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# **DoD Energy Demand: Addressing the Unintended Consequences**

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# DoD Energy Space

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

## Operational System Fuel

## Installation Energy

Supply

Demand

Supply

Demand

- Assured Supply
- Synthetic Fuels
- Coal to Liquids
- Agro-Chemistry
- Domestic Production
- Creating a Market

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

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

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



# DoD Fuel Demand – Premise

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- Reduce the fuel intensity of DoD operations, while...
- Increasing the combat capability of US forces



# High operational fuel demand...

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## ...Reduces combat effectiveness

- *Impedes mobility/flexibility/concealment*
  - *Imposes high logistics costs – long tail*
  - *Turns combat forces into protection forces*
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USMC Lt Gen Richard Zilmer, Al-Anbar Commander

- Urgent request to reduce military dependence on fuel
- Road-bound convoys, supply lines vulnerable to insurgent attack by ambush and IEDs
- Personnel loss rates, continued casualty accumulation can jeopardize mission success



Defense News, August 2006



# ...and its unappreciated burdens

## Fuel for DoD Operations

### *Direct Cost*

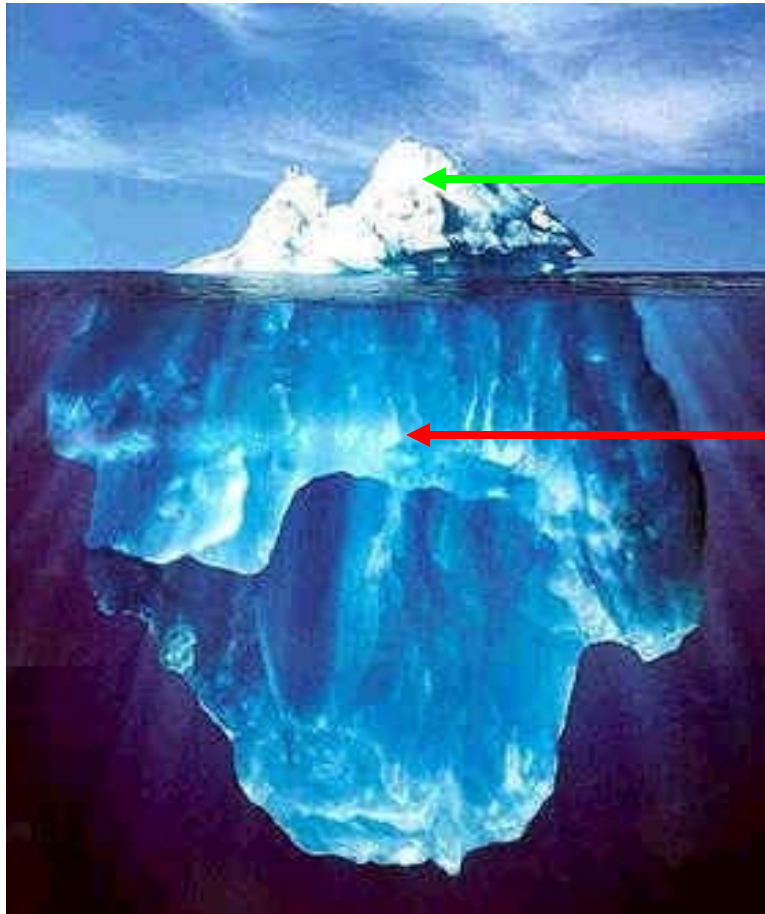
~\$12.6B in FY07 purchases



### *Indirect Costs*

Huge “tail” to deliver

- Airborne tanking
- Refueling trucks & helos
- Navy oilers
- Personnel
- Force Protection



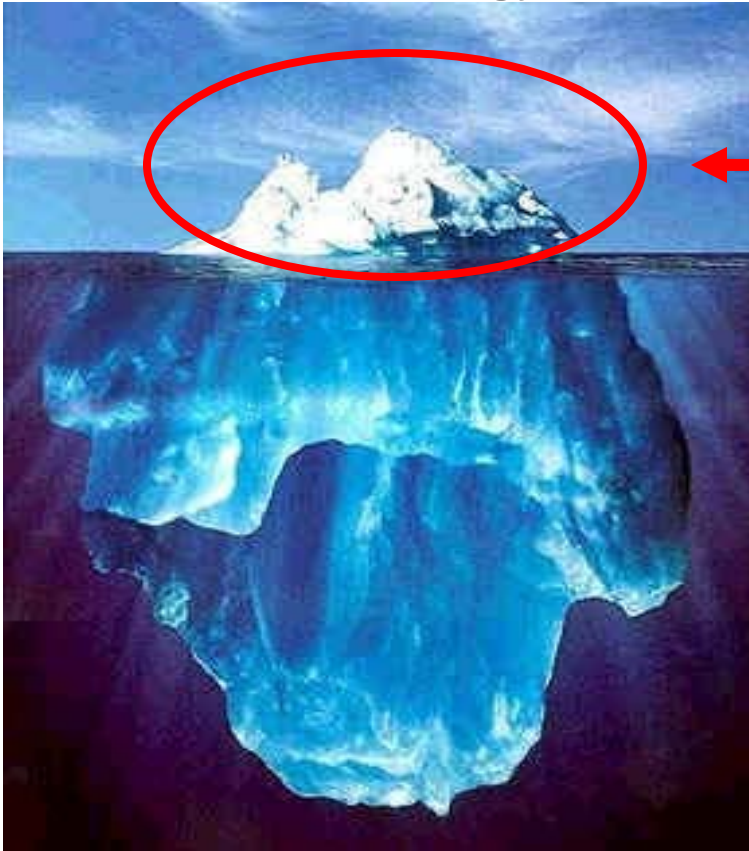
***Fiscal and Operational Costs from DoD's fuel demand are orders of magnitude bigger than we appreciate***



# Out of Sight, Out of Mind

## Fuel for Forces

**~75%** of DoD energy demand



**But, no one in charge above  
or below the waterline**

**vs.**

## Energy for Installations

**~25%** of DoD energy demand



### **No Invisible Tail**

- 4-Star Equivalent in charge
- Facilities are easy to count
- Virtually no invisible tail
- Clear focus
  - Energy Policy Act of '05
  - Executive Order 13423
- ~\$3B to purchase in FY06
- Numerous award programs - incentives
- Easy COTS solutions to exploit

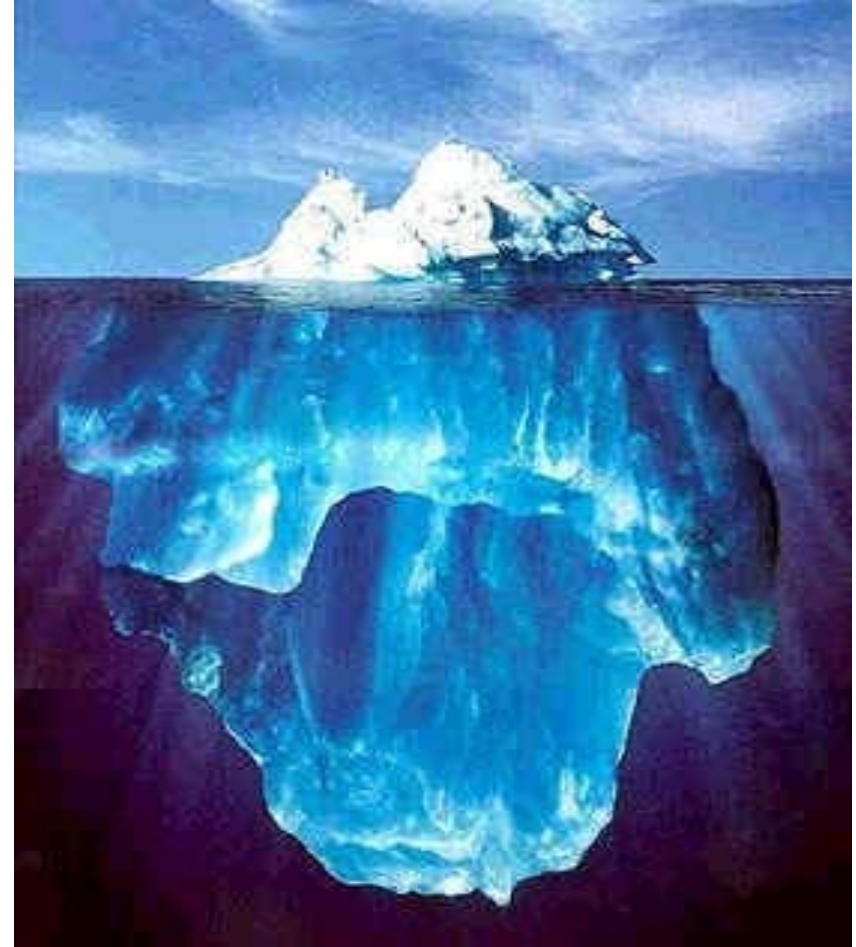
***We're missing the bigger Energy bill and tradespace***



## ...the Fully Burdened Cost of Fuel (FBCF)

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**FBCF is the commodity price plus the total life-cycle cost of all people and assets required to move and protect fuel from the point of sale to the end user.**



**FBCF is a decision tool for giving delivered fuel due consideration in the operational & risk tradespace**



# Delivery is the Real Cost



\$3.04/gal or \$42/gal\*



\$3.04 or \$15\* or ???/gal  
w/ escorts & helo  
protection?

~\$3.04 or ???/gal



\* Consistent FBCF results from 2001 DSB task force, PA&E, JASONs and IDA





# Fully Burdened Cost of Fuel...

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## What it Is

- A force planning variable
- An input to JCIDS (requirements) and the Acquisition process
- A denominator for metrics
- A facilitator for portfolio analysis
- A composite of capability and cost

## What it Isn't

- A budgeting number
- A budgeting number
- A budgeting number
- A budgeting number
- A budgeting number

***FBCF assumes a dollar invested toward fuel efficiency is at least a dollar invested in warfighter capability***



# Why is this so?

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DoD Planning ***Processes*** Undervalue Fuel  
And Its Delivery Costs

and

DoD Business ***Practices and Culture***  
Disincentivize Strategic Investment



# What We Want to *Change* - Processes

## Service & Joint Force Planning

- Get delivered fuel (logistics) and its related variables built into every Service & Joint campaign model, wargame, force planning conference (MSFDs) and scenario build (DPS')
- Set targets for reducing the fuel delivery “tail” within the SSSP/ISPs

## JCIDS

- Mandate descriptions of how materiel solutions' fuel demand impacts operation capability in an agreed set of DPS' – to frame the efficiency/effectiveness trades
- Develop a scalable methodology for the Energy KPP for all Requirements (CJCSI 3170)

## Acquisition

- Evolve beyond single “program” reviews – consider programs'/platforms' fuel demand within scenario-based future force packages
- Require SAEs-PEOs-PMs to speak on portfolio of capabilities and the program's role & support demands at milestone reviews



## ...and Practices & Culture

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- PMs and PEOs **not incentivized** to:
  - create life-cycle (O&S) savings through R&D investment (color of money obstacles, short-term HQ bill-paying)
  - propose portfolio-wide investment options (i.e. fund R&D investment applicable to multiple platforms, system-wide returns on investment)
- **Supplemental-based budgeting** - Direct fuel costs from ops considered “cost of doing business” – always paid by Congress
- Logisticians have a great track record at getting fuel to the warfighter – **no matter the risk**

***This is a risk management and culture problem***



# Working In Acquisition and Elsewhere

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- FBCF Pilot Programs & Policy Development
  - Apr 2007 USD(AT&L) memo identifying three major defense acquisition programs to identify how energy matters do & do not play in tradespace
  - Findings will inform DoD guidance in acquisition (DoDD 5000 & DAG) and requirements (Energy KPP in CJCSI 3170) to develop analytic methods, metrics and capability targets
- Broaden Consideration of Fuel in DoD Force Planning
  - Consider fuel tail reduction benefits in Defense Planning Scenarios and related force planning – less tail to haul and defense aids operational capability and commanders' flexibility
  - Consider strategic benefits of reallocating “tail” personnel, force structure, and investment to “tooth” by reducing users' need
  - Pursue joint analyses to inform the Energy Efficiency KPP in JCIDS and early acquisition tradespace



# Take Away – Burden vs. Opportunity

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1. Fuel Delivery is a large, unexamined, unappreciated burden (i.e., opportunity cost) on DoD resources (people, equipment, money, innovation, and mission)
2. Leaps in operational capability and reductions in fuel demand will come once the DoD planning and business processes properly value reduced energy demand.
3. Benefits will accrue to our industrial competitiveness and our national oil dependence through the innovations in energy technologies resulting from these changes.



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# BACK-UP



# USD(AT&L) Tasking Memo

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**“Effectively immediately, it is DoD policy to include the fully burdened cost of delivered energy in trade-off analyses conducted for all tactical systems with end items that create a demand for energy and to improve the energy efficiency of those systems, consistent with mission requirements and cost effectiveness.”**

**- 10 April 2007**

## **Pilot Programs established to refine methodology**

- Joint Light Tactical Vehicle (JLTV) (MS B mid 2007)**
- CG(X) - Maritime Air and Missile Defense of Joint Forces alternative ship concepts AoA (MS B mid 2007)**
- Next Generation Long-Range Strike (MS B FY11)**





# 2001 DSB Findings

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- The requirements process does not require fuel efficiency
- The acquisition process does not recognize the total force structure effects of efficiency
  - Investments based on the platform level view
  - Logistics force structure implications not determined or considered
- PPBES does not consider the total force effects of improved efficiency
- Few Science & Technology investments focus on fuel efficiency
  - Laboratories not asked to determine total contributions to capability, cost or environmental issues (only S&T investment prioritization has changed since 2001)