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# Financing Energy EUL Projects

Alan D. King

Office of the Assistant Secretary of the Army for Installations and  
Environment (Energy & Partnerships)

# TOPICS

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- Army EUL Examples
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# Army Energy Security Implementation Strategy

## Legislation

- EPLA 2005
- EISA 2007
- NDAA 2009

## Executive Order

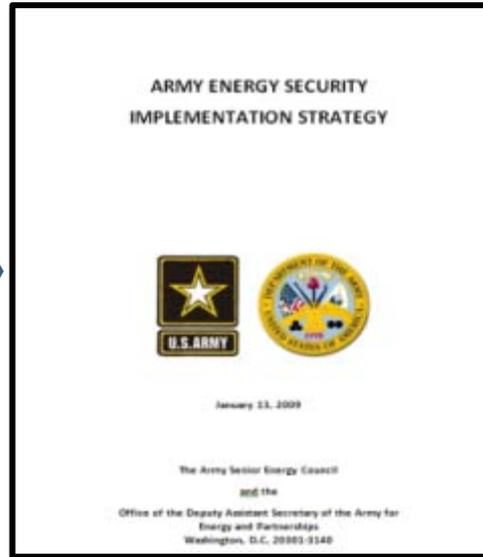
- EO 13423
- EO 13514

## OSD Policy

- DODI 4170.11, DOD Managers Handbook

## Army Policy

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



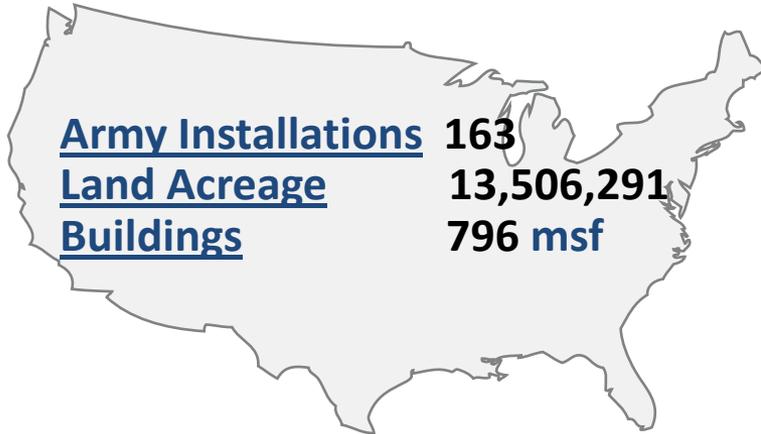
## Energy Security Goals (ESGs)

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**

**GovEnergy 2010**

# Renewable Energy Project Potential



## U.S. Army in 2009:

**Overall Energy Consumption = 190 Trillion Btu**  
**Energy Costs = \$3 Billion**  
**66 Renewable Energy Projects Operating**  
**Renewable Energy Generation = 363 Million Btu**

## Currently prioritizing installations for Renewable Energy Development based on:

- Resource potential
- State regulations
- Federal and State incentives
- Payback periods and levelized cost of electricity
- Regulatory considerations

**Top States for Renewable Energy Development:  
CA, NV, NM, WA**

## Our Strategy Depends on Partnerships!

“A number of Army installations [...] have significant potential for development of alternative and renewable energy programs. Providing access for industry to such opportunities “inside the fence” is a factor that the Army can take advantage of to build these partnerships.”

(Army Energy Security Implementation Strategy)

## Army's Partners in Identifying Installation Renewable Opportunities

Pacific Northwest  
NATIONAL LABORATORY



U.S. DEPARTMENT OF  
**ENERGY**



LMI  
GOVERNMENT CONSULTING

NREL  
National Renewable  
Energy Laboratory

Booz | Allen | Hamilton

**GovEnergy 2010**

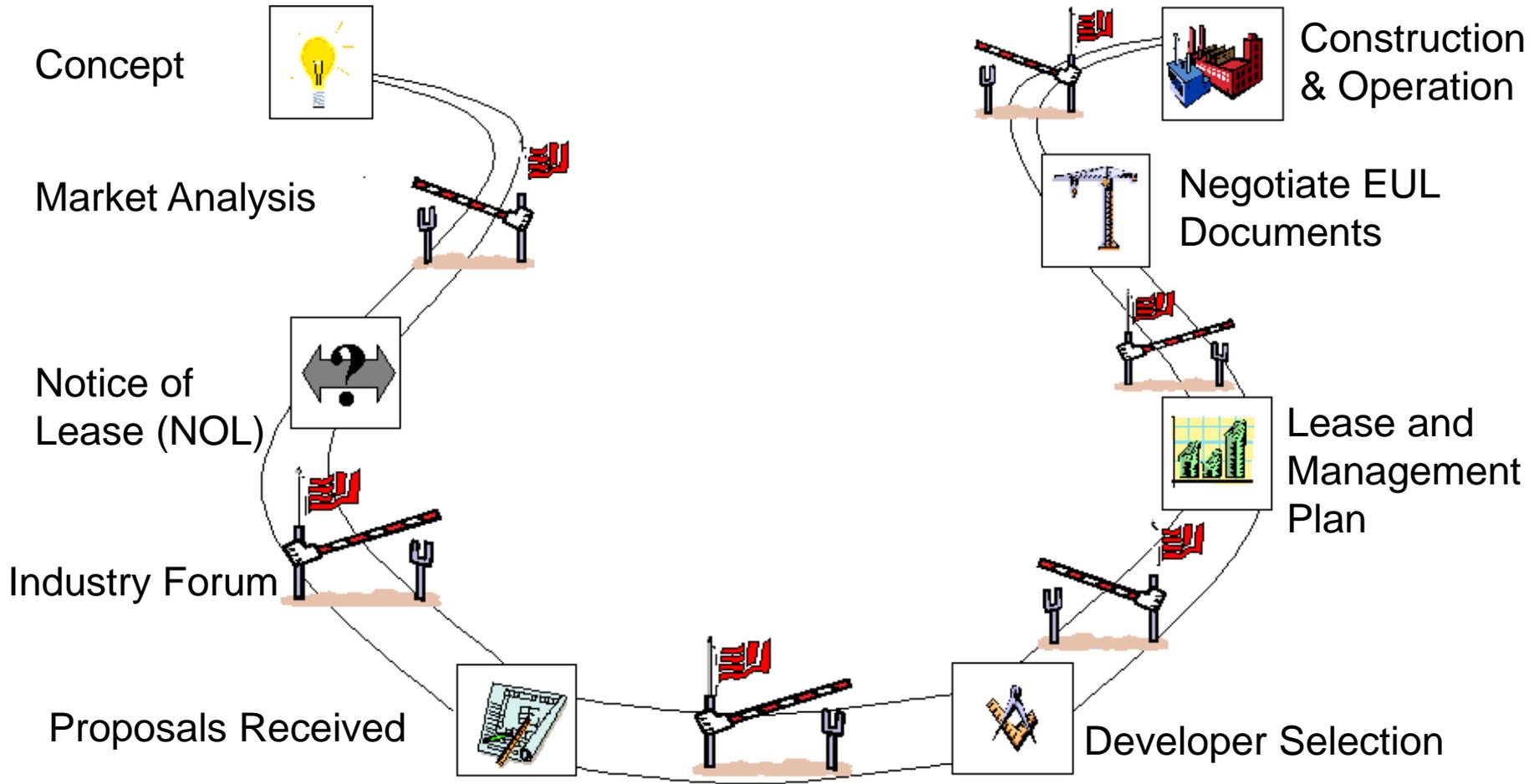
# Army Installation Energy Security Resourcing Requirements

- **Estimated funding requirement (FY2012 – FY2016): \$12.6 Billion**
  - **Planned appropriated funds (MILCON, ECIP): \$ 3.2 Billion**
  - **POM Energy Security support (critical O&M): \$ 0.7 Billion**
    - Renewable energy generation
    - Energy efficiency improvements
    - Utility modernization
  - **Private sector financing target : \$ 8.7 Billion**

# Enhanced Use Lease (EUL)

- Managed by the U.S. Army Corps of Engineers, Baltimore District
- To date, the program has helped private development execute a variety of projects such as
  - General Motors Hot Weather Test Track in Yuma, Arizona
  - Central Utility Plant in Frederick, Maryland
  - Administration space renovation at Fort Sam Houston
  - Business Park at Fort Leonard Wood
- The first Army EUL for Renewable Energy selected a partner for Fort Irwin on 30 July 2009 for a solar electric power plant

# Contracting Example: EUL Process Overview



# Army Energy EUL Project Inventory

- Completed—
  - Fort Detrick, MD (developers Keenan/Chevron)
- Under Development—
  - Fort Irwin, CA (developers: Clark/Acciona)
  - Watervliet Arsenal, NY (developers: Siemens/HP)
  - Camp Navajo, AZ (developers: Concourse/Bostonia)
- Feasibility Determinations—
  - Yuma Proving Ground, AZ
  - Schofield Barracks, HI
  - Fort Richardson, AK
  - Radford Arsenal, VA
  - Pueblo Chemical Depot, CA
  - Sierra Army Depot, CA

# EUL Example – Fort Detrick, MD Central Utility Plant

## Steam

-- Five, dual-fuel, high-efficiency boilers, producing 41,000 lb/hour at 125 psig steam

## Chilled Water

-- Two, dual-compressor, 1,800-ton electric centrifugal chillers

-- 2.5 million gallon, 27,000 ton-hours thermal energy storage tank, producing 6,000 equivalent tons of chilled water capacity.

## Power Conditioning and Back-up Generation

-- Five 1.67-MVA diesel uninterruptible power supply (UPS) units mechanically coupled to rotary flywheels and two 2.0-MVA diesel generators.



# Fort Detrick, MD Central Utility Plant EUL

- Most secure district energy plant in DoD's inventory
- Directly supports \$1 billion in world-class federal research and science assets – bio-safety level 3 & 4 labs
- Construction cost: \$103 million
- Designed/built in 18 months – April 1, 2008 operational
- Reliability and redundancy – 99.999% uptime warranty on conditioned power & thermal energy

# EUL Example – Fort Irwin, CA

- **Fort Irwin 500 megawatt solar plant** will allow Fort Irwin to be energy secure and capable to operate off the commercial power grid by 2016.
- **Project includes five identified sites to be completed in 5 phases by 2022.**
  - Contribute to achieving Army's renewable and energy efficiency goals
  - Deliver in-kind consideration to Fort Irwin
- **Key Partners and Stakeholders:**
  - Clark Energy Group / Acciona Solar Power
  - State of California
  - Southern California Edison
  - San Bernadino County
  - Los Angeles Department of Water and Power



# Fort Irwin EUL Development Schedule

- Development plan proposes to install 20-45 MW of solar power by 2014, an additional 80 MW by 2015, an additional 160 MW by 2016, and an additional 300 MW by 2017 for a total of 585 MW
- Additional development in 2018 and beyond is dependent on successful permitting, securing additional water resources and other factors
- Project development across several phases will be managed concurrently to ensure that plants are developed as quickly and efficiently as possible

**MASTER DEVELOPMENT PLAN SCHEDULE BY LOCATION AND PLANT TYPE**

Phase	IA	IB	IC	II	IIIA	IIIB	IV	V
Location	Main Gate			Goldstone South	Red Pass Lake		Goldstone Central	Goldstone North
Size (MW) (approximate)	20 –45 <sup>1</sup>	80	160	200 --CSP 100 --PV	200	110	200 –300	250 –350
Technology	PV	CSP	CSP	CSP and PV	CSP	PV	CSP and PV or Future Tech	CSP and PV or Future Tech
Online Date	2014	2015 <sup>2</sup>	2016 <sup>2</sup>	2017 <sup>2,3</sup>	2018 <sup>2,3,4,5</sup>	2018 <sup>2,3,5</sup>	2019 <sup>3</sup>	2022+ <sup>3</sup>
Notes	<p>1 Base case phase size is 20 MW                      2 Presumes EIS/EIR permitting completed within 2 to 3 years                      3 Project phase size/timing tailored to market needs; can be accelerated and developed in parallel with earlier phases                      4 CSP development is not planned for this site unless and until all potential mission conflicts are resolved                      5 Presumes land rights for the Red Pass Lake “withdrawn lands” area is extended to be consistent with 50 year EUL</p>							

# Conclusion

## *New Energy for America's Army*

### Our Strategy depends on Partnerships!

- ***Advocate for changes to emerging policies*** at the federal and state levels.
- ***Develop approaches that afford flexibility and creativity*** in defining and executing projects
- ***Leverage Army land, legal authorities, and purchasing power*** to incentivize private capital & expertise to expedite and expand development of renewable energy sources and achieve energy efficiency