Achieving Sustainability Goals in the Federal Community

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DOE’s Federal Energy Management Program
Chair, Interagency Sustainability Working Group

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• Federal energy management
  – Lead by example
  – Transform the market
  – Demonstrate and deploy new technologies
• Carrots and sticks
• Leadership from senior management and Congress is vital

The Federal Government consumes 1.6% of the Nation’s total energy budget, or $14.5 billion in annual energy costs.
Optimize Energy Performance

Protect and Conserve Water

Enhance Indoor Environmental Quality

Reduce Environmental Impact of Materials

Enhanced quality of life

Economic

Social
Sustainability Policy

Drivers

• **OMB A-11 (2002)** – Section 300 Planning, Budgeting, Acquisition, and Management of Capital Assets

• **EPACT, Section 109 (2005)**

• **OMB Scorecards**
  – Environmental, Energy, Transportation, Real Property

• **MOU on Federal Leadership in HPSB (2006)**

• **EO 13423 and Implementing Instructions (2007)**

• **Energy Independence and Security Act (2007)**
Sustainability: The Umbrella of EO 13423

- Pollution Prevention
- Renewable Energy
- Sustainable Procurement
- Energy Efficiency
- Water Conservation
- Greenhouse Gases
- Alternative Fuels
- Petroleum Reduction

15% by 2015
Organizing Federal Sustainability

Management and Oversight
Office of Management and Budget – Scorecards
Office of the Federal Environmental Executive – EO 13423

Guidance
Interagency Sustainability Working Group (DOE)
Office of High Performance Federal Green Buildings (GSA)

Implementation
Agency Working Groups, Offices, ISWG reps
Site-level Facility / Energy Managers and HPSB staff

Private Sector and Non-Profits
e.g. USGBC, ASHRAE, etc

Office of High Performance Commercial Green Building (DOE)

Technical Expertise
- Whole Building Design Guide
- Energy Star Buildings / Products
- EPA Green Building Program
- Labs21
- Data Centers
- Building Technologies R&D Subcommittee
- National Institute of Standards and Technology
• 290 members (~65 core) from across the Federal government and industry
• Bi-monthly meetings and trainings
• Purpose:
  – Serves as forum for information exchange
  – Advocates for sustainable building practices in new construction and existing buildings
  – Eliminates barriers to sustainable design, making it the new “business as usual”
Whole Building Design Guide

• Interagency cooperation managed by NIBS
• Design Guidance focused on Federal facilities
• Federal Green Construction Guide for Specifiers
• 7 FREE Continuing Education courses
• July 2008: 56,000 downloads per day

www.wbdg.org
FEMP’s High Performance Federal Buildings Database: 44 Federal Case Studies

www.eere.energy.gov/femp/highperformance

DOE Sustainable Building Databases

BT’s High Performance Buildings Database: 101 Total Case Studies

www.eere.energy.gov/buildings/database/
103 Federal LEED Buildings!

Federal Buildings Awarded LEED Certification
Federal LEED Building Breakdown

By Building Type

- Office
- Dormitory
- Warehouse
- Courthouse
- School
- Recreation
- Visitor Center
- Medical Center
- Transistion Station
- Rescue Station
- Restaurant
- Laboratory
- Prison

By Certification Level

- PLATINUM
- GOLD
- SILVER
- CERTIFIED

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable
Agency LEED Policies for New Construction

**Agency LEED-NC Policies**

- **GOLD** (2): DOE, EPA
- **SILVER** (5): NASA, State, Army, DOC, USDA
- **CERTIFIED** (6): GSA, Navy, Pentagon, SI, AF, HHS*

* Specifies the usage of LEED or Green Globes

**By Rating System**

- **New Construction**
  - **Core & Shell**
  - **Commercial Interiors**
  - **Existing Buildings**

**GOLD**: DOE, EPA

**SILVER**: NASA, State, Army, DOC, USDA

**CERTIFIED**: GSA, Navy, Pentagon, SI, AF, HHS*
1. **Focus on Existing Buildings**: Sustainable Building Guiding Principles for Existing Buildings

2. **Campus or Portfolio Approach to Sustainability**

3. **Integration**: Incorporating Sustainability into Environmental and Property Asset Management

4. **Overcoming Cost Barriers**: first cost bias, color or money issues, and budget cuts

5. **Training and Outreach**: e.g. EB assessment tools, LEED EB workshops
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www.fedcenter.gov
www.wbdg.org/sustainableEO
www.wbdg.org/design/greenspec.php
http://www1.eere.energy.gov/femp/sustainable/
www.eere.energy.gov/femp/highperformance/index.cfm
Employ Integrated Design Principles

Integrated Design

• Use integrated teams in all stages of a project
• Establish environmental performance goals

Commissioning

• Employ total building commissioning practices to verify performance of building components and systems and ensure that design requirements are met
Optimize Energy Performance

Energy Efficiency

- Establish a whole building performance target
- Design to earn ENERGY STAR.
- For new construction, reduce the energy cost budget by 30 percent compared to the baseline building performance rating per ASHRAE Std 90.1-2004.
- For major renovations, reduce the energy cost budget by 20 percent below pre-renovations 2003 baseline.

Commissioning

- Install building level utility meters in construction and renovation projects.
- Measure all new major installations after 1 year using the ENERGY STAR Benchmarking Tool.
- Enter data and lessons learned into the High Performance Federal Buildings Database
Protect and Conserve Water

Indoor Water

• Reduce indoor potable water use by a minimum of 20%

Outdoor Water

• Reduce outdoor potable water use by a minimum of 50%
• Reduce storm water runoff and polluted site water runoff
Enhance Indoor Environmental Quality

During Construction
- SMACCNA IAQ Guidelines for Occupied Buildings under Construction, 1995
- Prior to occupancy, conduct a minimum 72-hour flush-out

During Occupancy
- ASHRAE 55-2004, Thermal Env. Conditions
- Implement a moisture control strategy
- Achieve a minimum daylight factor of 2 percent
- Provide lighting controls and appropriate glare control
- Specify materials and products with low pollutant emissions
Guiding Principle #5

Reduce Environmental Impact of Materials

• Use materials with recycled content for at least 10% of the total value of the materials in the project

• Use biobased products made from rapidly renewable resources and certified sustainable wood products

• Recycle or salvage at least 50 percent construction, demolition, and land clearing waste, excluding soil

• Eliminate the use of ozone depleting compounds
<table>
<thead>
<tr>
<th>Agency</th>
<th>LEED Goal</th>
<th>Goal Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE</td>
<td>Gold</td>
<td>Required for NC/MR &gt; $5M; LEED Gold preference for leases</td>
</tr>
<tr>
<td>EPA</td>
<td>Gold</td>
<td>Required for NC &gt; 20,000 sqft</td>
</tr>
<tr>
<td>NASA</td>
<td>Silver</td>
<td>Silver is required, strive for Gold</td>
</tr>
<tr>
<td>State</td>
<td>Silver</td>
<td>Required by 2009 for major assets, new embassies for next 10 yrs</td>
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<tr>
<td>Defense – Army</td>
<td>Silver</td>
<td>Vertical construction required; LEED for Homes adopted</td>
</tr>
<tr>
<td>Commerce – NWS</td>
<td>Silver</td>
<td>“Shall strive for minimum of LEED Silver”</td>
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<tr>
<td>USDA – Forest Service</td>
<td>Silver</td>
<td>Required for offices, visitor centers, research facilities &gt;2500 sqft</td>
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<tr>
<td>USDA</td>
<td>Silver</td>
<td>Design for LEED Silver</td>
</tr>
<tr>
<td>GSA</td>
<td>Certified</td>
<td>Required for NC/MR, Silver recommended (some regions require)</td>
</tr>
<tr>
<td>Defense – Navy</td>
<td>Certified</td>
<td>Required now, potentially Silver in near future</td>
</tr>
<tr>
<td>HHS</td>
<td>Certified</td>
<td>LEED or Green Globes for projects &gt; $3M</td>
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<tr>
<td>Defense - Pentagon</td>
<td>Certified</td>
<td>Long-term goal of LEED rating for entire Pentagon</td>
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<tr>
<td>Smithsonian</td>
<td>Certified</td>
<td>NC/MR to aim for a minimum of LEED certification</td>
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<tr>
<td>Defense - Air Force</td>
<td>Certified</td>
<td>Required by FY '09, self-certified</td>
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<tr>
<td>Interior</td>
<td>-</td>
<td>Incorporating LEED criteria for NC and EB, not required</td>
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