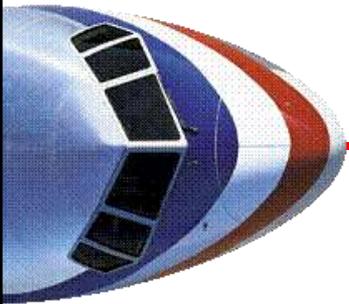


# **Alternative Fuels and the Aviation Industry**

## **ATW Eco-Aviation Conference**

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**John Rau**

**Managing Director - Fuels Management, American Airlines**

**CAAFI Business and Economics Team Lead**

**ATA Energy Council Representative**

**June 25, 2010**

# Overview

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- **Why airlines are interested in advancing alternative fuels**
- **Steps Air Transport Association (ATA) member airlines have taken**
- **Overview of recently announced renewable fuel deals**

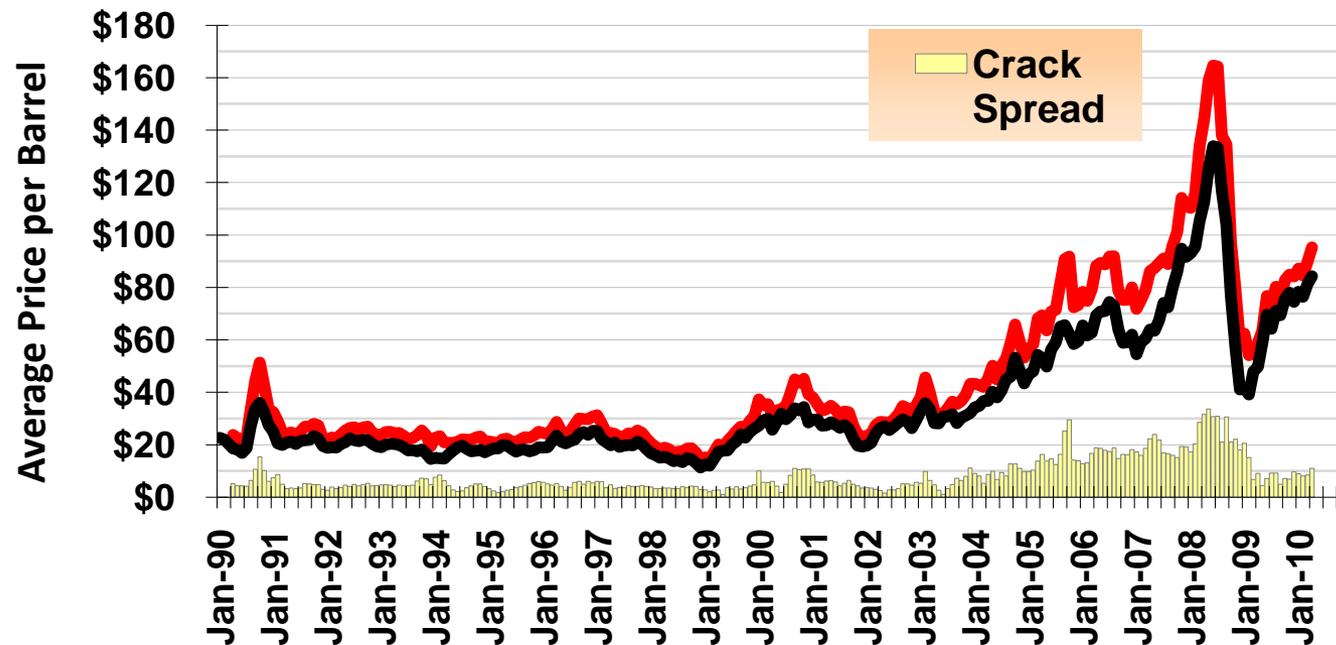
# **Why Airlines Are Interested In Advancing Alternative Fuels**

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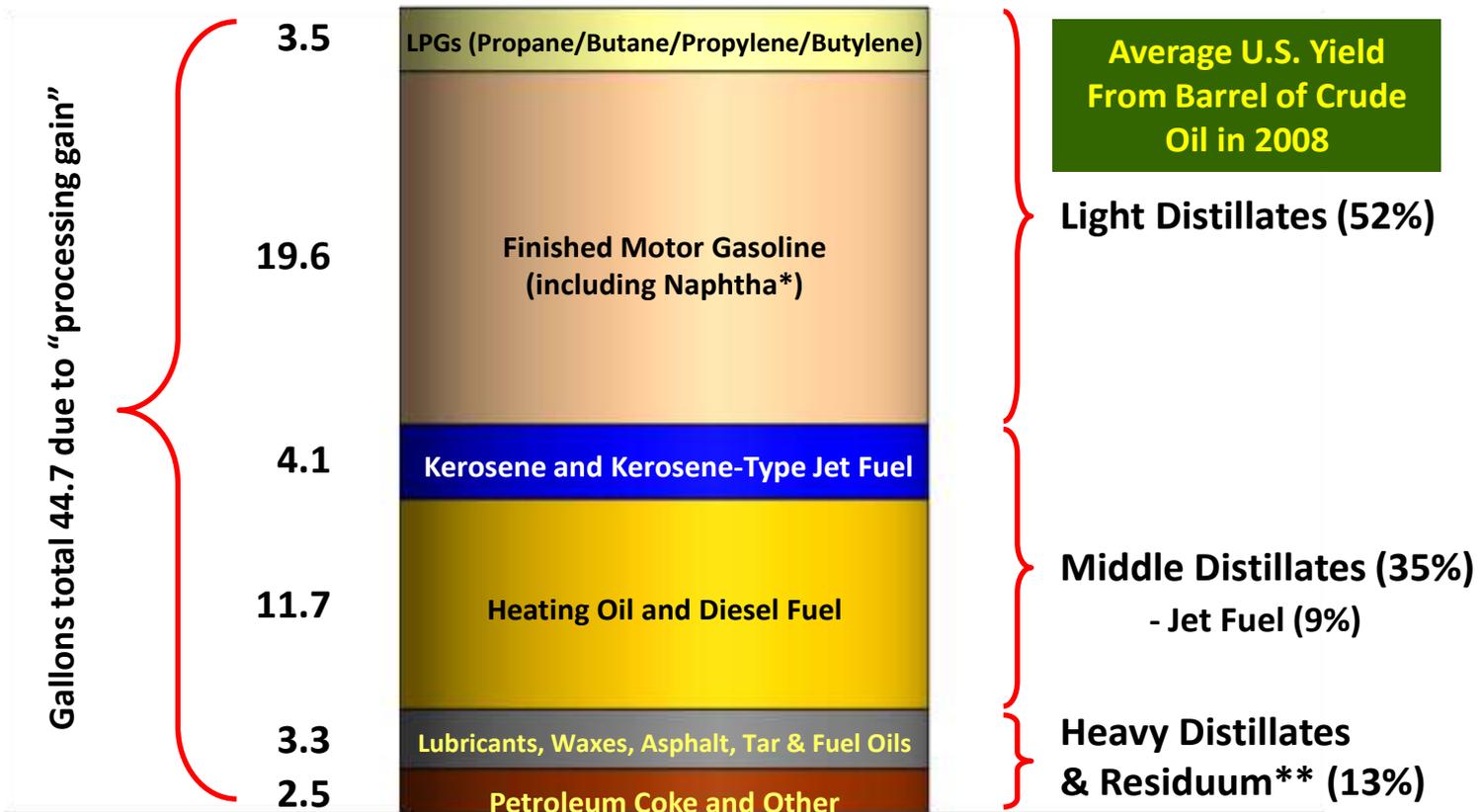
# Jet Fuel Is One Of The Largest Expenses To An Airline

- The price of jet fuel is volatile and has been increasing due to the higher price of crude and the increase in the “crack spread”
  - Fuel expense for U.S. passenger airlines has averaged as high as 35% of operating costs during the past two years
- Per the ATA, each penny increase in the jet fuel price per gallon increases the U.S. airlines’ fuel expense by \$175 - \$200 million annually



# Reduce Our Dependence On Crude Oil As A Feedstock for Jet Fuel

- Jet fuel is a small percentage of what is produced from a barrel of crude oil
- The price and availability of jet fuel is influenced by other petroleum prices



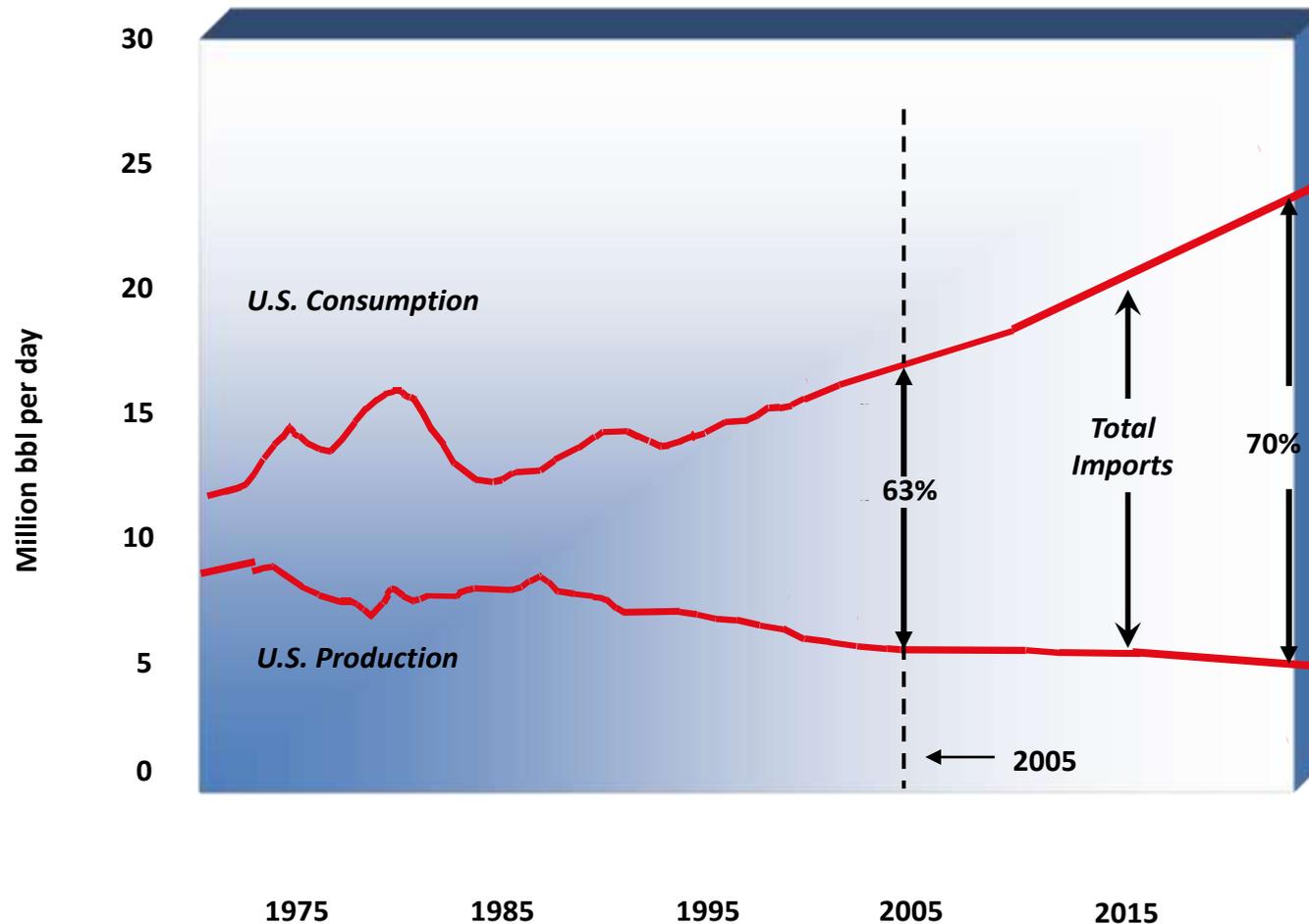
\* Feedstock for high-octane gasoline, petrochemicals and solvents

\*\* Includes heavy oils used in industry, marine

Sources: [Energy Information Administration](#) and [American Petroleum Institute](#) transportation and electric-power generation

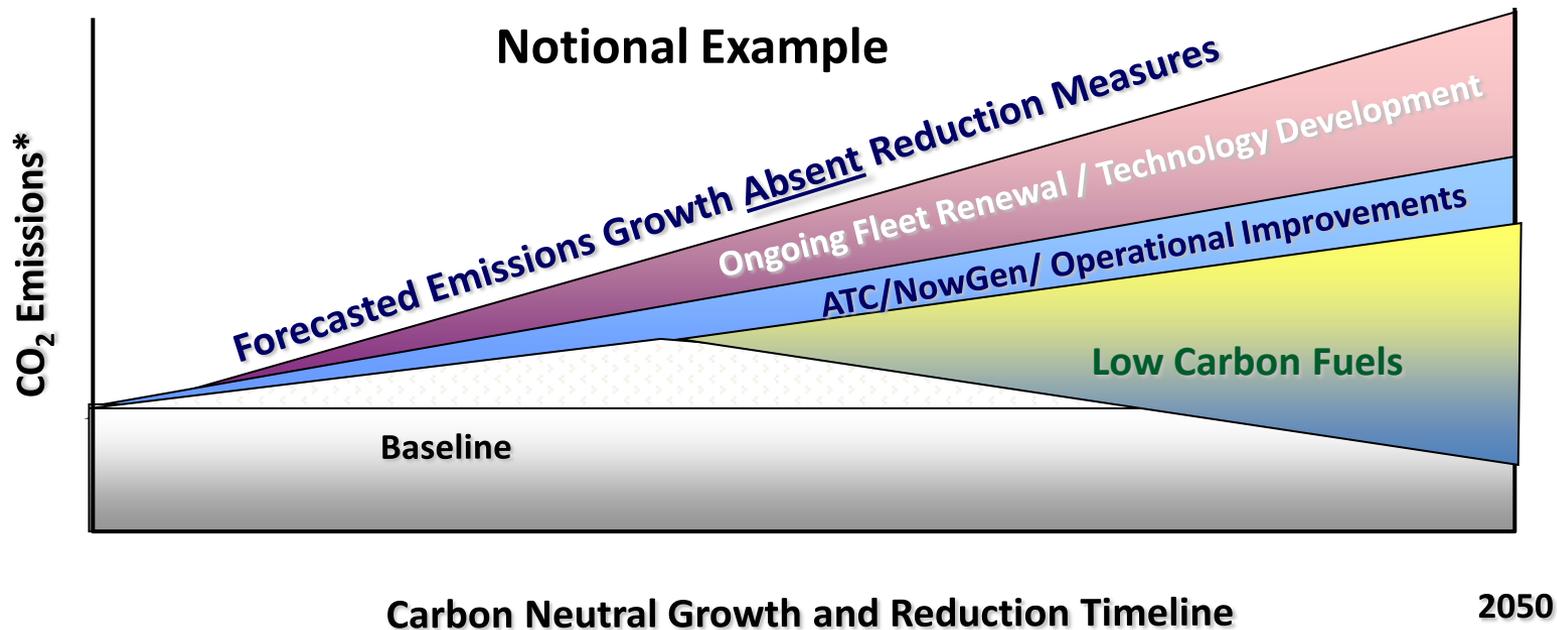
# Increase The Amount Of Jet Fuel Produced From Domestic Sources

- This will increase our security of supply by reducing our dependence on imports



# Need Alternative Fuels For Environmental Benefits

- The ATA supports a global approach with collective aviation-specific emissions targets
  - Fuel efficiency improvements that result in an annual average improvement of 1.5% through 2020
  - Make the growth of the industry's emissions “carbon neutral” beginning in 2021
  - Aspirational goal of 50% reduction in emissions in 2050, relative to 2005 levels
- We will need low carbon fuels to meet these targets





# **Steps Air Transport Association (ATA) Airlines Have Taken**

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# ATA Principles Document

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- **In April 2008, the ATA issued a principles document that outlined the airlines' commitment to work with suppliers that are aligned with ATA on four basic criteria:**
  - **Safety and fuel quality: fuel must meet the ASTM specification approved for commercial aviation**
  - **Environmental benefit: fuel must be better than conventional jet fuel on a life cycle basis with respect to greenhouse gas emissions**
  - **Supply reliability: fuel must be a “drop-in” fuel and able to be distributed via existing infrastructure**
  - **Economic feasibility: fuel must be economically viable for both suppliers and airlines**

# Industry Approach To Promote Alternative Fuels

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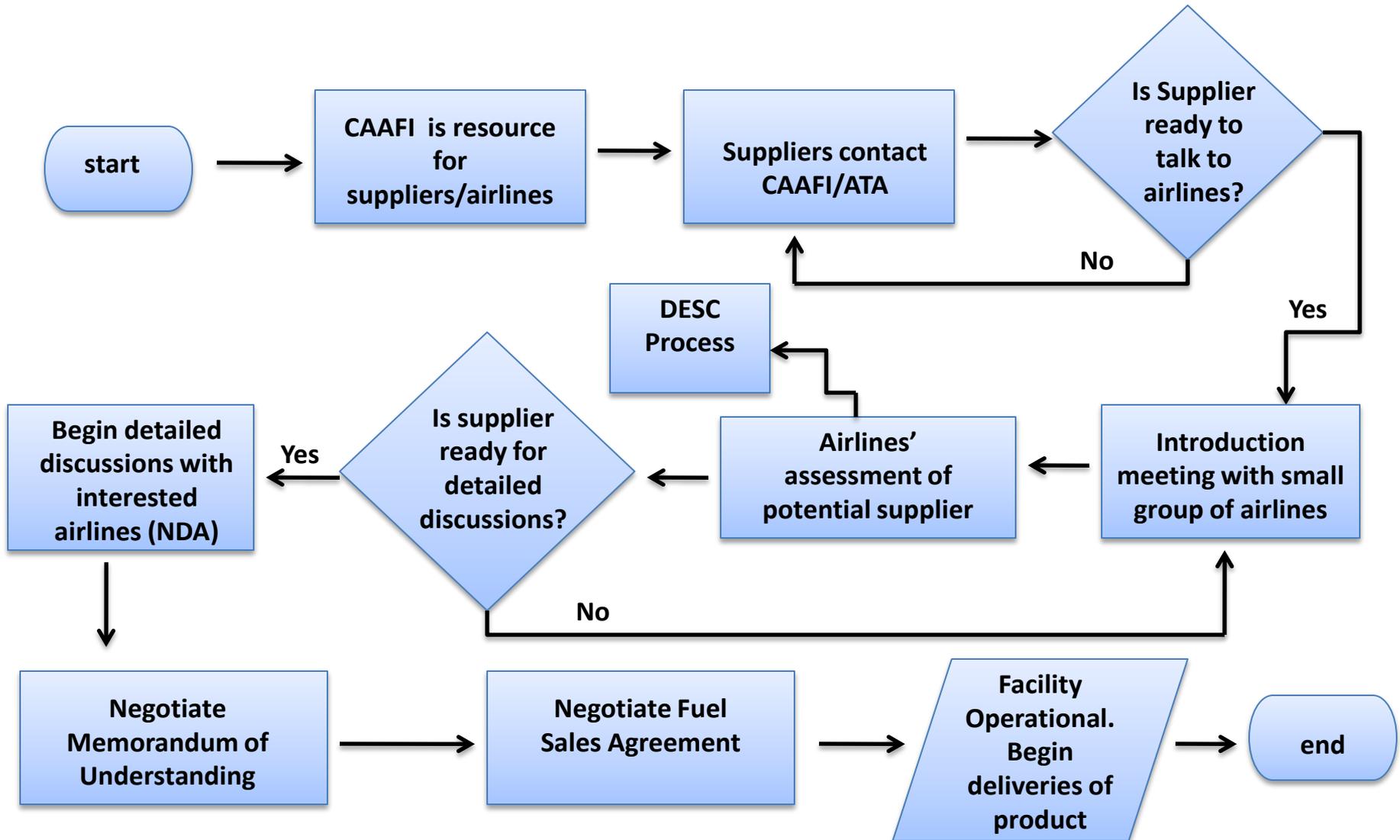
- **Determined that an industry approach would be more successful than individual airline efforts**
  - **It would be difficult for an airline to replicate the CAAFI process**
  - **Spreads the financial risk for both the airlines and potential suppliers**
    - **Pricing risk for the airlines**
    - **Credit risk for the suppliers**
  - **Accelerates deployment of projects**
    - **Identify various sources of supply while remaining feedstock neutral and technology neutral**
    - **Can work on multiple projects in different parts of the country**
  - **Develop a consistent methodology for greenhouse gas “life cycle analysis” (LCA)**

# Strategic Alliance With The U.S. Military

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- **On March 19, 2010, the ATA entered into a strategic alliance for alternative aviation fuels with the Defense Energy Support Center (DESC) which is responsible for fuel purchasing and logistics for the Department of Defense.**
  - **The purpose of the strategic alliance between DESC and ATA is to leverage our jet fuel requirements to encourage suppliers to bring commercial aviation alternative fuels into the market place**
  - **The three key areas of focus will be:**
    - **Environmental**
    - **Deployment/Logistics**
    - **Finance/Contracting**
- **Recently held joint sessions with many potential suppliers at the Worldwide Energy Conference sponsored by DESC in Washington, D.C.**

# ATA Alternative Fuels Development/Deployment Process



# **Overview Of Recently Announced Renewable Fuel Agreements**

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# Rentech Rialto Agreement

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- **AA along with seven other airlines entered into a five-year agreement with Rentech & ASIG on the Rialto Project**
  - Technology will be Fischer-Tropsch
  - Feedstock will be urban woody waste
- **Opportunity to test our industry approach**
  - The volume is small
  - Operational by end of 2012
  - Diesel will be used for our ground equipment at LAX
  - This agreement was less complex than a jet fuel deal



# AltAir Agreement

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- **AA along with 13 other airlines entered into a memorandum of understanding with AltAir to purchase jet fuel and diesel**
  - **Crop oils will be refined at a facility located at an existing refinery on the West Coast**
  - **Feedstock will be camelina or other non-food crops**
- **Utilized our industry approach**
  - **The volume is 75 million gallons per year (jet fuel and diesel)**
  - **Estimated facility will be operational by late 2012/early 2013**
  - **Much more complexity associated with the deal**



# Challenges

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- **Even though we have been successful utilizing the joint industry model to help promote the production of alternative jet fuels, some key challenges remain in reaching fuel supply agreements.**
  - **Approval of the HRJ jet fuel by ASTM**
    - **At this time expected by end of 2010**
  - **Pricing structure which is acceptable to both the airlines and supplier/investors. The following are needed to assist in this:**
    - **Long-term tax and environmental credits**
    - **Government loan guarantees**
  - **The appropriate infrastructure must be in place for supplying jet fuel**
  - **An industry standard methodology for LCA must be developed**
    - **Need to develop metrics/standards to measure the impact on the environment**

# Conclusion

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- **We believe that development of alternative jet fuels is key for the following reasons:**
  - Increase security of supply from domestic sources
  - Diversifies feedstock sources
  - Integral part of meeting our environmental commitment
  - Lessens volatility associated with petroleum-based jet fuel
- **We have created a process to guide the discussions with potential suppliers**
- **While we are excited about our progress so far, we recognize there are still several challenges to overcome**
- **The airlines must be proactive in shaping the future of alternative jet fuels**



**Airlines need alternative fuels**

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**Alternative fuels need airlines**