U.S. Air Force & Operational Energy

29 September 2009

Air Force 2008 Energy Use

Over $9 billion spent for energy in 2008

AVIATION

- Fuel Used: 2.4B Gal
- Fuel Cost: $7.7B

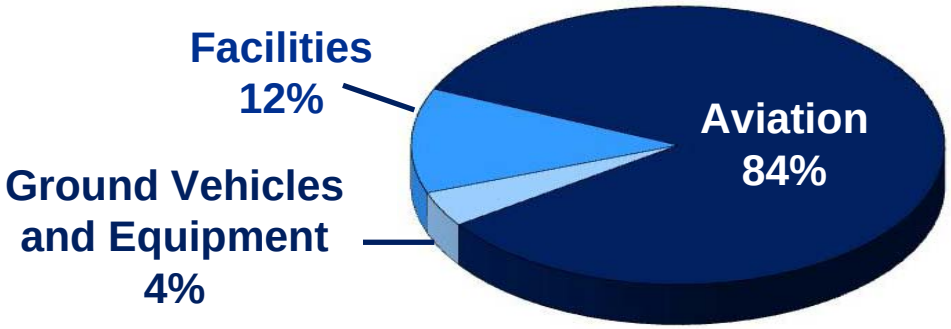
FACILITIES

- Energy Used: 66.8M MBTU
- Energy Costs: $1.1B

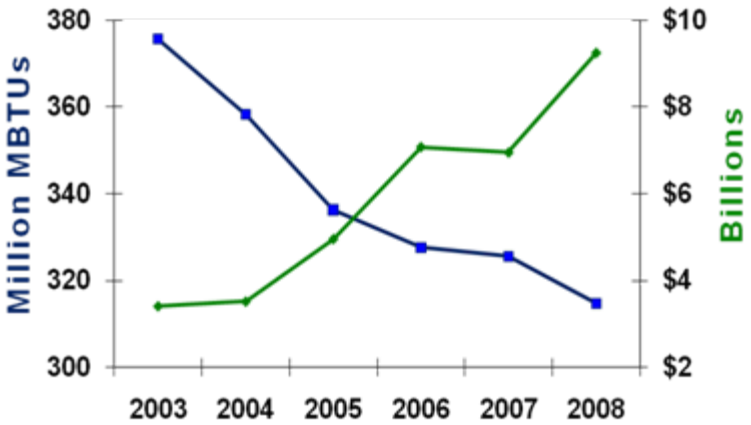
GROUND EQUIPMENT AND VEHICLES

- Fuel Used: 109.1M GGE
- Fuel Costs: $378.9M

Energy Cost Breakdown



Energy Cost and Consumption Trends



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Air Force Energy Threats

- **Operational Forces:**
  - **Inefficient use and over reliance on oil**
    - **Undermines combat effectiveness**
    - **Extracts huge price: in dollars and lives**
  - **Impacts on tactical mobility**
- **Fixed Installations:**
    - **Fragile domestic grid increases vulnerability of bases**
    - **Old, inefficient infrastructure**
- **Budget Disruption:**
  - **Price volatility = budget unpredictability**
    - **Undermines usefulness of standard price of fuel**
    - **Introduces program risks across all portfolios**
  - **High prices consume ever greater proportion of budget**

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Elements of the Challenge

Mobility Operational Energy

Supply

- Assured Supply
- Synthetic Fuels
- Biomass Derived Fuels
- Domestic Production
- Collaboration with Commercial Sector

Demand

- Fuel Productivity
- Efficiency to Enhance Capability
- Reducing "Tail" to Enhance "Tooth"
- Disruptive Tech Options

Installation Operational Energy

Supply

- Grid Dependence
- Adequate
- Back-Up Power
- More DoD critical missions conducted from CONUS, MOBs
- Alternatives: sustainable on-base power

Demand

- Facility Inefficiency
- Green Building Principles
- Treat Buildings as Systems in Planning
- Exploit Commercial Technologies & Practices

Grand Strategy View –
Preserving US interests, resource competition, climate impact, etc.

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Air Force Energy Plan

3-Part Strategy

Reduce Demand

Increase Supply

Change the Culture

Vision

Make Energy A Consideration In All We Do

Operational Energy: Reduce Demand

- Current Operations
  - Reduce weight
  - Efficient flight operations
  - More precise fuel loading
  - Simulators
  - MAJCOM-specific approaches and metrics tied to missions
- Mid Term
  - Explore Recap / Modernization investments to improve energy performance of systems
- Long Term
  - Integrate energy consequences into force planning, requirements and acquisition via use of energy KPP and fully burdened cost of fuel

Operational Energy: Increase Supply

Alternative Aviation Fuel Certification Initiative:

- **Test**... alternative fuel in Air Force fleet
- **Certify**...fleet on alternative fuel by 2011
- **Fly**...be prepared to cost-competitively purchase 50% of domestic aviation fuel via "greener" alternative fuel blend by 2016

Ensure Domestic Fuel Availability

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Installation Energy

- **Reduce Demand**
  - Increase energy efficiency through demand side management
  - Incentivize energy efficient behavior
- **Increase Supply**
  - On- or Near-Site renewable generation
  - Building-level renewables
  - Address grid reliability with Inter-Agency
- **Obstacles**
  - Cost – budgeting process discounts future savings
  - Culture – compliance driven

Approach Systemically

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http://www.safie.hq.af.mil/