



Office of the Assistant Secretary of the Army (Installations & Environment)

Energy Security and You

Mr. L. Jerry Hansen

Senior Official performing the duties as the ASA(I&E)

Army Senior Energy Executive

www.asaie.army.mil

30 March 2010



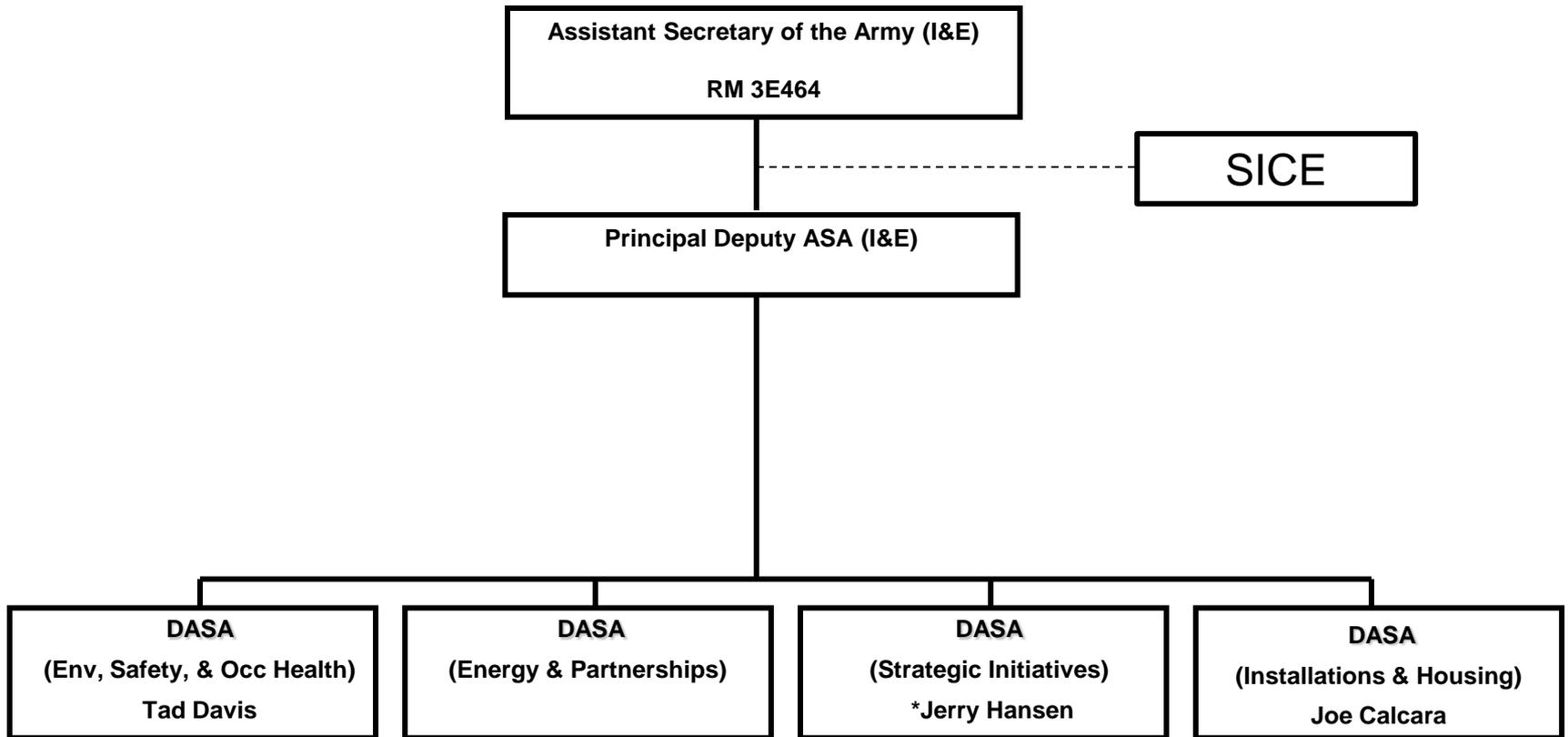
Agenda



- Organization
- Authorities/Responsibilities
- Oversight Process
- SICE
- Energy Security
- Conclusion



OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS AND ENVIRONMENT)



* Senior Official Performing Duties of the ASA (I&E)



Authorities / Responsibilities



- **10 USC 3013 - Sec. 3013. Secretary of the Army**

Provides the SA is responsible for, and has authority necessary to conduct, all affairs of the Department of the Army, to include: recruiting, organizing, supplying, equipping, training, servicing, mobilizing, demobilizing, administering, maintaining, construction, maintenance and repair of buildings, structures, and utilities and acquisition of real property and interests in real property.)

- **10 USC 3016 - Sec. 3016. Assistant Secretaries of the Army**

(a) There are five Assistant Secretaries of the Army. They shall be appointed from civilian life by the President, by and with the advice and consent of the Senate.

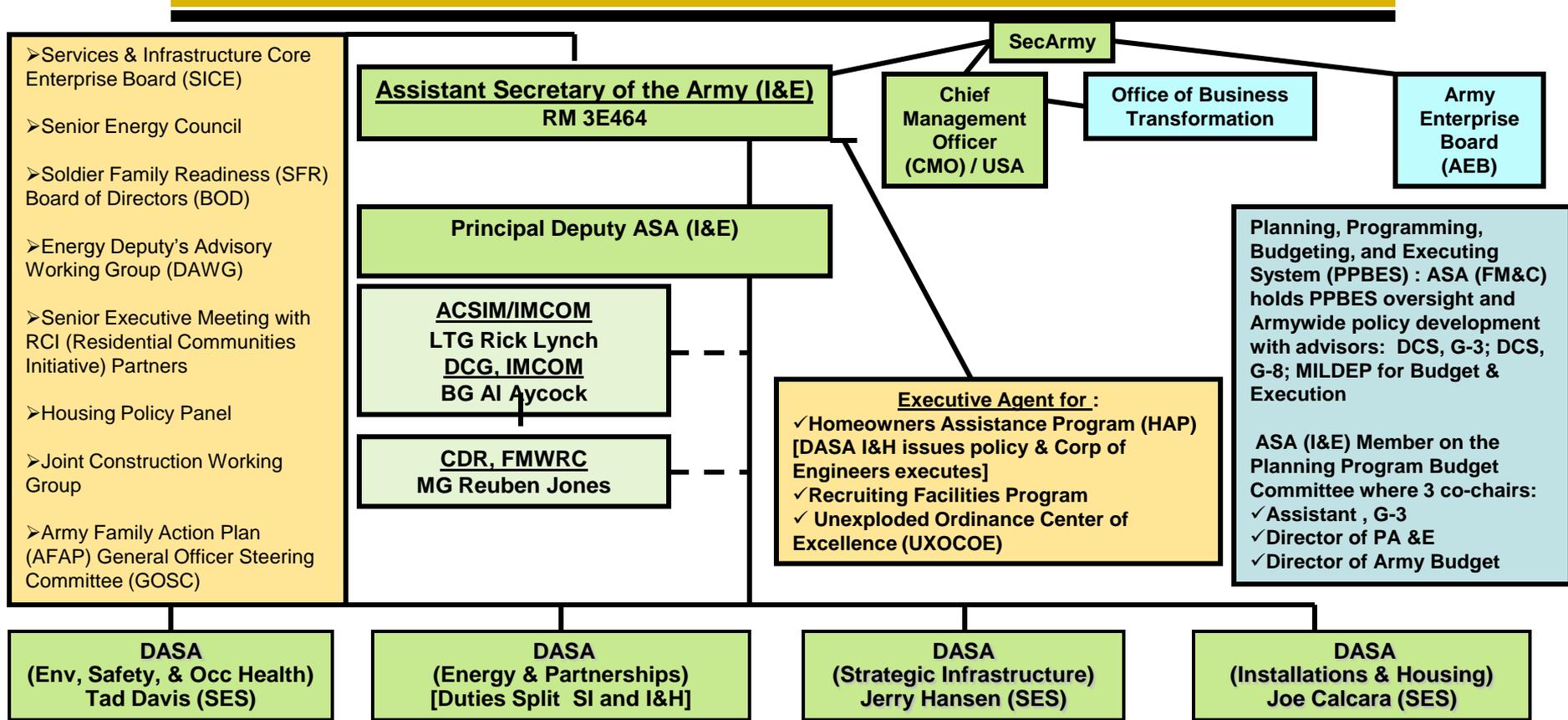
(b)(1) The Assistant Secretaries shall perform such duties and exercise such powers as the Secretary of the Army may prescribe.

- **HQDA General Order Number 3**

The Assistant Secretary of the Army (ASA(I&E)) has the principal responsibility for all DA matters related to installations, real estate, chemical and biological agent destruction, and environment, safety, and occupational health.



Office of the Assistant Secretary of the Army (Installations and Environment)-OVERSIGHT PROCESS



- ✓ Army Environmental Policy Institute
- ✓ Chemical & Biological Restoration
- ✓ Safety & Occupational Health
- ✓ Sustainability
- ✓ Technology
- ✓ Environmental and UXO Clean-Up

- ✓ Senior Energy Executive
- ✓ Residential Communities Initiative Office of Historic Properties & Partnerships
- ✓ Competitive Sourcing
- ✓ Utilities Privatization
- ✓ Privatization of Army Lodging
- ✓ Energy Security Program

- ✓ PPBE process
- ✓ Business Transformation
- ✓ Strategy development
- ✓ Installation POM and Budget
- ✓ National Museum of the United States Army (NMUSA)
- ✓ II PEG Co-Chair
- ✓ Strategic Assessments
- ✓ Family Programs

- ✓ MILCON
- ✓ Engineering
- ✓ Housing
- ✓ BRAC
- ✓ MILCON IPT



Services and Infrastructure Core Enterprise (SICE)



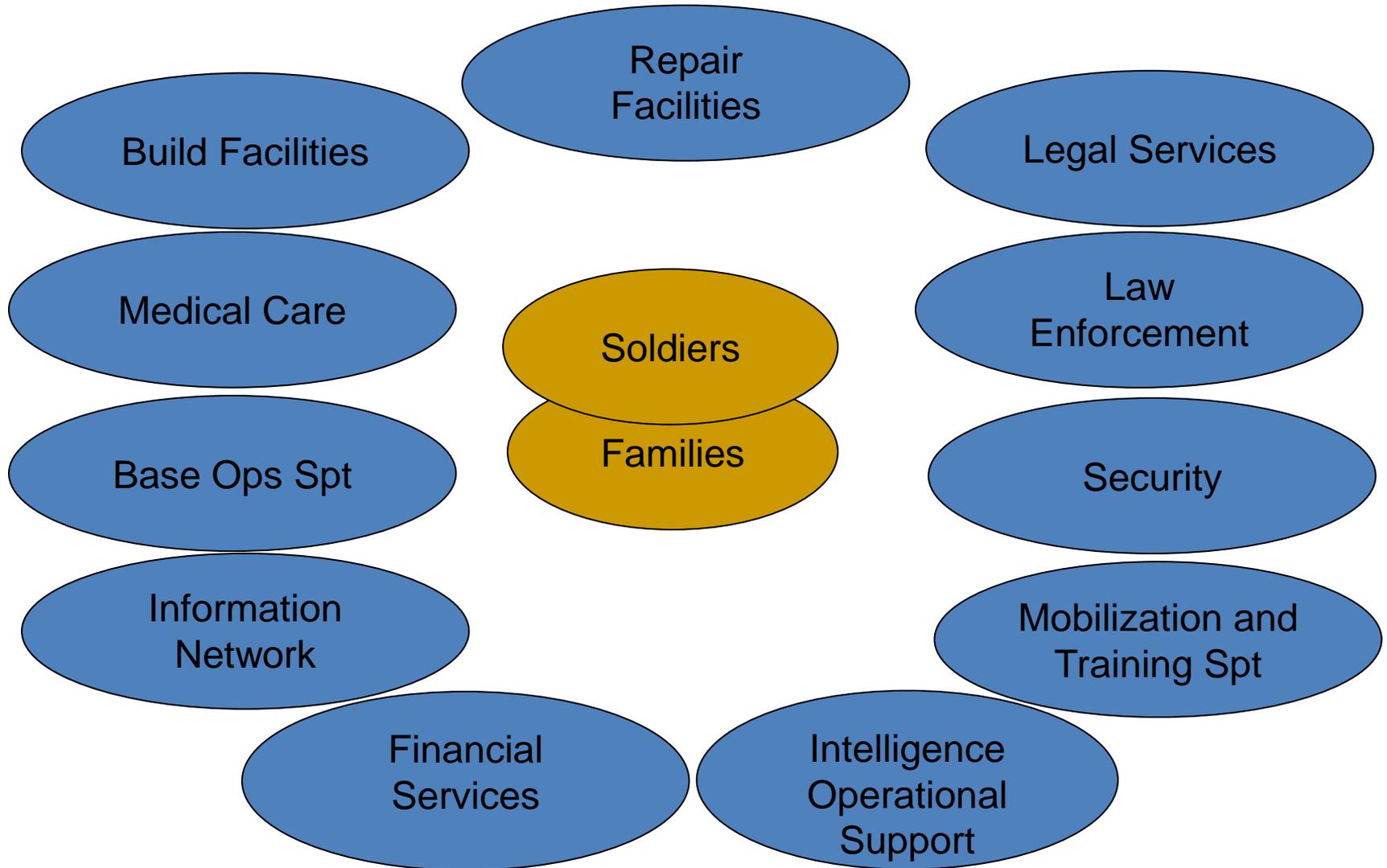
Services and Infrastructure Core Enterprise (SICE)



- The CE initiative recognizes the benefit of establishing fora in which to promote collaboration, share ideas, and devise potential solutions to common problems.
- Enhances the quality and speed of learning and innovative processes.
- Functionally aligned to correspond roughly to the Army's Title 10 end-to-end lifecycle functions.
- Operate subject to authority, direction and oversight of the Chief Management Officer (CMO) through the Army Management Enterprise.
- CE established in the areas of Human Capital, Material, Readiness and Infrastructure.
- Current SICE focus: “Big Ideas” (which include Energy Security)



Services and Infrastructure Core Enterprise (SICE)





Services and Infrastructure Core Enterprise (SICE)



**Assistant Secretary of the Army (Installations & Environment) (ASA (I&E))
Installation Management Command (IMCOM)**

**Family, Morale, Welfare and Recreation
Command (FMWRC)**

Army Environmental Command (AEC)

US Army Medical Command (MEDCOM)

US Army Corps of Engineers (USACE)

**US Army Criminal Investigation
Command (CIDC)**

**Network Enterprise Technology
Command (NETCOM)**

**Intelligence and Security Command
(INSCOM)**

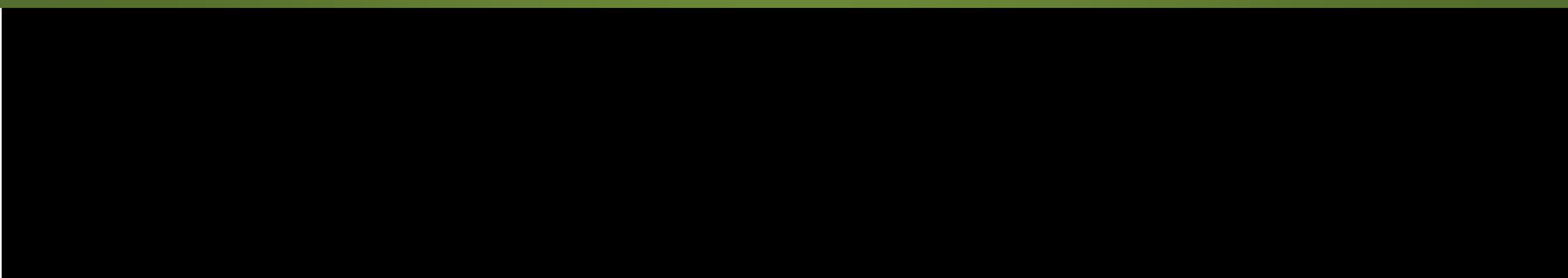
{US Army Reserve}

{Army National Guard}



Energy Security

Army Priority and National Imperative





Senior Energy Council (SEC)



SEC provides enterprise leadership, strategy and accountability for energy security

Army Directive 2008-04 Army Energy Enterprise

Senior Energy Council Charter (dated, 26 SEP 08)

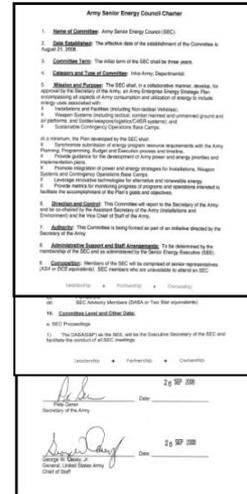
Formalizes:

- Senior Energy Executive
- Senior Energy Council
- Energy Enterprise Strategic Plan

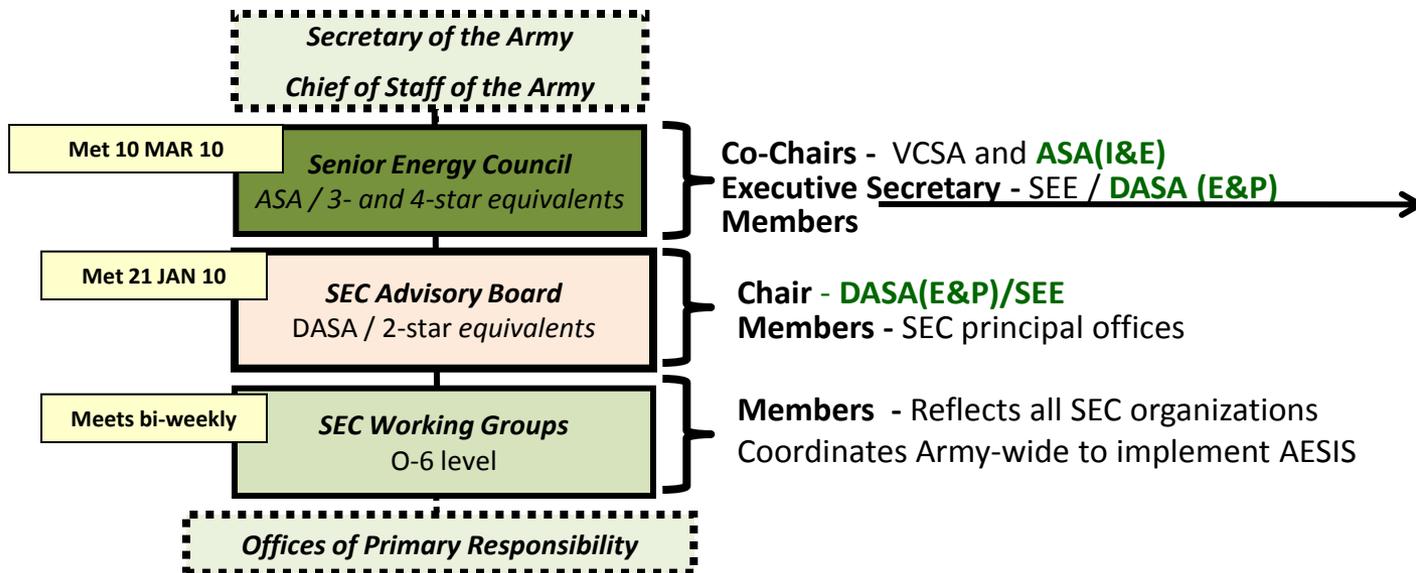
Establishes Army Energy Enterprise Governance Structure

Includes all aspects of Army energy consumption and utilization:

- Installations
- Facilities
- Weapon Systems
- Sustainable Contingency Operations Base Camps



Army Energy Enterprise Governance Structure



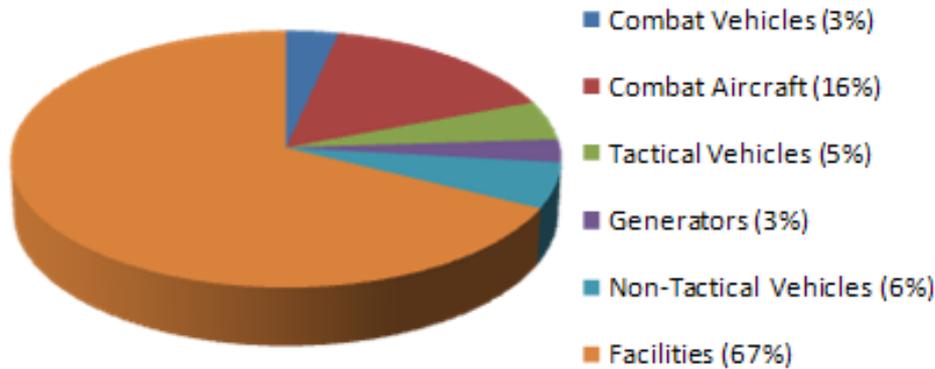
SEC membership	
VCSA	– co-chair
ASA(I&E)	– co-chair
DUSA	G-1
DAS	G-2
SMA	G-3/5/7
AMC	G-4
AASA	G-8
ACSIM	G-8, PAE
ASA(ALT)	OCAR
ASA(CW)	OCLL
ASA(FM&C)	OCPA
ASA(I&E)	OGC
ASA(M&RA)	OTJAG
CIO/ G-6	TRADOC
DARNG	FORSCOM
USACE	MEDCOM
	ATEC



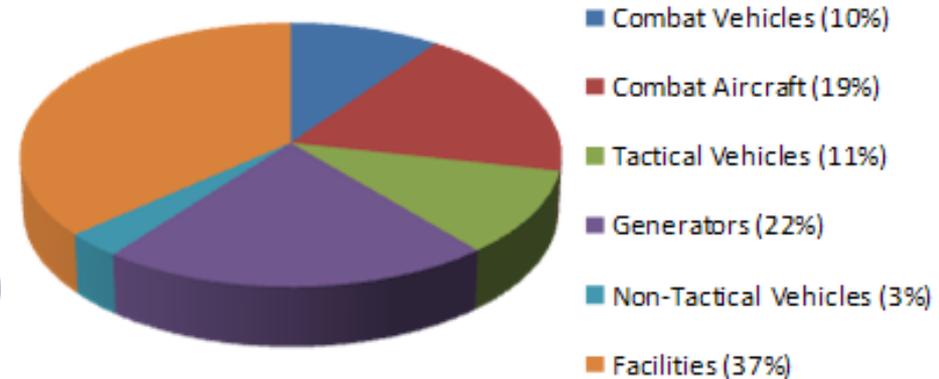
Army Energy Consumption



Peacetime



Contingency Operations



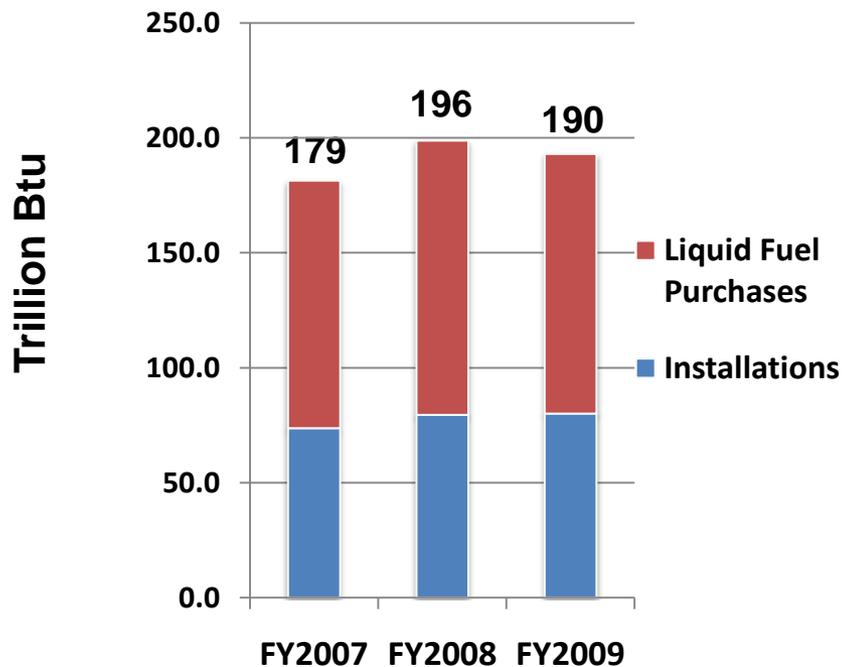
Sources: Defense Science Board. More Fight – Less Fuel (February 2008); Department of the Army FY07 Annual Energy Management Report (December 2007)



Army Energy Consumption and Cost

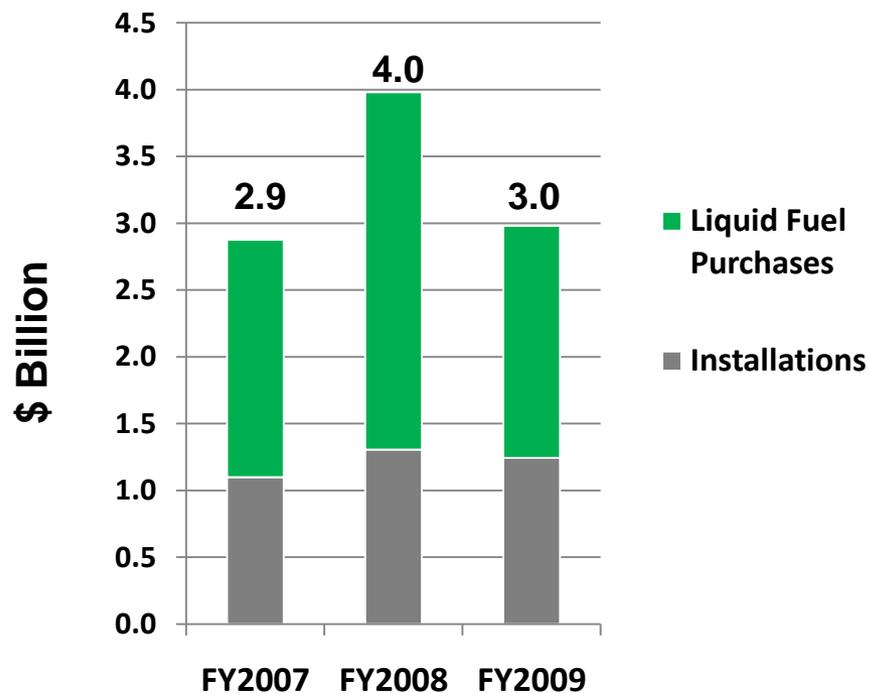


Consumption & DESC Purchases



FY 2008 – FY 2009 Trillion Btu Decrease = 3%

Cost



FY 2008 – FY 2009 Cost Decrease = 25%



Installation Energy Overview



Army did not achieve energy efficiency goal in FY09

- 7.1% compared to statutory goal of 12%
- Falling behind FY08 achievement of 10.4%

- **Strategic message:** Army is committed to improve energy efficiency and expand use of renewable sources to achieve 2015 goals of 30% greater energy efficiency and 7.5% renewable energy generation. The new Energy Security Implementation Strategy establishes the way ahead to ensure secure and reliable energy for installations/combat forces and increased emphasis on renewable energy sources. Despite conservation efforts, the utilities budget continues to grow due to rapidly escalating energy prices, additional consumption and operational charges. In FY09, Army lost ground in its energy efficiency efforts. Greater effort is needed by all commands to reduce energy use in all activities consistent with mission.
- **Important components:**
 - **Operations:** **FY10 Utilities Services budget will exceed \$1.4 Billion for commodity bills, largest single requirement in the Army Base Operation Services program, doubled from FY04 (\$674 M) to FY08 (\$1.3 B).**
 - **Sustainment:** FY09 Stimulus program funded nearly \$350 Million SRM Active Army projects which directly address energy efficiency and/or energy related projects for existing infrastructure. Projects executed in FY10.
 - **Construction:** Meets statute for designs 30% better efficiency than industry Standard, achieves US Green Building Council LEED SILVER rating for sustainable facilities.
- **Additional information:** Army FY09 Energy Scorecard for statutory energy compliance:

OMB Scorecard Performance Metric	DOD	Army	Goal
Energy Requirements	DOD FY09 results reflecting totals of all Services and DOD agencies will not be available until 1 APR 10	Red	
Energy Reduction from 2003 Baseline (BTU/SqFt)		-7.1%	-12.0%
Renewable Energy (% total electricity)		2.1%	3.0%
Advanced Meters installed (% appropriate buildings)		40%	40.0%
Energy Efficient Design in new Construction (% total)		100%	100%



Summary of 2009 Army Energy Report



2009 Army Energy Report Key Metrics			
Metric	FY09 Goal	FY09 Accomplished	Performance
Energy Efficiency	12%	7.20%	Missed goal 4.8%
Renewable Energy	3%	2.10%	Missed Goal 0.9%
Water Consumption	-4%	1%	Missed Goal 5%
Total Energy Used (Billion BTU)	Energy use measured by efficiency metric above	160600	Usage up 11,370 BBTU vs. FY08
Greenhouse Gas (Metric Tons CO2)	Goals imposed starting FY10	9,312,200	Emission up 236,500 MTCO2 vs. FY08
Advanced Meters Installed	40%	40%	Met Goal

o Performance measured by key metrics established in statutes

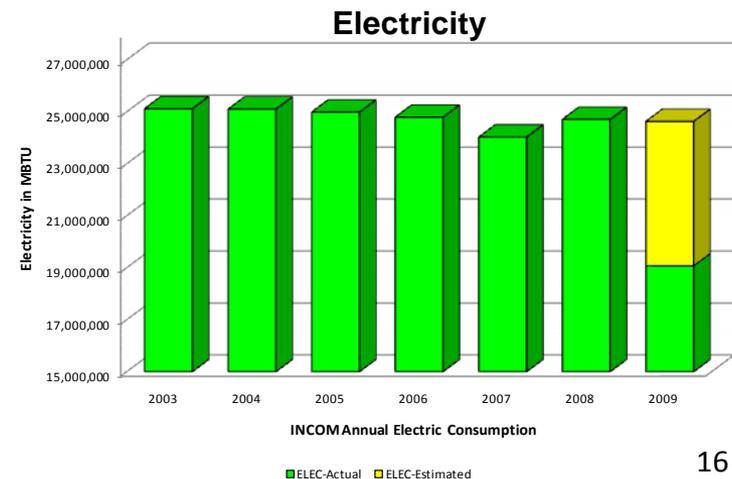
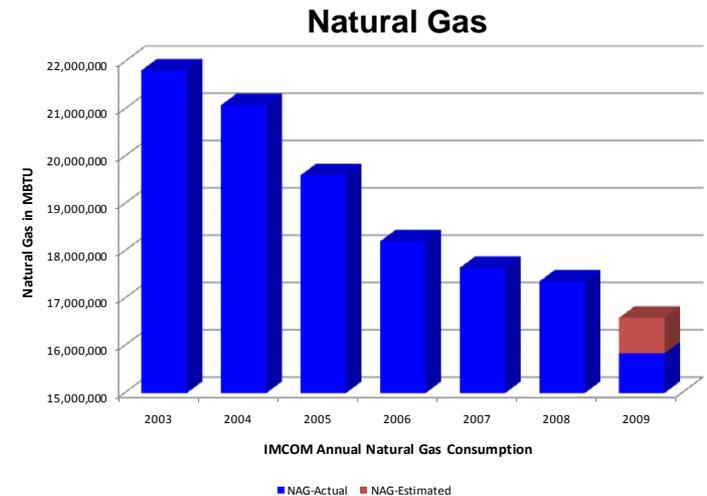


Energy Management: Challenges



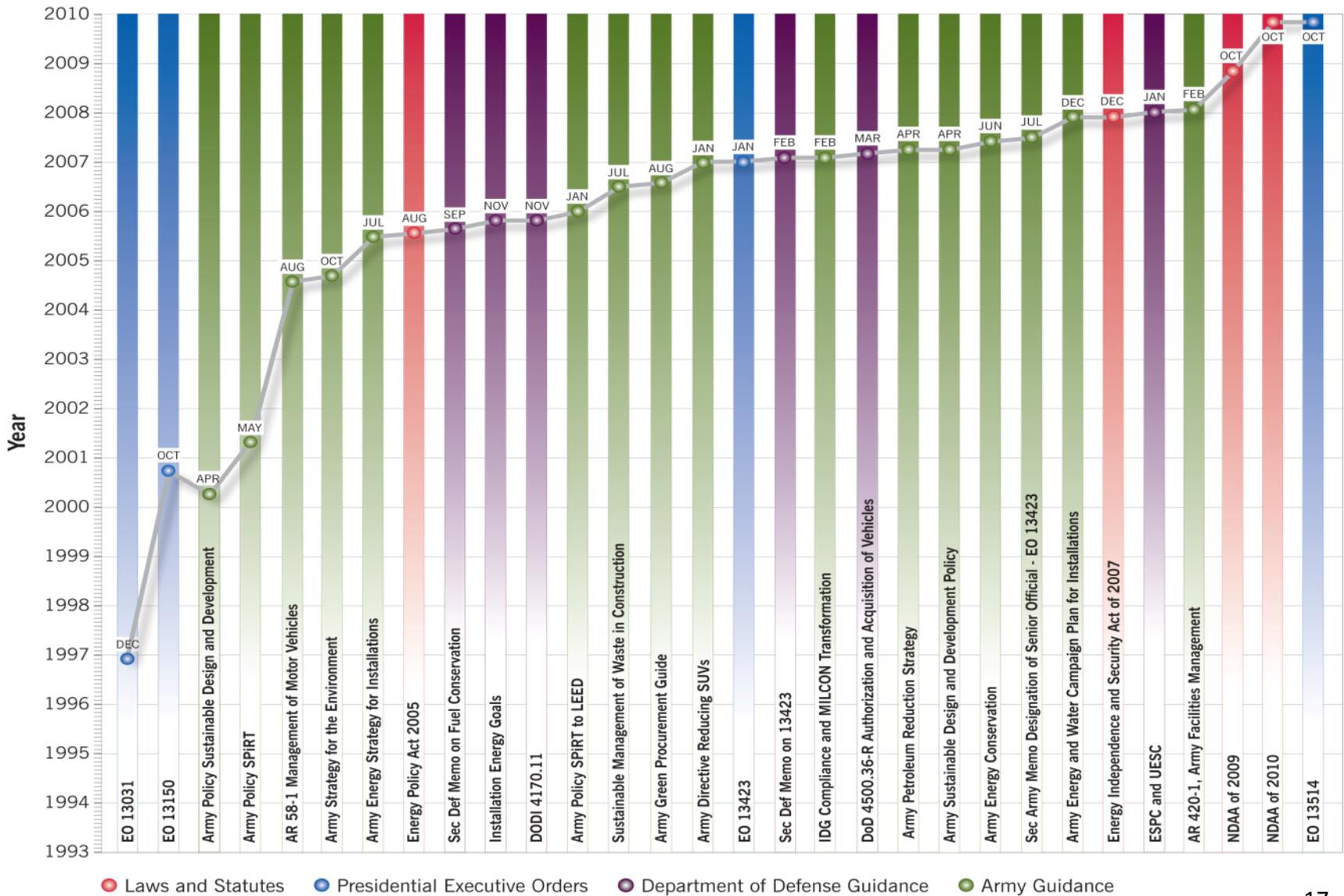
Current metric of performance measurement is energy per square foot

- Managing energy reduction for fixed installations responsible for housing an Expeditionary Army
- IMCOM has made significant progress in reducing natural gas consumption while electric remains a challenge
- Challenges:
 - BRAC construction
 - Grow the Army
 - Large energy consuming activities not included in real property





Key Energy Directives





Leadership Supports Energy Initiatives



“We're making our government's largest ever investment in renewable energy – an investment aimed at doubling the generating capacity from wind and other renewable[s]... “ 9/23/09



-President Barack Obama

“...[T]he Army is actively supporting advanced technologies and increases in energy efficiencies at our installations, in our weapon systems, and in operations.” 10/09

Army Energy Awareness Month Letter

“As long as we're dependent on those fossil fuels, we're dependent on the Middle East. If we are not victims, we're certainly captives.”

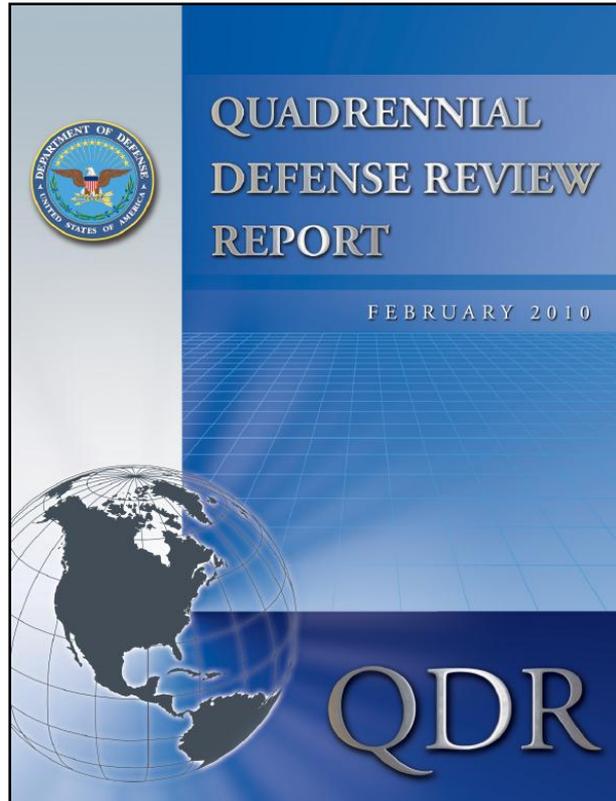


- John McHugh,
Secretary, U. S. Army



QDR, FEB 2010

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

- DoD will
 - conduct a coordinated energy assessment
 - prioritize critical assets
 - 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

QDR energy security discussion is consistent with Army approach and priorities



ARMY ENERGY SECURITY IMPLEMENTATION STRATEGY



Legislation

- EPA Act 2005
- EISA 2007
- NDAA 2007

Executive Order

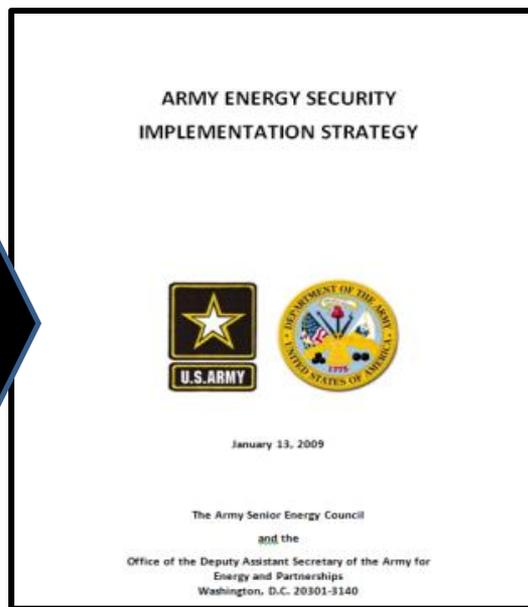
- EO 13423

OSD Policy

- DODI 4170.11, DOD Managers Handbook

Army Policy

- Army Regulation 420-1
- Army Energy & Water Campaign Plan



Energy Security Goals (ESGs)

1. Reduce Energy Consumption
2. Increase Energy Efficiency Across Platforms and Facilities
3. Increase Use of Renewable / Alternative Energy
4. Assure Access to Sufficient Energy Supplies
5. Reduce Adverse Impacts on the Environment

Army Senior Energy Council



Vision and Mission

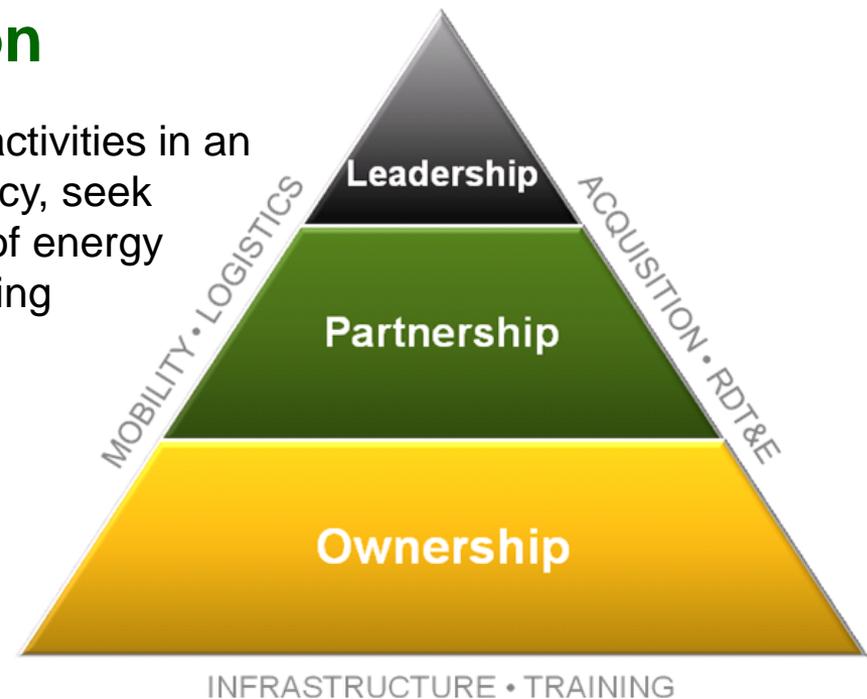


Army Energy Security Vision

An effective and innovative Army energy posture, which enhances and ensures mission success and quality of life for our Soldiers, their Families, and Civilians through Leadership, Partnership, and Ownership, and also serves as a model for the nation.

Army Energy Security Mission

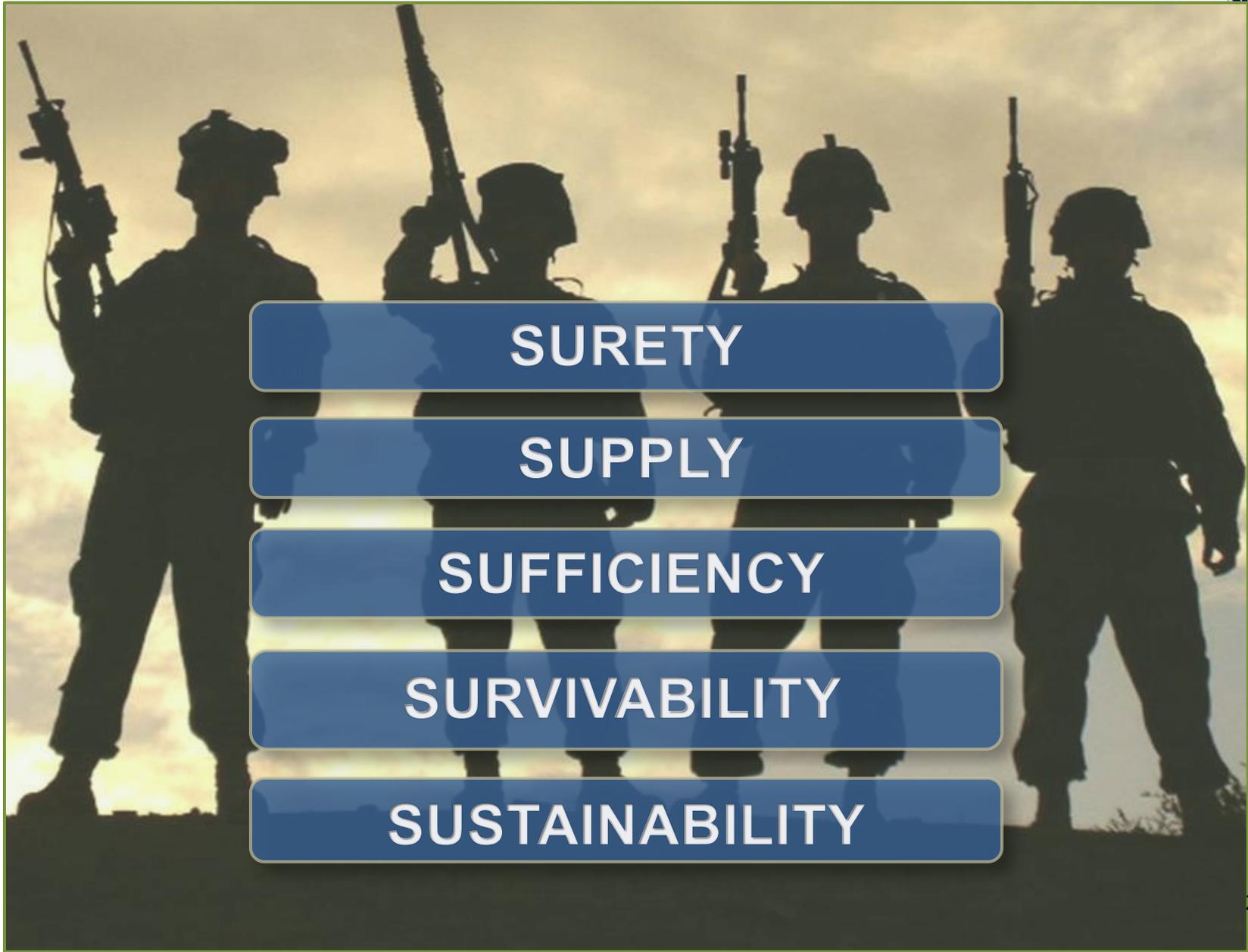
Make energy a consideration in all Army activities in an effort to reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability, while sustaining or enhancing operational capabilities.





U.S. ARMY

ENERGY SECURITY



SURETY

SUPPLY

SUFFICIENCY

SURVIVABILITY

SUSTAINABILITY

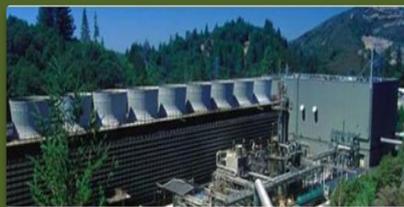


Major Army Energy Initiatives



Acquisition of Electric / Hybrid vehicles

- Army Order of 502 hybrid vehicles
- Acquisition of 4000 Low Speed Electric Vehicles (LSEV)
- One of the Largest Federal Electric & Hybrid fleets



Build 30 MW Geothermal Power Plant at Hawthorne Army Depot, NV

- Meet all of Hawthorne's electrical power requirements
- Releases essentially no greenhouse gas emissions
- Available 24/7
- Partnership with Navy and USACE



Develop 500 MW Solar Thermal Energy Plant at Fort Irwin, CA

- Supports Energy Security for the Installation
- Estimated \$20.8M utility cost reduction to Army over 25 years
- Partnership with Industry through Enhanced Use Lease (EUL) and Power Purchase Agreement (PPA)
- Developer Announced July 09



Renewable & Alternative Energy



Renewable Energy - energy produced from renewable fuel resources such as biomaterial (biomass, landfill gas (LGS) and municipal solid waste (MSW)), hydropower, geothermal, wind, ocean (tidal, wave, current, and thermal), biofuels, thermal and solar.

Alternative Energy - any source of energy (e.g., nuclear, clean coal technologies, hydrogen) that can supplement or replace fossil fuels (oil, coal and natural gas) and other conventional energy sources.

From AESIS, Jan 13, 2009



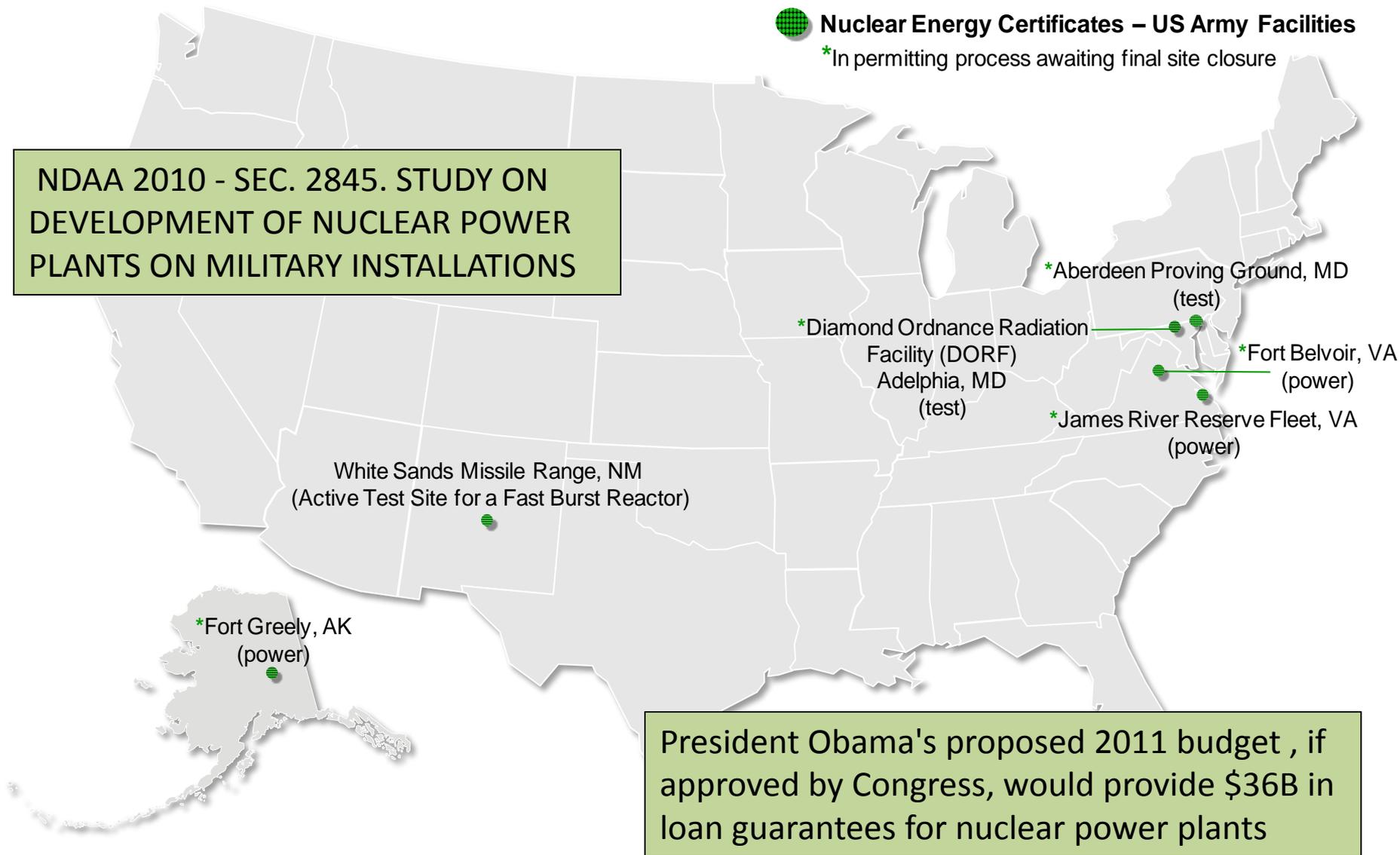
US Army Facilities – Nuclear Energy



Nuclear Energy Certificates – US Army Facilities

*In permitting process awaiting final site closure

NDA 2010 - SEC. 2845. STUDY ON DEVELOPMENT OF NUCLEAR POWER PLANTS ON MILITARY INSTALLATIONS



President Obama's proposed 2011 budget , if approved by Congress, would provide \$36B in loan guarantees for nuclear power plants



EXAMPLES OF INSTALLATION ENERGY PROJECTS



Motion Sensor Light Controls
High Efficiency Lighting
Energy Management Control Systems (EMCS)
Solar Water Heating
Wind Turbines
Photovoltaic Panels
Ground Source Heat Pumps
Solar Walls
Daylighting
Photovoltaic Roof Systems
Solar Tubes (daylighting)
Geothermal Test Wells
Decentralize Steam/Boiler Plants
Neighborhood Electric Vehicles (NEVs)

Solar Energy Fields
Bio-Mass to Fuel (biodiesel)
Bio-Mass to Energy
Fuel Cell Generator
HVAC System Repairs for Energy Conservation
Hydro Electric Power Generation
Upgrades to Building Envelope for Energy Conservation
Install New/Replace Generator Sets
Lighting Retrofits
Install Electric Meters
Install Cool Roofs



Existing Renewable Projects



Ft. Drum Solar Wall



Ft. Huachuca Photovoltaic Roof



Ft. Carson Solar Array



- 2 Megawatt array generates ~3,200 MWh/year
- Ground-mounted, fixed-tilt, ~12 acres on former landfill

Renewable Energy Project 2009 Summary

Electricity Generation (40)

Solar	34
Wind	05
Hydro/Ocean	01

Natural Gas (1)

Landfill / Biomass

Thermal Energy (25)

TOTAL PROJECTS – 66

363 Million Btu = Renewable Energy Generation
(23.8 GWH = Renewable Electricity)

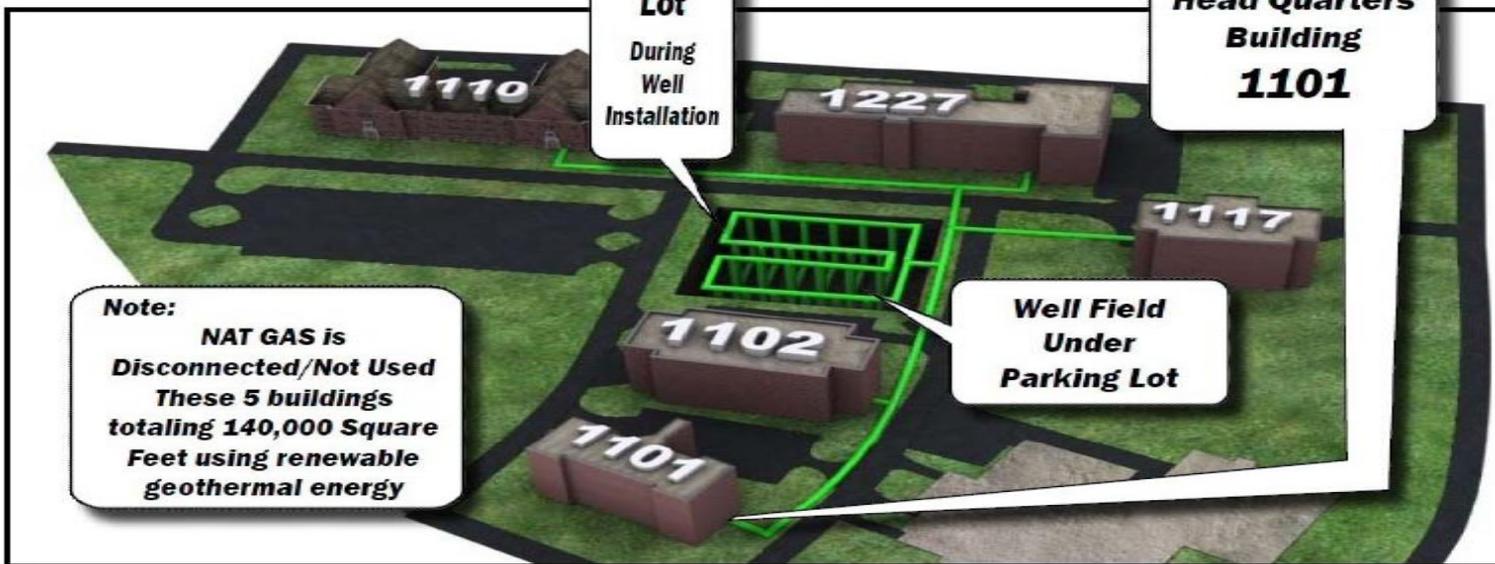
Note: Source: FY 2009 Army Energy Mgt Data Rpt



Fort Knox Ground-Coupled Heat Pumps



A typical example of many large ground-coupled heat pump projects constructed at Fort Knox. This 5-building complex (140K sq ft) was disconnected from natural gas and connected to a geothermal ground-coupled heat pump system (containing 130 500-ft deep wells)





Fort Knox Heat Pumps



Maple Ridge Housing

Entire housing area uses ground-coupled heat pumps





Fort Knox Renewable Methane Gas



Fort Knox is utilizing renewable shale methane gas in lieu of fossil fuel natural gas. Methane gas is collected from wells on Fort Knox property.





Fort Knox Solar



Solar Arrays

100kw Solar Photovoltaic (PV)





Renewable Projects – Fort Irwin



- **Strategically located in sunny southern California with over 1,000 square miles of land**
 - **Good potential for large scale renewable project**
 - **Identified as one of 5 SecArmy energy initiatives**
- **The U.S. Army Corps of Engineers, Baltimore District, Enhanced Use Leasing (EUL) program**
 - **Prepared solicitation to test market viability for large scale EUL**
 - **Good industry response to solicitation**
- **Corps selected Irwin Energy Security Partners LLC to develop, construct and manage the largest solar power project proposed to date within the Department of Defense**
- **Solar energy EUL will entail a flexible, phased, multi-technology approach to delivering up to 500 megawatts (MW) of power generation**
- **Improves Fort Irwin's overall energy security posture**



ACCIONA's Nevada Solar One

California Context

- NTC's energy demand currently is 28 MW, projected to grow...
- The combination of insufficient power generation capacity coupled with continued population growth in SOCAL, and corresponding increases in energy demand may have an adverse impact on the NTC mission in the future
- We have a compelling need to achieve energy security, sooner, rather than later

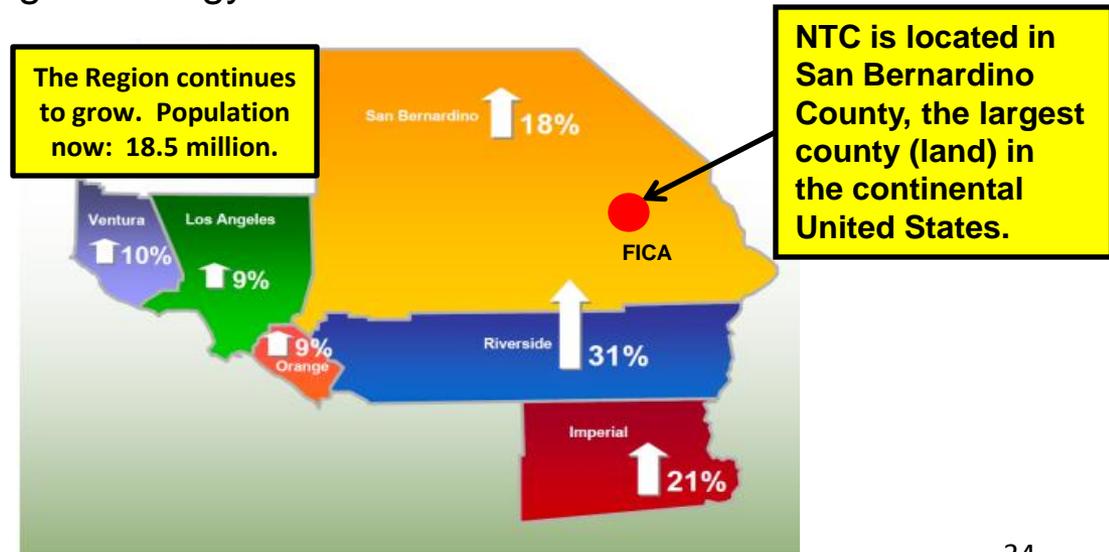
Facts:

Environmentally conservative

Recent experiences w / brownouts (summer months) and limited rolling blackouts (load shedding)

Wind technology *is not an option* at the NTC due to the R2508 airspace restrictions

California possesses higher energy costs relative to other states





Fort Huachuca ESPC



Energy Savings Performance Contract (ESPC) at Fort Huachuca, AZ

- Fort Huachuca was one of the first to use an ESPC
- The current cumulative savings for the first 3 task orders - \$6.14M
- 90% has gone to the contractor to pay his original investments for the first 3 task orders
- The fourth task order has a 20 year term with savings/payments of \$777.5K per year
- Technologies have included energy efficiency, water conservation and renewable energy projects



LEED Platinum



Fire Station
Fort Bragg, NC



LEED Gold



BCT Headquarters

Fort Carson, CO



Fort Bliss Energy Security Tiger Team



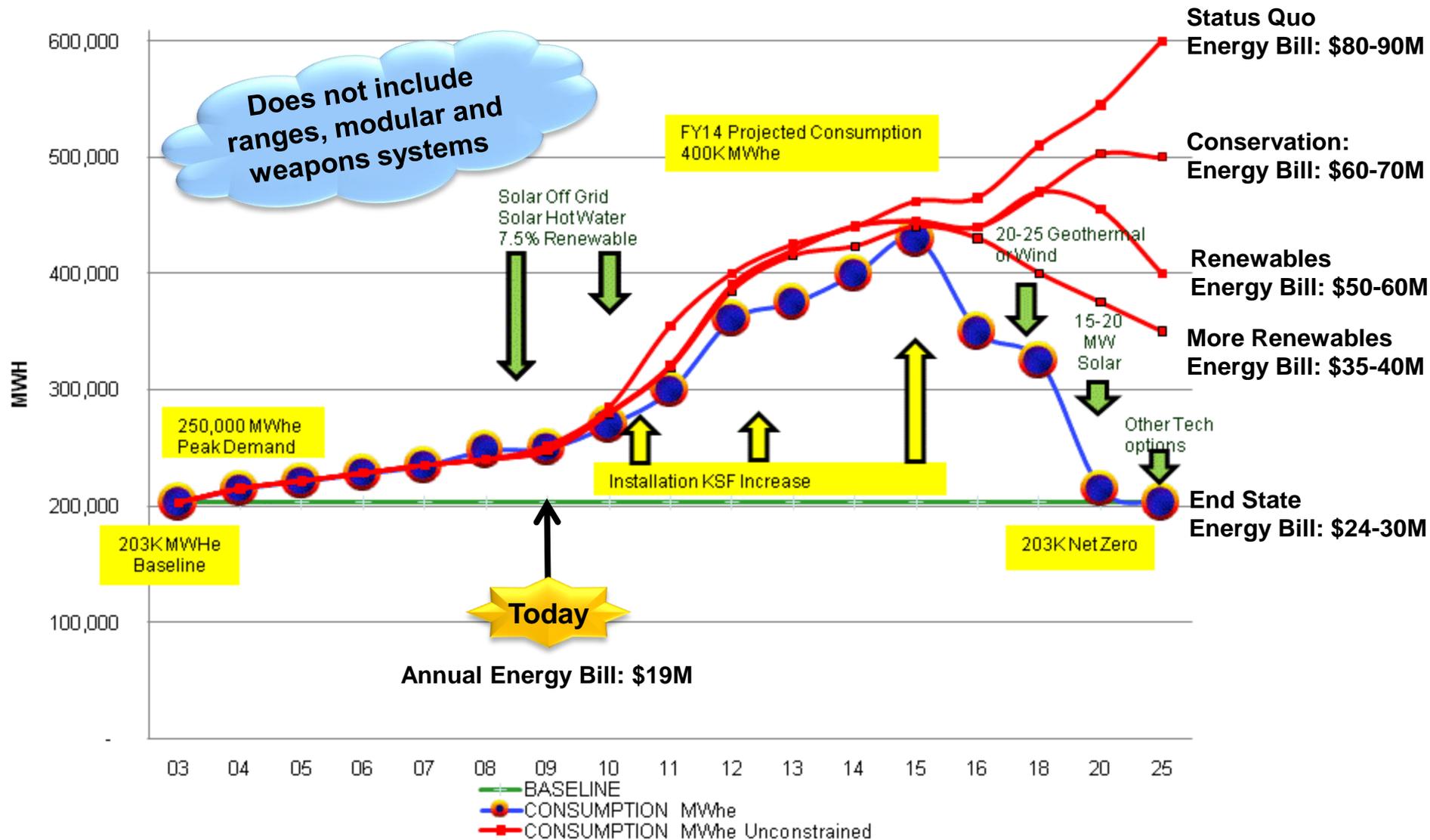
- Post Expansion
 - Installation will become the nation's 4th largest in population
 - 260% total population growth (from 2005 to 2012)
 - More than \$4B in construction doubling building space from 10 to 20 million sq. ft.
- Opportunities Explored
 - Improve energy services
 - Efficient energy use
 - Energy security

Recommendation Topic Areas		Time Frame*
New Construction		Mid-term
Renewable Power and Energy		
	Solar Hot Water	Near-term
	Solar Photovoltaic Power Plant	Near-term
	Geothermal Power Plant	Long-term
	Integrated Municipal Solid Waste/ Concentrated Solar Power Plant	Long-term
	Wind Farm Power Plant	Long-term
Transportation Planning and Energy Use		Mid-term
Installation Energy Management		Mid-term
Installation Energy Surety and Critical Infrastructure Planning		Near-term
Existing Infrastructure		Near-term

* Near-term = FY 09-10, Mid-term = FY 09-12, and Long-term = FY 09-15.



Ft. Bliss Energy Milestone Projection

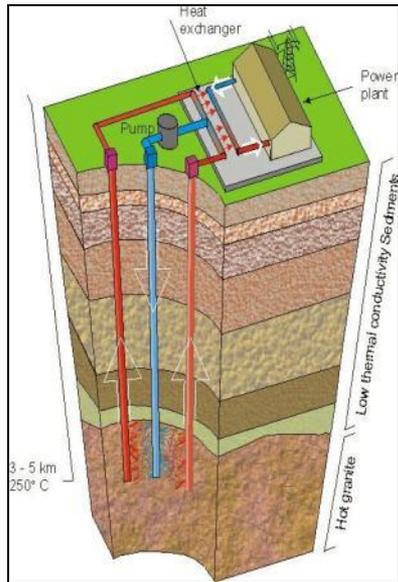




Geothermal Example – Ft Bliss



McGregor Range Base Camp



**Training
Mission
Continues**

- The best evaluated in the Army renewable assessment
- 1996 test wells found 170° - 190°F water
- Minimized environmental impacts
- Takes the base camps and other training camps off the grid
- Cost effective – once implemented, price is fixed
- Great potential for PPP venture



Tactical Fuel Logistics & Protection



EXAMPLE

2007 Kuwait/OIF/OEF Fuel to FOB (M gal)...	431
Fuel trucks needed.....	140,075
Convoys needed.....	9,332
Soldiers per convoy trip (Fuel trucks, protection, other support).....	120
Soldier trips.....	644,360
Fewer Soldier trips.....	6,444

(Resulting from 1% Fuel Savings)



Deployed Operations – “Beans, Bullets and BTUs”



The Challenge

- Fuel logistics, management and protection are key for contingency operations

Key Energy Opportunities

- Distributed Generation
- Tactical Grid Management
- Renewable/Alternative Power
- Lightweight, Flexible, Structural, or Integrated Solar
- Alternative Fuels
- Standardized Deployable Kits
- High Efficiency Systems
- Leveraging Local Opportunities





Energy Management: Challenges



Large energy consuming facilities are not included in real property but count against reduction goals

Fort Bliss
Large Area Maintenance Tent



Growing trend of deploying these types of facilities across the enterprise

Fort Hood Simulators



Fort Leonard Wood Tent





Army Energy Security Strategic Communications



• Milestone Events and Announcements

- **24 Feb 10 Congressional Hearing** on Energy Security / Installation Energy - House Armed Services Committee - Subcommittee on Readiness: Members are supportive of renewable energy efforts, only if they do not negatively impact core training and readiness missions.
- **2009 Energy Awareness Month** – SMA, CSA, SA Tri Star Signed Note/endorsement (Oct 09)
- **Ft Irwin solar energy project/developer selection/ceremony** – ASAIE, BG Abrams, Pentagon reporters (July/Oct 09)
- **Neighborhood Electrical Vehicle (NEV) Announcement/Delivery at Ft Belvoir** – SA, ASAIE, ACSIM, SMA, Cong Reps (Jan 09)

• Conferences and Panel Discussions

- National Academy of Sciences – Dep. Asst. Sec. (Dec 09/Jul 09)
- EPA (Nov 09)
- AUSA – Acting ASAIE (Oct 09)
- Association of Defense Communities (Aug 09)
- Asia Pacific Clean Energy Summit (Aug/Sep 09)
- Producers Guild of America (Jun 09)
- Center for Naval Analysis (Nov 09)
- Australian Embassy (Nov 09)
- Department of Justice (Oct 09)
- GovEnergy (Aug 09)
- Reserve Officers Association (Jun 09)
- Constellation Energy meeting (Jun 09)

• Congressional Briefings

Briefings to individual members

- Representative Giffords, AZ
- Representative Delahunt, MA
- Representative Rogers, AL
- Representative Quigley, IL

Congressional Staff Delegation Visits:

- Fort Irwin, CA (27-29 Jan 10)
- Fort Knox (Oct 09)
- Fort Bliss (Jul 09)
- Fort Carson (Jul 09)

Congressional Staff Interactions/Briefs

- HASC and SASC, Ft Irwin Solar Energy project brief (Dec 09)
- HASC and SASC, Energy RDT&E brief (May 09)
- AUSA Staffer Tour, (Oct 09)

• White House Interaction

- National Security Council (14 Jan 10)
- Council of Environmental Quality (Dec 09)



EO 13514 – October 2009



- Agencies provided to CEQ and OMB a Scope 1 and 2 absolute GHG emissions reduction goal for 2020 from 2008 baseline – 34%.
 - Scope 1 – Direct emissions by an agency.
 - Scope 2 – Direct emissions from electricity, heat, or steam purchased by an agency.
 - Scope 3 – Emissions from “sources not owned or directly controlled by a Federal agency but related to agency activities.
- Excluded direct emissions from vehicles, vessels, aircraft, and non-road equipment used in combat support, combat service support, tactical or relief operations, or training for such operations.
- Subject to the exemption authority described in Section 18, emissions from combat and tactical vehicles will need to be included in the inventory.
- DOD Senior Sustainability Officer (SSO) is USD (AT&L)
- Army SSO is the Undersecretary (USA) Dr. Joseph Westphal



Upcoming Energy Security Events



- June 2010: Fort Bliss Energy Exposition
- August 2010: GovEnergy Conference
- August 2010: Army Energy Training Workshop
- October 2010: Energy Awareness Month
- October 2010: Association of the United States Army (AUSA) Meeting
- 4th Qtr 2010: 2 Star Advisory Board Mtg / Senior Energy Council Mtg



Conclusion



A New Energy for America's Expeditionary Army

- The ***Army is answering and leading*** the call to the nation to face one of the great challenges of our time: confronting our dependence on foreign oil, addressing the moral, economic, and environmental challenge of global climate change, and building a clean energy future that benefits all Americans.
- ***Leveraging the inter-agency process*** to lead in the transformation of the ways we produce and use energy for the sake of our environment, our economy, and our security.
- Continue to ***lead by example in using public and private cooperation*** to meet our nation's security needs.



Office of the Assistant Secretary of the Army (Installations & Environment)

Energy Security and You

Mr. L. Jerry Hansen

Senior Official performing the duties as the ASA(I&E)

Army Senior Energy Executive

www.asaie.army.mil

30 March 2010