



---

# **Sustainable Infrastructure in the DoD: Energy and **Green** Building**

**Col Bart Barnhart  
ODUSD(I&E)  
July 15, 2010**



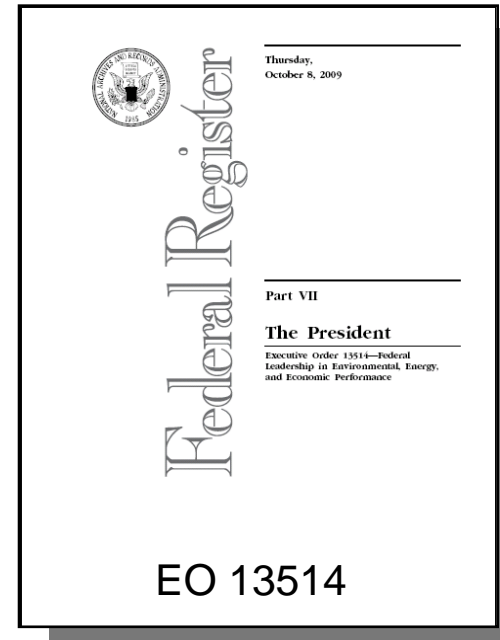
# What is Sustainability ???

## ➤ At the Federal level

- ◆ **Vision:** ... *create a **clean energy economy** to increase National **prosperity**, promote **energy security**, protect taxpayer **interests**, and **safeguard our environment** ...*
- ◆ **Definition:** ... *create/maintain conditions where humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of future generations*

## ➤ DoD definitions (*note the mission focus!!!*)

- ◆ **DoD Dictionary (Joint Pub 1-02):** *Ability to maintain the necessary level and duration of operational activity to **achieve military objectives***
- ◆ **Unified Facilities Criteria:** *Capacity to **continue the mission without compromise** ... **operate** into the future **without decline** – either in the mission or the natural and man-made systems that support it*



**DoD sees a strong linkage between Sustainability and accomplishing our nation's military objectives**



# Sustainability – Mission

## The Linkup

---

*Energy security for DoD means assured access to reliable energy and the ability to protect and deliver sufficient energy to meet operational needs*

*Increasing renewable energy use and reducing demand improves operational effectiveness, reduces GHG emissions, protects from energy price fluctuations*

*US forces rely on support from US bases. DoD will...promote efficiency investments to ensure bases are prepared for prolonged outages*

*DoD will fully implement the statutory requirement for the energy efficiency KPP and fully burdened cost of fuel set forth in the 2009 NDAA*

*Energy efficiency is a force multiplier...it increases range and endurance of forces and reduces forces diverted to protect energy supply lines*



# Sustainability – Mission

## The Linkup

---

### ➤ Sustainability enhances DoD operational capability

- ◆ Secures warfighter *reachback* because energy conservation & renewable energy reduce *grid dependency* & promote *energy security*
- ◆ Reduced installation operational costs increases funds available for direct mission needs

### ➤ Sustainability reduces DoD operational risk

- ◆ Low fuel appetite = Fewer convoys
- ◆ Fewer convoys = Less risk
- ◆ Fully burdened cost of fuel
  - Includes cost to get fuel to fight; some estimates say \$400/gal
  - Iraq, May '08; 44 tanker trucks, 220Kgal lost to insurgent attacks





# Sustainability at the Federal Level

---

- Federal sustainability = EO 13514
- Drives each Federal Agency to build a Strategic Sustainability Performance Plan (SSPP)
- SSPP Agency Goals (10) – 4 new, 6 holdovers from EO 13423
  - ◆ Holdovers include high performance sustainable buildings requirements
  - ◆ New goals require Greenhouse Gas (GHG) emission reduction targets for Scope 1, 2, 3 emissions
    - Reduced GHG emissions = Reduced energy consumption
    - **Operational energy exempt**



Hydropower = low GHG emissions



# Sustainability at the Federal Level

---

## ➤ Agency Goals

- ◆ **Set scope 1 & 2 Greenhouse Gas (GHG) emission reduction target**
- ◆ **Set scope 3 GHG emission reduction target**
- ◆ **Accomplish comprehensive GHG emissions inventory**
- ◆ **Advance regional and local integrated planning**
- ◆ **Improve water efficiency and management**
- ◆ **Promote pollution prevention and eliminate waste**
- ◆ **Implement high performance sustainable buildings**
- ◆ **Advance sustainable acquisition**
- ◆ **Promote electronics stewardship**
- ◆ **Sustain environmental management – EMS**

**Also in  
EO 13423**



# Federal Sustainability Depends on DoD

---

- **Over 3M people** (nation's largest employer)
  - ◆ 1.3M active duty military
  - ◆ 684K civilian employees
  - ◆ 1.1M Guard/Reserve
- **Operating in**
  - ◆ All 50 States & 7 US territories
  - ◆ More than 160 countries
- **US single largest energy user**
  - ◆ ~0.9% of U.S. energy
  - ◆ ~80% of federal energy
- **Lots of Buildings**
  - ◆ 307K bldgs; ~75% of Fed bldgs
  - ◆ >2.2B SF; ~67% of Fed footprint
  - ◆ Replacement value >\$720B; ~47% of Fed Govt repl value
  - ◆ ~1/3 of DoD bldgs >50 yrs old
  - ◆ By 2025, 2/3 of DoD bldgs will be >50 yrs old
- **28.6M acres**
  - ◆ 593 installations & 5,579 sites
  - ◆ If DoD were a state, we'd be as large as ...



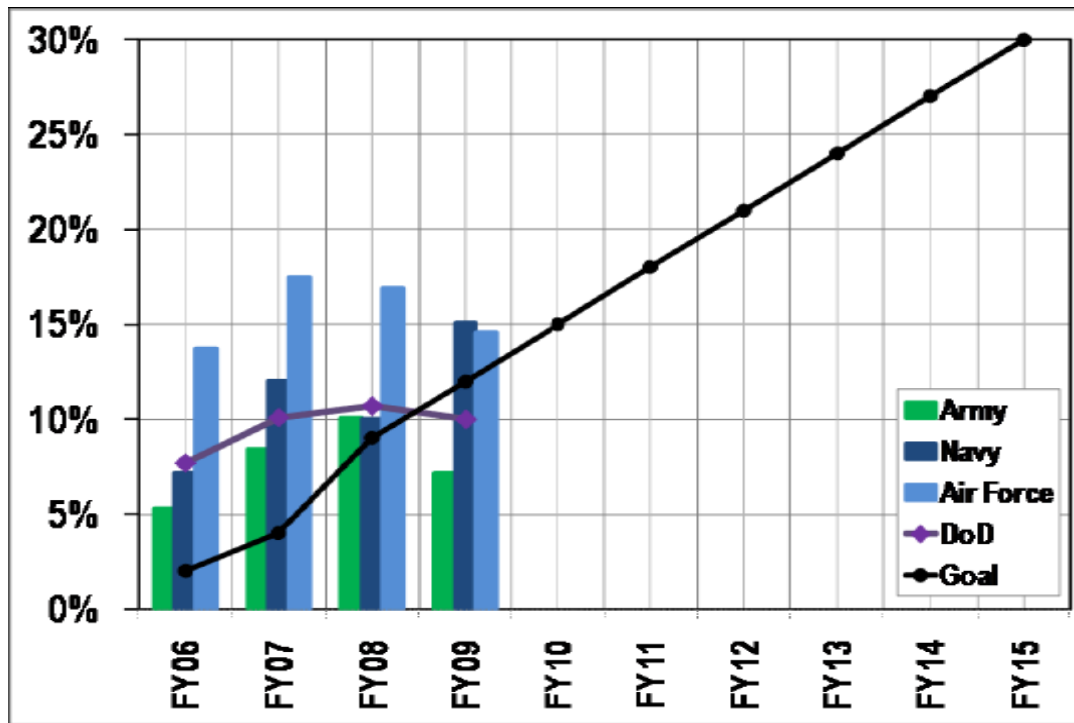


# DoD Sustainable Infrastructure

## Energy Challenges

➤ **Reduce facility energy consumption 30% by FY15, 37.5% by FY20**

◆ **DoD Energy Intensity**

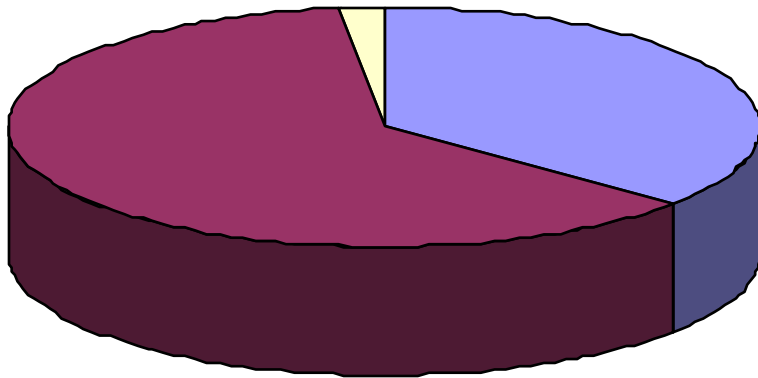


◆ **Will the current level of investment in ECIP/ESPC/UESC be enough to get to 37.5% energy reduction by FY2020???**



# DoD Energy Consumption

## GHG (CO<sub>2</sub>eq)



■ Facility (36%)

■ mobility & generators (62%)

■ fleet fuel: non-tactical (2%)

- **GHG emission reductions will come from facility energy and non-tactical vehicle fuel**
- **\$13.4B direct costs in 2009**
  - ◆ **\$9.6B fuel (72%)**
    - **Current optempo high**
  - ◆ **\$3.8B facilities (28%)**
- **Energy GHG Emissions**
  - ◆ **73.5 million MT CO<sub>2</sub>eq in 2008**
    - **1.3% of US emissions**
    - **Would be in top 40 countries**



# DoD Sustainable Infrastructure

## Green Building Challenges

---

➤ 15% of existing DoD bldgs (>5kSF) conform to **Guiding Principles** (GP's) by FY15



➤ EO directs continual progress to **GP** conformance for 100% of DoD bldgs



# DoD Sustainable Infrastructure

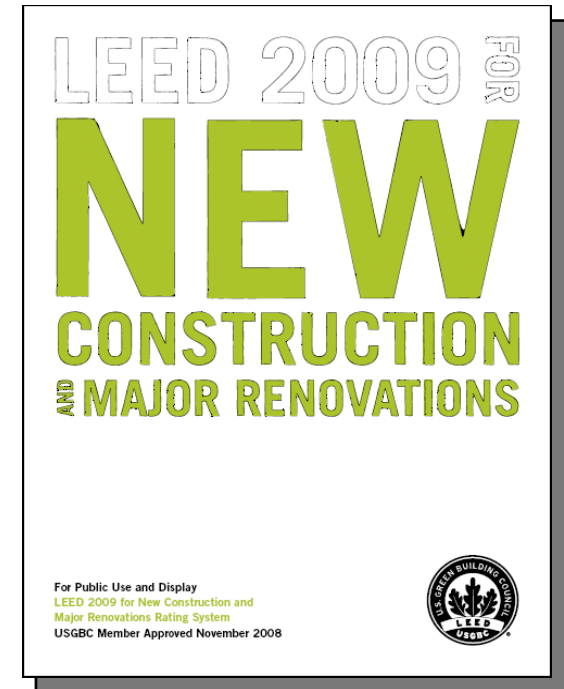
## Green Building Challenges

---

- The **Guiding Principles** (GP's) are:
  - ◆ Employ Integrated Design Principles
  - ◆ Optimize Energy Performance
  - ◆ Protect and Conserve Water
  - ◆ Enhance Indoor Environmental Quality
  - ◆ Reduce Environmental Impact of Materials.

- The 5 GP's are similar to the 5 categories that comprise USGBC's LEED Green Building Rating System

- ◆ Sustainable Sites, Energy and Atmosphere, Water Efficiency, Indoor Environmental Quality, Materials and Resources
- ◆ Bonus categories: Innovation in Design, Regional Priority



***Conformance with the Guiding Principles is roughly equivalent to the "LEED certified" level***



# DoD Sustainable Infrastructure

## Green Building Challenges

- **15% of existing DoD bldgs (>5kSF) conform to **Guiding Principles** (GP's) by FY15**
  - ◆ DoD bldgs >5Ksf = 75,740;  
15% = 11,361 bldgs
  - ◆ Pushes whole bldg renovations; bldg must meet all GPs to be conformant
  - ◆ Not “standard;” we typically do NOT renovate an entire building at one time; some HVAC/electrical commonly left out
  - ◆ Meeting 15% goal w/o SRM increase reduces flexibility for installation commanders
- **EO directs continual progress to **GP** conformance for 100% of DoD bldgs**





# DoD Sustainable Infrastructure

## Other Challenges

- **Must get immediate handle on training our “sustainability practitioners!”**
  - ◆ **Our building maintainers should be as smart about sustainable systems as our engineers**
  - ◆ **No good to build to the GP’s, LEED-Silver if our people can’t keep the systems at optimum efficiency**





# DoD Sustainability Action Plan

---

- **USD(AT&L) is the DoD Senior Sustainability Officer**
- **USD(AT&L) set up Senior Sustainability Council; DUSD-level; first meeting was May 17th**
- **DoD Strategic Sustainability Performance Plan (SSPP) describes how DoD will execute EO 13514 agency goals**
  - ◆ **Success will require some level of budget transformation, but FY12 budget is nearly “in the can;” first real impact will be FY13!**
  - ◆ **OMB says – Tell us how much it will cost, we’ll help you find \$\$\$**
  - ◆ **DoD submitted SSPP to OFEE & OMB on 2 June**
- **DoDI to follow and codify sustainability policy**
- **SSPP review annually**



# DoD Sustainability Hierarchy



**SECDEF**  
Dr. Robert M. Gates

**DEPSECDEF**  
Mr. William J. Lynn III



**USD(AT&L)**  
Dr. Ashton B. Carter

*DoD Sustainability is more than just I&E*



**DUSD(I&E)**  
Dr. Dorothy L. Robyn

**DUSD(A&T)**

**Director,  
Op Energy  
Plans & Pgms**

**DUSD(L&MR)**

**Chemical &  
Material Risk  
Management**

**Facilities  
Investment &  
Management**

**Environmental  
Management**

**Facilities  
Energy**



# **DoD Sustainable Infrastructure**

## **Action Plan**

---

### **➤ DoD Sustainable Infrastructure Policy**

- ◆ **“50,000 foot level;” avoids major redirect to DoD Components; drives DoD to green building renovation and O&M (GP’s & LEED!!)**
- ◆ **Stands up Infrastructure Sustainability Council**
- ◆ **Sets major renovation threshold for Guiding Principle compliance**
- ◆ **Sets LEED point standard for energy efficiency, water conservation**

### **➤ Promote DoD outreach**

- ◆ **SAME Sustainable Installations Subcommittee**
- ◆ **Unveil DoD roadmap to comply with EO 13514 and public laws**



# Questions

---



**Contact Info:**  
**Col Barton V. Barnhart**  
**ODUSD(I&E)/EM**  
**(703) 604-1831**  
**[barton.barnhart@osd.mil](mailto:barton.barnhart@osd.mil)**