

## SECTION 3-5: SUSTAINABLE DESIGN

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### 3-5-00 POLICY

HHS and its OPDIVS shall consider sustainable design during planning, programming and budget formulation for all new federally-owned HHS facilities. Sustainable design is a desired integral characteristic of HHS facility project development. Through sustainable design and construction of HHS facilities, OPDIVs will model responsible environmental practices and help create the framework within which the building industry as a whole can shift towards practices that will promote "Green Buildings". HHS signed the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU), on January 24<sup>th</sup>, 2006. This memorandum commits the Department to Federal leadership in implementing common strategies for planning, acquiring, siting, designing, building, operating, and maintaining high performance and sustainable buildings. The MOU establishes a common set of Guiding Principles to: 1) employ integrated design principles; 2) optimize energy performance; 3) protect and conserve water; 4) enhance indoor environmental quality; and 5) reduce environmental impact of materials.

The Department has developed additional documentation to further support the MOU's Guiding Principles. The *Sustainable Buildings Implementation Plan (December 2008)* implements the *Guiding Principles for Federal Leadership in High Performance and Sustainable Building*. This Plan is updated annually, reported on semiannually and is intended to promote continuous improvement toward the goals. The Sustainable Buildings Checklist (as included within the Implementation Plan and the Facility Project Approval Agreement (FPAA), assists personnel in recording a building's sustainable features and identifies opportunities for improving sustainable performance. *The Sustainability Plan (June 2010)*

### 3-5-10 PROCEDURES

Several executive orders affecting facilities have been issued which promote and mandate the greening of the Federal Government. The design therefore shall provide for the protection of the environment through energy efficiency, recycling, pollution prevention, and affirmative procurement.

1. Energy conservation shall be given major consideration in the design of HHS buildings. Products, materials, and systems shall be selected with a view toward minimizing the use of nonrenewable resources.
2. Pursuant to Executive Order (E.O.) 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*, HHS is committed to recycling and buying recycled content and environmentally preferable products. OPDIVS are encouraged to reduce construction and demolition waste by reducing debris, reusing materials and recycling. The design shall maximize the use of environmentally preferable products and services to the extent feasible, consistent with price, performance, availability, and safety considerations.
3. Pursuant to E.O. 13123, *Greening the Government Through Efficient Energy Management (June 3, 1999)*, HHS shall select, where life-cycle cost effective, ENERGY STAR® and other energy

efficient products when specifying energy - using products. The design should specify products that are in the upper 25 percent of energy efficiency as designated by the Federal Energy Management Program (FEMP). The design should meet ENERGY STAR® building criteria for energy performance and indoor environmental quality in eligible HHS facilities.

4. Pursuant to E.O. 13148, *Greening the Government Through Leadership in Environmental Management (April 21, 2000)*, the design shall maximize the use of cost-effective environmentally sound landscaping practices to reduce adverse impacts to the natural environment, prevent pollution and potential future liabilities at HHS facilities.
5. Explore life-cycle cost-effective system alternatives and make selections based on long-term durability, energy efficiency, flexibility, accessibility, ease of operation and maintenance, for Heating, Ventilation, and Air Conditioning (HVAC), Plumbing, Fire Protection systems, steam systems, boilers, air compressor systems, industrial processes, fuel switching systems, and cogeneration.
6. Incorporate the use of renewable energy and technologies in the design of HHS buildings and facilities when life cycle cost effective. Renewable energy includes photovoltaic, solar thermal, biomass (wood, wood waste, refuse and agricultural waste), wind, geothermal and low- impact hydropower technologies.
7. Incorporate Best Management Practices (BMP) for water conservation in the design of the project.

### 3-5-20 GUIDANCE AND INFORMATION

#### A. GOALS

HHS facilities, both new and existing, should serve as models for a healthy workplace with minimal environmental impacts. To achieve this goal, OPDIVS are encouraged to utilize both innovative, state-of-the-art technologies and a holistic approach to design, construction, renovation, and use. Important considerations in the design, construction, and use of HHS owned and leased facilities include the following:

1. Site planning that utilizes resources naturally occurring on the site such as solar and wind energy, natural shading, native plant materials, topography, and drainage.
2. Location and programs to optimize use of existing infrastructure and transportation options.
3. Use of recycled content and environmentally preferable construction materials and furnishings, consistent with HHS and Federal Acquisition Regulations.
4. Minimize energy and materials waste throughout the building's life cycle from design through remediation.
5. Design of the building envelope for energy efficiency.
6. Use of materials and design strategies to achieve optimal indoor environmental quality (such as lighting quality and air quality) to maximize health and productivity.
7. Operation systems and practices that support an integrated waste management system.
8. Recycling of building materials at demolition.
9. Management of water as a limited resource in site design, building construction and building operations.
10. Utilization of solar and other renewable technologies, where appropriate.

Evaluation of trade-offs will be an important component of the design of Green Buildings. Where the goals of a Green Building are contradictory (e.g., increased ventilation vs. increased energy efficiency), the trade-offs will have to be evaluated in a holistic framework to achieve long-term benefits for the environment.

OPDIVS are encouraged to design construct and operate high performance facilities by establishing performance goals at the programming phase. Whether building a new laboratory or renovating an existing structure, there are nine key elements to creating a high performance building:

1. Set high performance goals early and include them in the specifications.
2. Minimize the impact of the site.
3. Provide high performance design.
4. Communicate goals to designers.
5. Pursue integrated design.
6. Communicate goals to construction contractors.
7. Monitor construction.
8. Verify goals.
9. Train maintenance and administrative staff.

For a high performance facility, project team collaboration and integration of design choices should begin no later than the programming phase.