

Green Building Policy Profiles

Compiled by the NPS-PWR

The following is a summary of federal, state, and local agencies' initiatives, requirements, and policies on green building. Sources of information include the Office of the Federal Environmental Executive's (OFEE) "Federal Commitment to Green Building" Report (www.ofee.gov/sb/fgb.html), the Whole Building Design Guide (www.wbdg.org), and agency websites and publications.

Cost/Benefit

Research on the cost benefit of green buildings has yielded very little information as savings are often difficult to track and quantify. However, the Sustainable Building Task Force of the California Integrated Waste Management Board commissioned an economic analysis study titled, *The Costs and Financial Benefits of Green Building*. This report, the most comprehensive analysis of the financial costs and benefits of green building conducted to date, concludes that sustainable design can be incorporated into a structure with little or no increase in construction costs and that a minimal "upfront investment of less than two percent of construction costs yields life cycle savings of over ten times the initial investment." The financial benefits of green buildings include lower energy, waste disposal, and water costs, lower environmental and emissions costs, lower operations and maintenance costs, and savings from increased productivity and health.

www.ciwmb.ca.gov/greenbuilding/design/costissues.htm

A study in Massachusetts reports the average green building premium is slightly less than 2%, but generally, the earlier green building features are incorporated into the design process, the lower the cost. (*Green Building Costs and Financial Benefits*, Gregory Kats, 2003) The study also finds that financial benefits of green design are over ten times the additional associated cost.

www.masstech.org

GSA and LEED have undergone a major study, the GSA LEED Cost Study, to define costs associated with the LEED ratings. Building comparisons will identify differential costs of construction, design, and documentation/submission requirements. Study findings will be posted on www.wbdg.org in the Fall of 2004.

Federal Government Policy Profiles

Federal Executive Orders (EOs) issued beginning in the late 1990s demonstrated the federal government's commitment to green building. The first EOs addressed waste reduction, recycled content purchasing, and energy efficiency. The Energy Policy Act of 1992 and Executive Order 13123, among others, required that federal agencies address sustainable design comprehensively, including energy efficiency, efficient use of water, waste reduction, sustainable site planning, and indoor environmental quality.

Federal Green Building regulations, mandates, and EOs include:

- Section 6002 of the Resource Conservation and Recovery Act (RCRA), along with EPA's Comprehensive Procurement Guideline (CPG)
- The Energy Policy Act (EPA) of 1992, along with its amendments to the National Energy Conservation Policy Act
- Executive Order 13101: Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition
- Executive Order 13123: Greening the Government Through Efficient Energy Management

- Executive Order 13134: Developing and Promoting Biobased Products and BioEnergy
- Farm Security and Rural Investment Act of 2002, Public Law 107-171: commonly referred to as the 2002 Farm Bill
- Executive Order 13148: Greening the Government Through Leadership in Environmental Management
- NPS-PWR Directive 48: Sustainable Design and Construction Guidelines
- OMB Circular A-11: “In 2002, recognizing that investments in better building design and construction typically return dividends that will save money over the life of the building, OMB revised Circular A-11, Section 55-Energy and Transportation Efficiency Management- to encourage Federal agencies to incorporate ENERGY STAR® or the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ into up front design concepts for new construction and/or building renovations. Agencies must report if they incur or anticipate incurring additional costs for incorporating these standards.”

Many federal agencies have chosen to adopt LEED's™ design standards into their green building policies. Some agencies require LEED™ certification, while others set LEED™ goals, but do not require certification (a debated topic whether standards without actual certification can really meet the standards). Some agencies have created their own standards, while others incorporate a number of standards such as LEED™, Energy Star, and the Whole Building Design Guide.

U.S. Department of State

The State Department's Architectural Design Branch currently encourages (but does not require) all new office buildings to meet LEED™ certification requirements. The State Department includes sustainable and green building language in its Requests for Proposals (RFPs) and is also incorporating it into their Standard Embassy Design (SED) contract requirements. Challenges include initial costs (over lifecycle costs) and lack of awareness.

- RFP C.4.5 Sustainable Design: “The Contractor shall utilize the LEED™ Green Building Rating System as developed by the U.S. Green Building Council to earn a minimum LEED™ Certified Rating (26 points) for the office building(s) and compound sitework. Refer to C.5.5.1.5.2 for associated reporting requirements.”
- RFP C.5.5.1.5.2 Sustainable Design Rating: “The Contractor shall complete the LEED™ 2.1 Reporting Format (Attachment J.2.11) for the Design Development Submittal. The Contractor shall prepare the LEED™ Certification documentation for the minimum 26 LEED™ points being eared as defined under LEED™ 2.1. When LEED™ documentation is complete, the Contractor shall transmit two copies to the USG for acceptance.”

U.S. Navy

The Department of Navy supports the concept of incorporating sustainability requirements into its mainstream specifications and guidelines. The agency contributed to the Whole Building Design Guide's Construction Criteria Base, which includes their building standards, specifications, and green building guidance. Internal policy focuses on integrated greening design without increased costs, sustainability in A&E contracts, and adoption of the LEED™ Rating System.

- Planning & Design Policy Statement (PDPS) 98-01 (6/18/98), Design of Sustainable Facilities and Infrastructure: Applies to all projects; no increase in first cost or design costs; key is integrated design

- PDPS 98-02 (6/18/98), Criteria Supporting Design of Sustainable Facilities: Industry-based guidance
- PDPS 98-03 (6/18/98), Procurement of Sustainable Facilities – AE Contracts: Architects and engineers must demonstrate “knowledge and demonstrated experience in applying sustainability concepts and principles to facilities and infrastructure problems through an integrated design approach.”
- Memo, 7/2/02, Adopting the U.S. Green Building Council’s LEED™ Rating System, from J.W. Wright, Chief Engineer: LEED™ (at least Certified) required as a tool and metric; submission for LEED™ certification not required.

<http://navyenergy.nfesc.navy.mil>

Office of the Secretary of Defense

The Office of the Secretary of Defense created the Unified Facilities Guide Specifications in conjunction with the Whole Building Design Guide to unify all technical criteria and standards pertaining to planning, design, construction, and operation and maintenance of real property facilities.

- Department of Defense Standard Practice for Unified Facilities Criteria and Unified Facilities Guide Specifications, April 2002: “This standard establishes procedures for the development and maintenance of Unified Facilities Criteria (UFC) and Unified Facilities Guide Specifications (UFGS) and prescribes their use by the Army, Navy, Marine Corps, Air Force, DOD Defense agencies and DOD Field Activities. All DoD components are adopting the concept and practice of Sustainable Design and Development and the use of project rating and scoring systems, such as Leadership in Environmental and Energy Design (LEED) and Sustainable Project Rating Tool (SPiRiT). These and other concepts should encourage innovation and alternatives to the traditional planning, design, construction, and maintenance process. The UFC/UFGS criteria program will implement the concepts of Sustainable Design and Development and continuous innovation into the facilities acquisition and maintenance processes.”

UFC Documents and Policy http://65.204.17.188//report/doc_ufc.html
www.wbdg.org/ccbref/pa_dod.php?category=pa

U.S. Army

The US Army and US Army Corps of Engineers (USACE) have developed their own rating tool, based on LEED™, called the “Sustainable Project Rating Tool” or SPiRiT. Unlike LEED™, SPiRiT includes operations and maintenance issues and flexibility in design to allow for building modifications as needs change. It also differs from LEED™ in that it is a self-rating tool without third-party certification.

All military construction projects were originally required to strive for at least a Bronze SPiRiT rating until FY 2006, at which point a Silver rating will be required. 10 Showcase projects were required in FY 2003, 12 in FY 2004, and a number increasing by two every year thereafter, which should aim for Gold or Platinum ratings. To date, the Army has focused particularly on greening family housing.

- Sustainable Design and Development, April 26, 2000: Incorporate sustainability into installation planning and infrastructure, balanced with cost and customer requirements. ACSIM to develop implementing policy; USACE to develop technical guidance.

- Sustainable Design and Development Policy, May 26, 2000: SDD defined as “the systematic consideration of current and future impacts of an activity, product, or decision on the environment, energy use, natural resources, the economy and quality of life.”
- Deconstruction and Re-Use of Excess Army Buildings, January 18, 2001: The Army will develop policy, provide technical assistance and develop technologies for building deconstruction and reuse, in cooperation with other Federal agencies.
- Technical Letter ETL 1110-3-491: Sustainable Design for Military Facilities, May 1, 2001: Introduction of SPiRiT and additional technical guidance. All USACE military facility design shall phase in SDD and strive for SPiRiT Bronze.
- Sustainable Project Rating Tool (SPiRiT), May 4, 2001: As of 6/1/01, Army will begin using SPiRiT. Initial goal is for all MACOM and installation projects to achieve a minimum Bronze rating. There will also be SDD Showcase Projects aiming for higher ratings.
- Sustainable Design and Development, June 1, 2001: All new designs shall strive to achieve Bronze; when District can’t achieve this, they must inform HQ.
- Sustainable Design and Development, March 18, 2002: Endorses and emphasizes goal.
- Sustainable Project Rating Tool (SPiRiT), December 21, 2002: All projects beginning with FY 2006 will achieve Silver level.
- Sustainable Design and Development, February 4, 2003: Reiterates Silver goal. 10 showcase projects in FY 2003 and increase by two every year after. Showcase projects should aim for Gold.
- Sustainable Design and Development, March 18, 2003: Silver rating minimum requirement for FY 2006 MILCON projects currently under design. Gold rating minimum for all other FY 2006 and future-year MILCON projects. Gold goal for projects under the Residential Communities Initiative.

U.S. Air Force

The US Air Force Office of the Civil Engineer and the Center for Environmental Excellence (AFCEE) lead the agency’s sustainable building policy, guidance, and technical support. They created the Sustainable Facilities Guide which translates LEED™ standards into action items for design teams.

Sustainable Design and Development Policy, December 19, 2001:

- Declares “Air Force policy to apply sustainable development concepts in the planning, design, construction, environmental management, operations, maintenance, and disposal of facilities and infrastructure projects, consistent with budget and mission requirements.”
- Calls for “integrated programming and project planning” through the use of multidisciplinary teams and the selection of contractors partly on the basis of their knowledge of environmental issues.
- LEED™ is described as “the Air Force preferred self-assessment metric.” At least 20 percent of each major command’s projects are to be selected as LEED™ pilot projects in FY 2004, with increasing percentages of projects until FY 2009, when all military construction projects are to be capable of achieving LEED™ certification.

Air Force Guidance Documents:

- Air Force Sustainable Facilities Guide, www.afcee.brooks.af.mil/dc/dcd/arch/rfg/index.html
- Air Force Construction and Demolition Waste Management Guide, www.afcee.brooks.af.mil/eq/programs/summary.asp?rscID=870
- Air Combat Command Sustainable Facilities Guide, www.afcee.brooks.af.mil/green/case/accsfguide.pdf

- AFCEE’s Web University: Sustainable Development Training – introductory course for sustainable planning, design, construction and management of facilities, <https://webu.brooks.af.mil/webu/secure/onlinecourse.asp>
- Air Force Civil Engineer Support Agency’s (AFCEA) Water Conservation page, www.afcesa.af.mil/directorate/ces/civil/water/waterconserv.htm
- AFCEA’s Facility Energy Program, www.afcesa.af.mil/directorate/ces/mechanical/energy

National Aeronautics and Space Administration (NASA)

NASA policies stating their requirements for implementing sustainable designs established goals for Construction of Facilities projects to meet the LEED™ rating of Silver. NASA encourages its designers to strive for the LEED™ Gold rating if cost effective. NASA has included sustainable design factors in its overall corporate prioritization and rating process for approving projects and obtaining funding.

NASA employs an extensive NASA Procedures and Guidelines (NPG) manual that stipulates NASA’s commitment to green building and resource conservation. Within the NPG, a Facility Project Implementation Guide provides guidance to incorporating sustainable design principles in facility construction. NPG also includes guidance for evaluating and implementing cost-effective energy efficiency, renewable energy, and water conservation measures in NASA facilities and operations. The NPG also includes policy for incorporating sustainable design in facility-type projects under agency authority and control. NASA emphasizes that sustainable designs cover the full cost of a facility from planning through deconstruction.

NPG 8570.1, Energy Efficiency and Water Conservation Technologies and Practices: Provides guidance for accomplishing cost- and energy-efficient, renewable energy, and water conservation measures in NASA facilities and operations.

- NPG 8570.1.P.1.2: “NASA Procedures and Guidelines (NPG) has been prepared to assist NASA Headquarters, Centers, and Component Facilities, Strategic Enterprises, and Institutional Program Offices in implementing the requirements of Federal law, Executive Orders, and NASA policy related to energy and water conservation and efficiency management. This NPG serves as a practical reference and source of guidance for use by NASA managers and other responsible staff in ensuring that NASA facilities and related operations comply with the letter and spirit of NECPA and EO 13123.”
- NPG 8570.1.3.1.1: “Energy efficiency and conservation management ensure that energy and water are used effectively and judiciously. A successful program not only involves energy conservation and engineering, but every area of institutional management, including facilities and maintenance management, procurement, administration, and communications and public affairs.”
- NPG 8570.1.3.7.2: “The purpose of an energy awareness program is to eliminate energy waste by making energy users more energy conscious. An awareness program attempts to influence energy users’ attitudes and behavior to reduce energy waste, promote energy efficiency, prevent pollution and reduce costs. Potential savings from awareness depends on the Center’s current level of efficiency and the motivation of its personnel. An effective program targets specific audiences, involves as many energy users as possible, is widely publicized, and makes energy energy-saving actions and goals as concrete as possible. The program should be creative, consistent, continuous, and informative.”

NPG 8500.1, NASA Environmental Management: Provides guidance for overall environmental stewardship in NASA facilities through resource conservation, waste reduction, waste management, and remediation of toxic sites.

- NPG 8500.1.f: “Actively partner with Federal, State, and local regulatory agencies, as appropriate, to leverage available resources and comply with environmental requirements, prevent pollution, reduce waste generation, and manage natural resources in the most efficient and effective manner possible.”

NPG 8820.2C, Facility Project Implementation Handbook (FPIH): provides a ready reference to pertinent policy and guidance for management of facility planning, budgeting, design, construction, and activation.

- Committed to making “provisions for alternate energy sources for reasons of reliability, economy, and/or pollution control.”

About Sustainability at NASA:

www.hq.nasa.gov/office/codej/codeje/site/sustainability/about_sustainability.html

General Services Administration (GSA)

GSA policy states all new GSA facilities must be LEED™ certified and are encouraged to achieve a Silver rating.

- Facility Standards for the Public Buildings Service (PBS-9100) (revised 2000) “GSA is committed to incorporating principles of sustainable design and energy efficiency into all of its sustainable building projects.” Sustainable design is defined as an “integrated, synergistic approach, in which all phases of facility lifecycle are considered. These principles shall serve as the basis for planning, programming, budgeting, construction, commissioning, operation, maintenance, decommissioning of all new GSA facilities, and for major renovation and alteration of existing buildings and facilities.”

All agencies that lease space from GSA are required to meet GSA’s Green Lease Acquisition requirements. The lease solicitation for offers (SFO) section entitled *Safety and Environmental Management* includes several paragraphs that address performance requirements for indoor air quality, hazardous materials, and recycling in space occupied by GSA tenants. Some of the requirements include:

- At a minimum, all lease actions are expected to address re-use of building material, maintenance of indoor air quality during construction, use of recycled content products required by the Comprehensive Procurement Guidelines, and use of environmentally preferable building products and materials.
- The Lessor will recycle the following items during both the demolition and construction phases of the project, subject to economic evaluation and feasibility: ceiling grid and tile, light fixtures, including proper disposal of any transformers, ballasts and fluorescent light bulbs, duct work and HVAC equipment, aluminum and/or steel doors and frames, hardware, drywall, steel studs, carpet, carpet backing, carpet padding, wood, insulation, cardboard packaging, pallets, windows and glazing materials, metals, etc.
- The Contracting Officer may eliminate from consideration products with significant quantities of toxic, flammable, corrosive or carcinogenic material and products with potential for harmful chemical emissions. Materials used often or in large quantities will receive the greatest amount of review.
- Landscape management practices shall prevent pollution by: employing practices which avoid or minimize the need for fertilizers and pesticides; prohibiting the use of 2,4-D and organophosphates; and composting/recycling all yard waste.
- The Lessor must use recycled content products as indicated in this SFO and as designated by the U.S. Environmental Protection Agency in the Comprehensive Procurement Guideline (CPG), 40 CFR Part 247, and its accompanying Recovered Material Advisory Notice (RMAN).

- The Lessor shall use environmentally preferable products and materials where economically feasible. Environmentally preferable products have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose.
- For all new installations of wood products, the lessor is encouraged to use independently certified forest products. New installations of wood products used under this contract should not contain wood from endangered wood species, as listed by the Convention on International Trade and Endangered Species (CITES). Particle board, strawboard and plywood materials shall comply with HUD Standards for VOC emissions (particleboard: 0.2 ppm of formaldehyde, plywood: 0.3 ppm of formaldehyde).
- All adhesives employed on this project (including, but not limited to, adhesives for carpet, carpet tile, plastic laminate, wallcoverings, wood adhesive, or sealants) shall be those with the lowest possible Volatile Organic Compound (VOC) content below 20 g/L. and which meet the requirements of the manufacturer of the products adhered or involved. The Lessor shall use adhesives and sealants with no formaldehyde or heavy metals.
- Where feasible, reprocessed or consolidated latex paint with low VOC should be used in accordance with EPA's Comprehensive Procurement Guideline. The type of paint shall be acceptable to the Contracting Officer. Lessor shall follow manufacturer's recommendations for the application and maintenance of all paint products.
- All offerors are encouraged to use Energy Savings Performance Contracts (ESPC) or utility agreements to achieve, maintain and/or exceed the ENERGY STAR Benchmark Score of 75, and are encouraged to include shared savings in their offer as a result of energy upgrades where applicable.
- All new construction shall achieve an ENERGY STAR Building Label within one year after reaching 95 percent occupancy and continue to maintain the level of performance.
- The Lessor shall provide occupancy sensors and/or scheduling controls through building automation system to reduce the hours the lights are on when the space is unoccupied. Daylight dimming controls shall be used in atriums or other space where daylight can contribute to energy savings.
- The Lessor shall make careful selection of janitorial cleaning products and equipment to: Use products that are packaged ecologically, Use products and equipment considered environmentally beneficial and/or recycled products that are phosphate free, non-corrosive, non-flammable and fully biodegradable, and Minimize the use of harsh chemicals and the release of irritating fumes.
- The Lessor shall select paper and paper products (i.e., bathroom tissue and paper towels) with recycled content conforming to the EPA's Comprehensive Procurement Guidelines.

www.wbdg.org/ccbref/pa_gsa.php?category=pa

U.S. Environmental Protection Agency (EPA)

EPA incorporates sustainable building principles into the siting, design, and construction of all new facilities, as well as the renovation and maintenance of existing facilities. The Agency requires Silver LEED™ certification for new significant building construction or acquisition, but encourages higher. Using Energy Star's Target Finder tool, EPA requires all buildings meet Energy Star certification. In addition, EPA's *Green Buildings Vision and Policy Statement* serves as a guide for sustainable projects.

- Executive Order 13101, Goals for 2005 and 2010: Have all of EPA's significant new facility construction and new building acquisition projects meet the U.S Green Building Council's LEED Silver standard by 2005. Commit to use the U.S. Green Building Council's LEED™ new Commercial Interiors and Existing Building standards by 2005 on at least one appropriate project where space in an existing building is acquired. EPA will request that GSA provide new major office leases that meet the Energy Star requirements.

- Green Buildings Vision and Policy Statement: Agency facilities, both new and existing, should serve as models for a healthy workplace with minimal environmental impacts. To achieve this goal, EPA will utilize both innovative, state-of-the-art technologies and a holistic approach to design, construction, renovation, and use. EPA will work with the private sector to identify opportunities for innovation and help create markets for both products and design concepts. Important considerations in the design, construction, and use of EPA-owned and -leased facilities include the following:
 - Site planning that utilizes resources naturally occurring on the site such as solar and wind energy, natural shading, native plant materials, topography, and drainage
 - Location and programs to optimize use of existing infrastructure and transportation options, including the use of alternative work modes such as telecommuting and teleconferencing
 - Use of recycled content and environmentally preferable construction materials and furnishings, consistent with EPA Procurement Guidelines
 - Minimization of energy and materials waste throughout the building's life cycle, from design through demolition or reuse
 - Design of the building envelope for energy efficiency
 - Use of materials and design strategies to achieve optimal indoor environmental quality, particularly including light and air, to maximize health and productivity
 - Operation systems and practices that support an integrated waste management system
 - Recycling of building materials at demolition
 - Management of water as a limited resource in site design, building construction and building operations
 - Utilization of solar and other renewable technologies, where appropriate

www.epa.gov/greeningepa/p2/eppgoals.htm

www.epa.gov/greeningepa/projects/policy.htm

- EPA's Facilities Management and Services Division is in the process of creating a "Sustainable Master Plan Statement" as a template for A&E firms. Steven Winter Associates is developing the template for EPA contracted planners, architects, and engineers constructing EPA laboratories, office buildings, multiple building sites, and single-building facilities. It will ensure contractors consider all aspects of sustainable development and will identify sustainability issues that should be considered in developing site alternatives and, ultimately, master plans.

www.swinter.com/wintergreen/wgmay04.pdf

U.S. Department of Health and Human Services (HHS)

The HHS Energy Program and the HHS Environmental Quality Program began specifically addressing green buildings and sustainability in FY 2000. Applicable Executive Orders, directives, and initiatives were analyzed and integrated into the existing policies, programs, and projects. The Assistant Secretary issued policy memoranda and directives addressing alternative financing, renewable energy applications, Energy Star buildings and hospitals, state funding for renewables and clean energy, and training. The agency's 11 Operating Divisions (OPDIVs) in turn incorporated the information into the existing energy and environmental programs and goals.

The Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and the National Institutes of Health (NIH) Design Policies and Guidelines include the mandated use of life-

cycle costing, Energy Star and energy efficiency product specification and procurement, sustainable design and development principles included in the *Whole Building Design Guide* and in the LEED™ rating system, and the analysis of renewable energy systems.

U.S. Department of Energy (DOE)

DOE Order 430.2A, Departmental Energy and Utility Management, April 15, 2000, emphasizes the energy efficiency strategies of Executive Order 13123, directs the application of sustainable design principles to new buildings, and recommends the application of sustainable design principles to major alterations of existing buildings. DOE promotes sustainable building design practices by offering seed funding to DOE sites to include sustainable principles in their site design/construction programs and document LEED™ certification.

In addition, DOE initiated the Energy Policy Act of 1992 and Executive Order 13123 which required federal agencies to address sustainable design comprehensively, including energy efficiency, efficient use of water, waste reduction, sustainable site planning, and indoor environmental quality.

- DOE Order 430.2A, Departmental Energy and Utility Management, April 15, 2000: Objectives are “to accomplish on a Department-wide basis the following energy efficiency leadership goals that apply to energy and utilities management using a life cycle cost-effective approach:
- Reduce energy consumption per gross square foot for buildings through life cycle cost-effective measures by 40 percent by 2005 and 45 percent by 2010, using a 1985 baseline.
- Reduce energy consumption per gross square foot (or other unit as applicable) for laboratory and industrial facilities through life cycle cost-effective measures by 20 percent by 2005 and 30 percent by 2010, using a 1990 baseline.
- Increase the purchase of electricity from nonhydroelectric renewable energy sources by including provisions for such purchases as a component in all future DOE competitive solicitations for electricity. DOE will purchase 3 percent of its total electricity needs from nonhydroelectric renewable energy sources by 2005 and 7.5 percent of its total electricity purchases from nonhydroelectric renewable energy sources by 2010. Nonhydroelectric renewable energy is energy generated from solar, geothermal, biomass, or wind technologies.
- Increase the purchase of electricity from less greenhouse gas-intensive sources, including, but not limited to, new advanced-technology fossil energy systems and other highly efficient generating technologies.
- Retrofit or replace all chillers greater than 150 tons of cooling capacity and manufactured before 1984 that use class I refrigerant by 2005.
- Reduce greenhouse gas emissions attributed to facility energy use through life cycle cost-effective measures by 25 percent by 2005 and 30 percent by 2010, using 1990 as a baseline. Greenhouse gas emissions are carbon dioxide emissions calculated from reported energy consumption.”

Full text of DOE Order 430.2A including specific goals, requirements, and implementation for facilities: www.directives.doe.gov/cgi-bin/explhcg?qry1573792191;doe-178

Additional DOE resources:

- Roadmap for Integrating Sustainable Design into Site-Level Operations, www.pnl.gov/doesustainabledesign/
- Laboratories for the 21st Century, www.epa.gov/labs21century

- DOE Energy Efficiency and Renewable Energy, Buildings Technology Program, High Performance Buildings, www.eere.energy.gov/buildings/high_performance
- FEMP Technical Assistance: Greening Federal Facilities, www.eere.energy.gov/femp/techassist/green_fed_facilities.html

U.S. Postal Service (USPS)

The United States Postal Service has been working actively since 1993 to reduce the environmental impact of its operations, including the use of alternative-fuel vehicles, recycled and recyclable paper, and low-impact buildings. With 35,000 facilities, and 500 to 700 new ones going up each year, the USPS has an enormous building program. In 2001, (updated 2003) the USPS created Building Design Standards that include the Standard Detail Library, Design Criteria, and USPS Master Specifications.

Copies of the Building Design Standards CD-ROM along with the Policy Letter can be obtained by contacting Corporate Visions, Customer Service Department, 202-833-4333.

- Standard Design Criteria, Handbook AS-503, 2003: The Standard Design Criteria is an integral part of the USPS Building Design Standards. Together with the other Standards components -- such as the Standard Detail Library, the USPS Master Specification and the various standard building designs -- the Standard Design Criteria conveys the necessary information to define how Postal facilities are to be designed and constructed.

The USPS built the first “Green Post Office” in Fort Worth, Texas in 1999 and has followed with numerous others since, including a straw-bale construction Post Office in Corrales, New Mexico.

www.usps.gov/environment
www.buildinggreen.com/news/postoffice.cfm

- USPS Environmental Protection Policy: “The United States Postal Service is committed to providing employees and customers with a safe and healthy environment. Environmental protection is the responsible thing to do, and makes or sound business practices.”

State Policy Profiles

California

Executive Order D-16-00, August 2000: Established the state’s sustainable building goal. The Secretary of State and Consumer Services Agency created an interagency design Task Force to prepare policy recommendations and report annual progress in meeting the goals of the Executive Order.

www.ciwmb.ca.gov/greenbuilding/taskforce

The Task Force created a 10-point plan called “Building Better Buildings: A Blueprint for Sustainable State Facilities.”

www.ciwmb.ca.gov/greenbuilding/Blueprint/2003/

CIWMB developed the report *The Costs and Financial Benefits of Green Buildings: A Report to California’s Sustainable Building Task Force*, a comprehensive study that finds that an upfront investment of less than two percent of construction costs yields life cycle costs of over ten times the initial investment.

Executive Summary: www.ciwmb.ca.gov/greenbuilding/Design/CostBenefit/ExecSummary.pdf

Final Report: www.ciwmb.ca.gov/greenbuilding/Design/CostBenefit/Report.pdf

More on cost-benefit studies: www.ciwmb.ca.gov/greenbuilding/Design/CostIssues.htm#Cost&Benefit

California Integrated Waste Management Board (CIWMB) Green Building Website – Includes the training manual *Designing with Vision: A Technical Manual for Material Choices in Sustainable Construction*.

www.ciwmb.ca.gov/greenbuilding

Florida

The *Process Guidelines for High-Performance Buildings* were implemented in 1998 as an updating of the *Florida Energy Conservation Manual* (1992 Revision) and *State Energy Management Plan* (1986 Revision). The *Process Guidelines for High-Performance Buildings* were developed to provide general information and legislatively mandated guidance for a range of personnel with facility and project responsibilities during all phases of building design, construction, and operation.

<http://sustainable.state.fl.us/fdi/edesign/resource/index.html>

Maryland

Executive Order .01.01.2001.02, “Maryland Green Building”, March 2001: Requires energy efficient and environmentally responsible facilities; sets goals for purchasing green energy; outlines energy conservation strategies.

Massachusetts

In Massachusetts vertical construction (e.g. buildings) and renovations are overseen by the Commonwealth's Division of Capital Asset Management (DCAM). DCAM has incorporated energy and resource efficiency and sustainable design technologies and techniques through a number of initiatives into its design and construction activities for State building and renovation projects. Some of the prominent activities in this area include the following:

- Form 9 - Instructions for Designers: This document, which becomes a part of every designer's contract with DCAM, stipulates that designers shall specify energy and water conserving building systems and end-use equipment. It further stipulates that designers shall consider the utilization of a litany of other sustainable design-oriented materials, technologies and planning issues, such as those related to site orientation, finishes and other building systems and products. This document provides justification for requiring that life cycle cost analysis be provided for all major mechanical and electrical systems.
- The Sustainable Design Building Guide: Offered to DCAM study consultants (and project designers), this document focuses on approaches to incorporate operational costs into planning processes (life cycle cost analysis) for energy and water using building systems and provides a guideline for the specification of sustainable construction materials.
- DCAM project management and the Energy and Sustainable Design team are made available to each project in the design phase for the purpose of assisting in the selection of sustainable materials and coordination of life cycle cost analyses. Such analyses are conducted to specify major building systems which provide the best value to the Commonwealth over their projected useful life. Cumulatively, these projects have resulted in savings of \$17,184,658 for projects begun since 1993

(during the time period of the Clean State Initiative). The emissions reduction associated with these projects is equivalent to 167,701,833 tons of CO₂, 1,343,704 tons of SO₂, and 470,296 tons of NO_x.

www.mass.gov/epp/products/DCAM.htm

Minnesota

Minnesota's State Architect's Office developed Sustainability Guidelines for Consultants that outline state policy on sustainable building. They include required and recommended standards for new construction and renovation projects.

www.sao.admin.state.mn.us/sustainability/sustainable-guideline.asp

New York

Executive Order 111: All buildings of 20,000 gross square feet or more must meet the criteria for a certified LEED rating and surpass the state's Energy Conservation Construction Code by 20% in energy savings. The effort is being funded by the New York State Energy Research and Development Authority and the New York State Office of General Services.

Full text of the guidelines:

www.nyserda.org/exorder111guidelines.pdf

Oregon

Executive Order EO-00-07, "Development of a State Strategy to Promote Sustainability," 2000: Requires that all state agencies integrate sustainable design into all state projects.

Washington

Executive Order 04-06, "Establishing Sustainability and Efficiency Goals for State Operations," 2004: As a part of larger sustainability goals, the state of Washington set the following standard for green building practices: Agencies incorporate green building practices in all new construction projects, and in major remodels that cost over 60% of the facility's assessed value.

- A. All building construction projects and major remodels over 25,000 gross square feet entering the predesign phase in the 2005-07 Biennium and thereafter, will be built and certified to the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver Standard (or certified to an equivalent standard as approved by the Department of General Administration).
- B. For all building construction projects and major remodels between 5,000 and 25,000 gross square feet entering the predesign or design phase in the 2005-07 Biennium and thereafter, the Department of General Administration will develop and implement a review process to ensure that green building performance standards consistent with the U.S. Green Building Council (LEED) Silver Standard are being applied, wherever appropriate. However, LEED Certification will not be required for these projects.
- C. The Department of General Administration and other affected state agencies will develop processes and procedures to ensure that green building practices are integrated into design and construction process for all new construction and remodels.

- D. The Department of General Administration will provide reimbursable training and support to all affected project managers.

www.governor.wa.gov/eo/exorders.htm

Local Government Policy Profiles

City of Austin, TX

Austin's Sustainable Building Guidelines provides specifications and guidance for constructing and maintaining high performance buildings. Their Sustainable Building Sourcebook also contains green building background, resources, and specs.

www.ci.austin.tx.us/greenbuilder

Austin's Municipal Guidelines:

- Inform clients and other professionals that sustainable design does not detract from the quality of life nor impede progress. Environmental measures are a means to provide clients with high standards for aesthetics as well as quality design.
- Encourage the design and construction of buildings that surpass current energy and land development codes. New standards for design excellence will relate to energy and water conservation and environmental impact.
- Encourage building healthy structures that have good indoor air quality, and provide source control as well as adequate ventilation using natural systems.
- Encourage designers to specify materials that do not contribute to over-consumption of non-renewable resources.
- Facilitate the integration of environmental concerns from the outset of a project.

City of Seattle, WA

The City's Sustainable Building Policy is an integral part of the City's move toward sustainability, calling for new City-funded projects and renovations with over 5000ft² of occupied space to achieve a Silver Rating using the US Green Building Council's (USGBC) LEED Rating System™.

www.cityofseattle.net/sustainablebuilding/SBpolicy.htm

Using a national standard such as LEED™ helps establish minimum performance levels, creates a common dialogue for discussion, and allows Seattle to measure its building performance relative to other jurisdictions using the same system. In addition, technical rulings, training, networking and marketing support are provided by the USGBC.

To facilitate use of LEED™ by City Capital Improvement Project (CIP) Managers and their design teams, the City's Green Building Team authored the Seattle CIP Supplements. This document provides Seattle-specific information on applying the rating system, directs users to relevant resources, and calls out several additional requirements for City projects. Although written for City CIP Managers, the Supplements have value to anyone applying LEED™ to a project in the Seattle area.

Seattle's CIP Supplements to LEED™

www.cityofseattle.net/sustainablebuilding/Leeds/default.htm

An interdepartmental group of City employees, the Green Building Team, serves as a coordinating body for implementation of the Policy and as resident experts on elements of green building. The Sustainable Building Policy and the Seattle CIP Supplements to LEED™ were both recommendations of the City's Sustainable Building Action Plan, completed in April, 1998.

www.cityofseattle.net/sustainablebuilding/

Alameda County Solid Waste Management Authority

Alameda County Solid Waste Management Authority's Green Building Program incorporates waste reduction into their green building requirements. County Projects with a total Estimated Cost of Construction of \$100,000 or greater and County Projects consisting primarily of Demolition with a total Estimated Cost of \$25,000 or greater shall meet the following requirements:

- At least 75% of the asphalt, concrete, and earth Debris generated by the project shall be diverted from landfill via Reuse or Recycling.
- At least 50% of the total Reuse of all other Debris generated by the project shall be diverted from landfill via Reuse or Recycling.
- Debris consisting of hazardous waste, contaminated earth or soil, and materials without any use or market value even after re-manufacturing shall be exempted from the foregoing Diversion Requirements.

In addition to construction waste requirements, all County projects initiated on or after July 1, 2003, except Traditional Public Works Projects, shall meet a minimum LEED™ Silver rating under the LEED™ Rating System, or a County-approved equivalent.

Additional resources available through the program include New Home Construction and Remodeling Guidelines, Green Building Materials Resource Guide, and the Builders' Guide to Reuse and Recycling.

www.stopwaste.org/fsbuild.html

King County, WA

King County has recently adopted the LEED™ rating system as a standard for all buildings the county constructs, remodels, and renovates. In 2003 an on-line resource, the LEED™ Supplement for King County, (<http://dnr.metrokc.gov/swd/leed/default.asp>) was launched to help owners, architects, designers, contractors, project managers or building professionals develop green buildings in King County. This supplement outlines the LEED™ Green Building Rating System within the context of current King County building codes.

Certification is currently available for commercial projects. The US Green Building Council is also developing certification programs for residential, interior, and operations applications.

http://dnr.metrokc.gov/swd/bizprog/sus_build/specs.htm

Triangle J Council of Governments

Triangle J Council of Government sponsored the creation of Waste Spec: Model Specifications for Construction Waste Reduction, Reuse, and Recycling.

www.tjcog.dst.nc.us/cdwaste.htm

City of Santa Monica

The City of Santa Monica has a commitment to protecting the environment, improving quality of life, and promoting sustainability. In order to fulfill this commitment, the City has adopted a set of requirements and recommendations to encourage the development of "green" buildings without forcing excessive costs or other burdens upon developers, building owners or occupants. The City has also developed Green Building Guidelines to explain possible ways of achieving green building goals.

The City of Santa Monica developed "Green Buildings Design and Construction Guidelines" and an online "Design Advisor" tool to implement their Green Building Program.

<http://greenbuildings.santa-monica.org>

City of New York

In 1999, New York City's Office of Sustainable Design published *High Performance Building Guidelines*. This document has been a means of introducing sustainable design to design and construction project teams and has been recognized internationally as a green building reference.

www.ci.nyc.ny.us/html/ddc/html/ddcgreen

Organizations & Resources

Whole Building Design Guide

Sponsored by EPA and a number of federal agencies and organizations, the Whole Building Design Guide has model specifications for green building, design guidance, and other resources.

www.wbdg.org

US Green Building Council

The United States Green Building Council (USGBC), a national non-profit organization, developed the Leadership in Energy and Environmental Design (LEED) Rating System™. LEED™ has been widely embraced both nationally and internationally as the green building design standard.

LEED™ is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council representing all segments of the building industry developed LEED™ and continue to contribute to its evolution. LEED standards are currently available or under development for: New commercial construction and major renovation projects, existing building operations, commercial interiors projects, core and shell projects, and homes.

LEED was created to:

- define "green building" by establishing a common standard of measurement
- promote integrated, whole-building design practices
- recognize environmental leadership in the building industry

- stimulate green competition
- raise consumer awareness of green building benefits
- transform the building market

LEED provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific standards, LEED emphasizes state of the art strategies for sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. LEED recognizes achievements and promotes expertise in green building through a comprehensive system offering project certification, professional accreditation, training and practical resources.

www.usgbc.org

Energy Star

Buildings that meet Energy Star guidelines use considerably less energy than non-qualified buildings. The Energy Star label can be achieved for new construction by meeting a variety of energy standards including standards for roofing, insulation, windows, heating and cooling systems, and other design elements. Energy Star's Target Finder tool helps facilities set and track energy use goals.

www.energystar.gov

American Institute of Architects

The American Institute of Architects (AIA) developed “Sustainable Design Language for Consultant Requests” that outlines specific RFP language and other ways to incorporate sustainability into specifications.

www.aia.org/pia/cote/rfp/rfp4.asp

AIA’s Committee on the Environment (COTE) also includes how to incorporate energy efficiency into remodeling, state incentive resources, and related articles and tools.

www.aia.org/cote/

ASTM International Standards

ASTM International’s Subcommittee E6.71 has sponsored the development of a compendium of standards that address “sustainability in buildings.” Providing access to 127 standards, this resource may assist federal agencies in meeting the requirements of the National Technology Transfer and Advancement Act in addition to a variety of green building goals.

Sections cover:

- Site & Ecosystems: Land management, biodiversity impacts, and ecosystem functioning
- Water: Water efficiency and water quality impacts
- Energy: Energy efficiency, renewable energy, and atmospheric impacts
- Materials: Recycled content, nontoxic, and biobased products
- Indoor Environmental Quality: Indoor air quality, acoustics, and lighting
- Operations: Durability, waste management, maintenance, quality of life, and life cycle assessment (LCA)

www.astm.org → search standards for “sustainability”