

Chapter 2 Background

2-1. Necessity of Using Green Building Technologies

a. The use of Green Building technologies for federal projects is not only good for the environment, it has been mandated by the highest levels of the Federal Government. The President, the Department of Defense (DOD), and the USACE have adopted policies that mandate the use of Green Building technologies.

b. Executive Order (EO) 13101, "Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition" (14 September 1998) has mandated the use of Green Building technologies for Federal activities including DOD and USACE. The EO requires that in developing drawings, work statements, specifications, or other product descriptions, agencies shall consider elimination of virgin material requirements, use of U.S. Department of Agriculture (USDA) designated biobased products, use of recovered materials, reuse of products, life cycle cost, recyclability, use of environmentally preferable products, waste prevention (including toxicity reduction or elimination), and ultimate disposal, as appropriate. The preamble to EO 13101 states that: "It is the national policy to prefer pollution prevention, wherever feasible. Pollution that cannot be prevented should be recycled; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner. Disposal should be employed only as the last resort."

c. Selected requirements of EO 13101 that may affect Green Building applications are summarized below. See Appendix D for the complete EO 13101.

(1) Agencies shall ensure that their affirmative procurement programs require 100 percent of their purchases of U.S. Environmental Protection Agency (USEPA) - designated items found in 40 CFR 247 (see Appendix E for the list of USEPA-designated items) to meet or exceed the USEPA guidelines unless written justification is provided. [These requirements and the Federal Acquisition Regulation (FAR) under which the USACE must operate are discussed in the Principal Assistant Responsible for Contracting (PARC) Instruction Letter 99-2. Documentation and reporting requirements are described in Paragraph 12(f) of the PARC Instruction Letter 99-2. The contents of the PARC Instruction Letter are provided in Appendix F.]

(2) Regulators have the authority under the Federal Facilities Compliance Act and section 6002 of the Resource Conservation and Recovery Act (RCRA) to evaluate compliance for Affirmative Procurement [EO 13101 Part 4, Sec. 403 (c)] during multimedia inspections of facilities (see Success Stories, Paragraph 5-5, Grand Forks Air Force Base).

(3) When developing, reviewing, or revising specifications, product descriptions, and standards, agencies shall consider recovered materials and any environmentally preferable purchasing criteria or energy efficiency criteria and ensure compliance with the criteria; otherwise, the Environmental Executive of the agency must provide justification.

(4) As items containing recovered materials have been designated by the USEPA, agencies shall modify their affirmative procurement programs.

(5) Agencies are encouraged to implement pilot programs to test and evaluate the principles of the Acquisition of Environmentally Preferable Products and Services and Energy Star products and materials (see Appendix E).

(6) Once the USDA Biobased Products List has been published, agencies are encouraged to modify their affirmative procurement program to give consideration to those products.

(7) Contracts at government facilities shall include provisions that obligate the contractor to comply with the requirements of this order.

d. As stated in the Defense Environmental Network and Information Exchange (DENIX) pollution prevention (P2) web page (<http://www.denix.osd.mil/>), pollution prevention supports the DOD's goals for readiness, quality of life, and modernization. Through resource conservation, source reduction, and recycling, pollution prevention programs assist DOD in:

(1) Enhancing operational readiness by minimizing the environmental challenges associated with every stage in the life cycle of a weapon system.

(2) Reducing health and safety risks to its personnel and neighbors in nearby communities while protecting the installation's natural resources.

(3) Reducing or eliminating compliance and cleanup problems.

(4) Implementing process improvements to increase productivity and quality.

(5) Curbing the growth of the environmental budget by eliminating rather than treating or cleaning up pollution problems, and improving the effectiveness of other DOD operations, maintenance, and procurement budgets through more efficient use of materials and resources.

e. In addition to these mandates for using Green Building technologies, USACE personnel should conform to Corps of Engineers Guide Specification (CEGS) 01355: "Environmental Protection".

2-2. Other Directives Mandating the Use of Green Building Technologies

a. There are many federal laws, executive orders, and executive memoranda that mandate energy and resource conservation and recovery for Federal activities. Early efforts include:

- (1) Energy Policy and Conservation Act of 1975.
- (2) Resource Conservation and Recovery Act (RCRA) of 1976.
- (3) National Energy Conservation Policy Act of 1978.
- (4) Federal Energy Management Improvement Act of 1988.
- (5) Pollution Prevention Act of 1990.
- (6) Energy Policy Act of 1992.

b. Recent directives for federal activities that relate to the use of Green Building technologies at HTRW sites include:

(1) Executive Order 13101 (September 14, 1998) “Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition” directed federal agencies to consider recycling and the use of recycled material (this EO revoked and replaced EO 12873).

(2) Executive Order 12902 (8 March 1994), “Energy Efficiency and Water Conservation at Federal Facilities,” encouraged the use of energy-efficient processes for industrial facilities and the procurement of energy-efficient products.

(3) Executive Order 12845 (23 April 1993), “Purchasing Energy Efficient Computer Equipment.”

(4) Executive Order 13123 (8 June 1999), “Greening the Government Through Efficient Energy Management.”

c. More details of these directives and other directives and topics can be found at: <http://www.eren.doe.gov/femp/greenfed/>. The text of Executive Orders can be found at the White House web page: <http://www.whitehouse.gov/search/executive-orders.html>.

d. USEPA and DOE have a joint incentive program called “Energy Star,” which provides information on and acknowledges products that are both economical and energy efficient (<http://www.epa.gov/energystar>).

2-3. Federal Acquisition Regulation (FAR)

a. The document, “The Affirmative Procurement Program,” from the Office of the Secretary of Defense (August 1994), states that 100 percent of Defense purchases of procurement guideline items must meet or exceed guideline standards unless narrowly drawn conditions are met. The Federal Acquisition Regulation (FAR) was amended to require USEPA-designated items purchased by Federal activities to meet minimum standards for recycled content (Executive Order 12873, 1995). Federal, state, and local government agencies *and their contractors* that purchase more than \$10,000 worth of these products must evaluate the feasibility of purchasing these designated products.

b. New guidance regarding FARs related to USEPA’s Comprehensive Procurement Guidelines (CPGs) and Recovered Materials was issued in the spring of 1999 by HQUSACE. A copy of this guidance is provided in Appendix E.

c. USEPA’s Comprehensive Procurement Guidelines and Recovered Materials Advisory Notices (RMANs) are available at: <http://www.epa.gov/epaoswer/non-hw/procure.htm>.

2-4. Overview of Green Building Concepts

a. The goals of the Pollution Prevention Act of 1990 were to increase the elimination, reduction, or recycling of wastes. The benefits of these activities are both environmental and economical (USEPA, 1991b).

b. The environmental benefits include:

- (1) Avoiding the shift of pollutants among environmental media.
- (2) Reducing the need for transportation and disposal of wastes.
- (3) Reducing the total waste and pollutant burden to the environment.
- (4) Reducing risks of exposure to toxic substances.

c. The economic benefits include:

- (1) Reducing waste management, compliance, liability, and remediation costs.
- (2) Increasing operating efficiencies.
- (3) Creating markets for sale or reuse of wastes.

2-5. Pollution Prevention Hierarchy

a. The Pollution Prevention Act and recent guidance developed the pollution prevention hierarchy. Under the hierarchy (USEPA, 1991b):

- (1) Pollution should be prevented or reduced at the source wherever feasible.
- (2) Pollution that cannot be prevented should be recycled in an environmentally safe manner.
- (3) In the absence of feasible prevention or recycling opportunities, wastes should be treated.
- (4) Disposal or other releases into the environment should be used as the last resort.

b. Source reduction may be accomplished through:

(1) Good operating practices (e.g., segregating waste streams such as investigation-derived waste (IDW) from different investigation sites so that reusable wastes won't be contaminated with non-reusable wastes).

(2) Technology changes: i.e., incorporating new methods that create less waste or less toxic waste (e.g., minimizing stormwater entering a contaminated excavation, thus minimizing water requiring treatment).

(3) Input material changes (e.g., using environmentally preferred products such as water-based cleaners instead of solvent-based cleaners).

(4) Product changes (e.g., converting incinerator fly ash into a soil amendment rather than disposing as waste).

c. Recycling may include:

(1) Use and reuse of waste (e.g., recycling demolition debris; using fly ash as a concrete additive).

(2) Reclamation of constituents in waste materials (e.g., extracting usable metals from sludge resulting from treatment of contaminated media). (See Chapter 5 Success Stories, Paragraph 5-3, Ashland 2 FUSRAP Site: Recycling of Uranium Tailings.)

c. The USACE document, "Report on Treatment, Storage and Disposal Facilities for

EP 200-1-10
10 Dec 1999

Hazardous, Toxic, and Radioactive Waste” provides information on commercial recycling and hazardous waste treatment, storage, and disposal facilities in the United States. The report provides addresses and phone numbers of commercial hazardous waste landfills, hazardous waste incinerators, deep well injection facilities, fuel blending and cement kilns, recycling facilities, and transportation operations. The report discusses relevant regulations, and it provides costs and fees for the commercial facilities.

2-6. Life Cycle Analysis

The National Institute of Standards and Technology (NIST) in cooperation with the USEPA has developed an interactive PC-based computer program that allows planners to conduct life-cycle assessments on materials they are considering for buildings. The program, called Building for Environmental and Economic Sustainability (BEES), assesses the environmental impacts of a product through its entire life cycle, from raw material, through use, to disposal (NIST, 1998).