Federal Energy Management Program

Sustainability of Federal Facilities

Past Performance and New Opportunities

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Federal Facilities Council

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Outline and Introduction

- Federal Sustainability Requirements
- Sustainable Building Guidance
- Federal LEED progress
- Priorities Going Forward
- Q&A, discussion

The mission of the Federal Energy Management Program is to facilitate the Federal Government's implementation of sound, cost-effective energy management and investment practices to enhance the Nation's energy security and environmental stewardship.

Bottom Line

- Numerous recent statutory and Executive Order requirements have resulted in increased activity and the need for greater interagency coordination.
- There has been considerable progress across the government over the last decade, with the number of LEED Certified buildings acting as one indicator.
- Much work remains to scale up sustainable initiatives across the government and make design and operation of sustainable buildings the standard practice.

Organization of Federal Sustainability

Sustainability and New Construction 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 High Performance Sustainable Buildings (2006)**
- **EO 13423 and Implementing Instructions (2007)**
- **Energy Independence and Security Act (2007)**
- **Update to MOU on High Performance Sustainable Buildings (2008)**
- ***2009?***

Section 433: Federal Building EE Standards

- DOE to revise Federal building standards to require that the fossil fuel-generated energy use be reduced by:
  - 55% in 2010
  - 65% in 2015
  - 80% in 2020
  - 90% in 2025
  - 100% in 2030 (*Zero Carbon Buildings?*)
  - **Exceptions** (must be approved): if technically impracticable in light of the agency's specified functional needs for that building
  - Sustainable design principles shall be applied to the siting, design, and construction of buildings subject to the standards
- DOE to identify a certification system and level for green Federal buildings, in consultation with GSA and DOD

Sec 435, 323: Leased Space

- **Effective 19 Dec, 2010**, Requires agencies to lease buildings that are EPA Energy Star labeled, with the following exemptions:
  - There is no space available in an Energy Star building that meets the agency's requirements
  - Agency proposes to remain in its current building
  - Agency leases space in a building of historical, architectural, or cultural significance (legal def)
  - The lease is less than 10,000 gross square feet
  - Lease contract requires all energy efficiency and conservation improvements that would be cost effective over the life of the lease
- **Section 323:** Directs GSA to establish minimum EE & RE performance for leased space; requirements for energy efficient lighting in Federal buildings

Sec 436: High-Performance Green Federal Buildings

- **Office of High Performance Green Federal Buildings** established within GSA to:
  - Coordinate w/ DOE's Office of Commercial H-PGreen Bldgs & other agencies
  - Identify and reassess improved or higher rating standards every 5 years
  - Disseminate info and promote results of R&D relating to Green Buildings
  - Identify and develop Green Building standards for all types of federal facilities
  - Establish green practices to be used throughout life of a federal facility
  - Identify opportunities to demo innovative and emerging Green Building technology
  - Analyze budget practices & LCC issues, recommend changes to Congress
    - **Sec 441** – Building life cycle cost analysis increased from 25 to 40 years
    - FEMP Guidance: http://www1.eere.energy.gov/femp/program/lifecycle.html
  - Establish Federal High-Performance Green Building Office and Advisory Committee…

Sec 438: Storm Water Runoff Requirements

Predevelopment hydrology shall be maintained or restored:

- To the maximum extent technically feasible
- By the sponsor of any development or redevelopment project
- Involving a federal facility with a footprint over 5,000 square feet
- Using site planning, design, construction and maintenance strategies

*** Comments on Draft technical guidance due to EPA by March 17, 2009*

Other New Construction Goodies

- **Sec 440** – $4 Million per year for 2008-2012 to implement Sections 434-439
- **Sec 453** – Data Centers: Voluntary National Information Program to be established within 90 days by EPA and others
- **Sec 491** – 1 demonstration project per year of green features in a Federal building from 2009 to 2014, project must:
  - Provide measureable elements to aid research
  - Achieve the highest rating offered by the high performance green building system (i.e. LEED Platinum)
- **Sec 523** – Requires 30 percent of the hot water demand in new Federal buildings (and major renovations) to be met with solar hot water equipment, provided it is life-cycle cost-effective

Sustainable Building Guidance, Dec. 2008

1. Updates the Guiding Principles for Sustainable New Construction and Major Renovations
2. Establishes a separate Guiding Principles for Sustainable Existing Buildings
3. Clarifies reporting guidelines for entering information on Sustainability Data Element #25 in the Federal Real Property Profile (FRPP) database, and
4. Explains how to calculate the percentage of buildings/square footage that are compliant with the Guiding Principles.
   - 15% of existing building inventory must comply by the end of FY 2015 (http://www.wbdg.org/references/sustainable_eo.php)

** Guidance to be updated, at a minimum, every 2 years*

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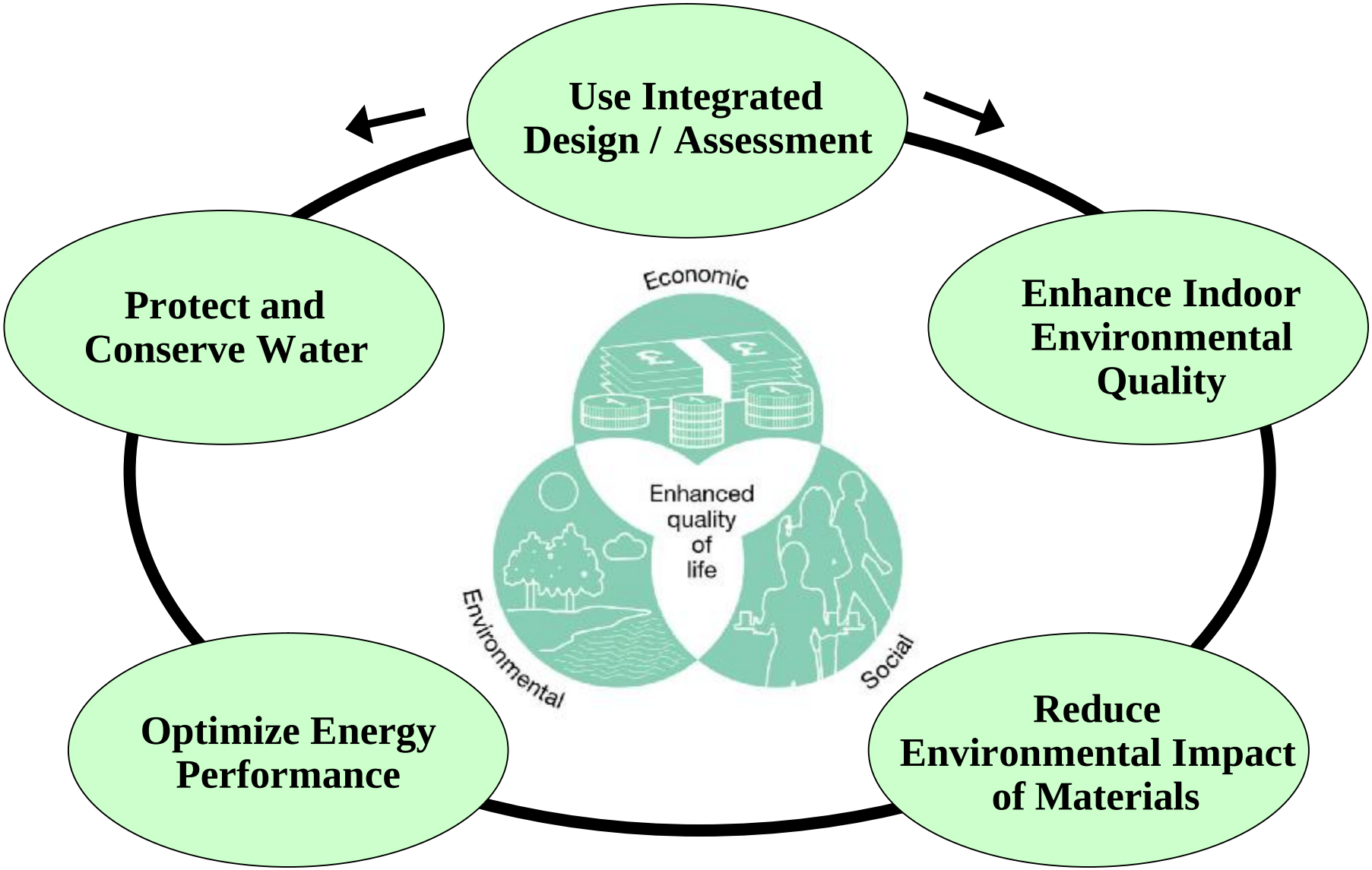
Updated Sustainable MOU Guiding Principles



Major Modifications for Existing Building GPs (1)

- **Integrated Assessment, Operation, and Management**. Adapted to address integrated assessment of building operations and maintenance.
- **Commissioning.** "Experienced commissioning provider" performs *recommissioning* within the four years prior to reporting a building
  - Meet EISA section 432 Guidance
- **Energy Efficiency**. Three approaches can be used to measure energy efficiency:
  - Receive an ENERGY STAR® rating of 75 or higher, or use the Labs21 Laboratory Modeling Guidelines, OR
  - Reduce energy use by 20% compared to the current ASHRAE 90.1 baseline building design, OR
  - Reduce measured building energy use by 20% compared to building energy use in 2003 or earliest year with quality data.

Major Modifications for Existing Building GPs (2)

- **Indoor Water**. Two approaches can be used to measure water efficiency:
  - Reduce potable water use by 20% for indoor water compared to a calculated baseline, OR
  - Actual usage in 2003 or earliest year with quality data.
- **Outdoor Water.** Three approaches can be used to measure water efficiency:
  - Reduce potable irrigation water use by 50% compared to conventional methods, OR
  - Reduce potable irrigation water use by 50% compared to water use in 2003 or earliest year with quality data, OR
  - Use no potable irrigation water.
- **Measurement of Water Use.**
  - If only one meter is installed, reduce potable water use (indoor and outdoor combined) by at least 20% compared to building water use in 2003 or a year thereafter with quality water data.

Major Modifications for Existing Building GPs (3)

- **Moisture Control.** Provide policy and illustrate use of an appropriate moisture control strategy. For façade renovations, Dew Point analysis and a plan for cleanup or infiltration of moisture into building materials.
- **Daylighting and Lighting Controls**. Automated lighting controls required. Two alternative methods can be used to meet additional performance expectations:
  - Daylight factor of 2% provided to 50% of regularly occupied spaces, OR
  - Occupant controlled lighting for 50% of the regularly occupied spaces.
- **Low Emitting Materials / Recycled Content / Biobased Content**. Procurement policy implemented.
- **Protect Indoor Air Quality**.
  - Allow no smoking within the building and within 25 feet of all building main entrances and building ventilation,
  - Use certified green products for maintenance, cleaning and pest management, and
  - Implement an indoor air quality plan for any building-related modifications.

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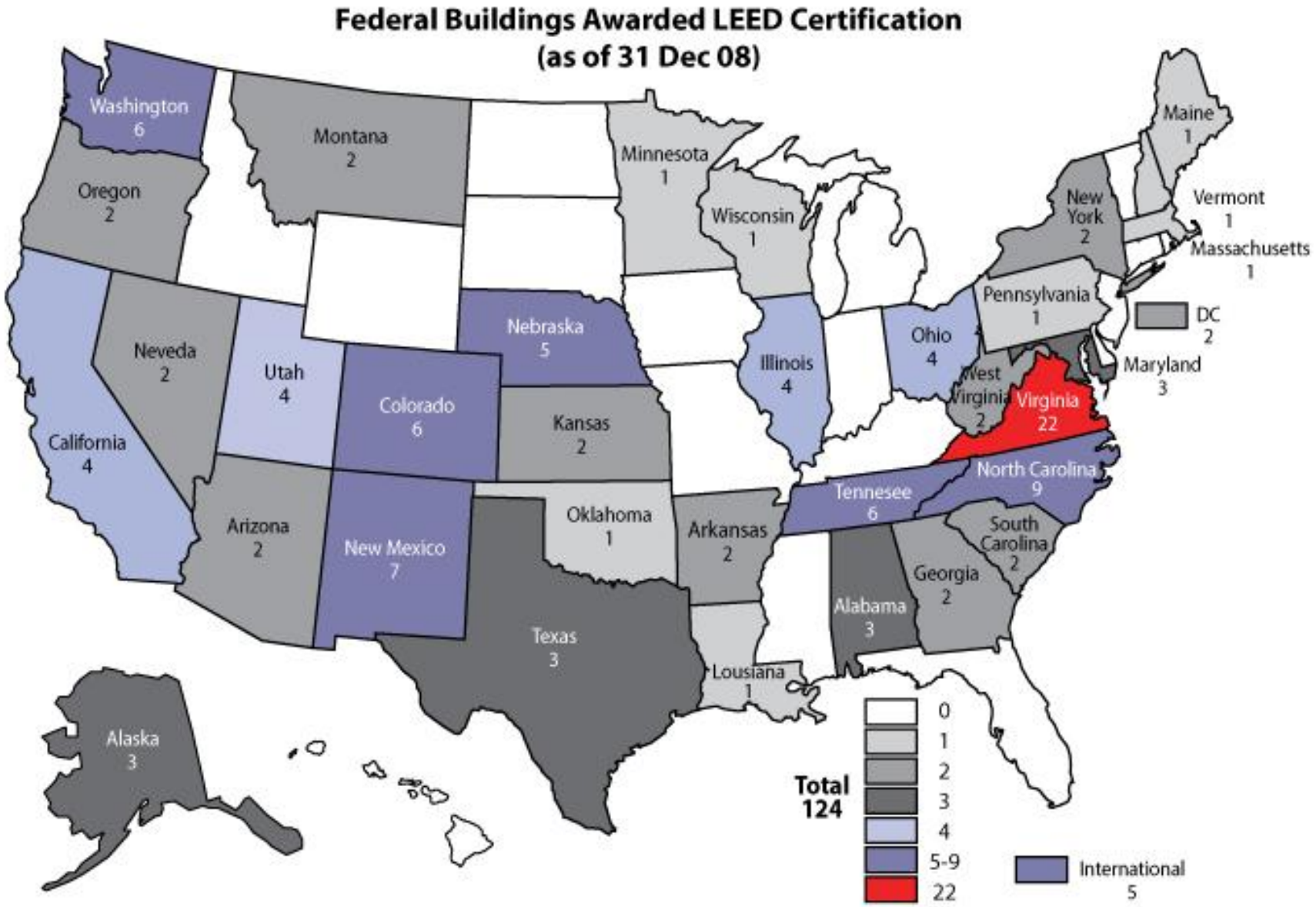
124 Federal LEED Certified Buildings



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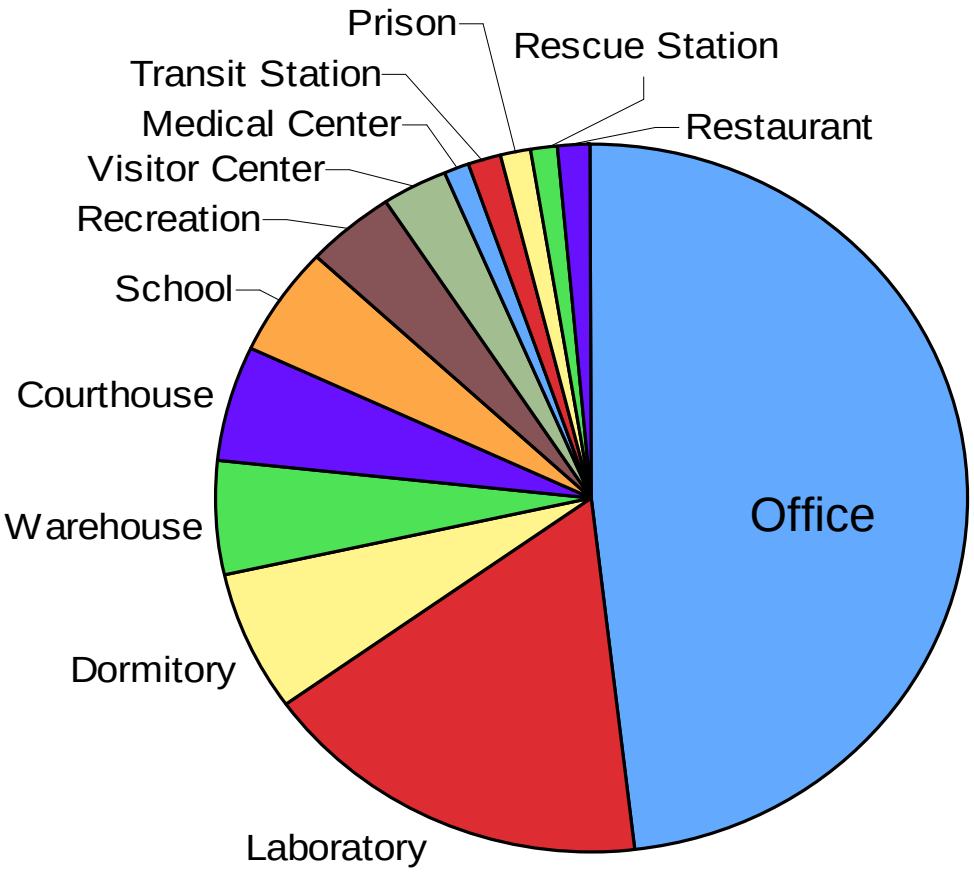
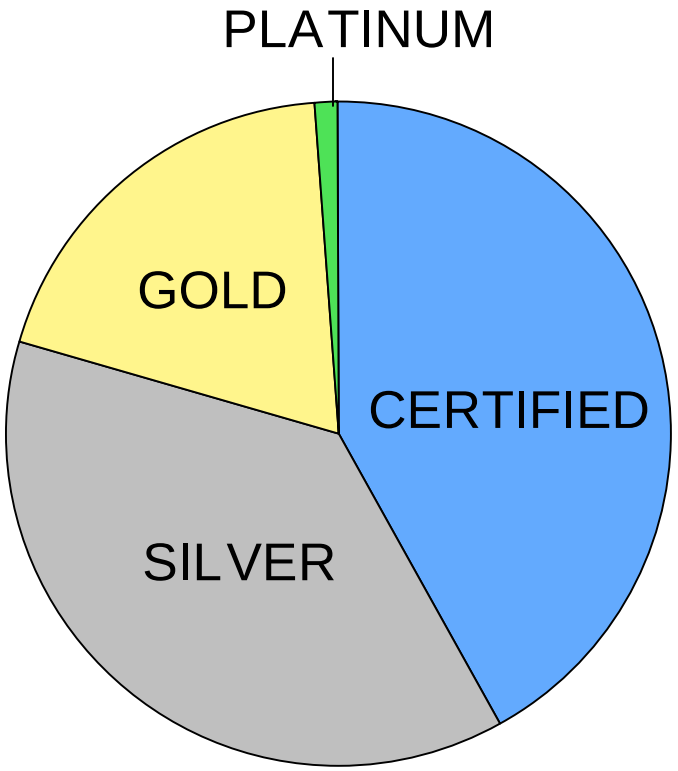
Federal LEED Building Breakdown

By Building Type

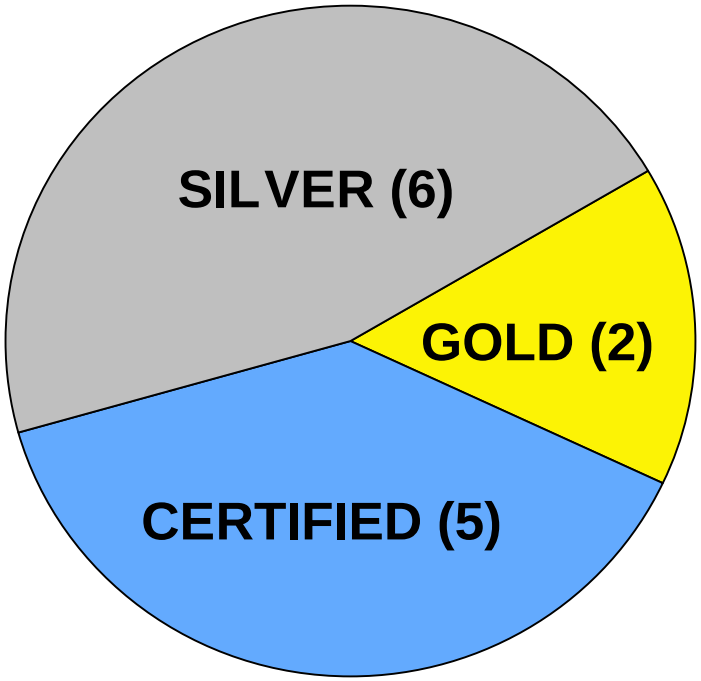


By Certification Level

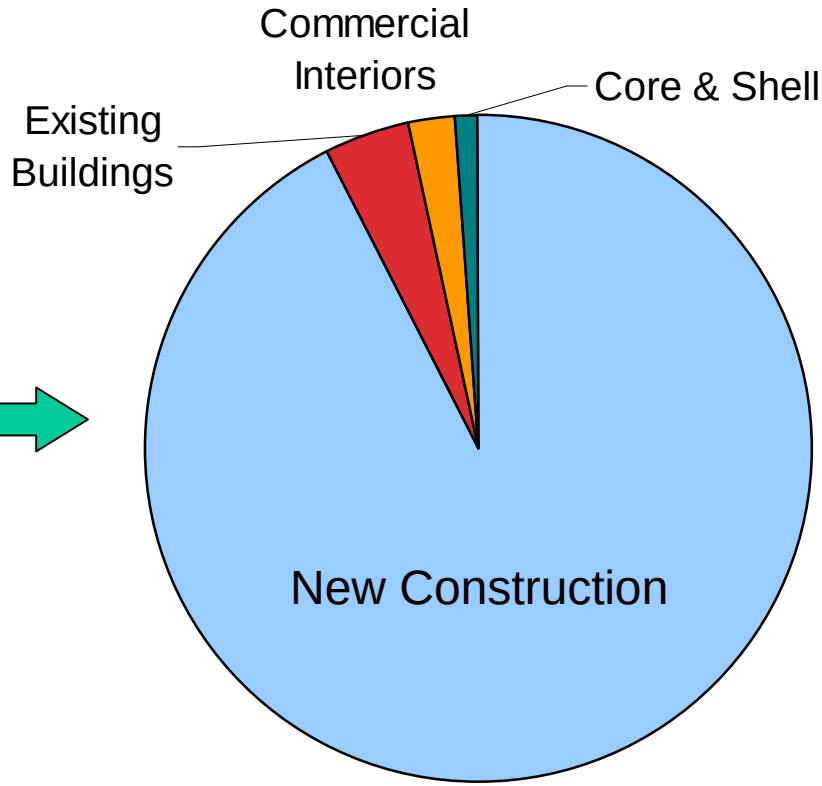


Agency LEED Policies for New Construction

Agency LEED-NC Policies



By Rating System



GOLD: DOE, EPA

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

CERTIFIED: GSA, Pentagon, SI, AF, HHS*

* Specifies the usage of LEED or Green Globes

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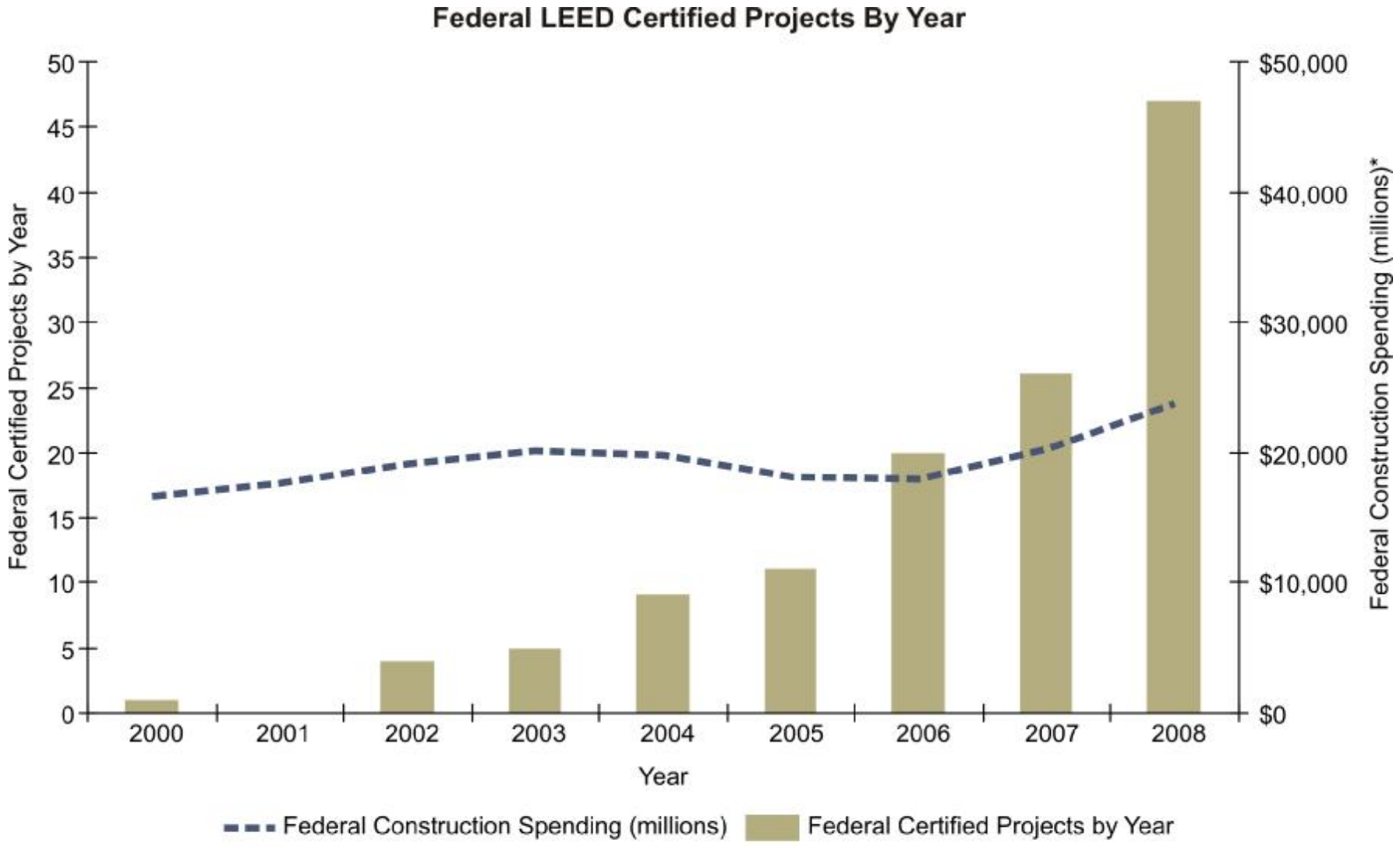
Federal LEED Certified Projects by Year



* based on U. S. Census Bureau statistics, adjusted to 2007 dollars (www.census.gov/const/www/fedpage.html)

ISWG Priorities

1. Make Sustainability the Standard Practice
2. Transform the Existing Built Environment by Integrating Sustainability into Campus and Portfolio Management
3. Measure and Verify Building Performance
4. Institutionalize Greenhouse Gas Management and Abatement

*** Visit the ISWG website for the full report:*

www1.eere.energy.gov/femp/sustainable/sustainable_workinggroup.html

Make Sustainability the Standard Practice

- **Support agencies in meeting the requirements of ARRA**
- Apply budgeting and life cycle costing methods that support sustainability improvements through retrofits and major improvements to older facilities
- Take advantage of green building incentives to the greatest extent practical
- Align sustainability goals with budget examination
- Reduce the budgeting and planning gap between design & delivery and O&M.
- Support innovation and communicate its results (e.g. Global Reporting Initiative, Living Building Challenge)

Transform the Existing Built Environment

- **Web-based sustainable building assessment tool to track the progress of individual buildings as well as portfolios of buildings in meeting the Guiding Principles**
- Continue to support federal sustainability goals with additional guidance and tools
- Emphasize training and/or succession plans for facilities management staff to effectively operate increasingly complex building systems
- Identify and exchange best practices on incorporating sustainability in the FRPP and EMSs
- Eliminate barriers to incorporating sustainable design into historic buildings, medical facilities, and other challenging building types

Measure and Verify Building Performance

- **Compile performance measurement data from multiple agency assessments to examine trends of larger data set of sustainably designed buildings**
- Explore development of a “dashboard” for whole building performance that provides a clear assessment of performance for a building, campus, or portfolio of buildings
- Support development of a publicly available database to manage whole building performance measurement data for analysis using the protocol methodology
- Communicate measurement studies to key stakeholder groups to inform budgeting and planning cycles, as well design and operations professionals

Institutionalize GHG Management / Abatement

- Develop guidance and tools for implementing EISA Section 433 on new construction, and track compliance
- Provide recommendations for establishing a single GHG measurement protocol for use across the government, and pilot the protocol
- Establish guidance for developing agency-level GHG management plans that aligns with any federal requirements and/or roadmap
- Provide GHG management tools, resources, and training, for example:
  - Completing agency- and site-wide emissions inventories
  - Reporting agency-level GHG emissions
  - Developing and implementing GHG management plans

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THANK YOU!

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