DoD Sustainable Buildings Strategy

Lt Col Keith Welch
ODUSD(I&E)
Purpose

• Discuss DoD Strategy Evolution:
  – Reduce Total Ownership Cost of Facilities

• Discuss Impact of Recent Events

• Articulate Next Steps
Where We Came From

• Early adopter of green rating systems
• Research shows wide performance variability
• Congress’ perception:
  – DoD is plaque-chasing
  – Green rating systems are NOT cost-effective
• National Defense Auth Act, 2012 – Prohibits LEED Gold or Platinum
• Requires report on cost effectiveness
NRC Report - Findings


- **Finding 1**: no traditional benefit-cost analysis for ASHRAE 90.1-2010, 189.1-2011, LEED or Green Globes.

- **Finding 2**: limited evidence to indicate ASHRAE 189.1-2011 may need to be selectively adopted to be cost effective.

- **Finding 3**: incremental costs to design and construct high performance buildings typically range from 0-8% (relatively small when compared to total life-cycle costs).

- **Finding 4**: analytical approach proposed by DOD has merit as a decision support tool if appropriate data are available.

- **Finding 5**: high-performance buildings can significantly reduce energy and water use (varies by region, climate zone, bldg type).
NRC Report - Findings

• **Finding 6:** Not every individual high-performance building achieved energy/water savings compared to conventional bldgs.

• **Finding 7:** In general, the quantities of energy and water used by a building in operation are greater than predicted by building design models.

• **Finding 8:** DOD can continue improving knowledge about high-performance buildings, decision-support tools, and building models by collecting data on measured energy, water, and other resource use for its portfolio of buildings and by collaborating with others.

• **Finding 9.** Effective operation of high-performance buildings requires well-trained facilities managers.
NRC Report - Recommendations

• **Recommended Approach 1:** Continue to require LEED-Silver or equivalent rating.

• **Recommended Approach 2:** Modify building standards and the application of green building certification systems in ways that are appropriate to DoD.

• **Recommended Approach 3.** Measure the actual performance of the DoD’s high-performance, green, and conventional buildings.

• **Recommended Approach 4.** Use investment approaches that analyze total cost of ownership, full range of benefits/costs, and uncertain future conditions.

• **Recommended Approach 5:** Fund training for facilities managers to ensure effective operation of high-performance buildings.
Wide Variation in Performance
One Solution: A Standard…

Bldg Performance  Max Possible

Minimum Performance

Bldg 1  Bldg 2  Bldg 3  Bldg 4  Bldg 5  Bldg 6  Bldg 7  Bldg 8  Bldg 9  Bldg 10  Bldg 11  Bldg 12  Bldg 13  Bldg 14  Bldg 15  Bldg 16  Bldg 17  Bldg 18
Shortcomings of a Standard
Shortcomings of a Standard
Shortcomings of a Standard
Shortcomings of a Standard

We need a hybrid approach
Raising the Bar

Acquisition, Technology and Logistics

Raise minimum ... Reduce variation ... Maintain flexibility
Development of the Standard

• Intent
  – Provide contract-enforceable requirements
  – Cover all Federal mandates

• Process
  – Drew from existing standards (ASHRAE, UFCs, etc.)
  – Consulted service SMEs
  – Kept cost-effective, widely-applicable items
  – Discarded items if not cost-effective
Next Steps

• Build decision framework
  – Enterprise level
  – Installation level
  – Dr Slaughter’s White Paper (hardcopy)

• Capture data…guide continuous improvement
  – DoD CBECS
  – Standardize project information

• Identify projects that must exceed minimum
Questions?
Back-Up
Backup
What Has Happened

Study:
Cost Effectiveness of Green

DoD
What Has Happened

Study: Cost Effectiveness of Green

DoD

Unified Facilities Criteria High-Performance Bldgs
What Has Happened

Study: Cost Effectiveness of Green

DoD

Unified Facilities Criteria
High-Performance Bldgs

Federal Agencies

Guiding Principle Revisions

Acquisition, Technology and Logistics
What Has Happened

Federal Agencies

- Review of Green Rating Systems
- Guiding Principle Revisions

DoD

- Study: Cost Effectiveness of Green
- Unified Facilities Criteria High-Performance Bldgs

Guidance, indicators, and tools began to converge