

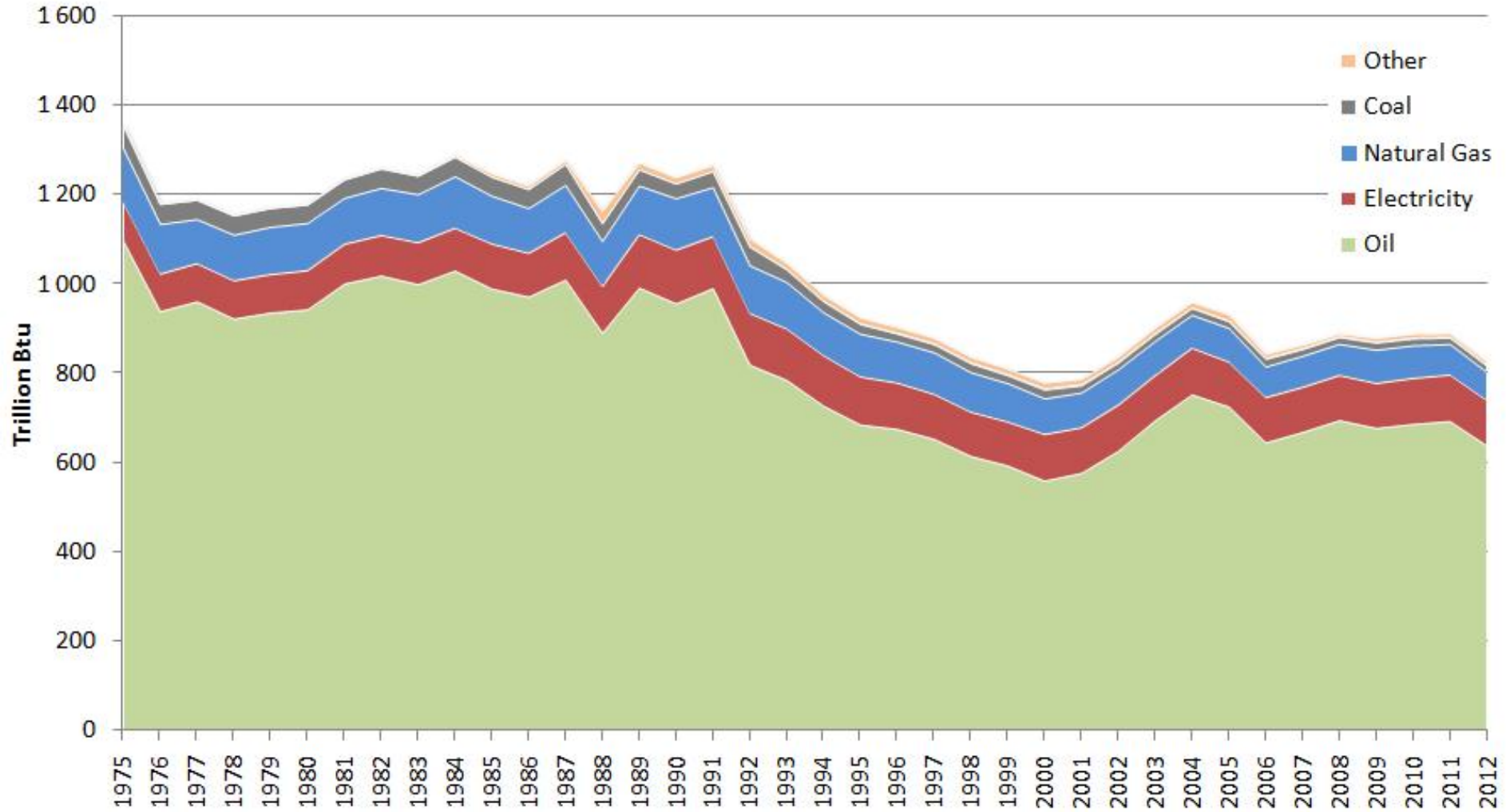
Opportunities for Alternative Fuel Vehicles at Military Installations

Dave Robau
Gulf Coast Energy Network

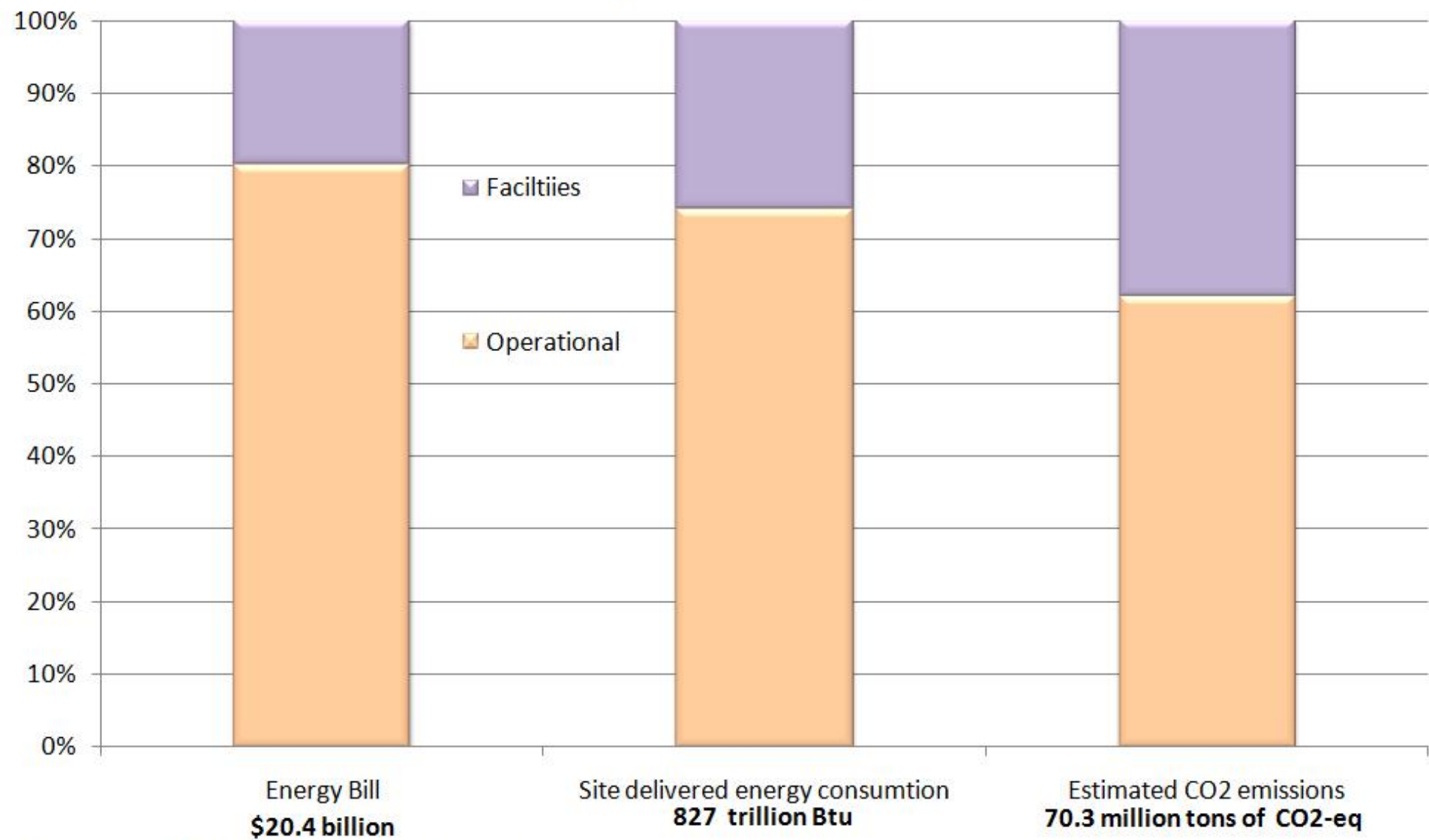


GULF COAST
ENERGY NETWORK

The U.S. Military is the World's Largest User of Energy

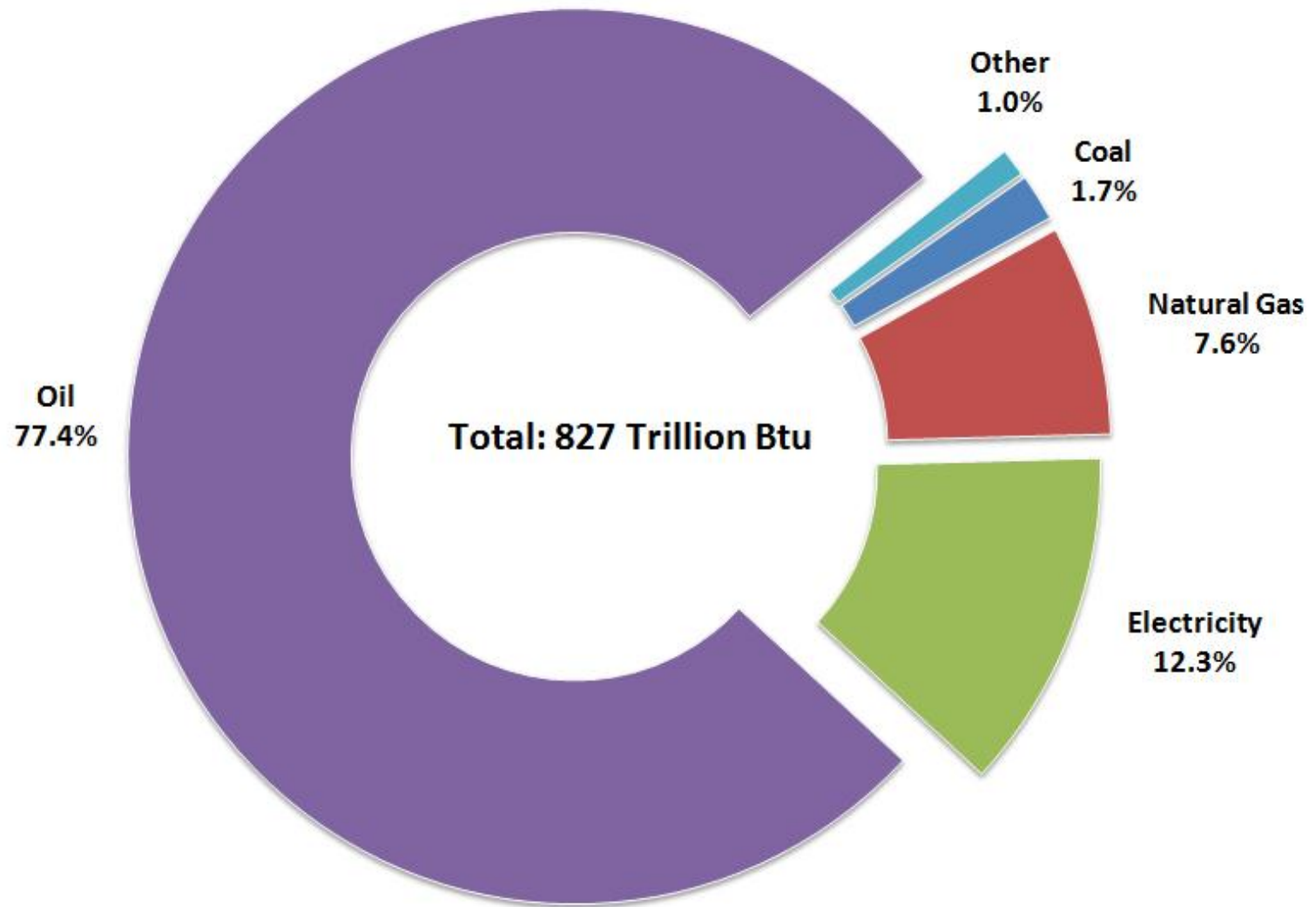


The US Department of Defense Energy Consumption, Costs and CO2 Emissions in FY 2012



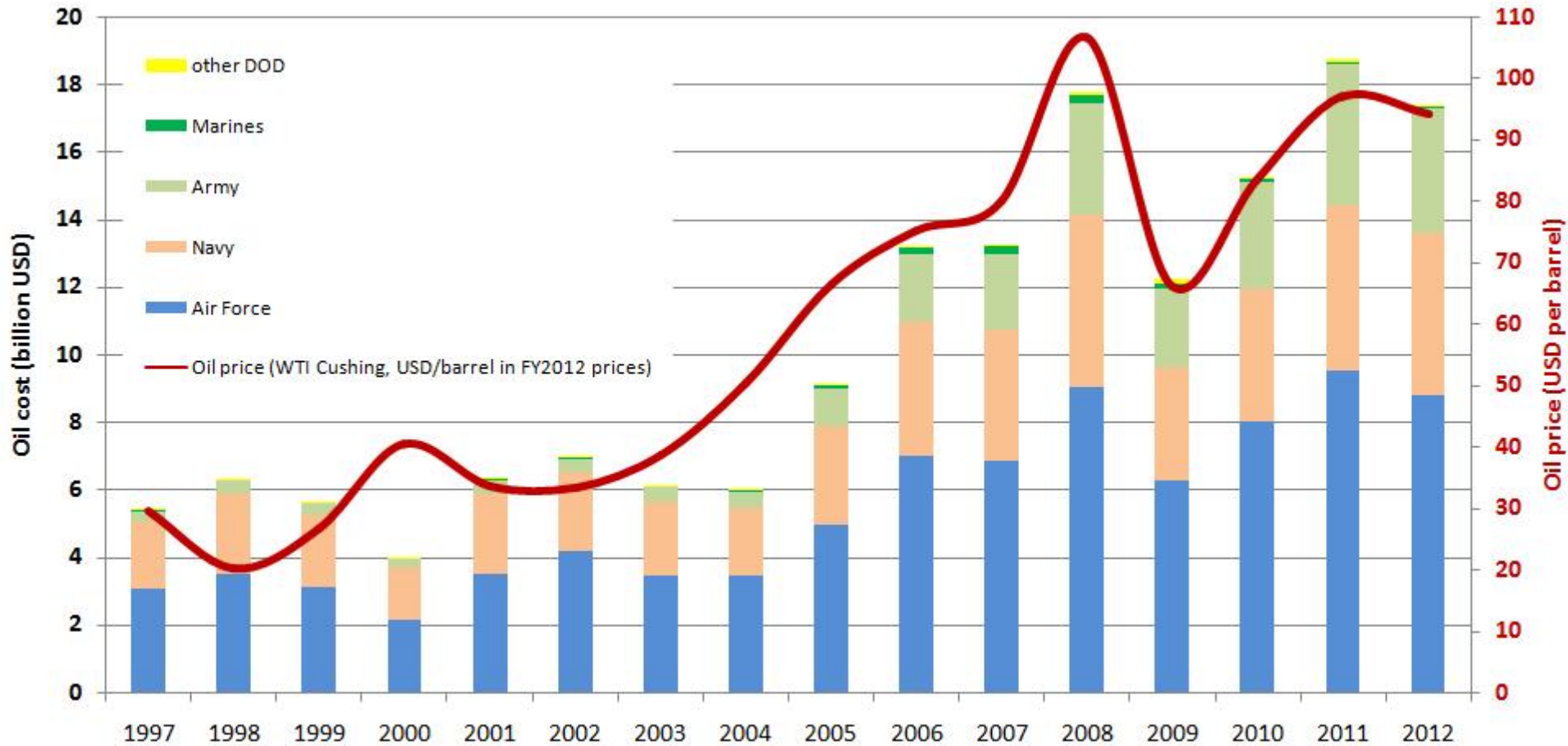
Source: Compiled by the Author from various DoD and US Government sources.

The DoD Energy Consumption, FY2012



Source: Compiled by the Author from various DoD and US Government sources.

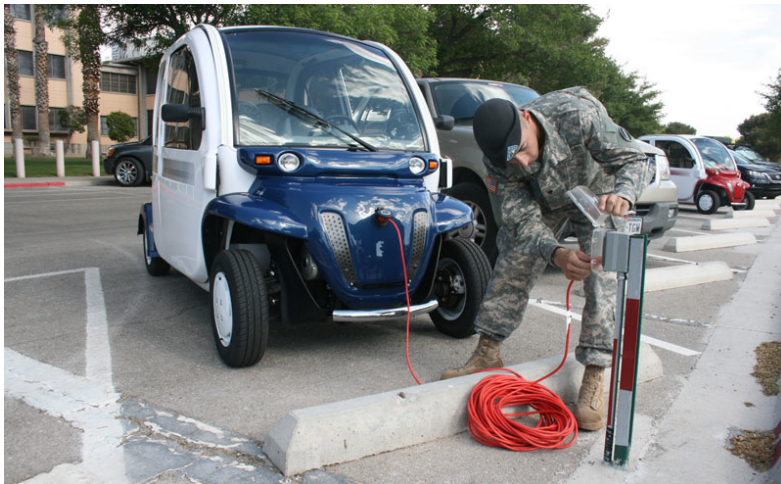
Dependency of Foreign Oil Creates Security Challenges



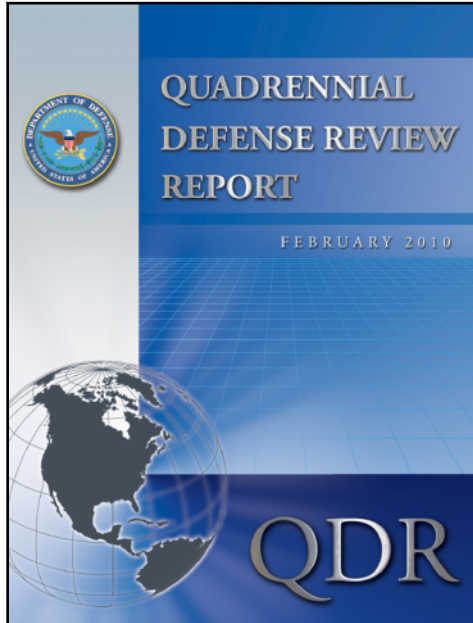
Source: karbuz.blogspot.com, Data from DLA Energy Factbooks, BP, and BLS

All the Services Are Making Strides Towards Renewable Energy and Alternative Fuel Vehicles

Self-Imposed Renewable Energy and Alternative Fuel Mandates Create the Demand for Clean Energy



Driver: Quadrennial Defense Review



Energy Security – *“assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet operational needs”* – pg 87

- DoD will
 - promote investments in energy efficiency
 - ensure that critical installations are adequately prepared for prolonged outages caused by natural disasters, accidents, or attacks
- Balance energy production and transmission to preserve test and training ranges and operating areas needed to maintain readiness

Energy efficiency can serve as a force multiplier, because it increases the range and endurance of forces in the field and can reduce the number of combat forces diverted to protect energy supply lines...” – pg 87

Drivers = Mandates

Federal Mandate	Energy Topic	Energy Performance Target
Energy Policy Act of 2005	Electricity use for federal government from renewable sources	<ul style="list-style-type: none"> • At least 3% of total electricity consumption (FY07-09), 5% (FY10-12), 7.5% (FY13 +)
Executive Order 13423	Energy use in Federal buildings	<ul style="list-style-type: none"> • Reduce 3% per year to total by 30% by FY2015 (FY2003 baseline)
	Total consumption from renewable sources	<ul style="list-style-type: none"> • At least 50% of required annual renewable energy consumed from “new” renewable sources
	Fleet vehicle alternative fuel use	<ul style="list-style-type: none"> • Increase by 10% annually to reach 100% (Base line FY2005)
Energy Independence and Security Act of 2007	Total consumption from renewable sources	<ul style="list-style-type: none"> • 25% by FY2025 -“Sense of Congress”
	Hot water in new / renovated federal buildings from solar power	<ul style="list-style-type: none"> • 30% by FY2015 if life cycle cost-effective
	Fossil fuel use in new / renovated Federal buildings	<ul style="list-style-type: none"> • Reduce 55% by FY2010; 100% by 2030
Executive Order 13514	GHG emission reduction	<ul style="list-style-type: none"> • DoD Goal: reduce Scope 1 & 2 GHGs by 34% by FY2020 • DoD Goal: reduce Scope 3 GHGs by 13.5% by FY2020
	Net zero buildings	<ul style="list-style-type: none"> • All new buildings that enter design in FY2020 and after achieve net zero energy by 2030
	Water consumption	<ul style="list-style-type: none"> • Reduce consumption by 2% annually for 26% total by FY 2020 (FY2007 baseline)
	Waste minimization	<ul style="list-style-type: none"> • Divert at least 50% of solid waste & 50% of C&D waste by FY2015
National Defense Authorization Act, 2010	Renewable Fuels Use	<ul style="list-style-type: none"> • Directs the Secretary of Defense to consider renewable fuels in aviation, maritime, and ground transportation fleets.

Leveraging Private Investments

Leveraging private sector investments is a strategy to advance efficiencies in an era of constrained resources.

Authorities from Congress (underutilized):

- Energy Savings Performance Contracts (ESPC) – Implementation and financing of energy efficiency projects out of energy cost savings
- Enhanced Use Lease (EUL) – Use of non-excess DOD land exchanged for In-kind SRM projects
- Power Purchase Agreement (PPA) – Energy projects installed on installations at no-cost in exchange for long term agreements to purchase renewable energy
- Utility Energy Service Contracts (UESC) – Service contract with utility provider

Other Authorities (New):

- National Defense Appropriations Act: Section 331; Community Partnership Initiatives

The New Vision

MISSION: Identify, prioritize and support the development and implementation of large-scale, renewable and alternative energy projects – focusing on attracting private investments and delivering the best value to the Military

GOALS:

1. Meet renewable energy *federal mandates*
2. Generate *revenue and cost savings*
3. Reduce *greenhouse gas emissions*
4. Contribute to achievement of *Net Zero Energy*
5. Increase *energy security* for installations

The U.S. Military will deploy renewable energy by leveraging its land and power consumption to attract significant private investment, provides long – term price stability and enhances the energy security of our installations



Air Force Initiatives



Why is fuel efficiency so important to us? Reason No. 1



When we can load
less of this ...



We can haul
more of this ...



... and warfighters get the
critical equipment and
supplies they need.

AIR MOBILITY COMMAND



Army's Net Zero Initiative



- **A Net Zero ENERGY Installation** is an installation that produces as much energy on site as it uses, over the course of a year.
- **A Net Zero WATER Installation** limits the consumption of freshwater resources and returns water back to the same watershed so not to deplete the groundwater and surface water resources of that region in quantity or quality.
- **A Net Zero WASTE Installation** is an installation that reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill.
- **A Net ZERO INSTALLATION** is one which applies an integrated approach to management of energy, water, and waste to capture and commercialize the resource value and/or enhance the ecological productivity of land, water, and air.

Energy	Water	Waste	Integrated
Fort Detrick, MD	Aberdeen Proving Ground, MD	Fort Detrick, MD	Fort Bliss, TX
Fort Hunter Liggett, CA	Camp Rilea, OR	Fort Hood, TX	Fort Carson, CO
Kwajalein Atoll, RMI	Fort Buchanan, PR	Fort Hunter Liggett, CA	
Parks Reserve Forces TA, CA	Fort Riley, KS	Fort Polk, LA	State-Wide
Sierra Army Depot, CA	JB Lewis-McChord, WA	JB Lewis-McChord, WA	OR ARNG
West Point, NY	Tobyhanna Army Depot, PA	USAG Grafenwoehr, Germany	



US Navy Mandates

Key Compliance Drivers

- 30% Energy Efficiency Increase (in Mbtu/KSF) by 2015 (Energy Independence and Security Act (EISA) 2007)
- 25% Renewable Energy Production by 2025 (NDAA' 10)
- Advanced metering and annual energy audits by 2012 (Energy Policy Act 2005 and EISA' 07)
- 20% decrease in NTV fleet fuel by 2015 and Alt Fueling stations (EISA' 07)
- Analysis and plan to address vulnerability of critical assets (NDAA' 10)

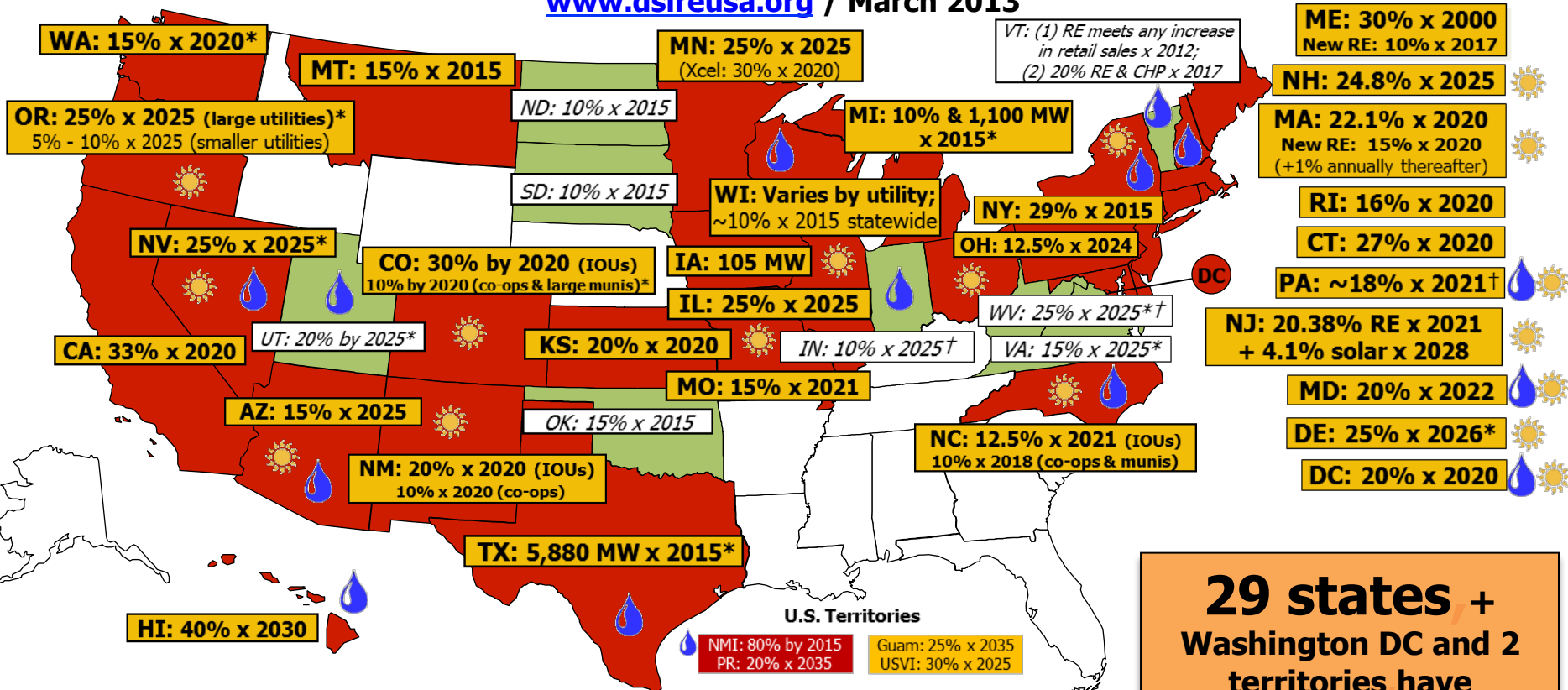
Navy Shore Energy Goals

- 50% Alternative Energy Ashore / 50% Net-Zero Installations by 2020
- 50% decrease in Non-Tactical Vehicle fossil fuel consumption by 2015
- Improve Energy Security by identifying shore energy supply infrastructure vulnerabilities

No RPS in Florida? Now What?

Renewable Portfolio Standard Policies

www.dsireusa.org / March 2013



- Renewable portfolio standard
- Renewable portfolio goal
- 💧 Solar water heating eligible
- ☀️ Minimum solar or customer-sited requirement
- ✳️ Extra credit for solar or customer-sited renewables
- + Includes non-renewable alternative resources

29 states + Washington DC and 2 territories have Renewable Portfolio Standards
(8 states and 2 territories have renewable portfolio goals)

How Do Florida Installations Meet Energy Mandates without Power Purchase Agreements?

Emerald Coast Energy Collaborative

- Working under Section 331 to establish a partnership with 3 Air Force installations in Northwest Florida
- Bringing together partners from industry, academia, and NGOs to leverage subject matter experts
- Set a goal to decrease non-tactical fuel use by 20% by 2015
- Deploy 400 Electrical Vehicles at 3 Air Force installations in Northwest Florida
- Using solar charging stations as a microgrid for V2G demonstration



How Do Florida Installations Meet Energy Mandates without Power Purchase Agreements?

Emerald Coast Energy Collaborative

- Working under Section 331 to establish a partnership with the Air Force Research Lab in Northwest Florida and Universities in the state of Florida
- Establish a Center of Excellence for Next Generation Fuels from renewable sources
- Generate the 1.21 gigawatts required to activate the flux capacitor



Thanks for Your Attention



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Dave Robau

Gulf Coast Energy Network

Dave@GulfCoastEnergyNetwork.org (850) 855-2108