



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

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ODUSD(I&E)
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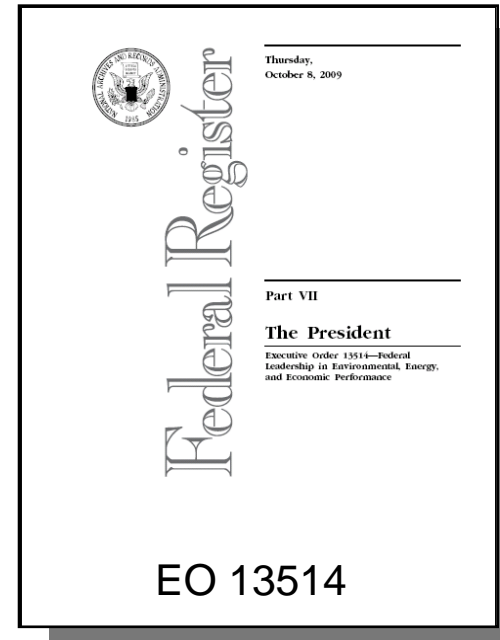
What is Sustainability ???

➤ 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 ...

Pennsylvania

28.7M acres



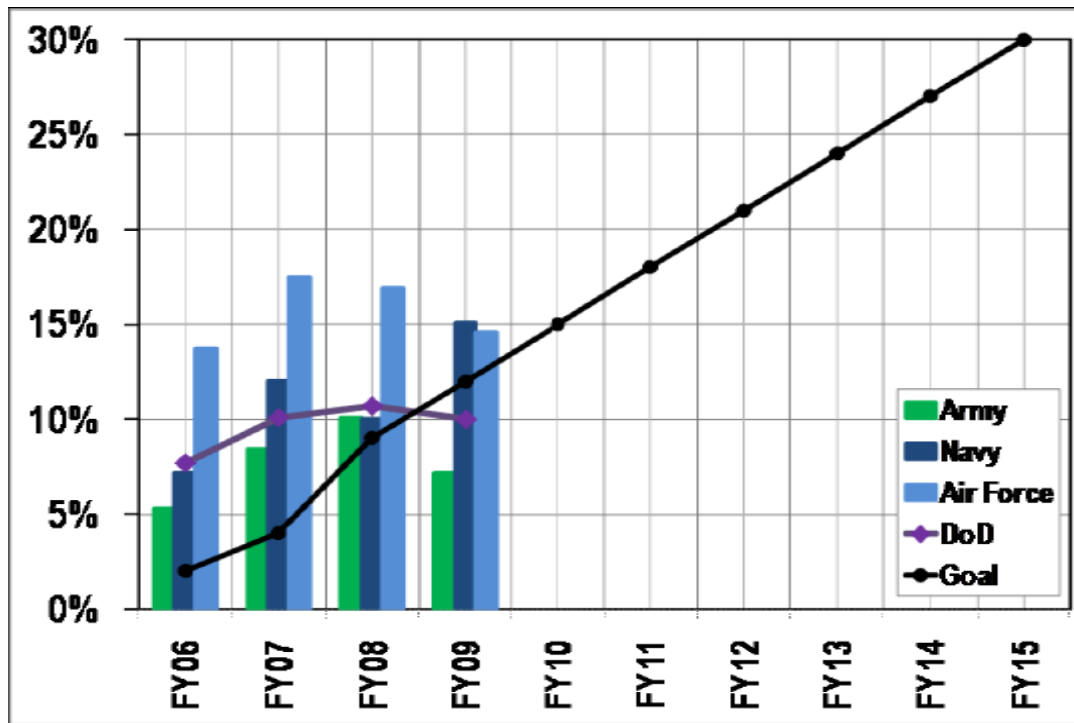


DoD Sustainable Infrastructure

Energy Challenges

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

- ◆ **DoD Energy Intensity**

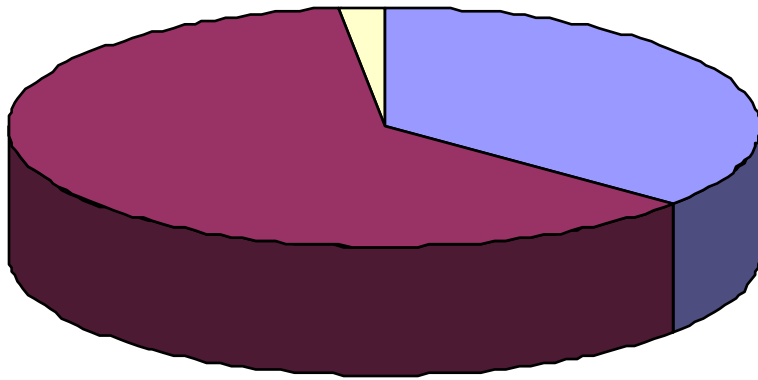


- ◆ **Will the current level of investment in ECIP/ESPC/UESC be enough to get to 37.5% energy reduction by FY2020???**



DoD Energy Consumption

GHG (CO₂eq)



■ 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 CO₂eq 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

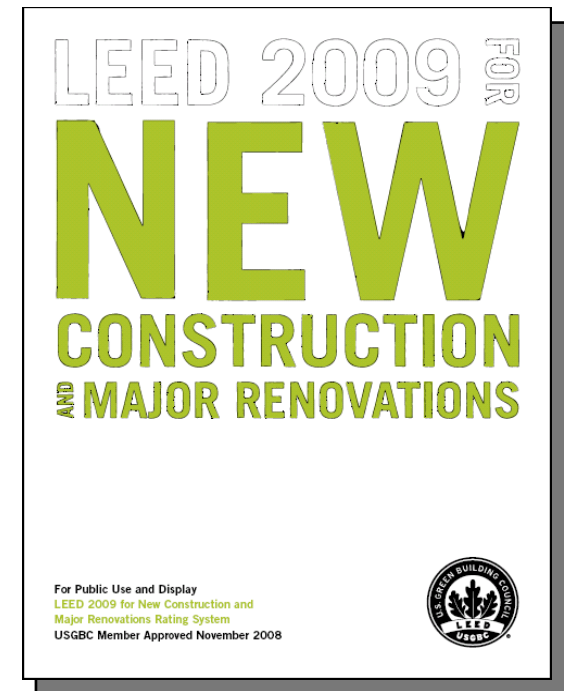
Green Building Challenges

➤ 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



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