

The background of the slide features five fighter jets, likely F-16s, flying in a precise diagonal line from the top-left towards the bottom-right. Each jet is leaving a white contrail behind it. The sky is a clear, bright blue. The jets are white with dark grey or black markings on the wings and tail sections.

Biofuels for Aviation

**An Opportunity for
NASEO/ASERTTI**

The Air Force Biofuel Issue

A formation of five fighter jets, likely F-16s, flying in a descending line from the top-left towards the bottom-right of the frame. The jets are white with dark markings on the wings and tails. The background is a clear, bright blue sky.

- The whole fleet of Air Force planes will be certified for 50% biofuel by 2012
- The certification effort was carried out in cooperation with jet engine companies
- Other military services and commercial airlines are not far behind
- Petroleum fuel for the aviation industry is just under 10% of the national transport demand for fuel



Why are the Military and Commercial Airlines Interested in Biofuel?

- **Security is a major issue for the Military—US consumes 25% world fuel production but produces 5 %**
- **For the Military and commercial fleets petroleum prices are increasing and becoming more variable**
- **Biofuels have fewer pollutants than petroleum jet fuel**

A background image showing five fighter jets flying in a V-formation against a clear blue sky. The jets are white with dark markings and are leaving white smoke trails behind them.

Summit in September 2009

Sponsored by the Air Force

- **Attendees**
 - US Air Force, other military services, Federal agencies, land-grants, private sector, commercial airlines
- **Themes**
 - Feedstock
 - Feedstock logistics
 - Conversion or processing
 - Deployment
 - Economics and policy
- **Airline and Military Issues for Production and Delivery**

Feedstocks by Region



- **East**
 - MSW and forest products
- **North central**
 - Oil seeds and fodder
- **South**
 - Forest products, oil seeds and paper mill products
- **West**
 - Algae, MSW, trees with beetle damage

Feedstock Logistics

A formation of five fighter jets, likely F-16s, flying in a diagonal line from the top-left towards the bottom-right of the frame. The jets are white with dark grey and red accents. The background is a clear, light blue sky.

- **Efficiency in terms of energy**
- **Community acceptance of delivery system**
- **Staging areas**
- **Standardization of feedstock**
- **Technologies in other industries for similar products**

Processing or Conversion

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- **Treating the production system as a whole**
- **New technology is coming; cellulose conversion, direct thermo conversion**
- **Use bio energy for processing**
- **Importance of systematic planning at the beginning**

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Deployment

- **Need for demonstration plants**
- **Possible government/private partnerships**
- **Sites selection important**
- **Feedstock supply continuity**
- **Price of feedstock**

Economics and Policy



- **Have a hard look at constraints, political and technical**
- **First plants will be combination of private and public**
- **Investigate state level laws and regulations**
- **Need for government action**
- **Kinds of contracts for assuring supplies**

Airline and Military Issues for Supplies



- **Necessary premiums for biofuel**
- **Delivery through pipelines**
- **Differences in fuel supplies for airports and bases**
- **What will feedstock cost**
- **How to assure necessary supplies**
- **Contracting interments with growers**
- **Multi fuel conversion facilities**

Issues to Address Now

The background of the slide features five fighter jets, likely F-16s, flying in a V-formation against a clear blue sky. The jets are white with dark grey and red accents. They are leaving white smoke trails behind them, which are visible as diagonal lines across the frame. The jets are arranged in a descending staircase pattern from the top left towards the bottom right.

- **Price stability from alternative feedstock**
- **Plant size and location**
- **Appropriate delivery systems**
- **How to get started**
- **Regional pilot plants**
- **What is the state role**
- **Regionalization for supplies**
- **Choice of starting points**

Proposal for NASEO and ASERTTI



- **Partner in the development of capacities**
- **Work out costs of entire production systems**
- **Identify state rules and regulations that may be obstacles (ones to add and ones to delete)**
- **Begin the process of developing pilots**
- **Partner in changing constraints at the federal level**
- **Be the first in for a prosperous new industry**

Partners are Available

The background of the slide features five fighter jets, likely F-16s, flying in a diagonal line from the top-left towards the bottom-right. They are set against a clear, bright blue sky. Each jet is leaving a white contrail behind it, and they are all angled upwards, suggesting a steep climb or a high-speed maneuver.

- **The Air Force & research organizations**
- **Other military services**
- **Commercial airlines**
- **Airports and air bases**
- **State agencies**
- **States with development needs**
- **Federal agencies**
- **Land grants; research, education and extension**
- **Federal labs**