

The Federal Context

The Federal government owns approximately 445,000 buildings with total floor space of over 3.0 billion square feet, in addition to leasing an additional 57,000 buildings comprising 374 million square feet of floor space.¹⁴ And so, while the imagery of the Pentagon or the Capitol may prevail in our minds, the average size of a Federal building is only about 6,700 square feet.

Federal buildings vary widely—including, for example, National Park visitor centers, Army barracks, single-family homes, Air Force hangars, post offices, veterans' hospitals, embassies, laboratories, prisons, warehouses, schools, border stations, data processing centers, and every variety of office building. Military buildings predominate, comprising two-thirds of all Federal buildings and floor space. Within the military, residential structures predominate, followed by buildings used for service, storage, office space, and schools.¹⁵



The sustainable features of this Navy residential facility in Norfolk, Virginia will include site restoration, additional stormwater-management features, graywater recycling, high-efficiency HVAC and lighting systems, and energy-recovery systems.

The Army represents nearly half of all Department of Defense (DoD) buildings, with the Navy representing another third. With the Air Force, Marines, and Office of the Secretary of Defense accounting for only about one fifth of all DoD buildings, they still represent more buildings than any civilian Federal agency. Among civilian (non-defense) agencies, the Postal Service (USPS) leads in square footage, followed by the General Services Administration (GSA), Department of Veterans' Affairs (VA), Department of Energy (DOE), Department of Justice (DOJ), Department of the Interior (DOI),

¹⁴Federal Real Property Profile as of September 30, 2002. General Services Administration, Office of Government-wide Policy.

¹⁵Ibid.

Department of Agriculture (USDA), Department of Transportation (DOT), and National Aeronautics and Space Administration (NASA). As shown in Table 1, these nine civilian agencies plus DoD represent more than 95 percent of all Federal square footage.¹⁶

Beyond the military, office space is the predominant use. The Federal government owns an estimated 30,000 office buildings covering 644 million square feet—four percent of all office buildings covering around five percent of all office floor space in the U.S.¹⁷ GSA, “the government’s landlord,” owns and/or operates more than 8,300 buildings comprising 330 million square feet of office space.¹⁸ Fifty-five percent of GSA’s building square footage is government-owned, and the rest is in privately-owned, leased facilities. Individual agencies own or lease the remaining buildings.¹⁹



The site of this U.S. Courthouse in Youngstown, Ohio was formerly classified as a Brownfield Site. All of the earth excavated from the project site was reused on site; and the roof of the facility was painted white which minimizes the artificial heat impact on the environment.

Table 1:
Federal Facilities for which the Government Purchases Energy
~Preliminary Fiscal Year (FY) 2002 Data²⁰~

Federal Agency	Building Sq. Ft. (Thou.)	Percentage of Total Sq. Ft.	Energy Use (Trillion Btu)	Energy Cost (Million \$)
Department of Defense	2,183,665.2	64.2%	244.0	\$2,614.1
U.S. Postal Service	349,547.0	10.3%	25.8	\$465.6
General Services Administration	206,534.3	6.1%	17.4	\$275.9
Department of Veterans Affairs	156,359.5	4.6%	26.9	\$279.2
Department of Energy	102,201.7	3.0%	29.1	\$287.9

¹⁶Ibid.

¹⁷DOE, Energy Information Administration, 1999 Commercial Buildings Energy Consumption Survey. See <<http://www.eia.doe.gov/emeu/cbecs/pdf/b12.pdf>>.

¹⁸See GSA’s Public Buildings Service website at <http://www.gsa.gov/Portal/content/orgs_content.jsp?contentOID=22883&contentType=1005>.

¹⁹Ibid.

²⁰Annual Report to Congress on Federal Government Energy Management and Conservation Programs: Fiscal Year 2000. FEMP. December 2002.

Department of Justice	59,436.9	1.7%	10.4	\$108.0
Department of the Interior	56,086.4	1.6%	4.9	\$61.2
Department of Agriculture	55,612.1	1.6%	4.6	\$56.3
Department of Transportation	52,732.4	1.6%	7.4	\$142.0
National Aeronautics & Space Administration	38,413.5	1.1%	9.3	\$112.1
Tennessee Valley Authority	31,658.4	0.9%	2.1	\$36.5
Department of Health & Human Services	26,311.4	0.8%	7.8	\$75.3
Department of Labor	21,476.2	0.6%	4.3	\$29.3
Department of the Treasury	16,543.3	0.5%	2.6	\$38.5
Department of Commerce	11,682.5	0.3%	1.8	\$25.3
Environmental Protection Agency	3,232.5	0.1%	1.0	\$11.0
Other	27,925.7	0.8%	4.6	\$50.3
Total	3,399,419.0	100.0%	404.0	\$4,668.6

Given this enormous real estate portfolio, the Federal government is a major contributor to the resource use and pollution associated with buildings. The total Federal facility inventory consumes about 119,000 Btu of energy per gross square foot per year and emit greenhouse gases at a rate of 11.6 million metric tons of carbon equivalent (MMTCE) per year, about two percent of the total for all U.S. buildings.²¹ In FY 2002, Federal facility energy use constituted 404 trillion British Thermal Units (Btu), at a cost of almost \$4.7 billion or about \$10,000 per building on average—making the Federal government the largest single energy user in the country.²² This amount of energy would provide enough fuel for 6.6 million US cars to each drive once around the world!²³ Just five agencies account for 90 percent of all Federal building energy use: DoD (60.4 percent), DOE (7.2 percent), VA (6.7 percent), USPS (6.4 percent), and GSA (4.3 percent). On average, Federal buildings consume 40 percent more energy per square foot than non-governmental buildings, perhaps in part due to the fact that many Federal buildings (such as laboratories) house highly energy intensive operations.²⁴

In FY 2002, Federal agencies reported using approximately 250 billion gallons of water.²⁵ Data on Federal construction and demolition debris generation are not available, although the fact that the Army estimates it has 50 million square feet of unneeded buildings (from planned base closings and renovations) indicates the potential for massive amounts of demolition debris to be generated if waste reduction options are not implemented.²⁶ Comprehensive data on indoor air quality levels, environmentally preferable building product acquisitions, and other environmental indicators are lacking.

²¹Ibid.

²²Ibid.

²³ Calculations based on EERE/Buildings Data Book. See <http://buildingsdatabook.eren.doe.gov/tableview.asp?TableID=434&t=xls>.

²⁴ DOE/EIA, Commercial Building Energy Consumption Survey, 1999. See <http://www.eia.doe.gov/emeu/cbeccs/pdf/c3.pdf>.

²⁵ Annual Report to Congress on Federal Government Energy Management and Conservation Programs: Fiscal Year 2000. FEMP. December 2002.

²⁶ U.S. Army, Office of the Assistant Secretary, Installations and the Environment, Memo, Deconstruction and Re-Use of Excess Army Buildings, 1/18/01. See <http://www.cecer.army.mil/sustdesign/RavClarkMemo.pdf>.



Argonne National Laboratory, one of the U.S. government's oldest and largest science and engineering research facilities, is at the forefront in implementing new ways to sustainable buildings practices.

The challenge—to make Federal buildings more sustainable—begins in a context of hundreds of thousands of diverse buildings, serving unique purposes, and owned by numerous agencies, with significant environmental impacts and the opportunity for improvement.