The Need For Green Building

Buildings in the United States have a significant impact on the environment and account for:

Energy[2]

- 37 percent of primary energy use
- 68 percent of all electricity use

Materials Use[3]

- 60 percent of non-food/fuel raw materials use

Waste

- 40 percent of non-industrial solid waste[4] or 136 million tons of construction and demolition debris per year[5]
- 31 percent of mercury in municipal solid waste[6]

Water

- 12 percent of potable water use[7]
- 36 billion gallons of water per day[8]
- 20 percent loss of potable water in many urban systems due to leakage[9]

Air Quality[10]

- 35 percent of carbon dioxide emissions
- 49 percent of sulfur dioxide emissions

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[2] Monthly Energy Review, March 2001, Energy Information Administration, U.S. Department of Energy.
[3] USGS Factsheet FS-068-98, *Materials Flow and Sustainability*, June 1998. See <**http://greenwood.cr.usgs.gov/pub/fact-sheets/fs-0068-98/fs-0068-98.pdf**>.
[4] U.S. EPA Characterization of Building-Related Construction and Demolition Debris in the United States, July 1998, and U.S. EPA Municipal Solid Waste in the United States: 2000 Facts and Figures.
[5] EPA, Characterization of Building-related Construction and Demolition Debris in the United States, 1998. See <**http://www.epa.gov/epaoswer/hazwaste/sqg/c&d-rpt.pdf**>.
[6] U.S. EPA Characterization of Products Containing Mercury in Municipal Solid Waste in the United States, 1970 to 2000, April 1992.
[7] U.S. Geological Service, 1995 data.
[8] USGS, Water Use in the United States, 1995. See <**http://water.usgs.gov/watuse/pdf1995/pdf/domestic.pdf**>
[9] This includes leakage from pipes in the ground, approximately one half of which are owned by the building-owner. Congressional Budget Office. *Future Investment in Drinking Water and Wastewater Infrastructure*. May 2002.
[10] See DOE's Center for Excellence for Sustainable Development website at <**http://sustainable.doe.gov/buildings/gbintro.shtml**>.

- 25 percent of nitrous oxide emissions
- 10 percent of particulate matter emissions

From siting and construction through operation, maintenance, renovation, and demolition, buildings impact many aspects of the environment. And buildings, where people spend 90 percent of their time, can also adversely impact human health.[11] Green building involves minimizing these negative environmental and human health impacts and enhancing positive results throughout the building's entire life cycle.

The new General Services Administration Federal Building in San Francisco will feature windows that open, shared spaces between offices, lots of natural light, and many energy saving measures. The building has been designed to reduce energy costs by 45 percent and is expected to save $500,000 per year in taxpayer dollars.

In addition to environmental benefits, through integrated design, green buildings can be constructed at the same or lower cost than conventional buildings. According to a Pacific Northwest National Laboratory analysis in which two prototype buildings were compared, energy and water efficiency measures alone can reduce annual costs by almost $10,000 in a 20,000 square foot building.[12] Furthermore, design features that simplify space reconfigurations over the life of the building can result in an additional $35,000 in annual cost savings.[13]

[11] EPA, Indoor Air Pollution: An Introduction for Health Professionals, 1994. See <**http://www.epa.gov/iaq/pubs/hpguide.html**>.
[12] The Business Case for Sustainable Design in Federal Facilities. FEMP. August 2003.
[13] Ibid.