

*Commercial Aviation Alternative Fuels Initiative meeting includes array of both emerging assessment tools and specific case studies of FT and biofuels to establish approach to robust analysis framework.*

**What:** October 21, 2008, Chicago, IL. Environmental Team Meeting, Commercial Aviation Alternative Fuels Initiative (CAAFI)

### Why

The purpose of the meeting was to ensure that:

- aviation establishes a world class approach to greenhouse gas life cycle analysis for candidate aviation alternative fuels from well to wake that will have maximum fidelity and be communicated effectively among and between collaboration participants and with all interested parties
- tools and processes are visible to CAAFI sponsor/stakeholders ensuring that candidates will meet their goals (e.g., ATA policy <http://www.airlines.org/economics/energy/altfuelsprinciples.htm>)
- all participants in lifecycle analysis tool development and studies share and obtain benefit from the work of others.
- visibility of unmet needs in lifecycle analysis for the use of participants with potential funding sources to align efforts of those best suited to address unmet needs is provided.
- established roadmaps for air quality measurement and assessment are up to date.

**Who:** CAAFI — the international coalition of airlines, aircraft and equipment manufacturers, airports, suppliers, universities, non-government organizations, and government agencies. The Environmental Team is one of four CAAFI teams tasked with driving commercially viable, environmentally friendly alternative jet fuel implementation.

CAAFI Environmental team members presenting included:

Greenhouse Gas Life Cycle Analysis

- MIT led, FAA Sponsored PARTNER Center of Excellence –
- USAF / DOE led Intergovernmental Group
- Argonne National Labs – University of Chicago
- UOP / Honeywell
- Neste (Finland)
- Boeing
- Rentech
- Idaho National Lab (for Baard Energy)
- Illinois Clean Fuels (for American Clean Coal Fuels)

Emissions Measurement of Alternative Fuels

- Missouri University of Science and Technology
- GE Aero Engines

Ultra Low Sulfur Fuels Cost/Benefit Analysis

- FAA

## Meeting highlights

A main focus of the meeting was the coordination and strengthening of approaches for alternative jet fuel greenhouse gas well to wake analysis. Specifically:

- USAF/ DOE Interagency Working Group – subgroup on environmental lifecycle analysis reporting on its efforts to define rules and tools for assessment of life cycle analysis. The assessment process includes university partners from MIT (PARTNER), University of Texas, University of Washington and Boeing.
- PARTNER Center of Excellence reporting on the range of outcomes and uncertainty levels associated with its first pass assessment of jet fuels. The PARTNER effort will ultimately include the calculation of aircraft emissions and health impacts using tools designed by FAA that have been accepted Internationally for aviation use. University of Chicago (Argonne) similarly reporting its progress in extending application of the industry standard greenhouse gas assessment model (GREET).
- Individual case study presentations by UOP, Neste (Biofuels) and Rentech, Idaho National Labs (for Beard Energy) and Illinois Clean Fuels LLC (for American Clean Coal Fuels). All case studies show significant variability in potential outcomes owing to local feedstock supply variables (e.g, transportation costs) and the booking of by products energy balance (displacement value) among other factors.
- Initial roadmaps communicating the accomplishments, plans and technical needs of most presenters developed to facilitate both participant collaboration and the identification of unmet needs for the use of funding sources.

CAAFI Environmental Team Leader and FAA Office of Environment Chief Scientist Dr. Lourdes Maurice said, “The ongoing analyses by groups and individual CAAFI’s sponsors/stakeholders establish the essential building blocks for an inclusive assessment framework for aviation well to wake greenhouse gases. The Environmental team’s goal is to coordinate ongoing efforts and provide peer-reviewed guidance in the conduct of such analyses. This is an essential step toward alternative fuels implementation.”

That identified framework will be developed to include:

- Use of USAF/DOE assessment tools emerging from their joint government/industry/university team, to assess specific alternative fuel projects proposed for aviation industry fuels as the primary well to wheels analysis discipline of production and distribution options.
- Use of FAA defined and globally accepted aviation emissions forecasting tools for a singular wheel to wake assessment output.
- Case studies of planned production and distribution of alternative fuel projects offered by stakeholder producers utilizing rules established under the Intergovernmental tools effort (first framework bullet) and emissions predictions from FAA emissions tools (second bullet) to ensure that full range of facility / process /site unique issues can be evaluated and bounded accurately using independent standards.

In addition to the efforts on greenhouse gases, the Environmental team was provided:

- Data emerging from 2007 tests of both Fischer Tropsch and bio fuels confirming benefits in air quality, specifically small particle formation for the initial fuels tested.
- Recently initiated studies to establish the benefits of low sulfur fuels in aviation.

## About CAAFI

CAAFI’s mission is to enhance energy security and environmental sustainability for aviation through alternative fuels. CAAFI is a forum that focuses the efforts of the U.S. commercial aviation supply chain to engage the emerging alternative fuels industry. It enables its diverse participants — representing all the leading stakeholders in the field of aviation — to build relationships, share and collect needed data, and motivate and focus research on aviation alternative fuels. See CAAFI Fact Sheet: <http://web.mit.edu/aeroastro/partner/caafi/caafi-descrip.pdf>

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