

# DoD Sustainable Buildings Strategy

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# 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

- [http://www.nap.edu/catalog.php?record\\_id=18282](http://www.nap.edu/catalog.php?record_id=18282)
- **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

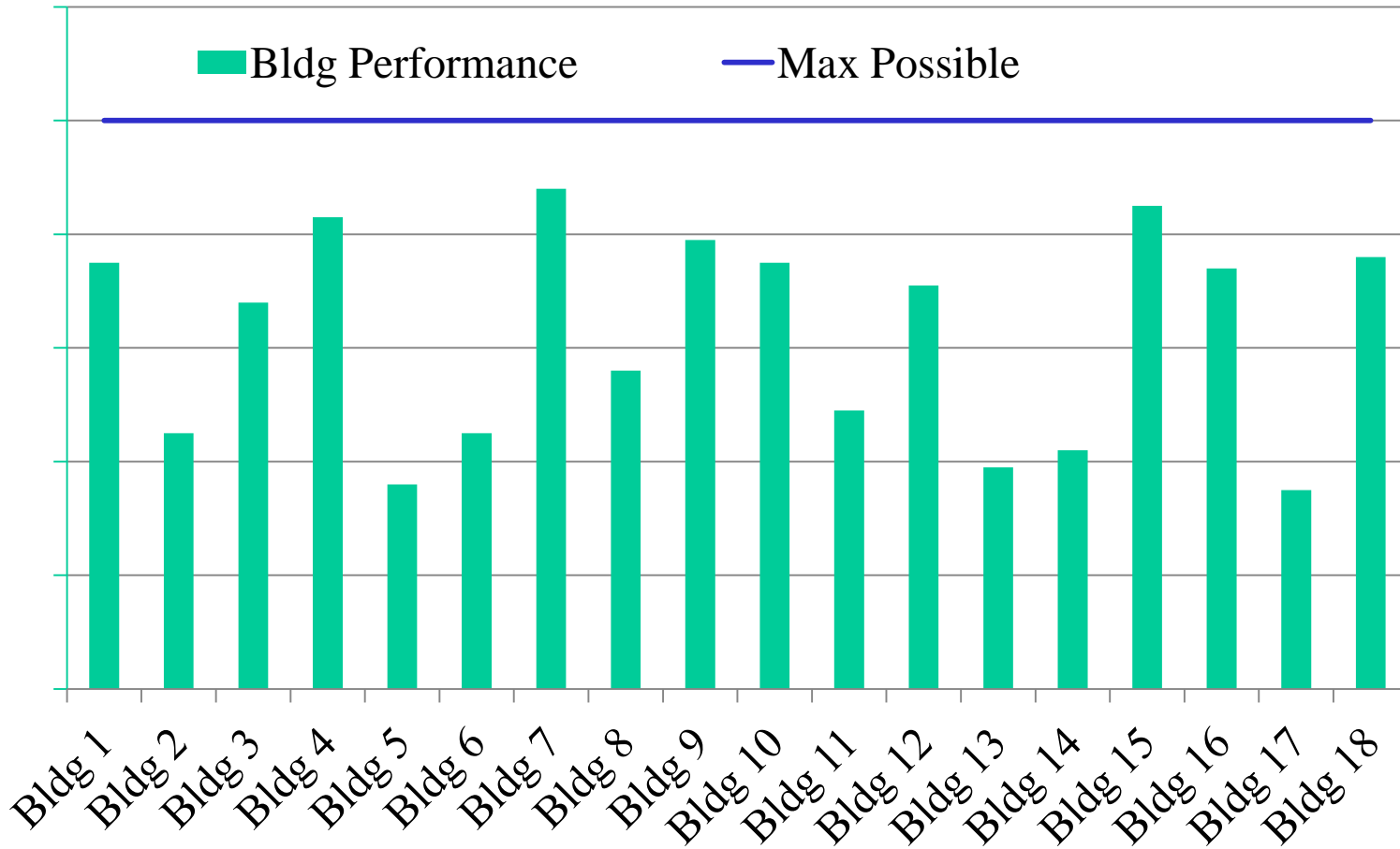
- **Finding 6:** Not every individual high-performance building achieved energy/water savings compared to conventional bldgs.
- **Finding 7:** In general, the quantities of energy and water used by a building in operation are greater than predicted by building design models.
- **Finding 8:** DOD can 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

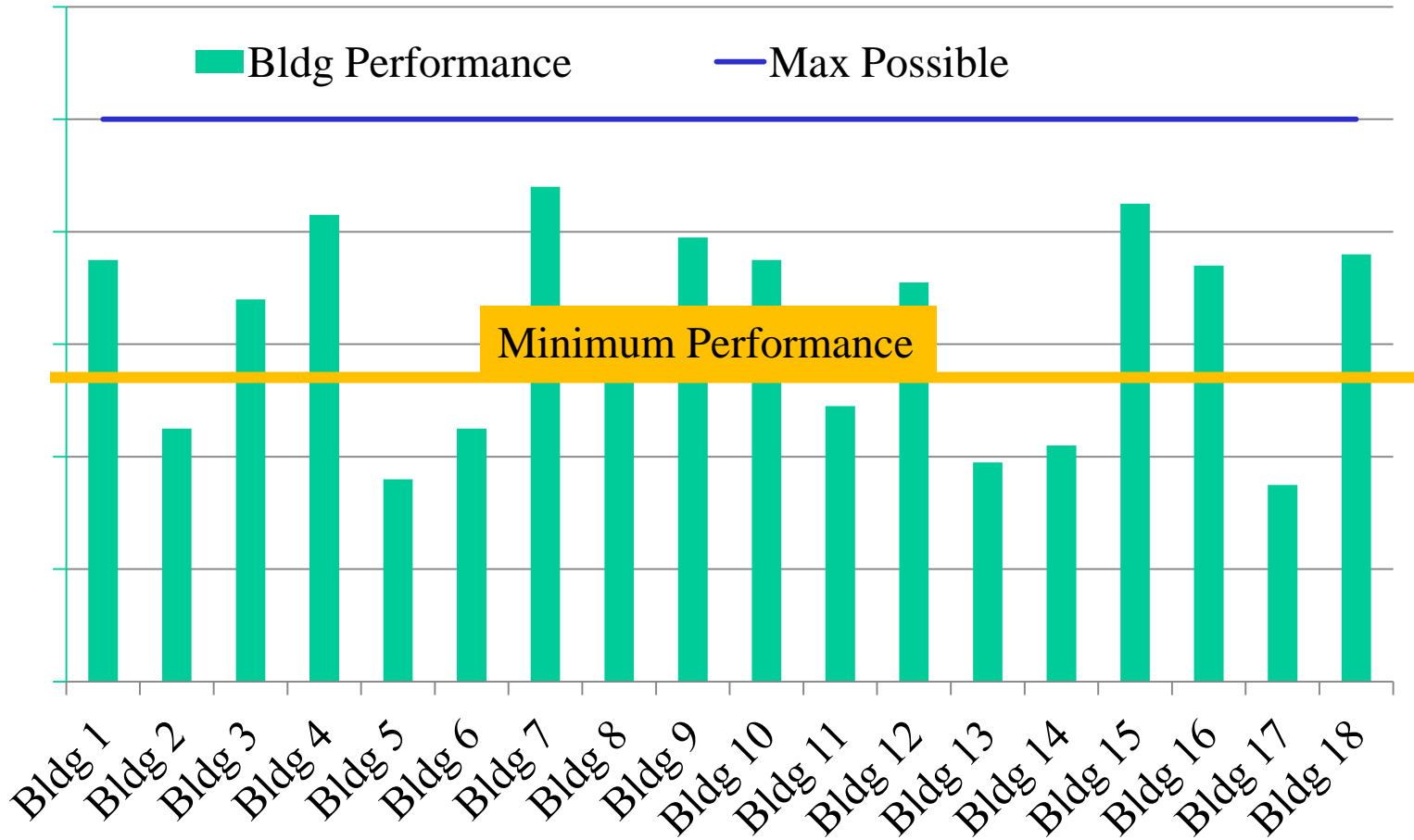
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- **Recommended Approach 1:** Continue to require LEED-Silver or equivalent rating.
- **Recommended Approach 2:** Modify building standards and the application of green building certification systems in ways that are appropriate to DoD.
- **Recommended 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

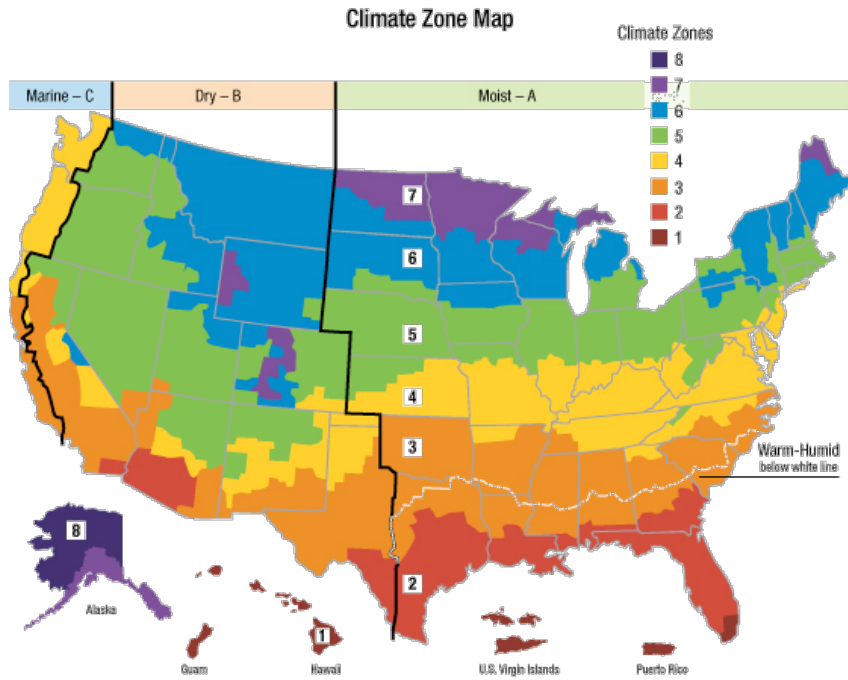


# One Solution: A Standard...

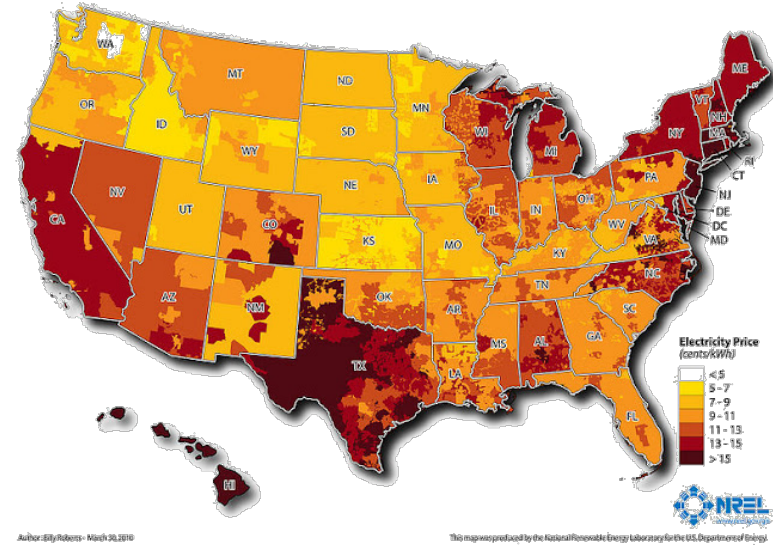
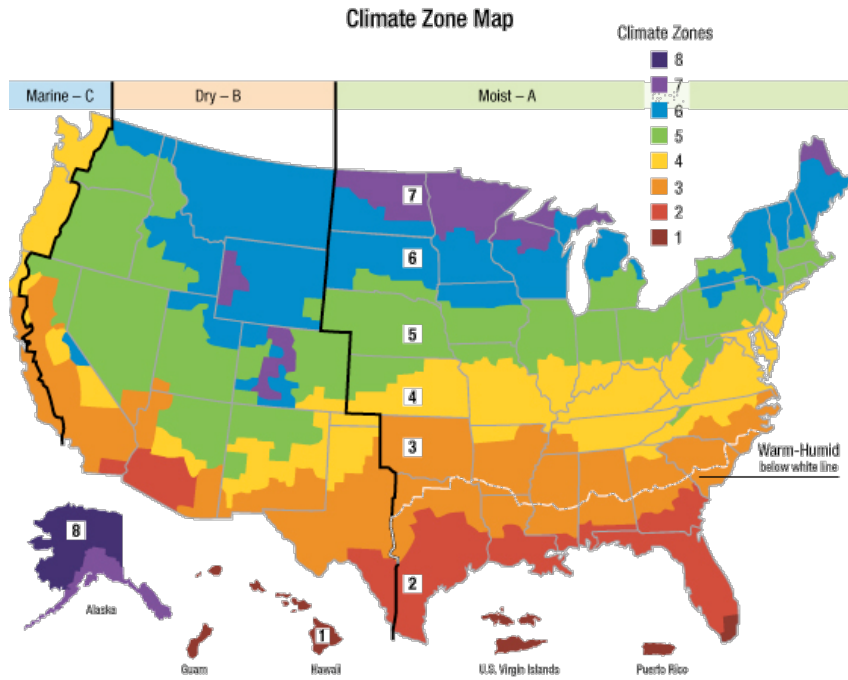




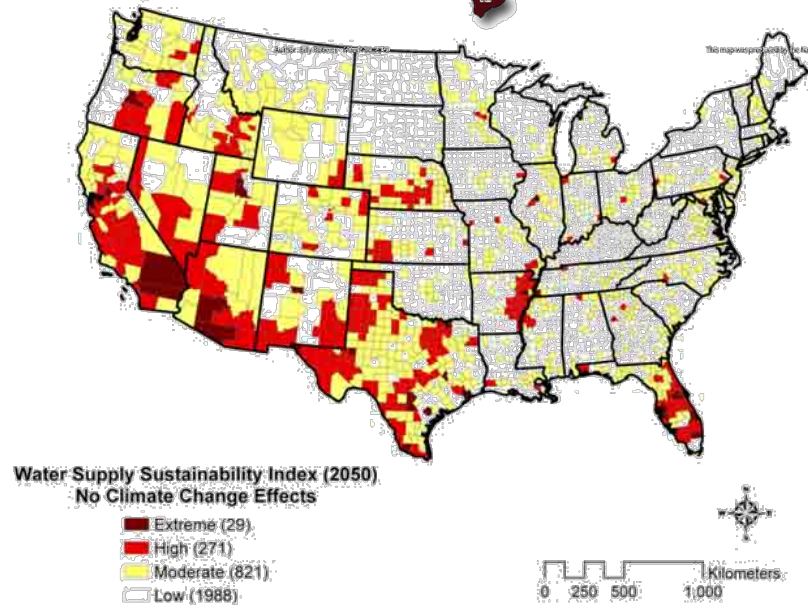
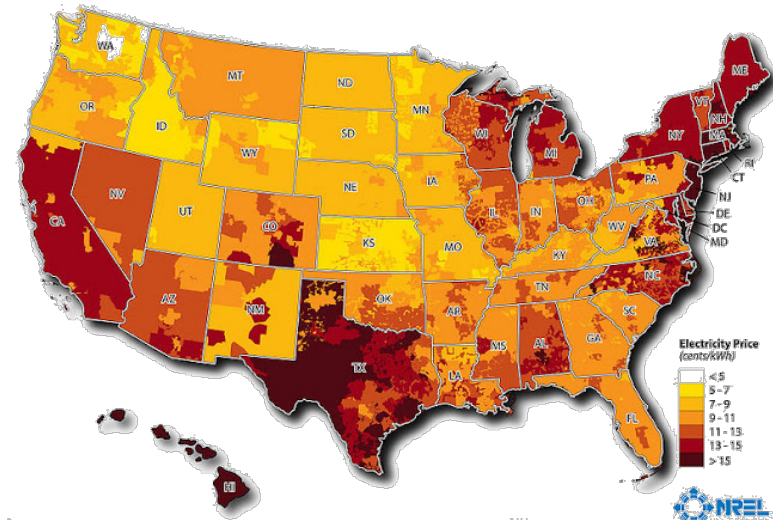
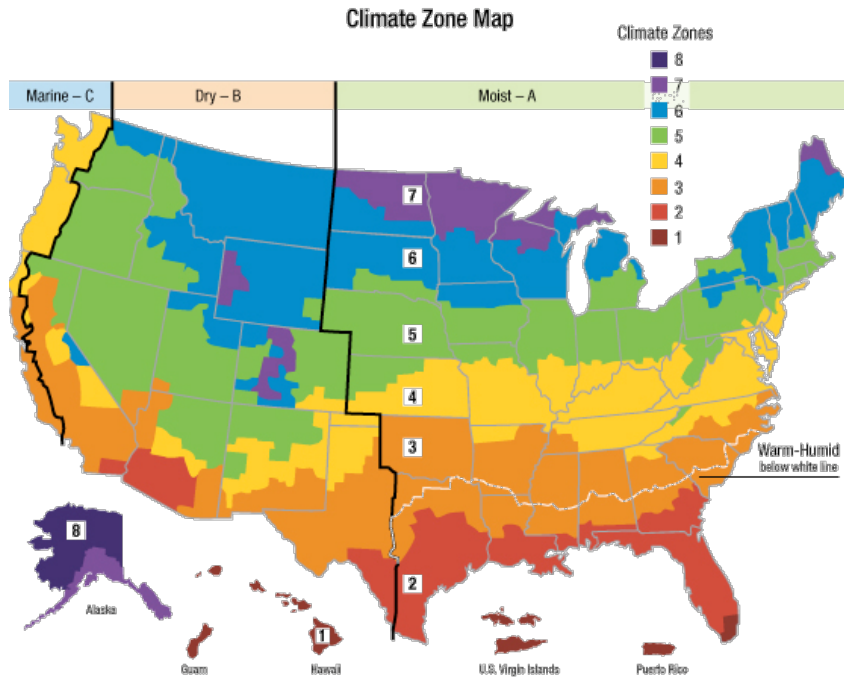
# Shortcomings of a Standard



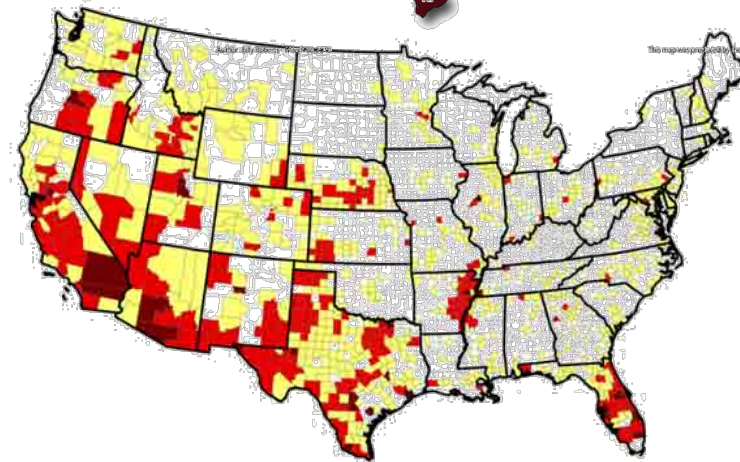
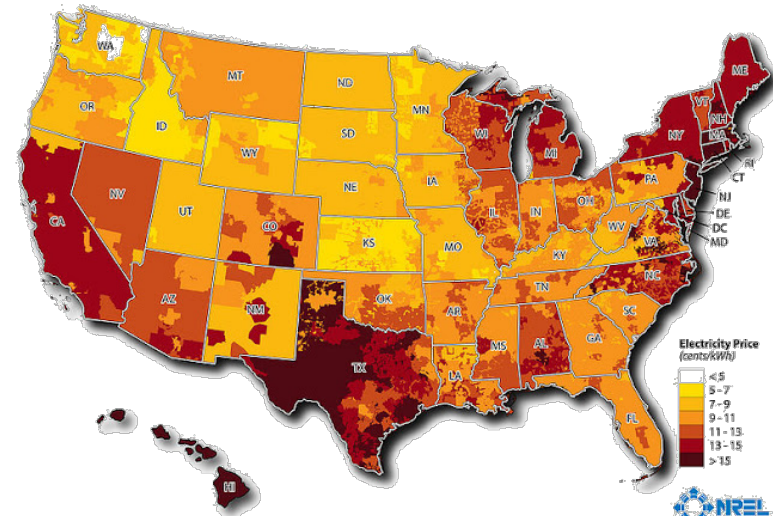
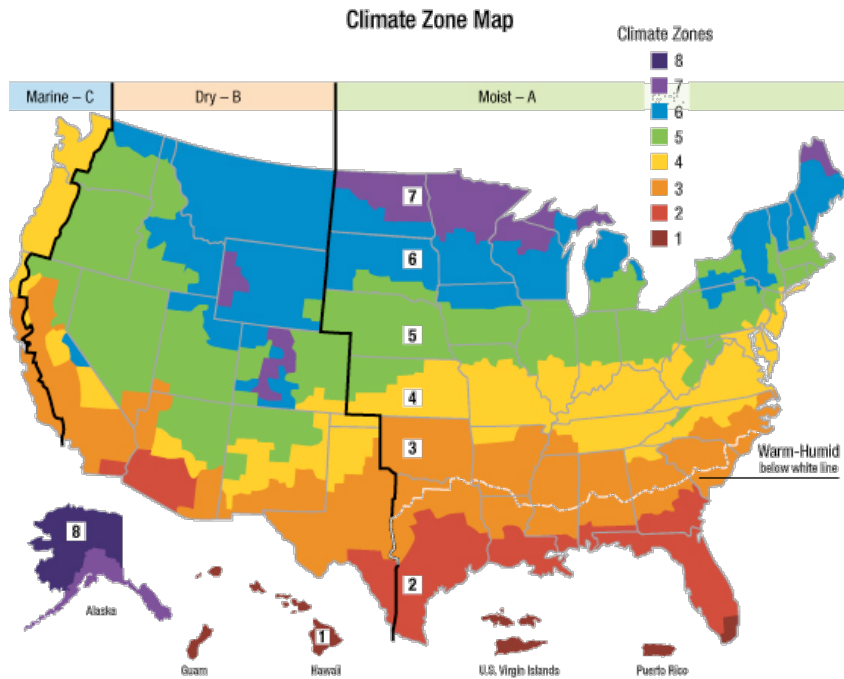
# Shortcomings of a Standard



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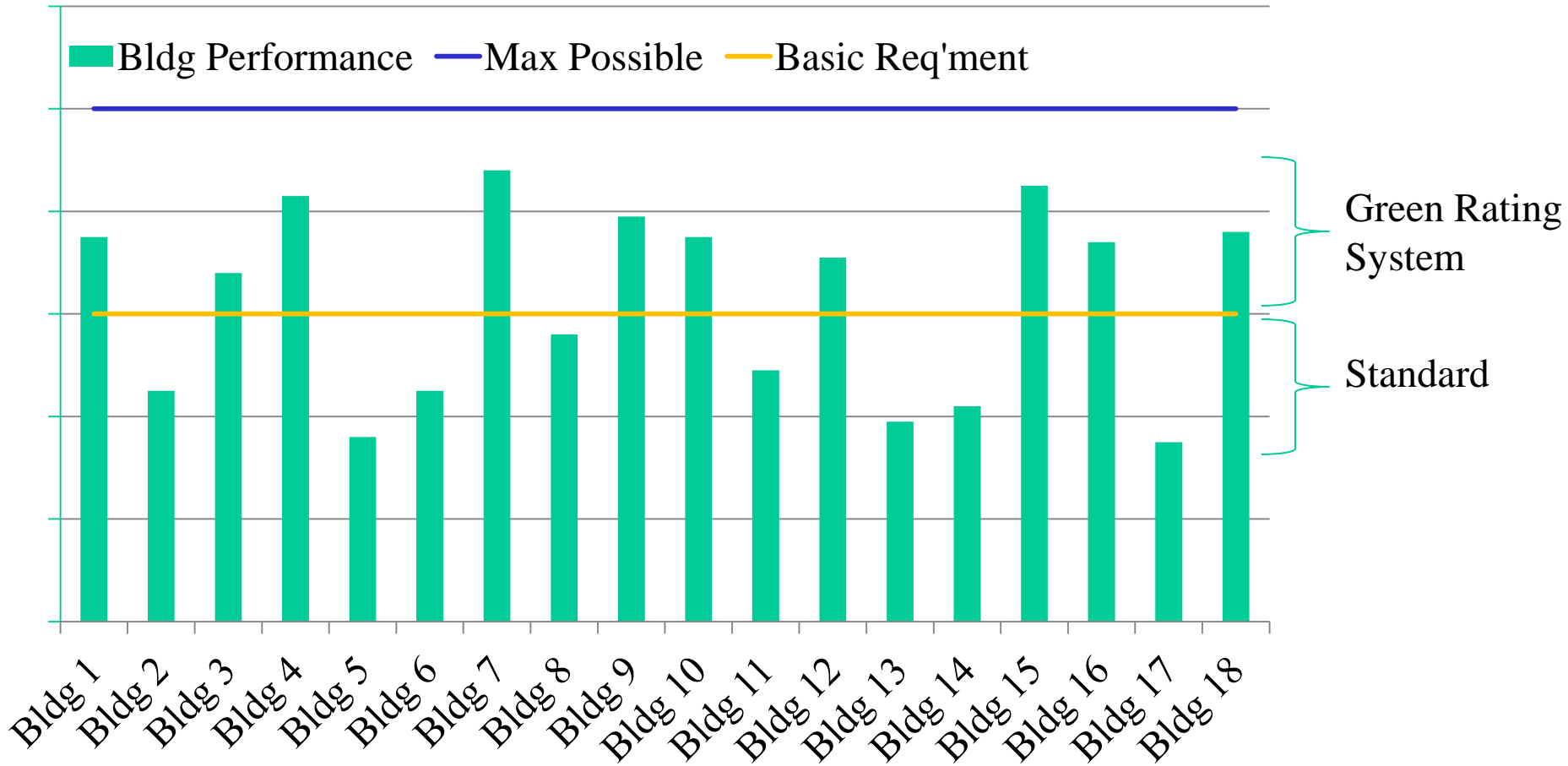


# Shortcomings of a Standard



We need a hybrid approach

# Raising the Bar





# 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

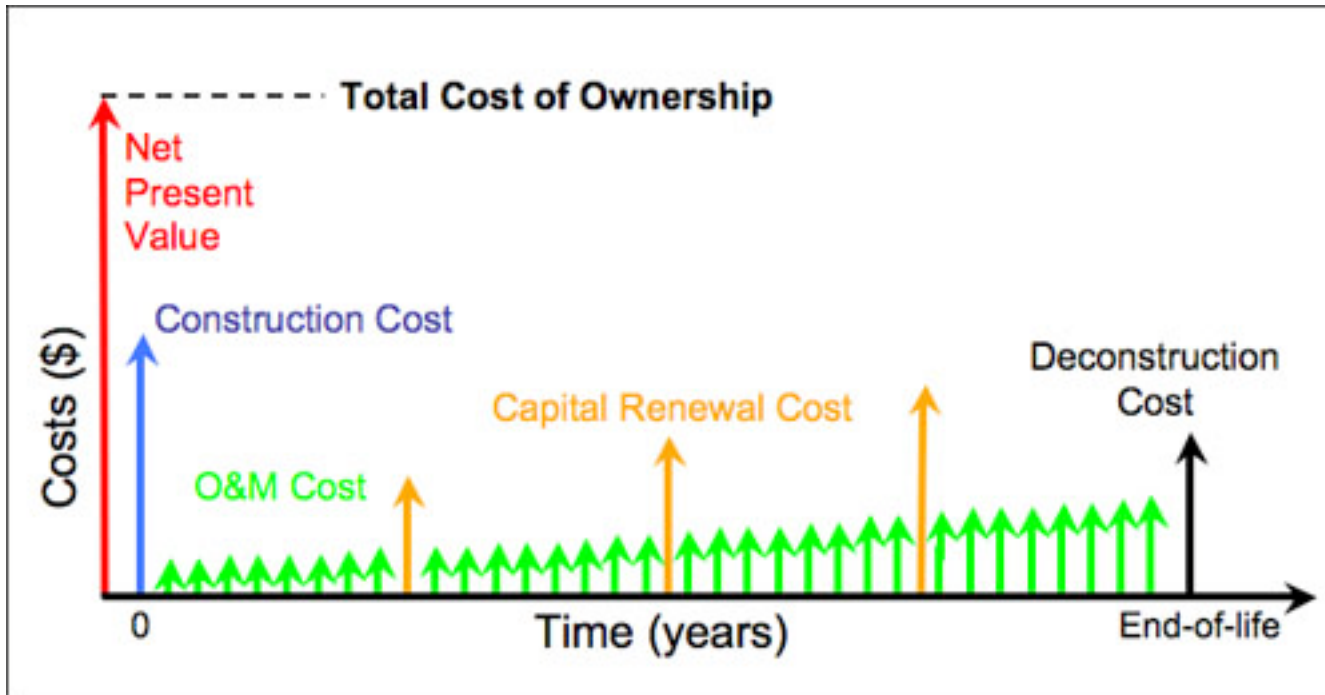
# Next Steps

- 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

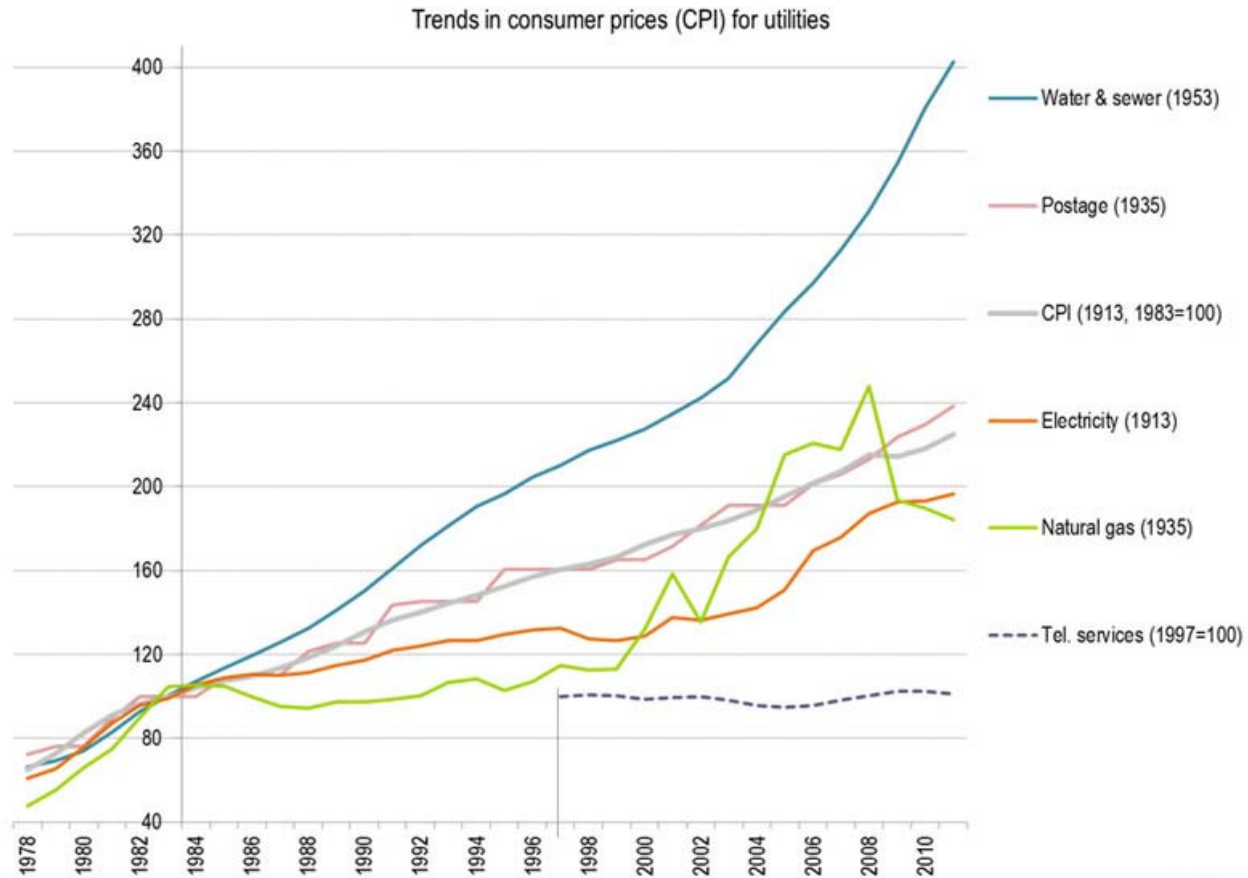
Questions?



# Back-Up



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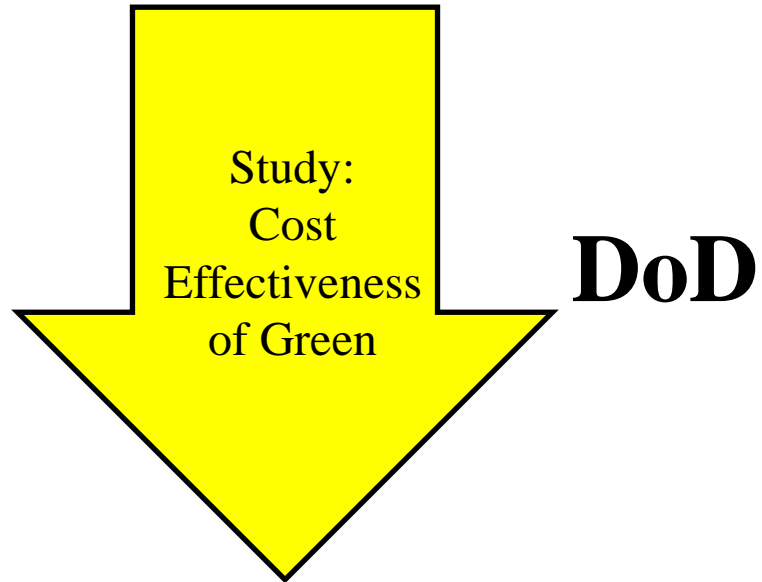


Beecher/PU-MSU

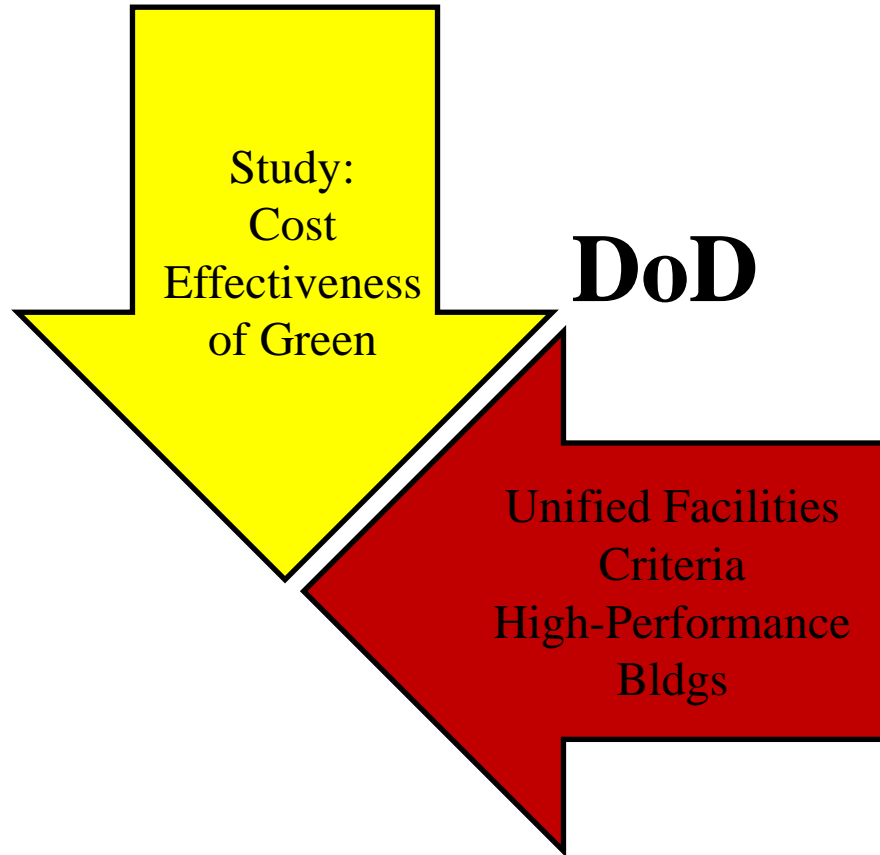
Exhibit 2. Trends in the Consumer Price Index for utilities (general, 1979-2011).  
The index is set to 100 for 1982-1984 except for telephone services, where the index is set to 100 for 1997.

# What Has Happened

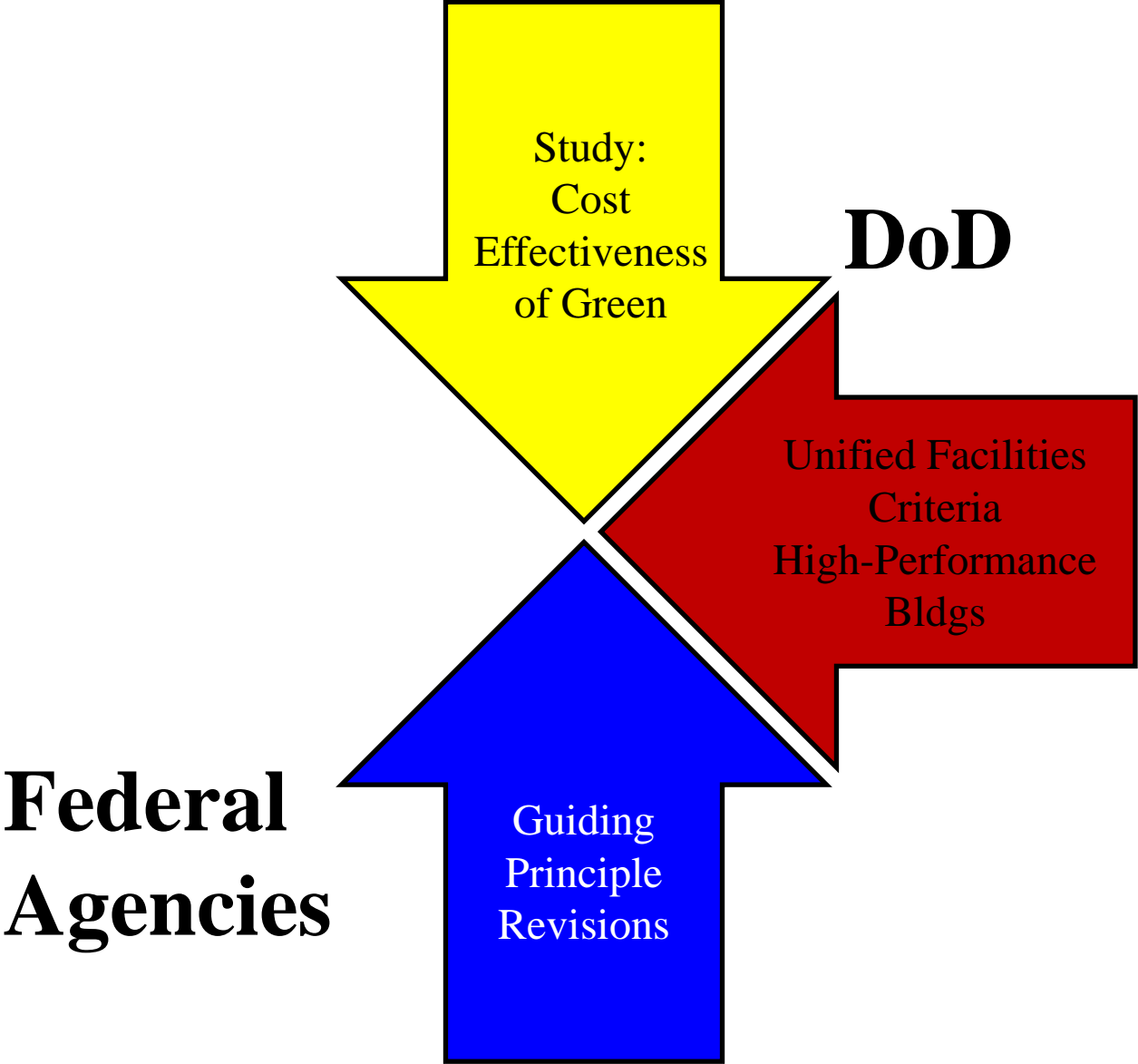
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# What Has Happened



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