

The CAAFI Coalition....Leading the Quest for a New, Sustainable Jet Fuel Dynamic

By: Donald P. Schenk – ACA Associates, Inc.
+1 212-808-4420, dpschenk@aca-assoc.com
www.aca-assoc.com

Richard Altman – Executive Director
Commercial Aviation Alternative Fuels Initiative (CAAFI)
+1 860-761-8634, altrich@cox.net

South Africa, October 2009



www.caafi.org



Agenda CAAFI

Who CAAFI is

Philosophy

Airlines' Global Challenges

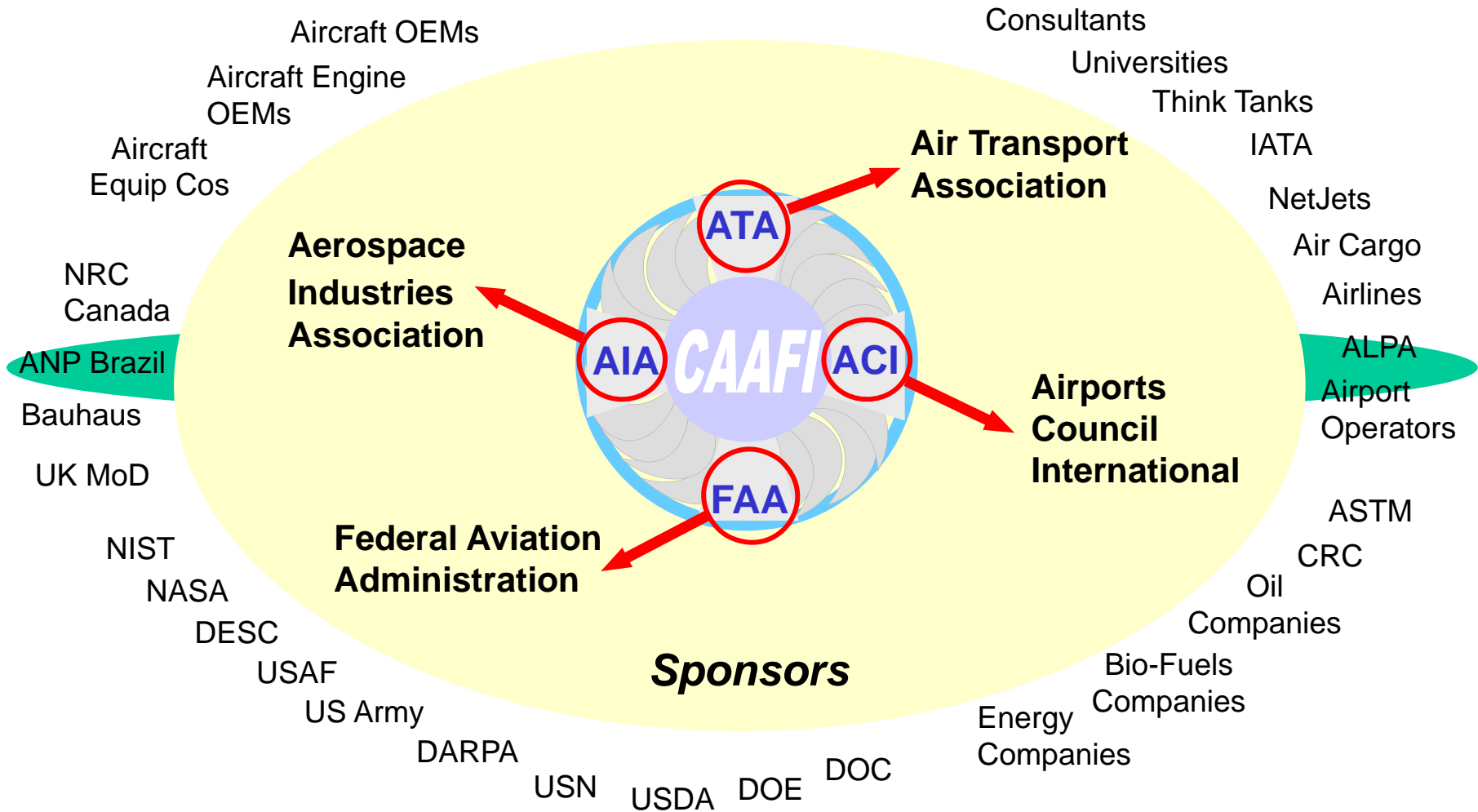
CAAFI'S Milestones and Goals

CAAFI - Organized to Meet Global Challenges



Who CAAFI Is

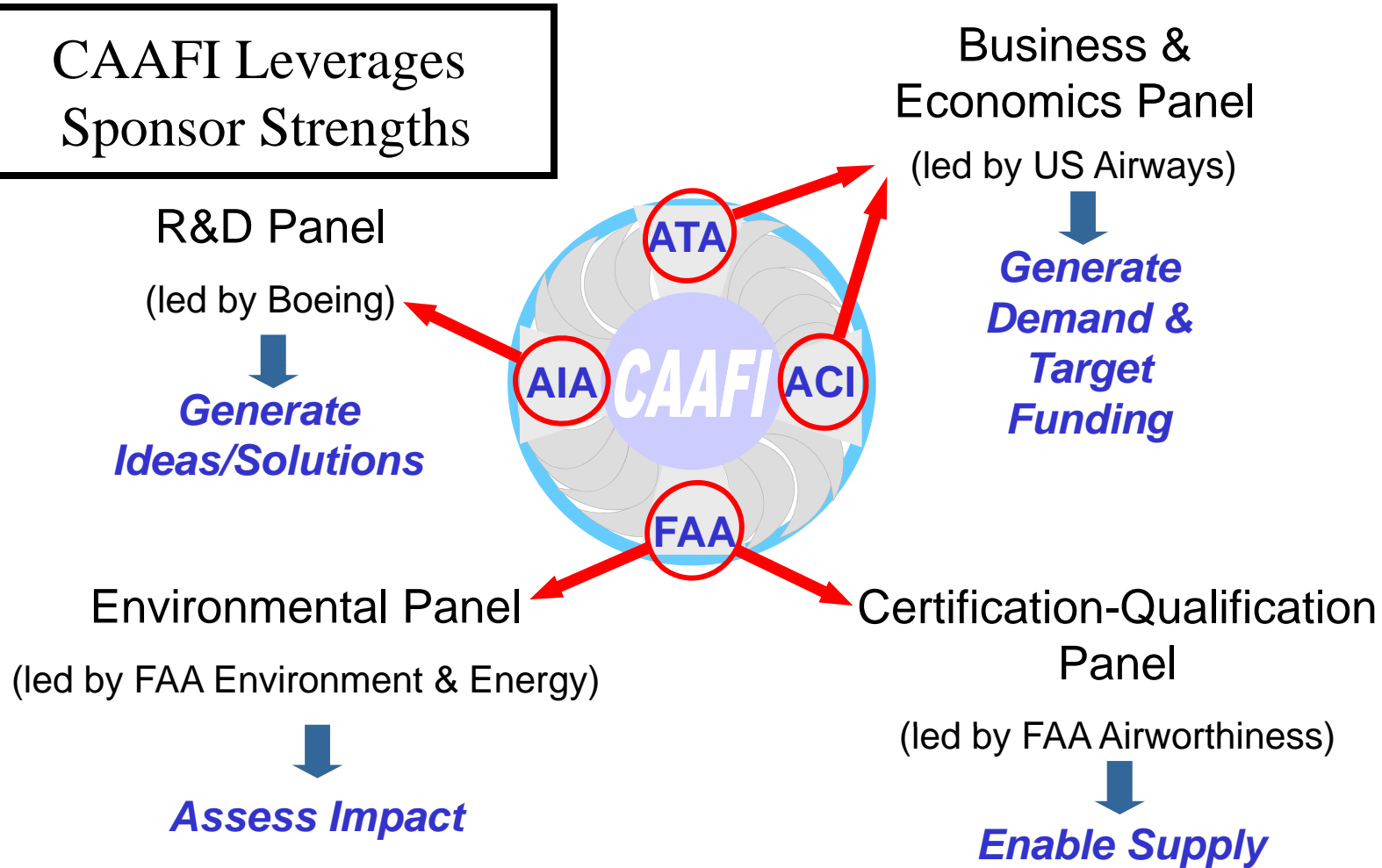
Stakeholders



....Over 300 Sponsors/ Stakeholders from All Continents

Who CAAFI Is

CAAFI Leverages Sponsor Strengths



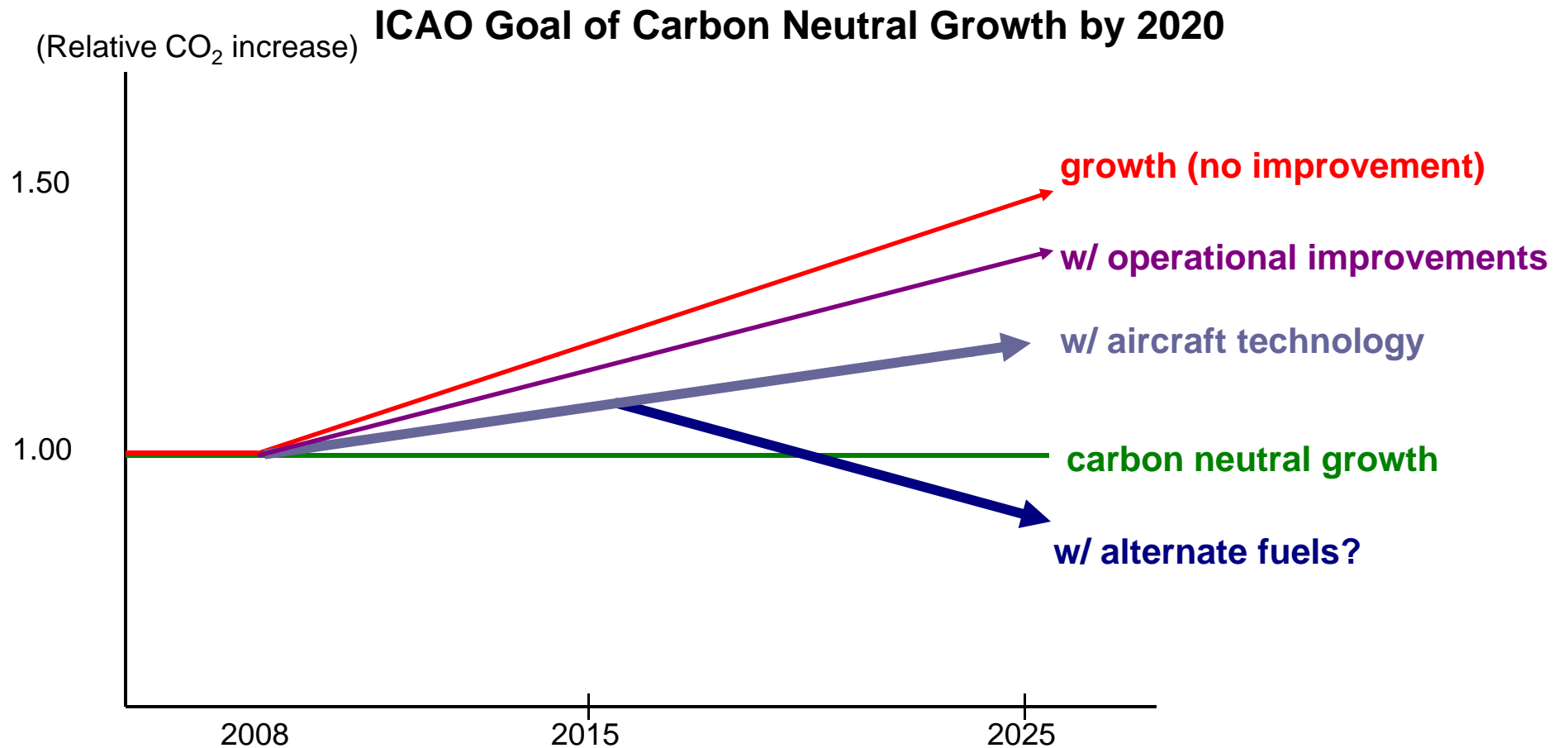
.....**Process Owners Lead Teams & Drive Outcomes**

CAAFI's Philosophy

- Ensure safety
- Support certification
- Promote alternative non-food based feedstocks
- Reduce LCA & promote common analytics
 - ICAO wheels-to-exhaust
 - FAA/MIT ground-to-plane
- Improve air quality
- Leverage airline purchasing power
- Speed deployment through global vision



CAAFI's Philosophy



Source: Richard Altman



Philosophy Reduce LCA & Promote Common Analytics

Three pathways meriting additional analysis:

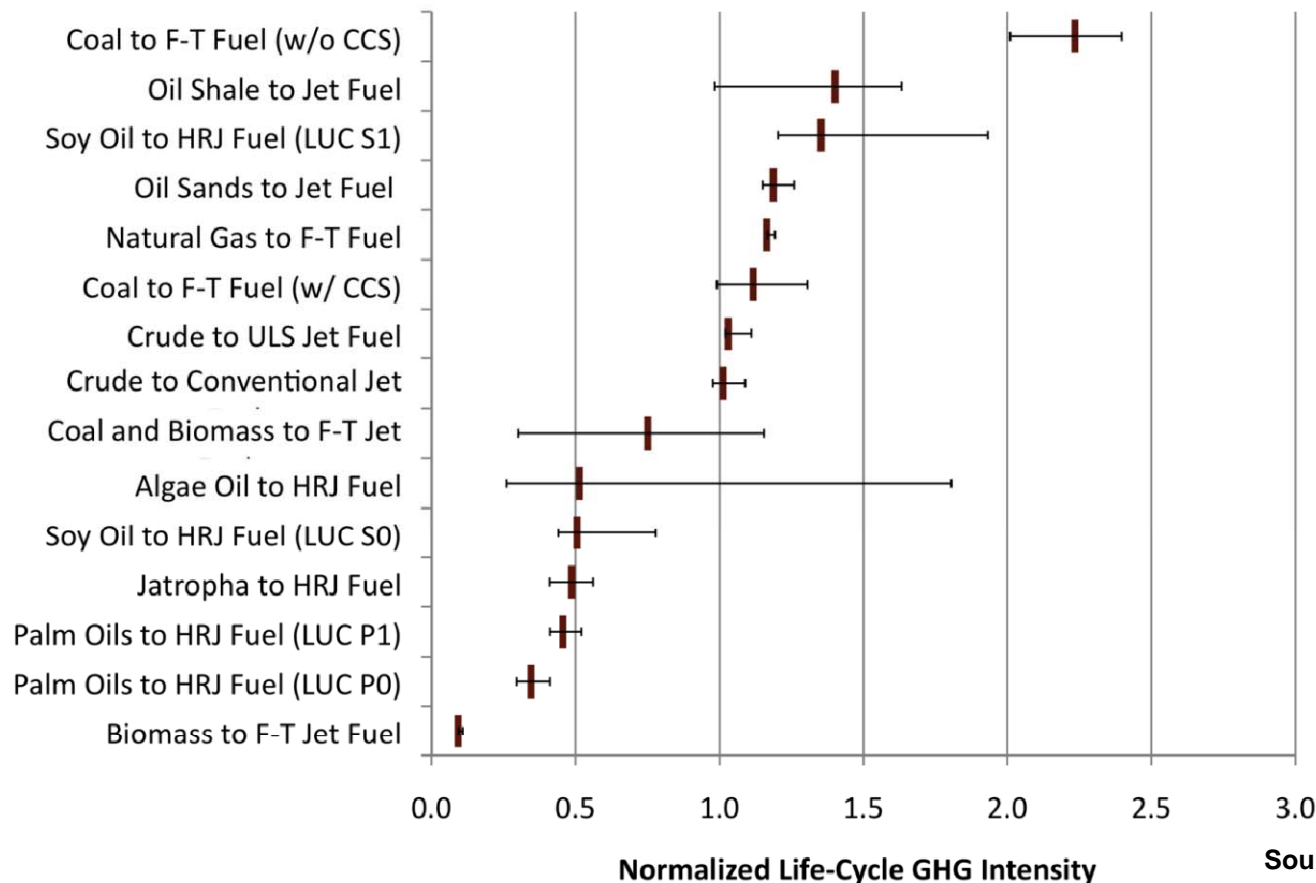


1) Coal-Biomass to F-T Fuel

2) Algae to Biojet (HRJ)

3) Jatropha to Biojet – added feedstocks (e.g. Camelina) (HRJ)

Additional pathways being considered (e.g. halophytes to HRJ)

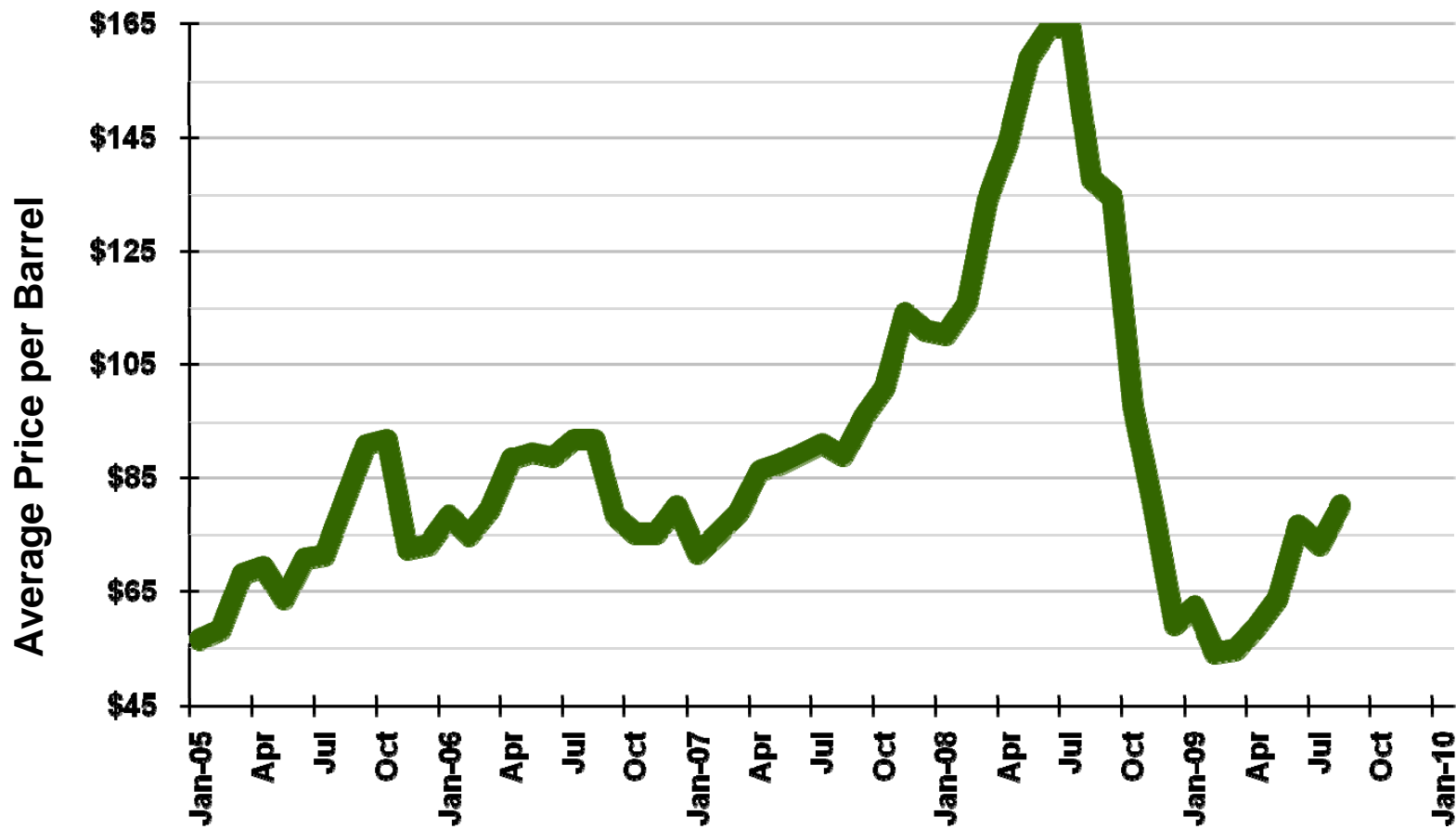


For additional information, contact:
Jim Hileman,
hileman@mit.edu

Source: GIACC/4, subject to change 04/09.

Airlines' Global Challenges

Volatility of Jet Fuel Prices Today Wreaks Havoc on Business Planning



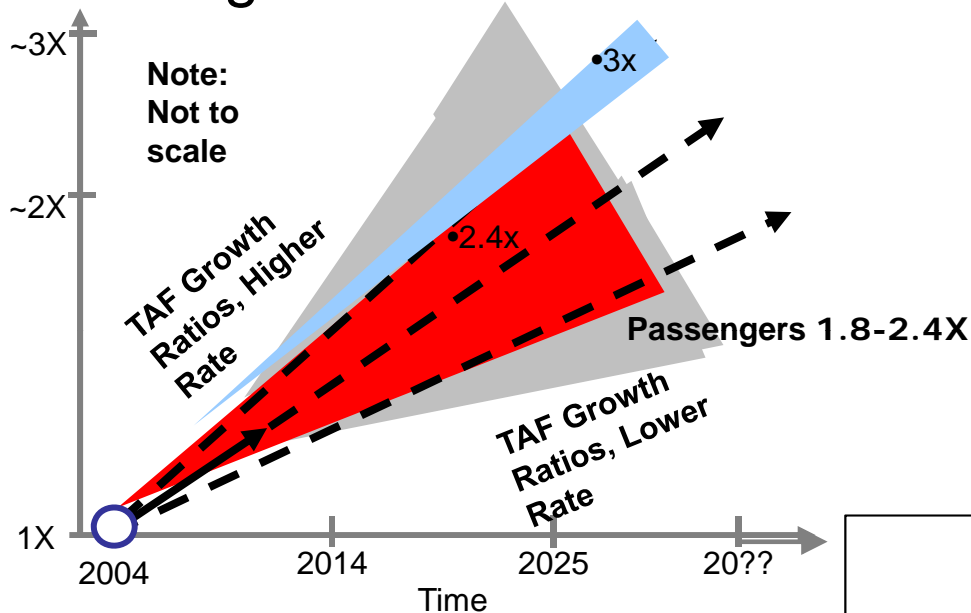
Source: Energy Information Administration

www.airlines.org



Air Quality (PM_{2.5}) Can Limit U.S. Aviation Growth

Growing demand ...



Preliminary Analyses of Emissions Growth for NextGen Scenarios

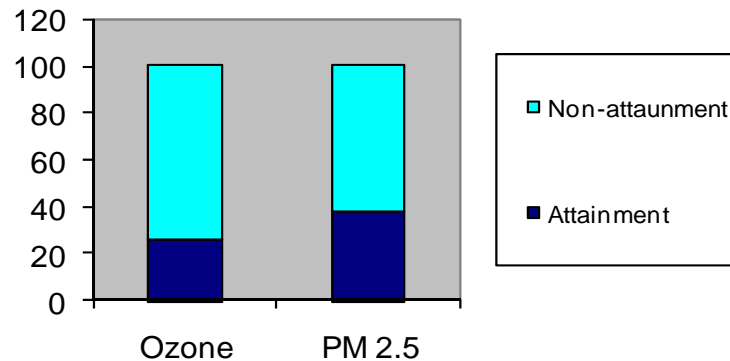
... a growing footprint

	2X Change
HC	+ 75%
CO	+ 70%
NOx	+ 90%
SOx	+ 85%

...precursor to PM_{2.5} driven capacity constraints?

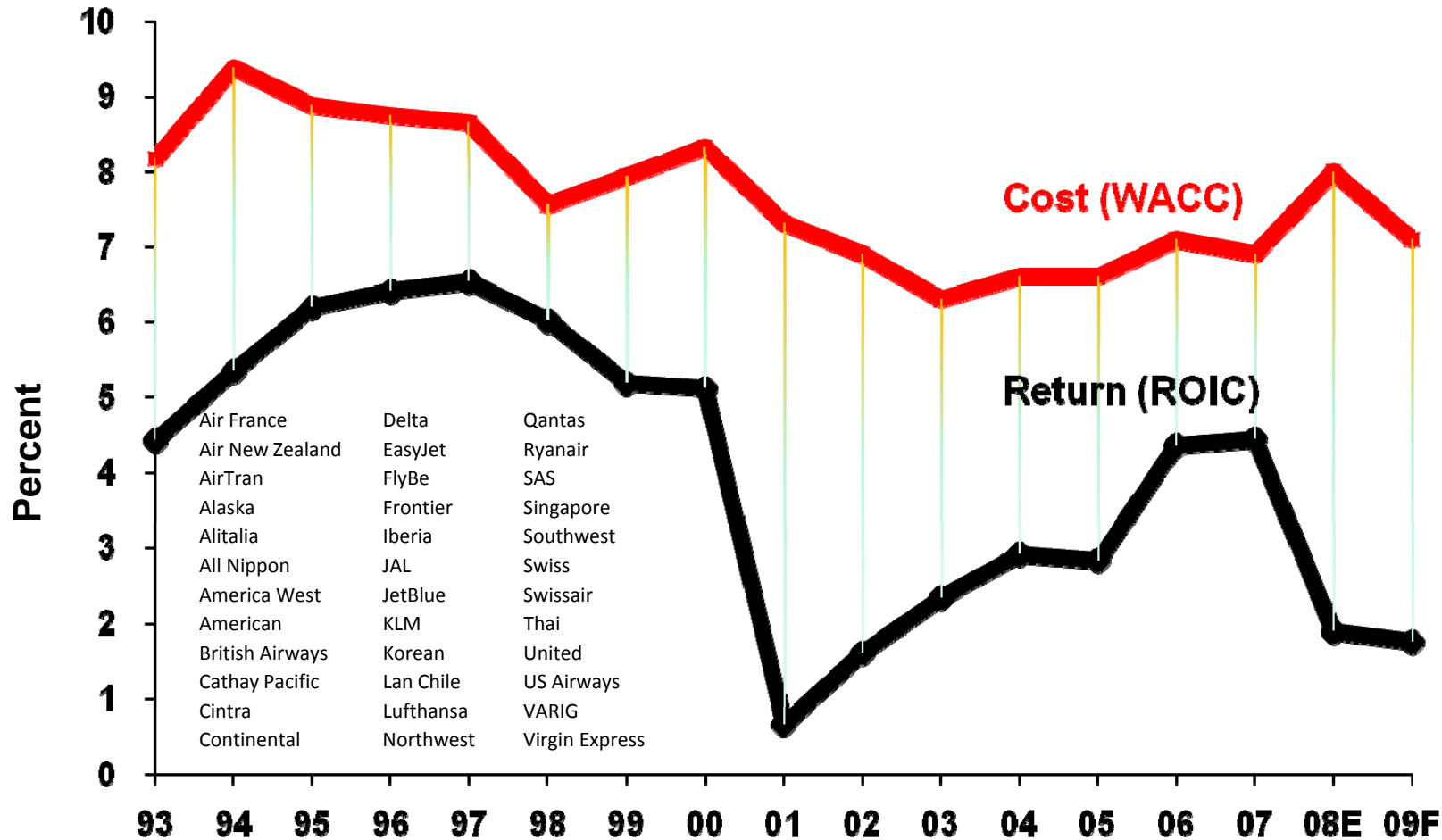
...controllable with alternative fuels?

Data for 50 Largest U.S. Airports



Airlines' Global Challenges

Airlines Not in a Position to Make Large Investments in New Markets or Equipment

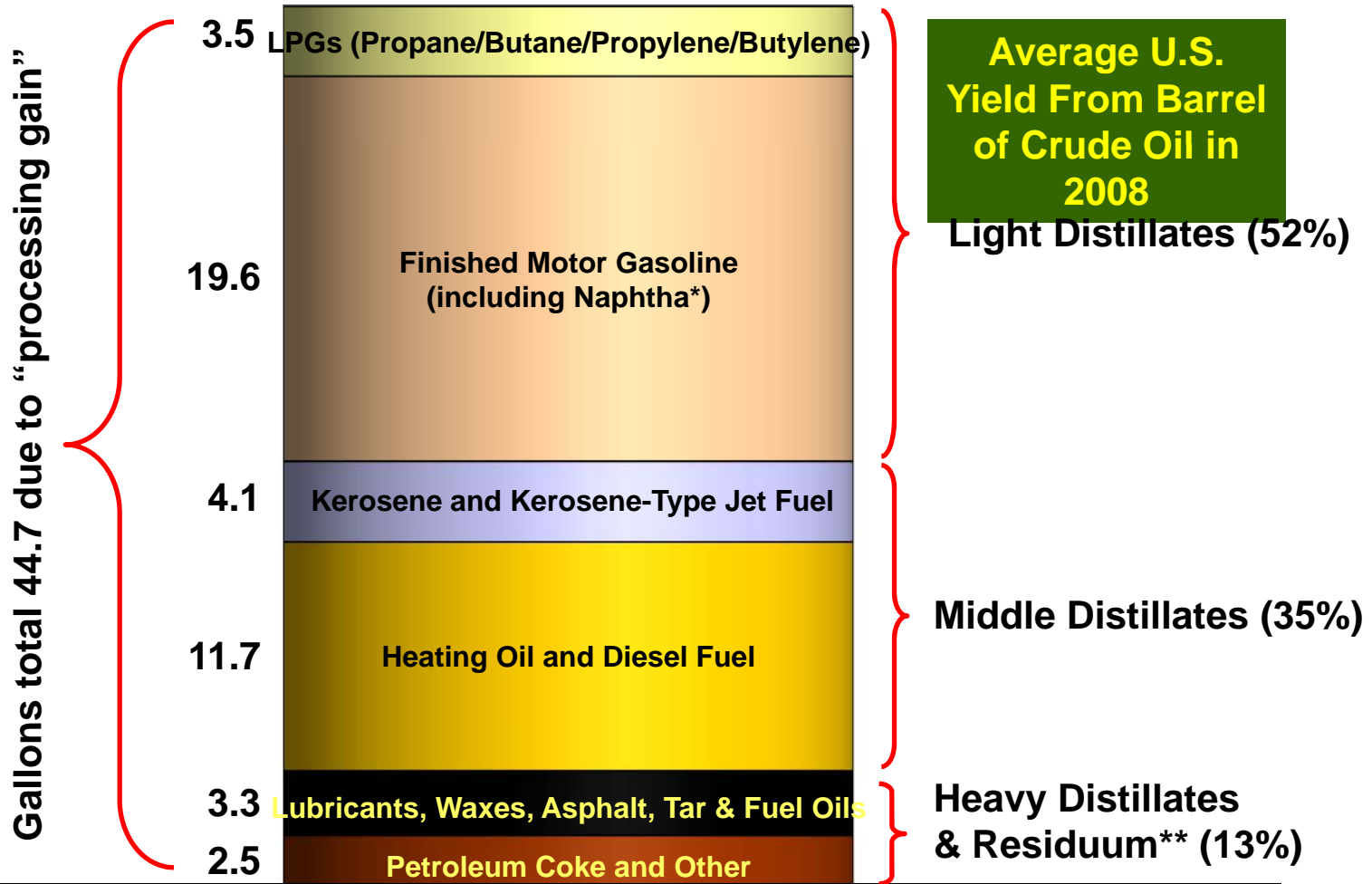


Source: 1993-2004 from McKinsey study (carrier sample shown in chart); 2005-2009F from IATA data/forecasts of global net income and estimates of invested capital



www.airlines.org

Airlines' Global Challenges



* Feedstock for high-octane gasoline, petrochemicals and solvents

** Includes heavy oils used in industry, marine transportation and electric-power generation

Sources: [Energy Information Administration](#) and [American Petroleum Institute](#)

CAAFI's Milestones and Goals

- CAAFI founded – 2006
- USAF – 600,000 gallon bio fuel buy current
 - 50/50/50 by 2016 (25% of US based consumption)
- DOE grant program for alternative energy projects
- USDA loan guarantee program with aviation 2008
- DARPA funding of algae research – 2009 to 2011
- Demonstration flights – 2008 & 2009
 - ANZ/Rolls-Royce, Continental/CFM, JAL/Pratt & Whitney, Virgin/Rolls-Royce
- Presidential directive to USDA and DOE on common policy for alternative energy – 2009
- ASTM Passes Synthetic Jet Fuel Specification, D7566 – Aug 09
- U.S. airlines sign first-of-kind supply agreement with Rentech and ASIG for renewable synthetic diesel fuel for LAX ground service equipment



CAAFI's Milestones and Goals

- Achieve common ICAO position in Rio in Nov 2009
- ASTM approval of hydro treated renewable jet – end 2010
- Speed deployment through global cooperation
- Deployment of 10 projects by 2013
- ICAO carbon neutral growth by 2020



CAAFI – Organized to Meet Global Challenges

- Leverage airline purchasing power
- Identify geographic fuel cost differences
 - Mexico, Brazil, Alaska
- Quantify airport fuel consumption needs
 - Airlines
 - Ground support equipment
- CAAFI Economics Council evaluate industry purchasing opportunities
- Use “champions” to support deployment opportunities



CAAFI – Organized to Meet Global Challenges

- Global Vision
- Speed Development of Alternative Aviation Fuels
 - Single R&D Roadmap
 - One LCA Framework
 - Promote Multiple Feedstocks & Projects
- Engage ICAO at Nov. Conference in Brazil prior to UN Climate Change Conference
- Consulting with global partners (partial list):

SASOL

QATAR Petroleum

Rolls-Royce

Pratt & Whitney

UOP

Shell

GE

Air New Zealand

Boeing

Continental Airlines

Embraer

QATAR Airways

Airbus

Virgin Atlantic



CAAFI – Organized to Meet Global Challenges

- Promote awareness of CAAFI & its resources
- Support projects with airline industry purchase contracts
- Dispense information of financing availability to project sponsors
- Promote knowledge of alternative energy and industry needs to public and private financing sources
- Identify needs of private sector investors
- Support required incentives
- Joint initiatives



What Now?

- Understand regional issues.
- Gather information on South Africa.
- Identify areas for collaboration.

Donald P. Schenk
ACA Associates, Inc
545 Fifth Ave, Ste 1009
New York, NY 10017, USA
Office: +1-212-808-4420
Cell: +1 -646-248-3461
dpschenk@aca-assoc.com

