

Sunday, January 21, 2007

**Alternative Aviation
Fuels Alphabet Soup**

A Primer

Richard Altman

Commercial Aviation Alternative Fuels Initiative

Sunday, January 21, 2007

Coffee

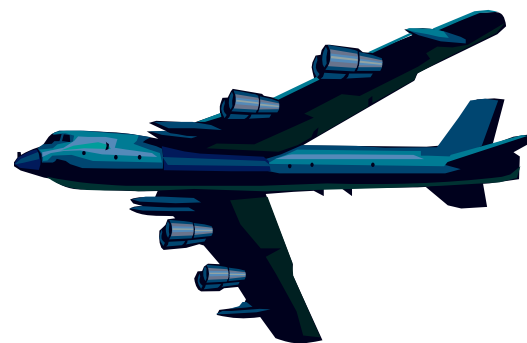


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Alternative Fuels Initiative




Alternative Aviation Fuels

Other Alphabet Soup Acronyms / Shortcuts

- **Jet A, JP8** - Current fuels (commercial/military)
- **JP8 + 100** - JP8 with Added thermal capacity
- **Thermal capacity** – ability of fuel to act as a heat sink
- **CTL** - Coal to Liquid alternative – e.g. Sasol from S. Africa
- **GTL** - Gas to Liquid alternative – e.g, Syntroleum from U.S.
- **Renewables** – Alternatives from biological sources
- **FT** - Fischer Tropsch process to produce CTL, GTL
- **IPK** - Iso-Paraffinic range of Carbon / Hydrogen fuels
- **ASTM** - American Society for Testing and Renewable Standards
- **Roadmaps** – Strategic Planning / Communications Management Tool used by CAAFI
- **ACI, AIA, ATA, FAA** – CAAFI supply chain sponsors

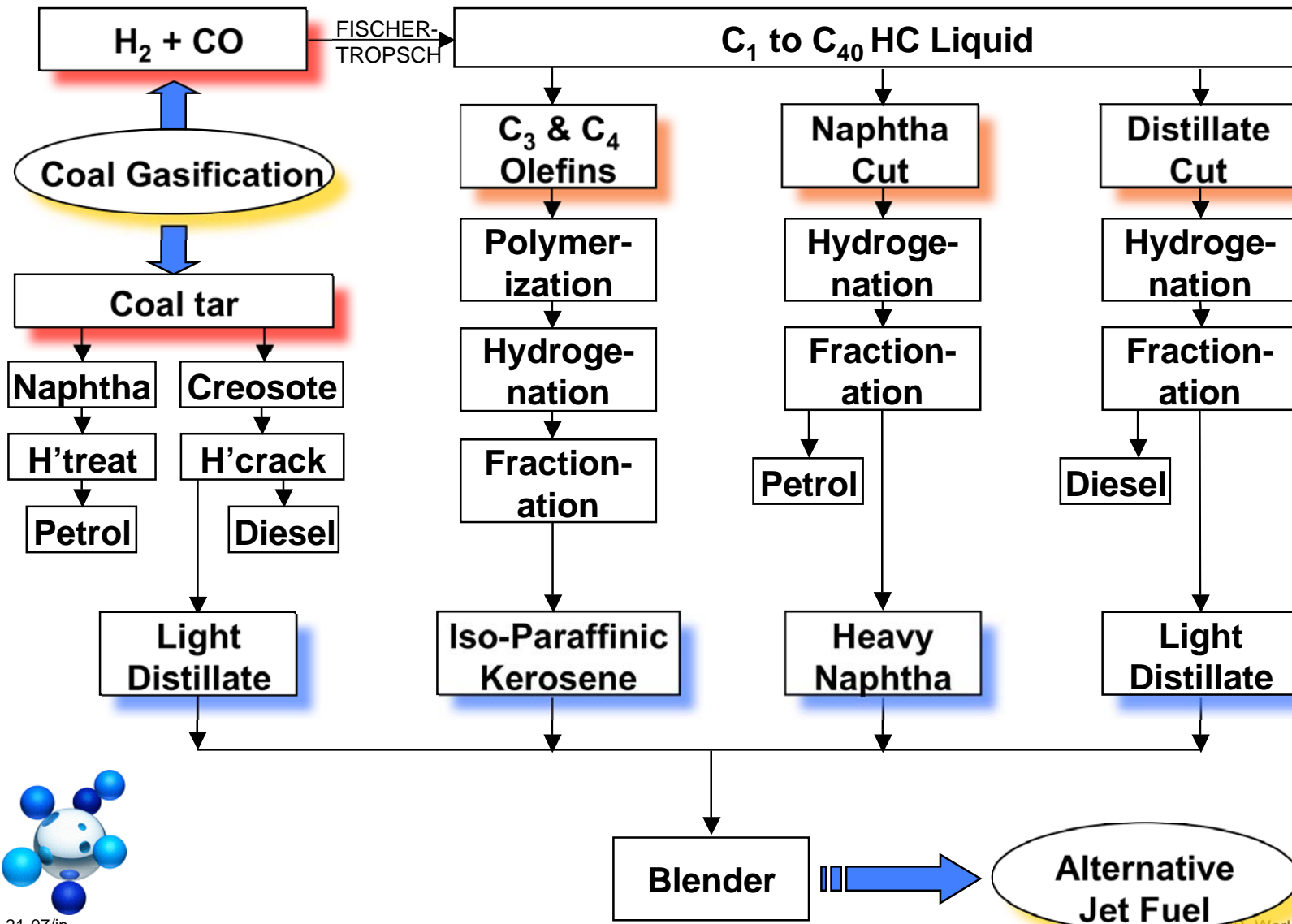
Alternative Fuels Opportunity

Viable Products / Technology

	<u>Status</u>	
<ul style="list-style-type: none">• 100% SASOL FT (substitute for Jet A (CTL))	<ul style="list-style-type: none">• Single source approval• All tests complete• OEM approvals 1st quarter 2007	 <p>Maturity Level</p>
<ul style="list-style-type: none">• 50% syntroleum FT (GTL) (substitute for JP8)	<ul style="list-style-type: none">• Second data source• Final tests funded• Results targeted by mid-year 2007	
<ul style="list-style-type: none">• Iso Parifinic Kerosene blanket approvals	<ul style="list-style-type: none">• 2008 target 50/50 F/T blend• 2009 target 100% F/T	
<ul style="list-style-type: none">• DARPA (other) renewable fuel research	<ul style="list-style-type: none">• Virgin/other initiatives• Awards granted 4Q 2006	

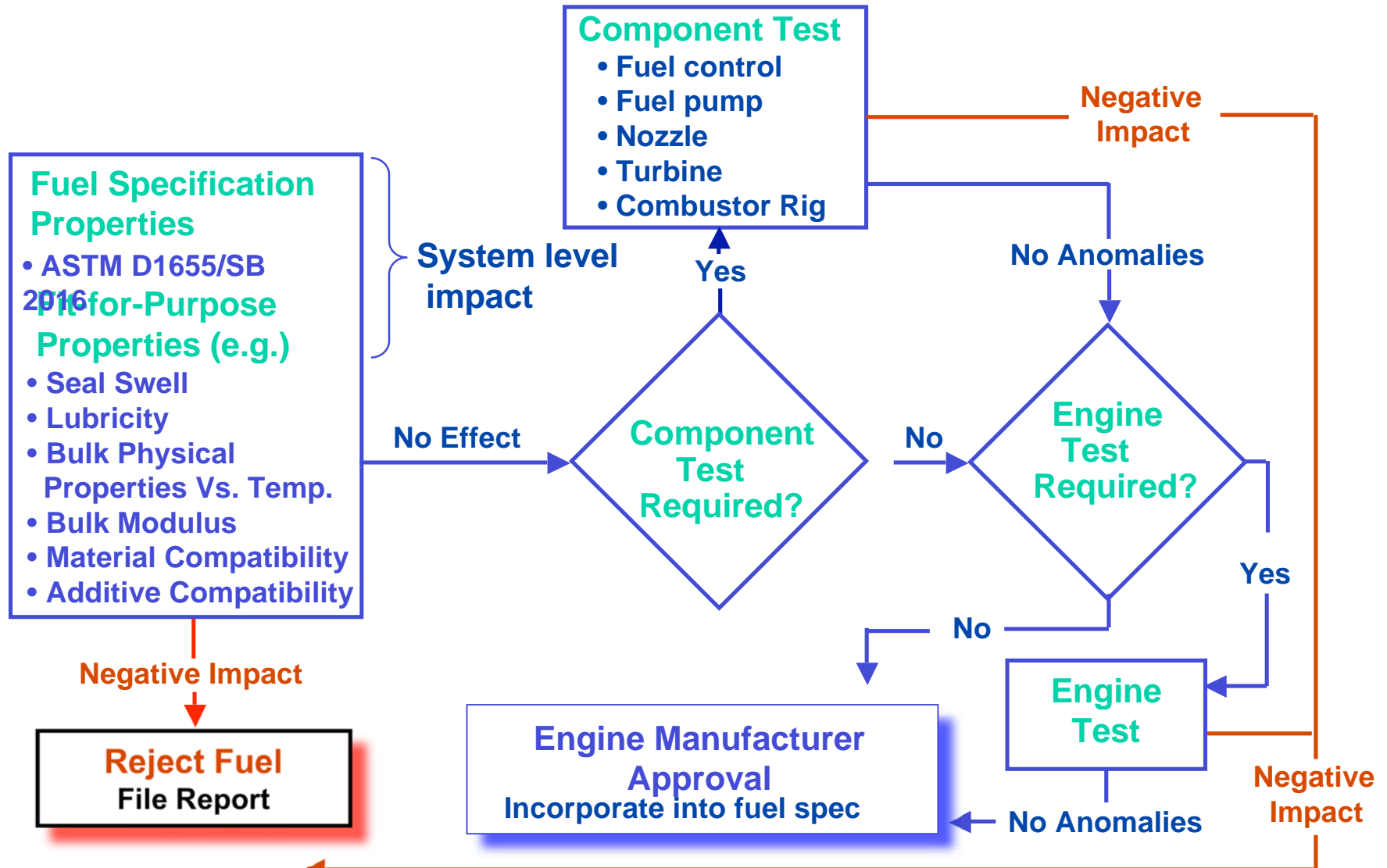
Fischer Tropsch Coal → Liquid

Refining Process



Alternative Fuel Opportunity

ASTM Approval Protocol*

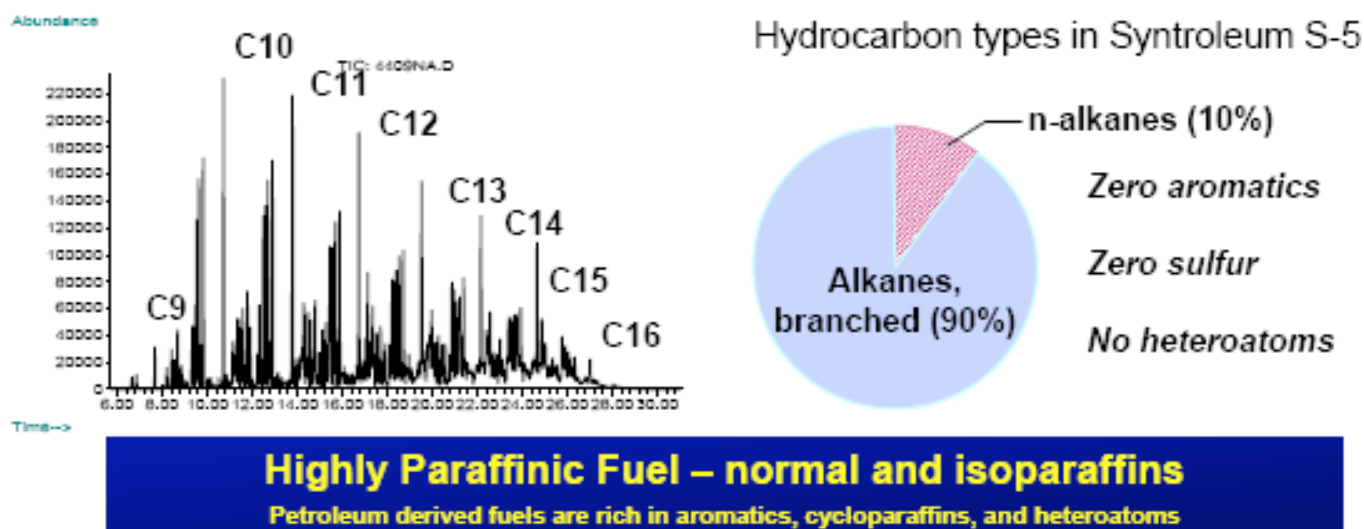


* Flow chart to be published as part of ASTM document written by industry

IPK Fuel Alternatives / Environment

Burn Cleanly

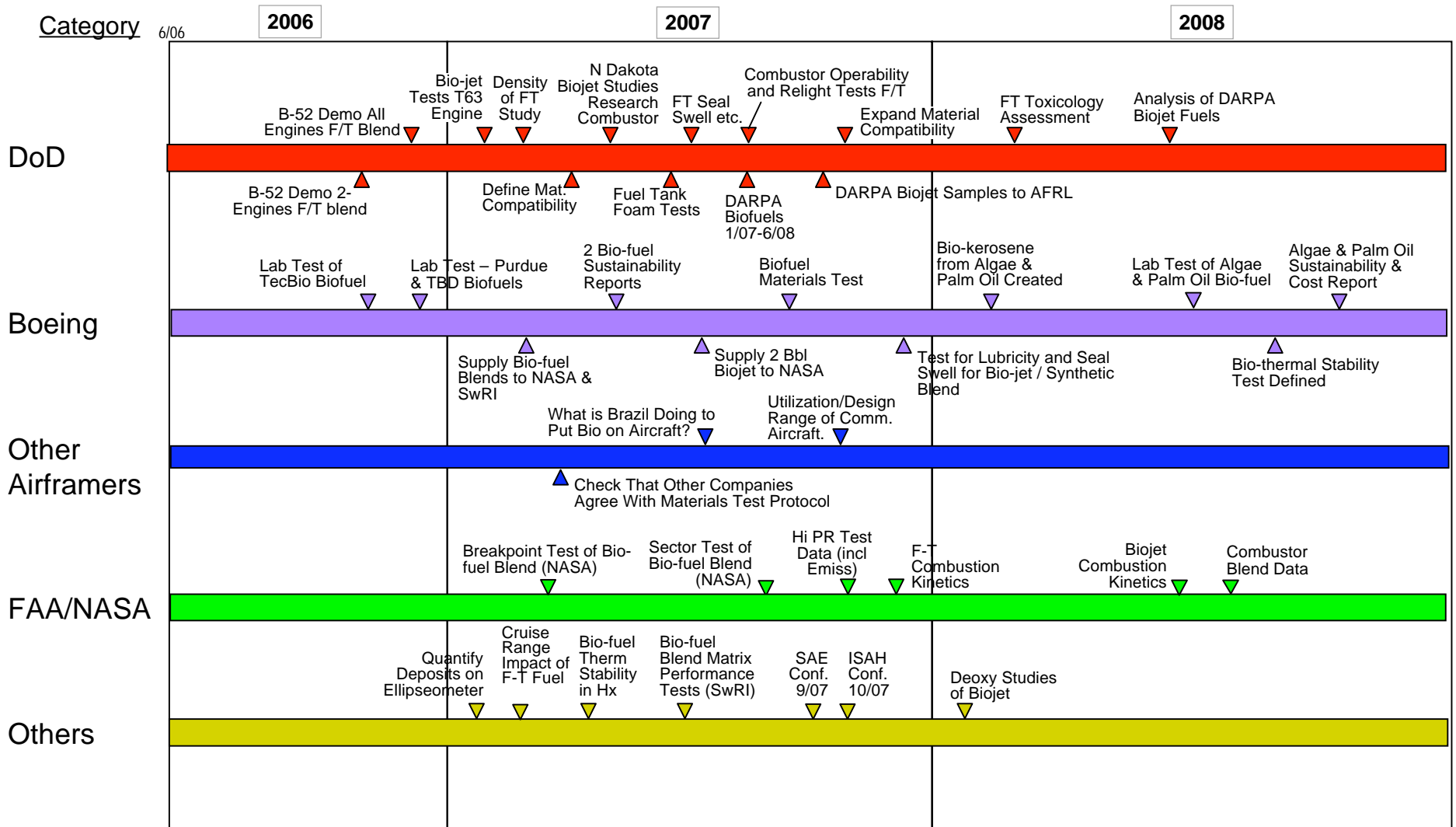
- Less Pollutant Emissions
 - 2.0% less CO₂
 - 50% to 90% less particulate matter (PM)
 - 100% reduction in Sox
 - ~1% less fuel burn (increased gravimetric energy density)



Ref: Presentation W. Harrison (AFRL) to VAATE Steering Committee , 8/15/06

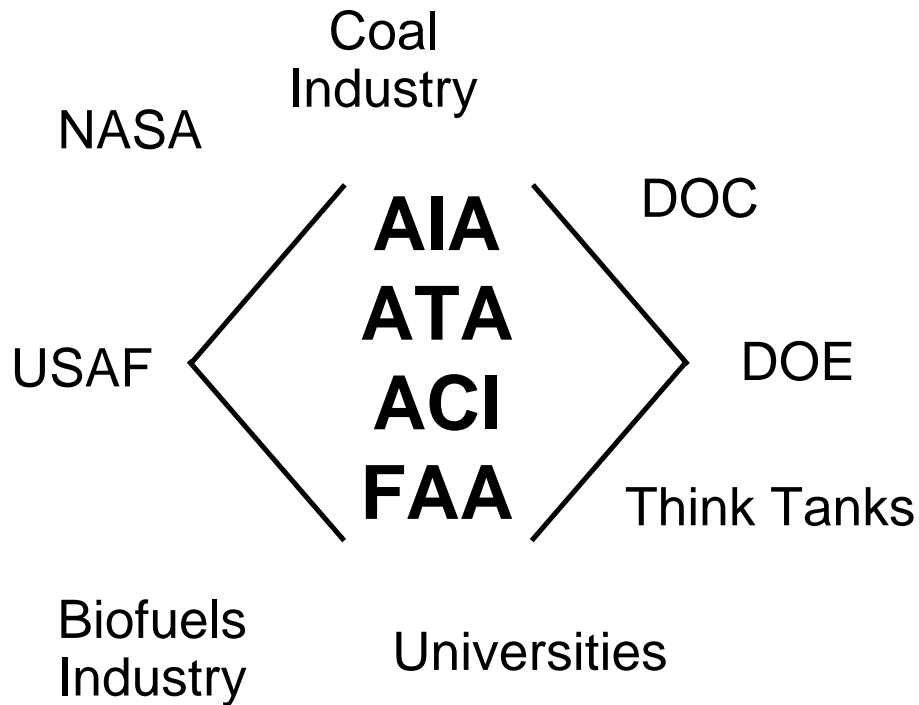
Renewable Aviation Alternatives

Significant Portion of CAAFI R&D Roadmap



* Reference: November 16, 2006, CAAFI R&D Team Roadmap(sheet 1 of 2)

Commercial Aviation Alternative Fuels Initiative



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“A Dog Wagger”

