UNCLASSIFIED

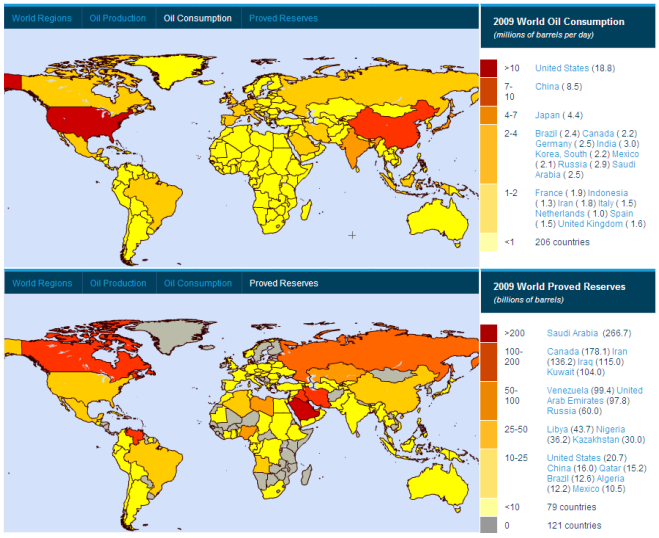
ENERGY FOR THE WARFIGHTER:

The DoD Operational Energy Strategy

Honorable Sharon E. Burke

Assistant Secretary of Defense
Operational Energy

The Context: Global Energy Supply and Demand



Dynamic energy markets have geopolitical, fiscal, and strategic implications

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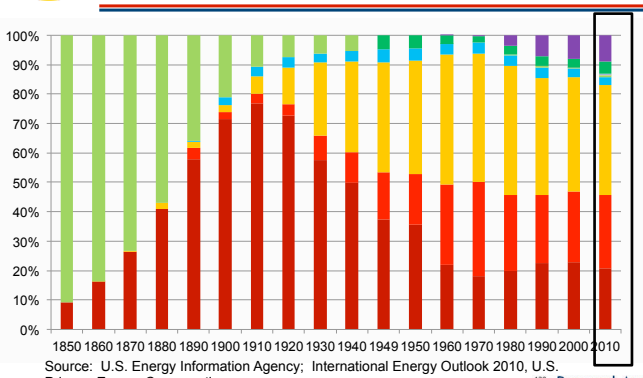
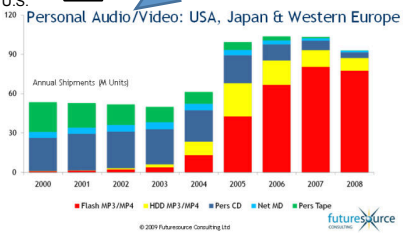
Change in the Energy Sector is Slow



Source: U.S. Energy Information Agency; International Energy Outlook 2010, U.S. Primary Energy Consumption



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The Context: Strategic Environment

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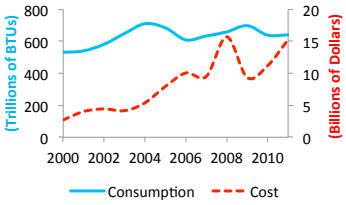
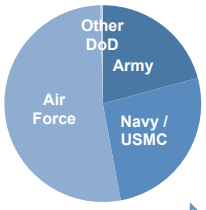
Energy Use and Costs at DoD

DoD Energy Use, FY11[1]

DoD Operational Energy Use and Cost, FY00-11[1]



Operational Energy Use by Service, FY10[2]



Operational Energy 74%
Facilities Energy 26%

2000	**$2.7B**
2008	**$15.7B**
2010	**$11.2B**
2011	**$15.3B**

Army	20.8%
Navy / MC	26.3%
Air Force	52.6%
Other DoD	0.4%

[1] FY2011 DoD Annual Energy Management Report, figures by site delivered BTUs
[3] DLA-Energy Fact Book FY2010, Total DoD Sales

Operational Energy – "The energy required for training, moving, and sustaining military forces and weapons platforms for military operations"

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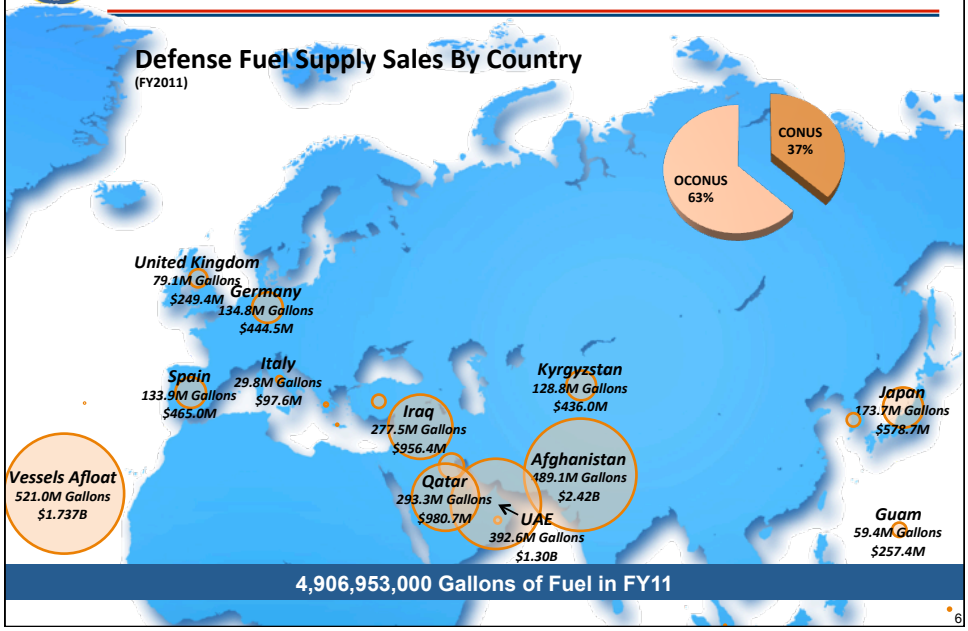
Energy for a Globally Active Force



4,906,953,000 Gallons of Fuel in FY11

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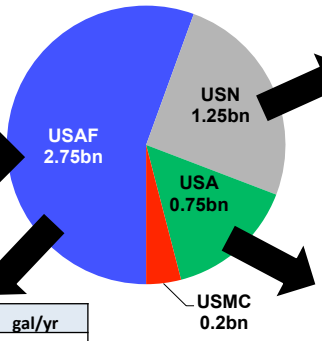
Where Does all the Fuel Go?

DoD Fuel Consumption: ~5,000,000,000 gal/yr

Methods of Operational Delivery

Equipment	Inventory
Aerial Refuelers	476
Fleet Replenishment	32
Fuel Trucks	Thousands
+ Bases	
+ Bulk Storage	
+ Contract Augmentation	
+ Force Protection	



Ship Class	gal/yr
DDG-51	194,000,000
CG-47	86,000,000
LHD-1	49,000,000
FFG-7	43,000,000
LHA-1	27,000,000

Aircraft	gal/yr
C-17A	608,000,000
KC-135R/T	437,000,000
KC-10A	194,000,000
F-16C/D	192,000,000
C-5A/B/C	122,000,000

Afghanistan Operations (Army) ~620,000,000 gal/yr

Type	gal/yr
Contingency Bases	254,000,000
Non-Army	149,000,000
Tactical	118,000,000
Aviation	99,000,000

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Defense Energy Challenges

- Complicated distribution networks
- Tactical fuel logistics in contested battlespace
- Inefficient equipment in theater adds to burden

- Energy Choke Points
- High and Volatile Prices
- Threats to fuel projection affect power projection
- AirSea Battle

- New capabilities with growing energy needs
- Implications for sustainment
- Legacy equipment

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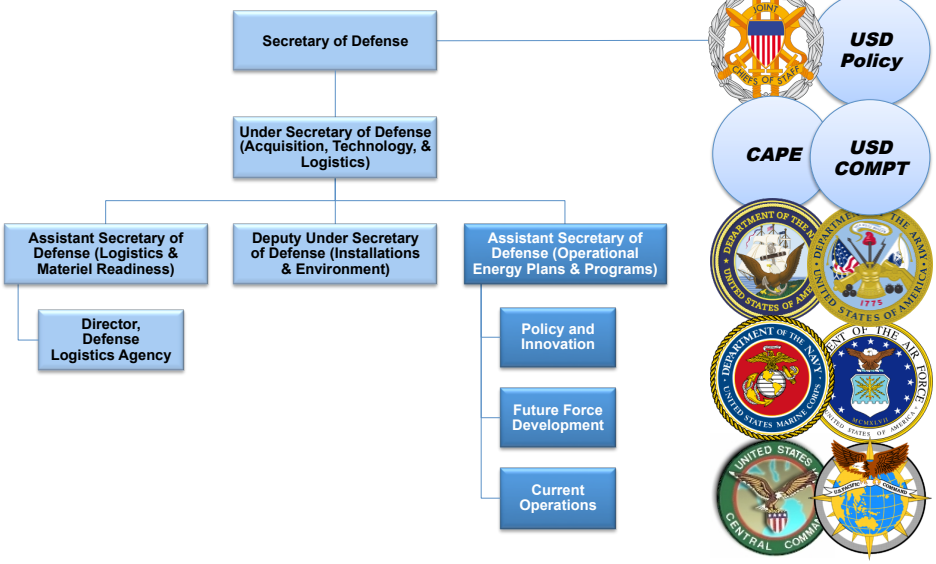
DoD Energy Management



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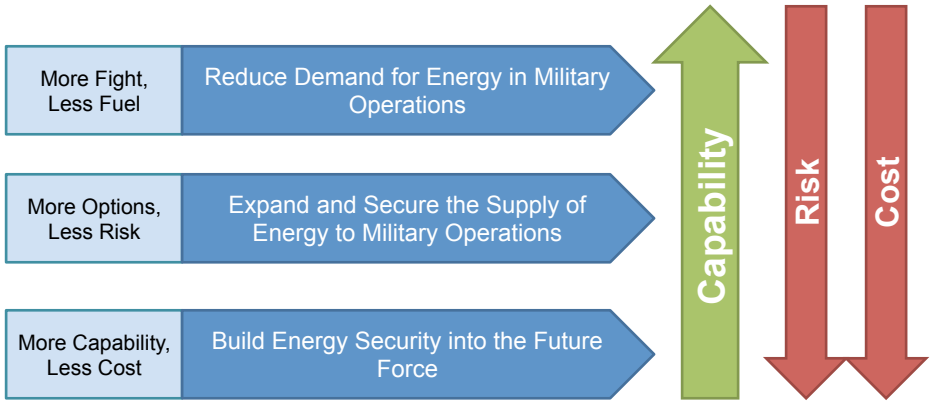
The DoD Operational Energy Strategy

- **GOAL: to assure that U.S. armed forces will have the energy they require for 21st century military missions**



Defense Energy Opportunities - Demand

- Centralized power generation
- Energy-efficient shelters, lighting, and heating/air conditioning
- Fielding of advanced power distribution

- Hybrid electric drives in LHDs, LHAs, and DDGs
- Better hull and propeller coatings and stern flaps

- Improved routing and flight profiles
- Optimized cargo loading and center of gravity
- Engine wash / less drag

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Defense Energy Opportunities - Supply

- Hybrid solar power generation
- Solar battery chargers
- Wearable solar technologies for mobile power generation
- Lightweight, efficient, universal batteries

- Unmanned Vehicles

- Advanced Fuels
- Fuel Cells

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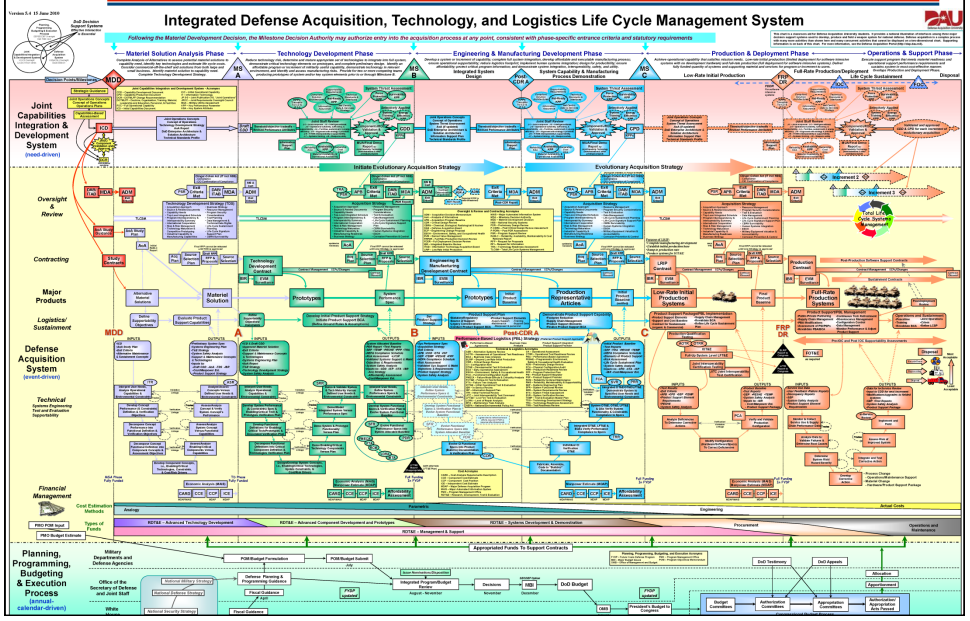
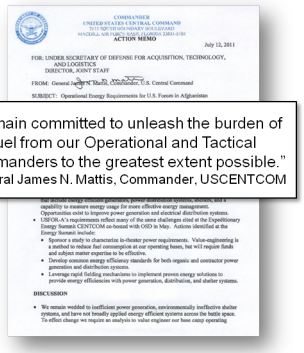
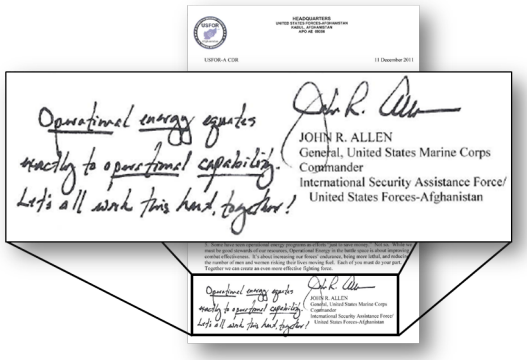
Easy as...



"Operational Energy" = "Operational Capability"



"I remain committed to unleash the burden of fuel from our Operational and Tactical Commanders to the greatest extent possible."
-General James N. Mattis, Commander, USCENTCOM



Gen James Mattis
12 July 2011

Gen John R. Allen
11 December 2011

Leadership stands behind capability improvements through operational energy

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Implementation Plan

- ❑ Measure Operational Energy Consumption
- ❑ Improve Energy Performance and Efficiency
- ❑ Promote Operational Energy Innovation
- ❑ Improve Operational Energy Security at Fixed Installations
- ❑ Promote the Development of Alternative Fuels
- ❑ Incorporate Energy Security Considerations into Requirements and Acquisition
- ❑ Adapt Policy, Doctrine, PME, and CCMD Activities

Near, Mid, and Long-Term Goals
Energy Security for the Warfighter

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Working with DoD

- ❑ **Battlefield Energy Innovation:**
  - Operational Energy Capabilities Fund: http://energy.defense.gov
  - Marine ExFOB: http://www.marines.mil/community/Pages/ExpeditionaryEnergy.aspx
  - Army: Demos at Ft. Devens; Ft. Leonard Wood; Energy Initiatives Task Force
- ❑ **Facilities Energy Innovation:**
  - SERDP/ESTCP: http://www.serdp.org/
- ❑ **Renewable Energy Siting on DoD Lands:**
  - Clearinghouse: http://www.acq.osd.mil/dodsc/
- ❑ **Small Businesses**
  - DoD SBIR program: http://www.acq.osd.mil/osbp/sbir/
  - Defense Venture Capital Initiative: http://devenci.dtic.mil/
- ❑ **Studies**
  - Minerva Program: http://minerva.dtic.mil/overview.html

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