



Department of Defense Energy Efficiency

Chris Tindal

**Acting Deputy Assistant Secretary of the Navy
for Energy**

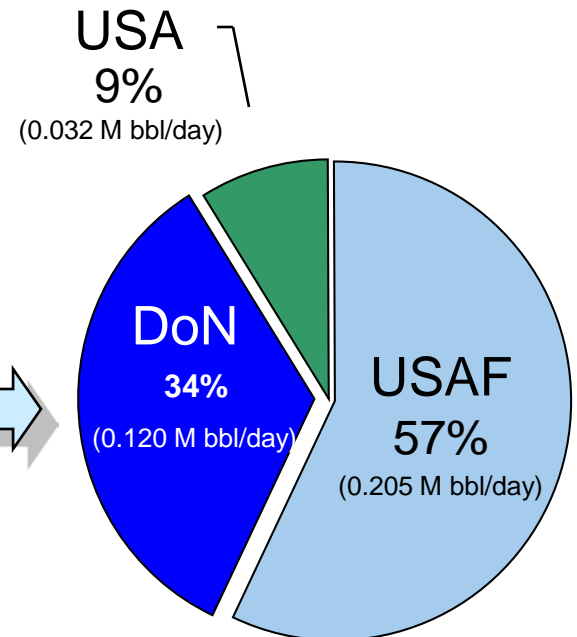
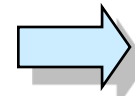
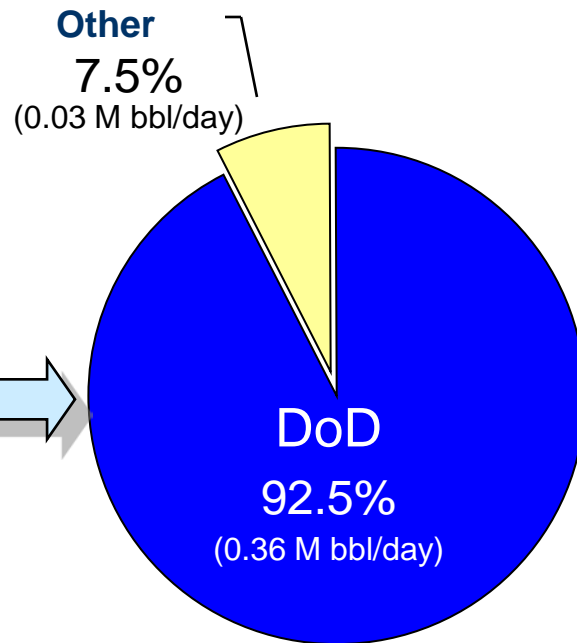
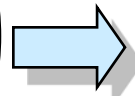
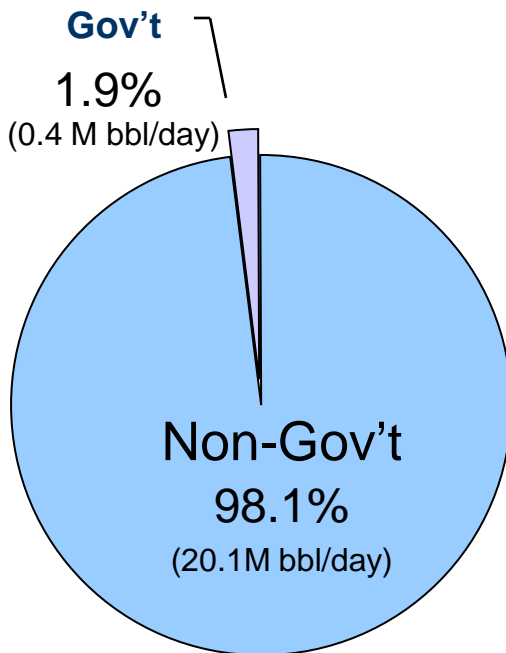


U.S. Petroleum Consumption

United States

Government

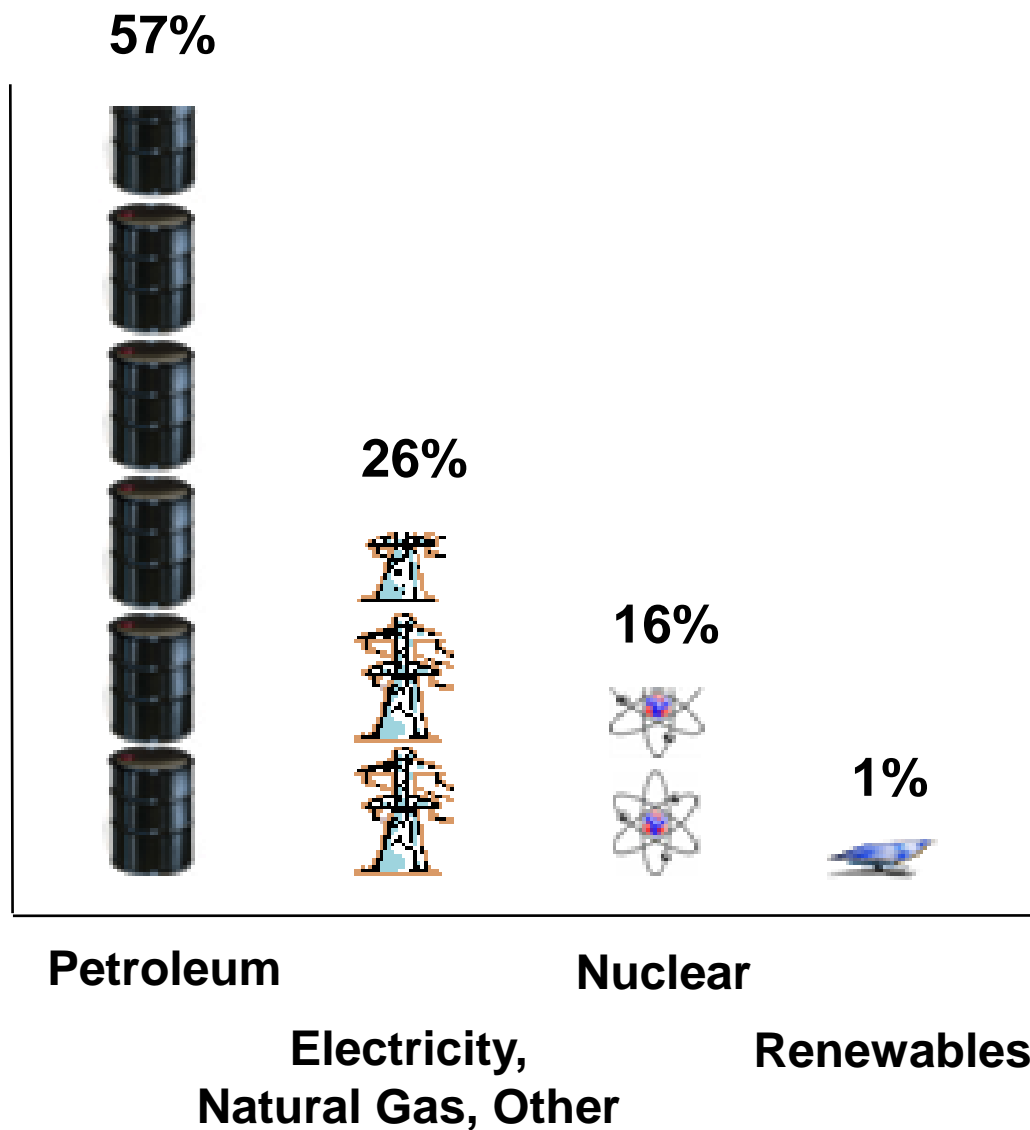
DoD



*DoD is the largest individual consumer...
but not a market maker*



Department of Navy Energy Profile





DoD Energy Strategic Planning

Energy Strategic Plan

Energy Security

**Reduce
Demand**

**Leverage
Technology**

**Drive
Awareness**

**Increase
Supply**

Solid Foundation of Professional Energy Experts



Leverage Technology

- Technology Validation Program
- Identify & transition new technology
- Utilize “smart” IT to facilitate work
- Advanced Metering Infrastructure
- Utilities GIS
- SCADA, EMCS, DDC systems
- Information Assurance to protect energy systems from intrusion



Drive Energy Awareness

- Promote a cultural change towards energy
- Train all personnel in energy
- Promote energy awareness through recognition and awards
- Establish energy curriculum at U.S. Naval Academy, Post Graduate School, and Navy and Marine Corps Recruiting Commands
- Communicate success
- Partner with other Services, agencies, and industry





DoD General Energy Efficiency Projects

- Building Commissioning and Re-commissioning (energy assessment/audit programs)
- Energy Star and FEMP Products
- Efficient Lighting
 - Occupational Sensors
 - Converting from T-12 to T-8
 - Incandescents to CFL
 - Spectroscopic
- HVAC Systems and Efficient Boilers
- Energy Management Control Systems and Digital Controls
- Building Shell
- Sustainable buildings and LEED certification
- Advanced Metering programs
- Water Saving Technologies and Water Heating



Building Audits



Current legislation (EISA 2007) requires 25% of covered facilities to be evaluated such that all each facility is evaluated once every four years

- Evaluates various building systems including HVAC, electrical, lighting and plumbing
- Compares current operation against intended and most efficient use
- Very important tool in identifying which systems need upgrades in either energy or water efficiency
- According to Berkeley National Lab, median whole building savings is 15% with payback of 0.7 years
- General results from an audit include: turning off computers, adjust HVAC settings, updating construction design, and improving regular maintenance of systems and appliances



Energy Star and FEMP Products



- DoD's Operation Change Out, Initiated in April 2008
- Army's Fort Bragg
 - Replace 6,000 incandescent light bulbs with compact fluorescents in base lodging
 - Partnered with Progress Energy (local utility) for CFL donation
- Navy estimates that as of April 1, 2009, 12,358 incandescent bulbs have been replaced with Energy Star fluorescent bulbs
 - Roughly 20 Navy Bases
 - 3.5 million kWh
- Aviano Air Base Hospital received the Energy Star rating through:
 - Installing lighting sensors in bathrooms
 - Adding a cooling system to existing an chiller
 - Replacing existing air handling units in Building 121 with new units that have energy efficient motor fans





Sustainable Buildings and LEED Certification

Port Hueneme



Enhanced use of day lighting, light interior colors and reflective flooring



Air National Guard
Base Civil Engineering in Reno, NV
Enhanced storm water design
for quality control through
storm water detention areas



Marine Corps Base Hawaii
Bachelor Enlisted Quarters
incorporating LEED Silver specs





Advanced Metering Programs



- NAVFAC Southeast is bringing in advanced metering infrastructure through \$23 million in ARRA funds
 - Started November 2009
 - 12 Bases in southeast
 - 2,177 smart meters
 - 2% energy cost savings through energy monitoring and replacing outdated technology

- Elmendorf Air Force Base in Alaska implementing advanced metering system
 - Helps identify performance of like facilities
 - Establishes a baseline to evaluate future performance buildings after system upgrades in efficient heating and lighting





Funding Tools for Project Execution

Off-budget Resource	Funding source	Primary Value
Energy Conservation Investment Program	Special requests via Office of Secretary of Defense to Congress	Funding for high savings-to-investment ratio projects
Sustainment and Operations & Maintenance Funds	Routine facilities maintenance budgets	Funding for equipment, maintenance, repairs, replacement
Energy Savings Performance Contract/Energy Services Company	Private capital	Smaller facilities with limited expertise in efficiency measures or capital
Utility Energy Services Contracts	Utility capital	Security of utilities' capital investment
State Energy Legislation & Tariffs	Public, municipal, and privately owned utilities	Electricity rate payback is determined by state specific legislation



Energy Savings Performance Contracts

- What are the benefits of ESPCs?
 - Private sector investments in energy conservation
 - Partner with Department of Energy
 - Guaranteed energy savings are paid to the contractor
- Naval Undersea Warfare Center (NUWC)
 - Contractor awarded to install numerous energy conservation measures including geothermal heat pumps, high-efficiency HVAC, lighting upgrades, and variable speed drive
 - Projected energy savings of 30%
 - Contractor will be paid based on guaranteed savings over the 18 years of the contract
 - March 2010



Air Force – Enhanced Use Lease

- Solar, wind, geothermal, and biomass projects are funded through Enhanced Use Lease (EUL) authority
- Air Force is currently pursuing six potential energy EULs:
 - Beale AFB: 1MW methane and solar generation project
 - Edwards AFB: 600 MW solar project on 3,288 acres
 - Kirtland AFB: 20 MW solar project
 - Luke AFB (Barry M. Goldwater Range): solar project on 2,700 acres
 - Luke AFB: 10-12 MW solar energy project on 100 acres on-base
 - Vandenberg AFB: 48 MW wind project







Thank You !!



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Chris.Tindal@Navy.mil – 703-602-4408