Energy as a Strategic Resource for the Department of the Navy

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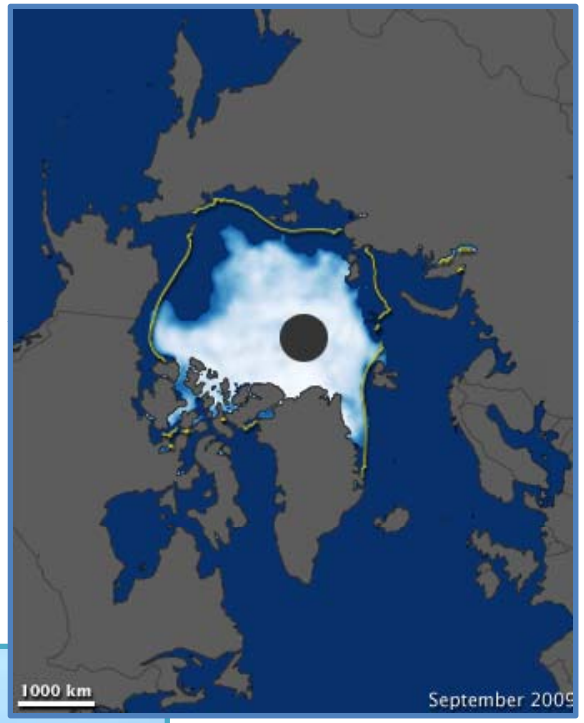
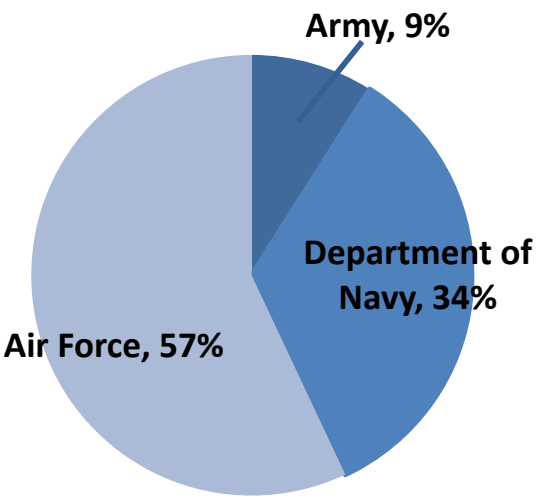
Why Does the Department of the Navy Have an Energy Policy ?

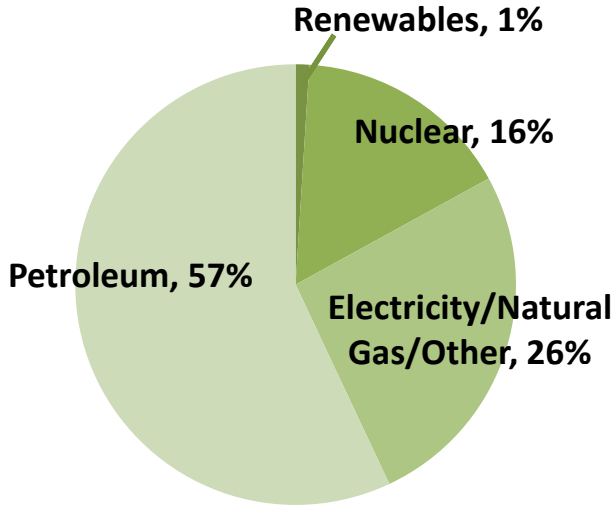
- *Tactical imperative*: Logistics tail
- *Strategic imperative*: Energy independence and security
- *Climate imperative*: Effect on the planet's oceans



How Much Petroleum Do We Use?

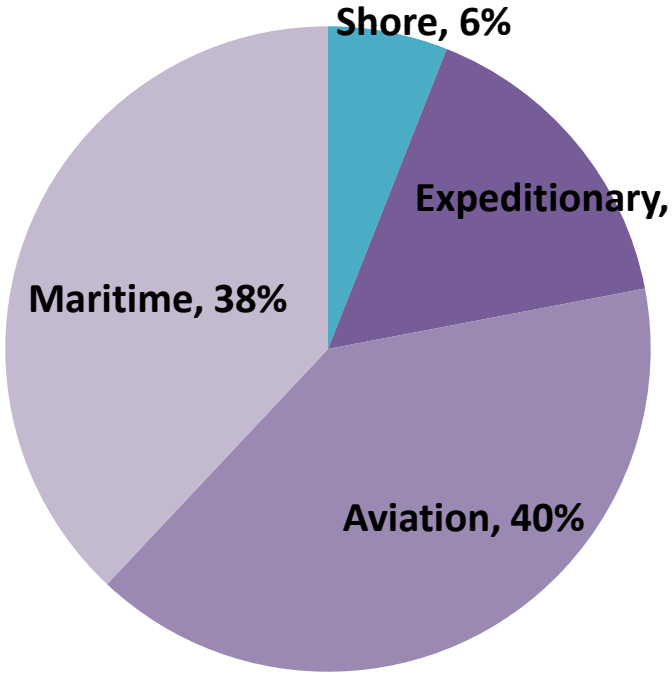


DoD Energy Consumption by Service



DON Energy Consumption by Fuel Source

In FY2008, the Department of the Navy used **30 million barrels** of petroleum.



DON Petroleum Consumption Profile

*FY2008 data

Tactical and Shore Energy Mandates

SHORE

Acquiring Alternative Fuels /Energy Efficient Products

Executive Order 13514, Oct 09
Energy Independence and Security Act of 2007

Energy Efficiency and Energy Consumption

Executive Order 13514, Oct 09
Energy Independence and Security Act of 2007
Executive Order 13423, Jan 07
Energy Policy Act of 2005

Greenhouse Gas Emissions Reduction

Executive Order 13514, Oct 09

Renewable Energy

National Defense Authorization Act 2010
Energy Policy Act of 2005
Executive Order 13423, Jan 07

Vehicle Petroleum Consumption

Executive Order 13514, Oct 09
Energy Independence and Security Act of 2007
Executive Order 13423, Jan 07

TACTICAL

- 2010 Quadrennial Defense Review
- National Defense Authorization Act of 2009
- National Defense Authorization Act of 2007
- DoD Instruction 5000.02: Operation of the Defense Acquisition System (Dec 2008)
- Manual for Operation of the Joint Capabilities Integration & Development System: CJCSI 3170.01G

Executive Order 13514

The head of each agency shall…establish…a percentage reduction target for agency-wide reductions of scope 1 and 2 greenhouse gas emissions in absolute terms by fiscal year 2020… The agency head shall consider reductions associated with:

- **reducing energy intensity in agency buildings**
- **increasing agency use of renewable energy and implementing renewable energy generation projects on agency property; and**
- **reducing the use of fossil fuels by:**
  - **using low greenhouse gas emitting vehicles including alternative fuel vehicles;**
  - **optimizing the number of vehicles in the agency fleet; and**
  - **reducing, if the agency operates a fleet of at least 20 motor vehicles, the agency fleet's total consumption of petroleum products by a minimum of 2 percent annually through the end of fiscal year 2020, relative to a baseline of fiscal year 2005.**

8 October 2009

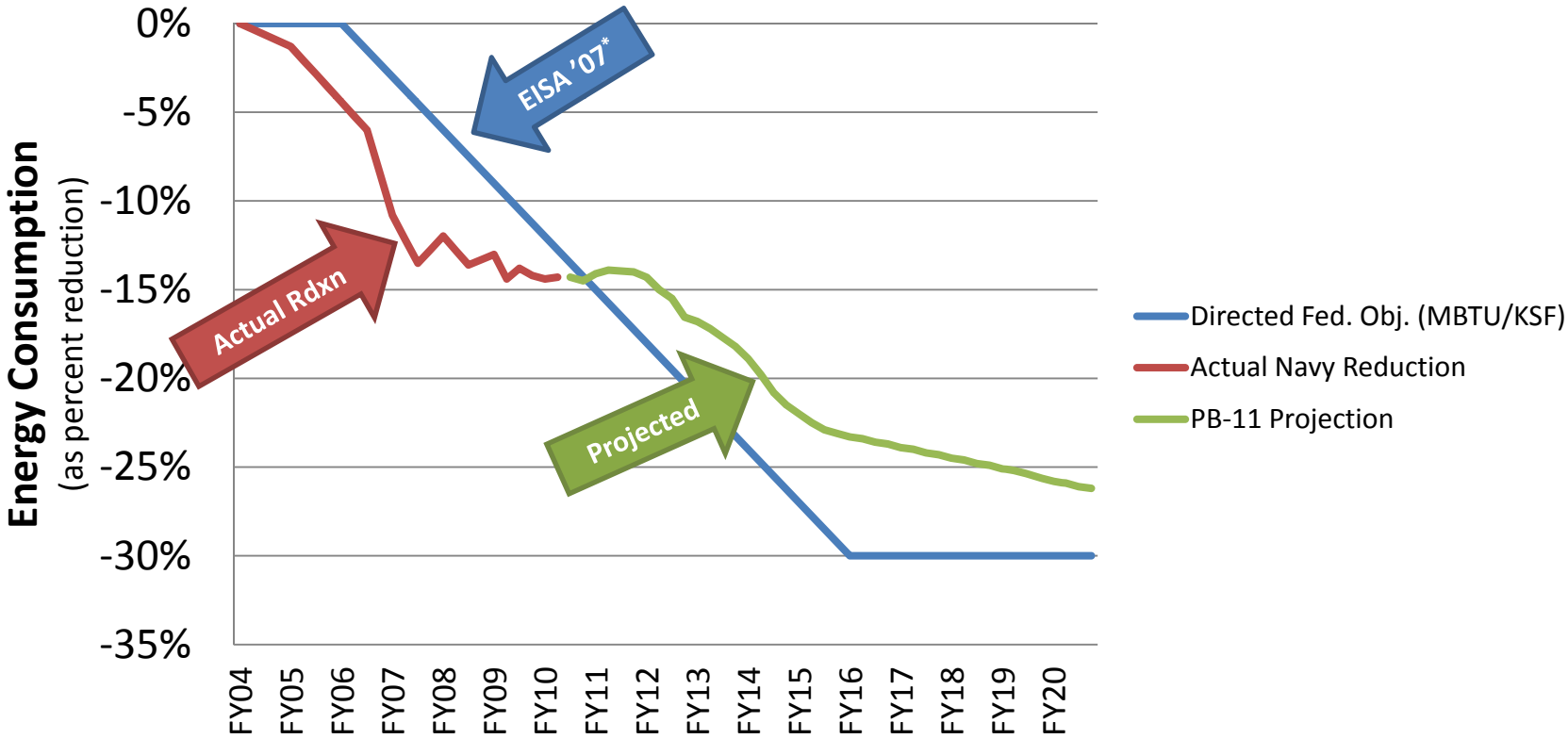
The Secretary of the Navy's Energy Goals

Energy Efficient Acquisitions	Evaluation of energy factors will be mandatory when awarding contracts for systems and buildings
Sail the "Great Green Fleet"	Department will demonstrate a Green Strike Group in local operations by 2012 and sail it by 2016
Reduce Non-tactical Petroleum Use	By 2015, Department will reduce petroleum use in vehicles by 50%
Increase Alternative Energy Sources Ashore	By 2020, at least 50% of shore-based energy requirements will be met by alternative sources; 50% of Department installations will be net-zero
Increase Alternative Energy Department-wide	By 2020, 50% of total Department energy consumption will come from alternative sources

Reducing Energy Consumption

E.O. 13514: Set a target for: "**reducing energy intensity in agency buildings**" and "**reducing the use of fossil fuels**."

Energy Consumption Reduction Since FY2004

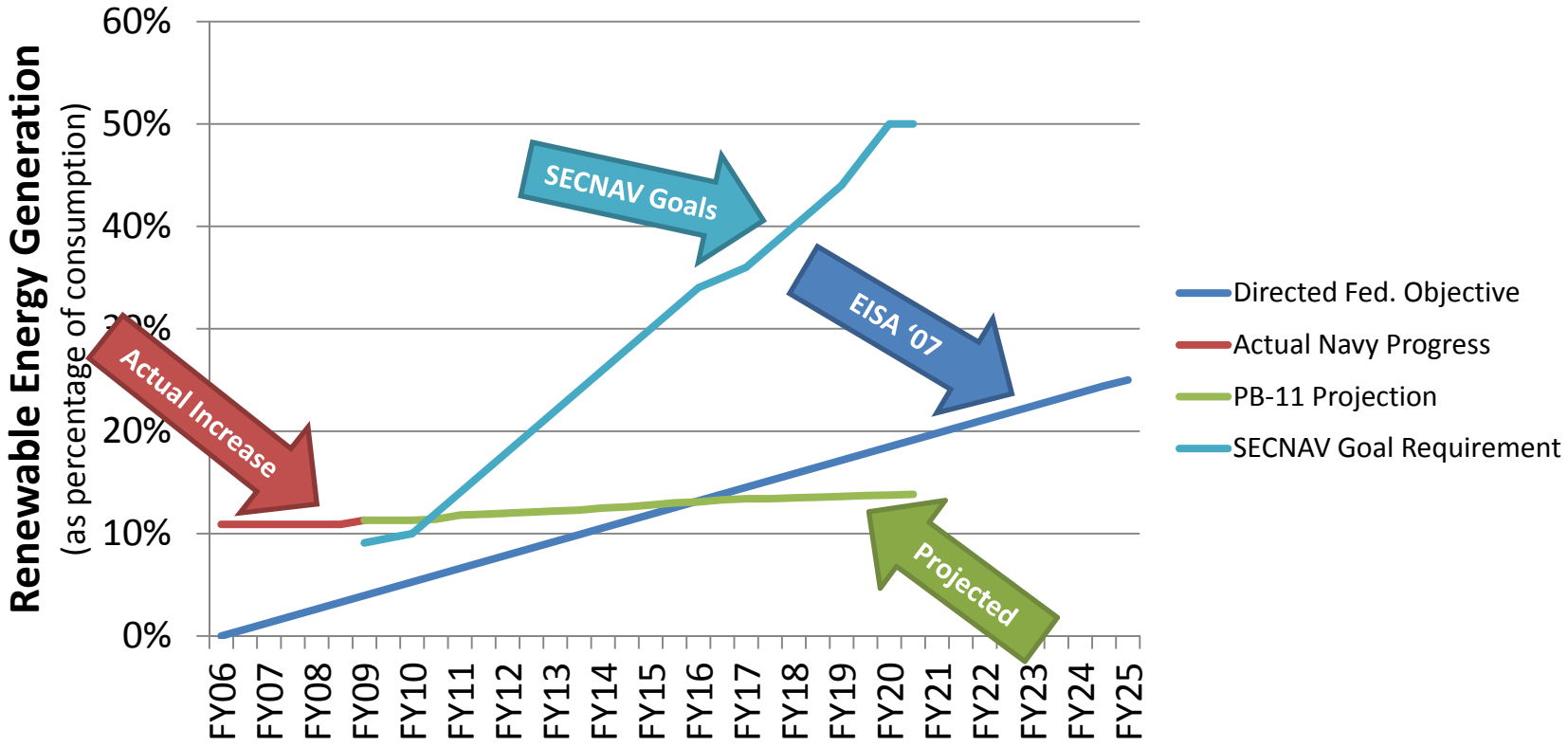


*EISA: Energy Independence and Security Act 2007

Increasing Use of Renewable Energy

E.O. 13514: Set a target for: "**increasing agency use of renewable energy** and implementing **renewable energy generation projects** on agency property."

Increase in Renewable Energy Since FY2006



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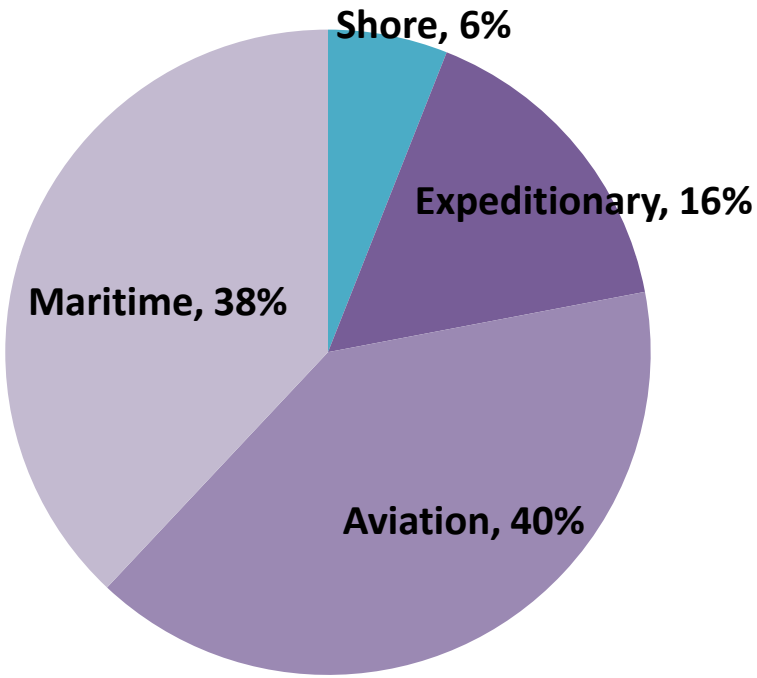
Shore vs. Tactical Energy Use



Department of Navy
Petroleum Consumption Profile

Alternative Energy: Shore Examples

Geothermal

- 270 MW at NAWS China Lake
  - Feeding California grid with four power plants
- Other projects in development (possible 20-30 MW each): NAF El Centro, MCAS Yuma, NAS Fallon
- Studying Guam potential

Biofuels and Hybrids

- 10,000+ alternative-fuel vehicles
- Mostly E85 ethanol/flex-fuel, some B20 bio-diesel
- Expanding use of hybrids, neighborhood electric vehicles, plug-in hybrids, compressed natural gas vehicles, etc.

Solar

- Producing 4-5 MW in 20+ locations
  - MCAGCC 29 Palms: 1.1 MW
  - Naval Base Coronado: >1.0 MW
- 90+ MW of photovoltaic currently being added in Southwest/Hawaii

Wind

- About 6 MW online
  - MCLB Barstow: 1.5 MW
  - Naval Station Guantanamo Bay: 3.8 MW (diesel hybrid)
  - San Clemente Island: 675 kW
- Other projects in development
  - 22 Anemometer studies underway

Waste-to-Energy

- Partnership with UCLA and State of CA
- MCAS Miramar may purchase methane gas from landfill leased by City of San Diego

Alternative Energy: Tactical Examples

Biofuels
- F/A-18 Green Hornet, April 2010

Great Green Fleet
- USS *Makin Island*, 2009
- Navy's first electric-drive surface combatant

Experimental Forward Operating Base (Ex-FOB)
- "Operation African Lion"
- Testing solar power element of the USMC Ex-FOB in Morocco

How else are we reaching our goals?

Partnering with Industry

- Advanced technologies for net zero energy installations
- Preferred Suppliers Pilot Program: Incentivize energy efficiency for contractors
- Research and development areas:
  - Training to discourage energy consumption
  - Biofuels
  - Energy storage devices
  - More efficient solar panels
  - "Stealthier" wind turbines

DeVenCI Defense Venture Catalyst Initiative

SBA Your Small Business Resource

Affecting Human Behavior

- Expanding maritime energy efficiency incentive program to aviation squadrons
- Energy Efficiency Outreach
  - Energy Efficiency Pentagon Event
  - Energy Awareness Month (October)
- Awards and Recognition

NAVY / MARINE CORPS ENERGY EFFICIENCY YOU MAKE IT HAPPEN

Collaborations with Government, NGOs, Academia

- Department of Energy / National Renewable Energy Lab
  - Biofuels for tactical assets
  - Working Groups on acquisition reform, smart grid, etc.
- U.S. Department of Agriculture: Biomass/biofuel development in Hawaii
- National Resources Defense Council, Environmental Defense Fund: Biofuels, efficiency

The Commander-in-Chief at Andrews

"Moving toward clean energy is about our security. It's also about our economy. And it's about the future of our planet."

"Our military leaders recognize the security imperative of increasing the use of alternative fuels, decreasing energy use, reducing our reliance on imported oil, making ourselves more energy-efficient."

Remarks by the President at Joint Base Andrews Naval Air Facility, 31 Mar 2010