Annual Report to Congress on Federal Government Energy Management and Conservation Programs Fiscal Year 2002

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U.S. Department of Energy
Assistant Secretary, Energy Efficiency and Renewable Energy
Federal Energy Management Program
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AGENCY ACRONYMS

Commodity Futures Trading Commission	CFTC
Central Intelligence Agency	CIA
Department of Agriculture	USDA
Department of Commerce	DOC
Department of Defense	DOD
Department of Energy	DOE
Department of Health and Human Services	HHS
Department of Housing and Urban Development	HUD
Department of the Interior	DOI
Department of Justice	DOJ
Department of Labor	DOL
Department of State	ST
Department of Transportation	DOT
Department of the Treasury	TRSY
Department of Veterans Affairs	VA
Environmental Protection Agency	EPA
Equal Employment Opportunity Commission	EEOC
Federal Communications Commission	FCC
Federal Emergency Management Agency	FEMA
Federal Energy Regulatory Commission	FERC
Federal Trade Commission	FTC
General Services Administration	GSA
International Broadcasting Bureau	IBB
National Aeronautics and Space Administration	NASA
National Archives and Records Administration	NARA
National Science Foundation	NSF
Nuclear Regulatory Commission	NRC
Office of Personnel Management	OPM
Panama Canal Commission	PCC
Railroad Retirement Board	RRB
Social Security Administration	SSA
Tennessee Valley Authority	TVA
United States Information Agency	USIA
United States Postal Service	USPS

INTERNET WEB SITES CITED IN THIS REPORT

Federal Energy Management Program	www.eere.energy.gov/femp
Energy Efficiency and Renewable Energy Clearinghouse	www.eere.energy.gov
National Energy Information Center	www.eia.doe.gov
Alternative Fuels Data Center	www.eere.energy.gov/cleancities/afv
Clean Cities Program	www.eere.energy.gov/cleancities

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EXECUTIVE SUMMARY

This report on Federal Energy Management for Fiscal Year (FY) 2002 provides information on energy consumption in Federal buildings, operations, and vehicles and equipment, and documents activities conducted by Federal agencies to meet the statutory requirements of Title V, Part 3, of the National Energy Conservation Policy Act (NECPA), as amended, 42 U.S.C. §§ 8251-8259, 8262, 8262b-k, and Title VIII of NECPA, 42 U.S.C. § 8287-8287c. Implementation activities undertaken during FY 2002 by the Federal agencies under the Energy Policy Act of 1992 (EPACT) and Executive Order 13123 are also discussed in this report.

Based on reports submitted to the Department of Energy (DOE) by 29 Federal agencies, the total primary energy consumption of the Government of the United States, including energy consumed to produce, process, and transport energy, was 1.4 quadrillion British Thermal Units (quads) during FY 2002.[1] These 1.4 quads consumed by the Government in buildings and operations to provide essential services to its citizens, including the defense of the Nation, represent approximately 1.4 percent of the total 97.61 quads[2] used in the United States. In total, the Federal Government is the single largest energy consumer in the Nation, although its pattern of consumption is widely dispersed geographically.

The Government consumed 1.0 quads during FY 2002 when measured in terms of energy actually delivered to the point of use (site-delivered energy consumption). Unless otherwise noted, this report uses the site-measured conversion factors to convert common units for electricity and steam to British Thermal Units (Btu). The total site-delivered energy consumption in FY 2002 was 27.8 percent less than the FY 1985 base year. This reduction of 402.8 trillion Btu, which reflects both a drop in Government activity and the success of energy management efforts, could satisfy the entire energy need of the State of North Dakota for more than one year.[3] The total cost of the 1.0 quads was $9.7 billion in FY 2002.[4] This is $778.8 million less than the $10.5 billion reported in FY 1985, a 7.4 percent[5] decrease in nominal costs. In constant 2002 dollars, this equates to a decrease of 38.3 percent from $15.7 billion in FY 1985 to $9.7 billion in FY 2002. The reductions in energy costs from 1985 are attributable primarily

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[1]Primary energy consumption considers all energy resources used to generate and transport electricity and steam. Tables 1-A, 5-A, and 8-B show primary energy consumption for comparison with site-delivered consumption shown in Tables 1-B, 5-B, and 8-A respectively. Conversion factors of 10,346 Btu per kilowatt hour for electricity and 1,390 Btu per pound of steam are used to calculate gross energy consumption.

[2]DOE/EIA-0035(2003/10), *Monthly Energy Review*, October 2003.

[3]Based on site-delivered energy consumption estimates for 2000 in the residential, commercial, industrial, and transportation sectors (365.4 trillion Btu). Source: DOE/EIA-0214(00), *State Energy Consumption Data, 2000,* Table R1.

[4]Unless otherwise noted, all costs cited in this report are in constant 2002 dollars, calculated using Gross Domestic Product implicit price deflators. See DOE/EIA-0384(02), *Annual Energy Review 2002*, Table D1; October 2003). Costs noted as nominal dollars reflect the price paid at the time of the transaction and have not been adjusted to remove the effect of changes in the spending power of the dollar.

[5]Calculation of percent changes in this report do not account for rounding of numbers in text.

to reduced energy prices and reduced Government activity, although they also reflect the effects of agency energy management efforts. Many other variables also contribute to fluctuations in annual energy consumption and costs, including changes in building square footage, building stock, weather, tempo of operations, fuel mix, and vehicle, naval, and aircraft fleet composition.

The Federal energy bill for FY 2002 decreased 0.3 percent compared to the previous year. Overall, the unit cost of all fuel types used decreased 4.4 percent, from $9.71 per million Btu to $9.28 per million Btu. Contributing to the overall decrease in unit costs were decreases in the prices paid by the Government for:

- Natural Gas (26.7 percent decrease)
- Diesel Fuel (3.8 percent decrease)
- Jet Fuel (2.4 percent decrease)
- Gasoline (1.5 percent decrease)
- Electricity (0.7 percent decrease).

Federal agencies report energy consumption under four categories: 1) standard buildings; 2) industrial, laboratory and other energy intensive facilities; 3) exempt facilities; and 4) vehicles and equipment.

Standard Buildings

In FY 2002, the Federal Government used 316.8 trillion Btu to provide energy to 3.0 billion square feet of standard buildings space. This consumption represents a 23.8 percent decrease compared to FY 1985 and a 2.5 percent decrease relative to FY 2001. These significant drops reflect the success of Federal energy management efforts in reducing fossil fuel use in Federal facilities. The cost of energy for buildings and facilities in FY 2002 was $3.7 billion, a decrease of approximately $265.7 million from FY 2001 expenditures, and a decrease of 30.9 percent from the FY 1985 expenditure of $5.3 billion (in 2002 dollars).[6]

Industrial, Laboratory and Other Energy Intensive Facilities

Under section 543(a)(2) of NECPA, as amended by EPACT, 42 U.S.C. § 8253, buildings that house energy-intensive activities may be excluded from NECPA's performance goal for buildings. Most energy used in these facilities is process energy used for purposes other than the normal building HVAC operations and electrical use. Process energy is consumed in industrial operations, laboratories, certain research and development activities, and in electronics-intensive facilities.

Section 203 of Executive Order 13123 sets a goal for these facilities that requires each agency to reduce energy consumption per square foot, per unit of production, or per other unit as applicable by 20 percent by 2005 and 25 percent by 2010 relative to 1990.

In FY 2002, the Federal Government used 61.2 trillion Btu of energy in energy intensive operations, approximately 5.9 percent of the total 1.0 quads consumed. Total energy consumption in this category decreased 11.9 percent relative to FY 1990 and increased 1.7

[6]Cost and consumption figures for FY 1985 may be different from those published in last year's Annual Report since Federal agencies update their files and provide revisions to their data.

percent relative to FY 2001. These changes resulted from both changes in activity levels and energy management efforts.

The Federal Government spent $590.1 million on energy intensive operations energy in FY 2002, $48.7 million less than the FY 2001 expenditure of $638.8 million constant dollars.

Exempt Facilities

Section 704 of Executive Order 13123 defines "Exempt facility" as "a facility. . .for which an agency uses DOE-established criteria to determine that compliance with the Energy Policy Act of 1992 or [Executive Order 13123] is not practical." Nine agencies, the Departments of Defense, Energy, Health and Human Services, State, and Transportation, the National Archives and Records Administration (NARA), the National Aeronautics and Space Administration (NASA), the General Services Administration (GSA), and the Tennessee Valley Authority have chosen to exempt facilities from Executive Order requirements. In addition, the U.S. Postal Service has reported electricity consumption used in mail processing automation under this exempt category without reporting associated facility square footage. Energy used in exempt facilities accounts for approximately 2.3 percent of the total 1.0 quads used by the Federal Government. Electricity constitutes 73.4 percent of the energy used in exempt facilities, 13.4 percent is accounted for by natural gas, and 7.0 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and "other" energy account for the remaining 6.2 percent.

The energy used in exempt facilities in FY 2002 accounted for approximately 4.3 percent of the total Federal energy bill. The Federal Government spent approximately $413.7 million for this category's energy during the fiscal year.

Vehicles and Equipment

The vehicles and equipment category includes aircraft and naval fuels, automotive gasoline, diesel fuel consumed by Federally-owned and leased vehicles and privately-owned vehicles used for official business, and the energy used in Federal construction.

In FY 2002, the Federal Government used approximately 643.8 trillion Btu of energy in vehicles and equipment, 61.6 percent of the total 1.0 quads consumed. Total energy consumption in vehicles and equipment decreased 31.1 percent relative to FY 1985 and was 9.5 percent greater than the FY 2001 consumption of 587.9 trillion Btu. Most of this increase is attributable to increased use of jet fuel by the Department of Defense (DOD). DOD consumed 593.9 trillion Btu or 92.2 percent of all vehicles and equipment energy used by the Federal Government.

The Federal Government spent $5.0 billion on vehicles and equipment energy in FY 2002, $339.0 million more than the FY 2001 expenditure, a 7.2 percent increase in constant dollars. For all fuels, the cost per million Btu decreased from $7.99 in FY 2001 to $7.82 in FY 2002. The unit costs of the two most-used fuels, jet fuel and diesel/distillate fuel oil, decreased 2.4 percent and 3.8 percent respectively. Gasoline prices paid by the Government decreased 1.5 percent.

Investments in Energy Efficiency

During FY 2002, Federal agencies had three primary options for financing energy efficiency, water conservation, and renewable energy projects in buildings and facilities: direct appropriated funding, energy savings performance contracts (ESPCs), and utility energy service contracts (UESCs). Known funding from the three sources totaled approximately $524 million in FY 2002. Direct appropriations accounted for approximately $121 million. ESPCs awarded in FY 2002 resulted in approximately $291.6 million in estimated contractor investment ($96.9 million from DOE Super ESPC delivery orders and $194.7 million from other agency ESPCs), and approximately $110.9 million in private sector investment came from UESCs. While these three categories of funding are not entirely comparable, they do indicate that ESPCs and UESCs were the dominant source of support for efficiency investments throughout the Federal Government. In FY 2002, direct funding identified by agencies for energy conservation retrofits and capital equipment decreased 8.8 percent to $121.1 million from $132.8 million dollars in FY 2001.

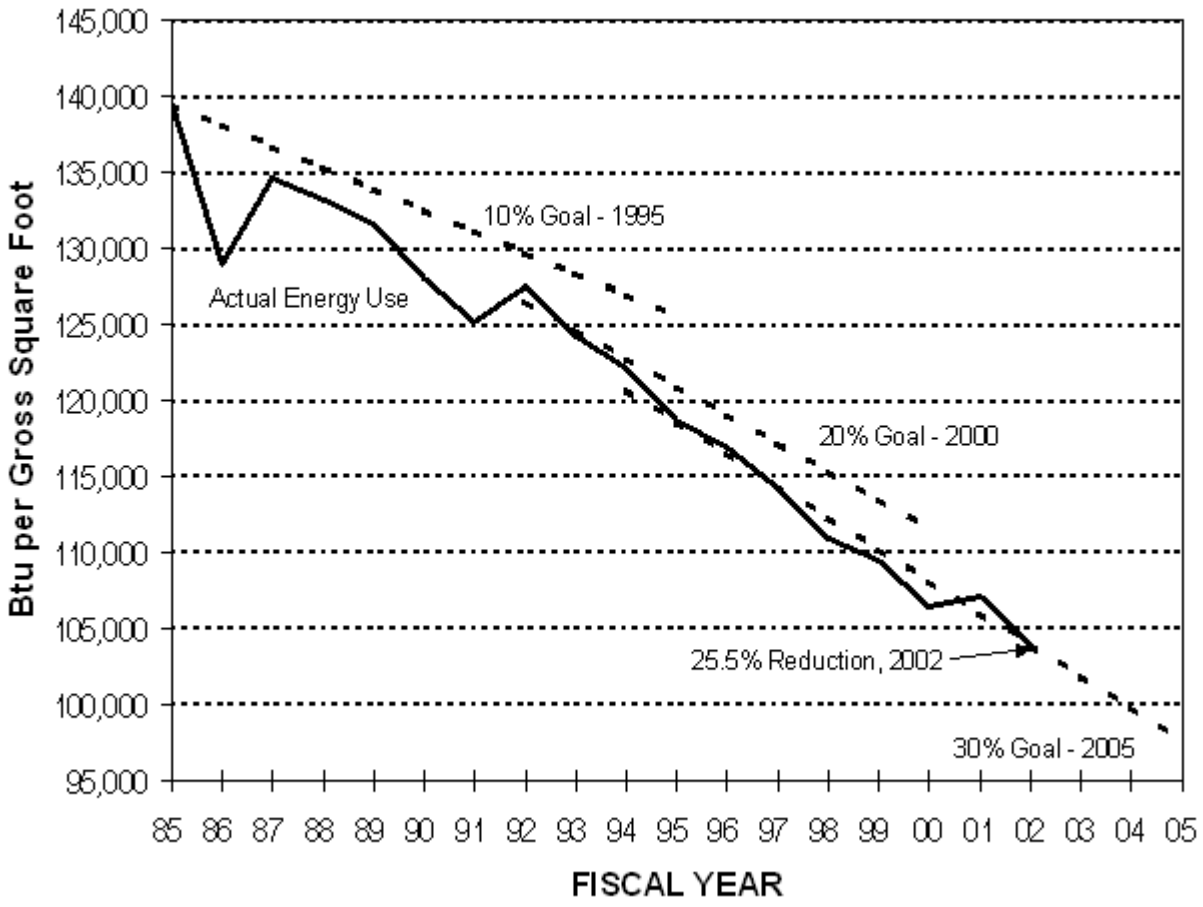
Since 1985, The Government has invested approximately $5.1 billion in energy efficiency, $2.8 billion of which was direct appropriations and $2.3 billion from alternative financing mechanisms ($1.4 billion from ESPCs and $0.9 billion from UESCs).

Agency Progress in Meeting Energy Reduction Goals

NECPA, as amended by EPACT, requires agencies to take the steps necessary to reduce energy consumption in Federal buildings by 10 percent by 1995 compared to 1985 consumption levels, based on Btu per gross square foot, and requires a 20 percent reduction by 2000 compared to 1985 consumption levels. The 10 percent goal was met by the Government in FY 1995 with a 14.9 percent reduction from FY 1985. The 20 percent goal was met by the Government in FY 2000 with a 23.7 percent reduction from FY 1985. Executive Order 12902 added a goal of reducing energy consumption by 30 percent by the year 2005 relative to 1985 consumption levels. Executive Order 13123, the successor to Executive Order 12902, adds an additional goal of a 35 percent reduction by 2010, compared to FY 1985. During FY 2002 agencies provided data to DOE that indicated a decrease in energy consumption per gross square foot of 25.5 percent relative to FY 1985. The Government's performance for each year since FY 1985 is illustrated in Figure ES-1. This reduction was the result of significant decreases in the consumption of fuel oil, natural gas, and coal. The use of non-electric fuels in Federal buildings has declined 38.6 percent since 1985, while the consumption of electricity has increased by 12.1 percent. The installation and increased use of electricity-driven electronic equipment contributed to increases in electricity through the years. Electricity now represents about 71.6 percent of the total energy costs of Federal buildings and accounts for 45.2 percent of total site-delivered energy consumption in buildings. This is compared to 30.7 percent of the total site-delivered energy consumption in buildings in FY 1985. Agency efforts undertaken in FY 2002 to increase energy efficiency in buildings included:

- improvement of operations and maintenance procedures;
- implementation of no-cost, low-cost efficiency measures;
- energy-efficient building retrofits and capital improvements;
- energy awareness activities and employee training programs; and
- procurement of energy-efficient goods and products.

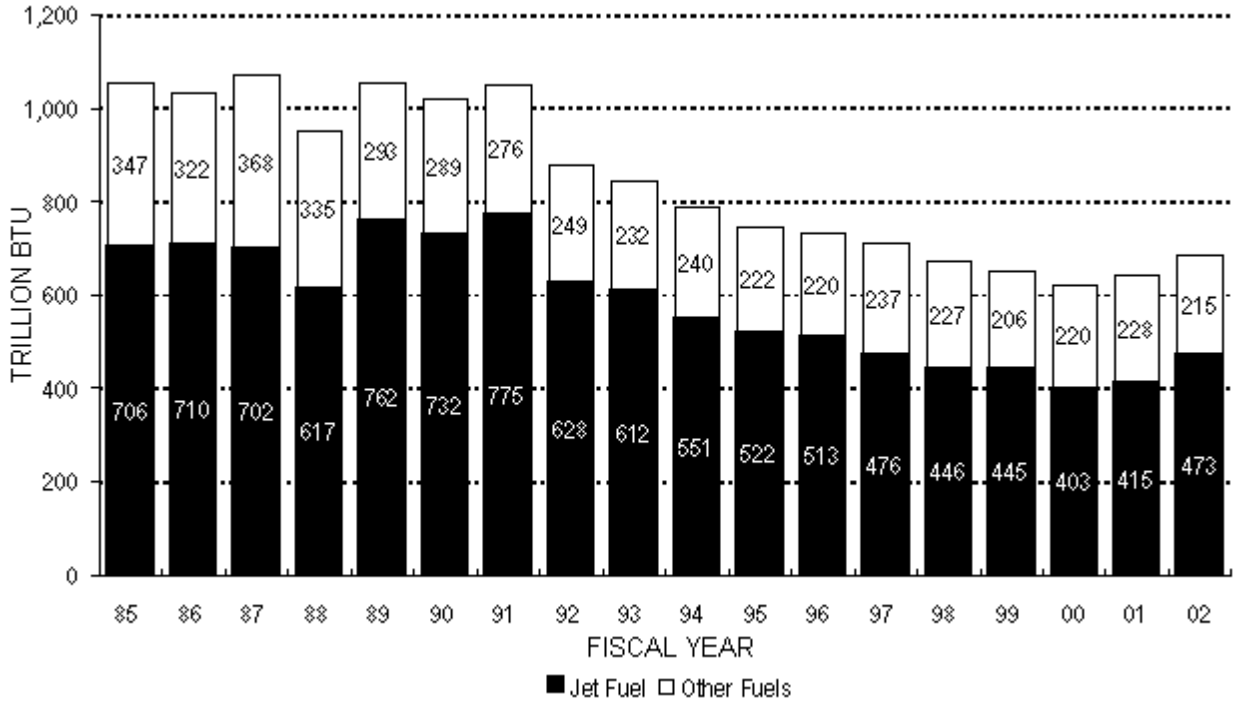
FIGURE ES-1
Decrease in Annual Btu per Gross Square Foot
in Federal Standard Buildings from FY 1985



Reducing Petroleum-Based Fuel Consumption
Effective management of energy resources is of strategic importance to the Federal Government as well as the Nation. In FY 2002, petroleum-based fuels accounted for 0.69 quads of the total 1.0 quads consumed by the Federal Government, with 0.63 quads used by DOD, primarily for jet fuel and distillate/diesel for vehicles and equipment. The Federal Government consumed 34.7 percent less petroleum-based fuel in FY 2002 than in FY 1985. Figure ES-2 illustrates the trend in the Federal Government's use of petroleum fuels.

Section 205 of Executive Order 13123 directs agencies to minimize the use of petroleum-based fuels in buildings and facilities. Federal agencies have made significant progress in reducing their dependence on petroleum-based fuels in their buildings and facilities. For example, Federal agencies report that in FY 2002, 36.0 trillion Btu of petroleum-based fuels were used for standard buildings energy, a 62.5 percent decrease from FY 1985, and a 17.6 percent decrease from FY 2001.

FIGURE ES-2
Federal Consumption of Petroleum-Based Fuels
FY 1985 through FY 2002



Renewable Energy

Section 204 of Executive Order 13123 restates the goal of the Million Solar Roofs Initiative, which is 2,000 solar roof installations in the Federal Government by 2000, and 20,000 installations by 2010. In the period from June 1997 to April 2000 the Federal Government installed 1,745 solar energy systems. This total included 1,682 solar hot water systems, 58 photovoltaic power systems and 5 transpired solar thermal collectors. The U.S. Navy installed an additional 1000 solar hot water systems by the end of FY 2000. This brought total installations to just over 2,700 systems by the end of 2000, accomplishing the Federal goal. In FY 2002 the total increased to 3,401 systems, including 3,085 solar water heaters, 309 photovoltaic systems, and 7 transpired collectors.

Federal Energy Management Highlights

Progress is being made in increasing Federal energy efficiency, although there remain opportunities for greater efficiency and cost reduction. Several of the most important findings of this report are listed below:

- The overall real cost of energy consumption in the Federal Government measured in constant 2002 dollars has fallen from $15.7 billion in FY 1985 to $9.7 billion in FY 2002. While most of this drop is attributable to declining energy prices and reduced Defense-related activity, energy management efforts made a significant contribution.[7]

- Total site-delivered energy consumption in FY 2002 decreased 27.8 percent from FY 1985; again, a reflection of both reduced Defense-related activity and successful energy management efforts.[7]

- Energy consumption in buildings in FY 2002 decreased 23.8 percent from FY 1985.[7]

- On a Btu-per-gross-square-foot basis, the 25.5 percent reduction in buildings site-delivered energy is a good indicator of the success of energy management efforts.

- Six agencies, the Departments of Agriculture, Commerce, Defense, Energy, Justice, and the Tennessee Valley Authority have surpassed a 25 percent reduction in buildings energy use per gross square foot from 1985.

- Energy consumption in FY 2002 was used for the following purposes:

End Use	*Percentage*	*Cost*
Standard Buildings	30.3 percent	$3.7 billion
Energy Intensive Facilities	5.9 percent	$0.6 billion
Exempt Facilities	2.3 percent	$0.4 billion
Vehicles & Equipment	61.6 percent	$5.0 billion

[7]Many other variables also contribute to fluctuations in annual energy consumption and costs, including changes in building square footage, building stock, weather, tempo of operations, fuel mix, and vehicle, naval, and aircraft fleet composition.

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I. OVERVIEW OF FEDERAL ENERGY MANAGEMENT ACTIVITIES

A. Overview of Federal Energy Management Policy and Legislative Mandates

This report on Federal Energy Management for Fiscal Year (FY) 2002 provides information on energy consumption in Federal buildings and operations and documents activities conducted by Federal agencies to meet the statutory requirements of Title V, Part 3, of the National Energy Conservation Policy Act (NECPA), as amended, 42 U.S.C. §§ 8251-8259, 8262, 8262b-k and Title VIII of NECPA, 42 U.S.C. § 8287-8287c. Implementation activities undertaken during FY 2002 by the Federal agencies under the Energy Policy Act of 1992 (EPACT) and Executive Order 13123, Greening the Government through Efficient Energy Management, are also discussed in this report. In compliance with section 381(c) of the Energy Policy and Conservation Act (EPCA), as amended, 42 U.S.C. § 6361c, this report also describes the energy conservation and management activities of the Federal Government under the authorization of section 381 of EPCA, 42 U.S.C. § 6361.

Requirements of NECPA and EPACT

NECPA provides major policy guidance to Federal agencies to improve energy management in their facilities and operations. Amendments to NECPA made by the Federal Energy Management Improvement Act of 1988, 42 U.S.C. § 8253 (a)(1), required each agency to achieve a 10 percent reduction in energy consumption in its Federal buildings by FY 1995, when measured against a FY 1985 baseline on a Btu-per-gross-square-foot basis. It also directed DOE to establish life-cycle costing methods and coordinate Federal conservation activities through the Interagency Energy Management Task Force. Section 152 of Subtitle F of EPACT, Federal Agency Energy Management, further amends NECPA and contains provisions regarding energy management requirements, life-cycle cost methods and procedures, budget treatment for energy conservation measures, incentives for Federal facility energy managers, reporting requirements, new technology demonstrations, and agency surveys of energy-saving potential.

Requirements of Executive Order 13123

On June 3, 1999, the President signed Executive Order 13123, Greening the Government Through Efficient Energy Management, superseding Executive Order 12902. Executive Order 13123 addresses greenhouse gas emissions from Federal facilities, and makes energy-efficiency targets more stringent.

The key requirements of the legislation and Executive Order authorities are outlined in the exhibit below along with current findings.

KEY REQUIREMENTS OF LEGISLATIVE AND EXECUTIVE ORDER AUTHORITIES

Statute/Directive	Requirement	FY 2002 Findings	Annual Report Discussion
Section 543, NECPA, 42 U.S.C., § 8253(a)(1) Executive Order 13123	20 percent reduction (Btu/GSF) in Federal buildings by 2000 from 1985. 30 percent reduction (Btu/GSF) by 2005 from 1985. 35 percent reduction by 2010 from 1985.	Federal agencies reported a 25.5 percent decrease in energy consumption in buildings in FY 2002, compared to FY 1985.	Section II (B), page 66
Section 544, NECPA, 42 U.S.C., § 8254	DOE to establish life-cycle cost methods to determine cost-effectiveness of proposed energy efficiency projects.	The 2002 edition of the energy price indices and discount factors for life-cycle cost analysis was published and distributed to Federal energy managers.	Section I (D), page 44
Section 545, NECPA, 42 U.S.C., § 8255	Transmit to Congress the amount of appropriations requested in each agency budget for electric and energy costs incurred in operating and maintaining facilities and for compliance with applicable statutes and directives.	Approximately $121.1 million was appropriated and spent on energy efficiency projects in Federal facilities.	Section I (D), page 36
Section 546, NECPA, 42 U.S.C., § 8256(a)	Establishment of a program of incentives within Federal agencies to expedite Energy Savings Performance Contracts.	In FY 2002, 59 ESPC contracts and delivery orders were awarded under DOE Super ESPCs and other agency contracts.	Section I (D), page 40
Section 546, NECPA, 42 U.S.C., § 8256(b)	DOE to establish a Federal Energy Efficiency Fund to provide grants to agencies.	There were no appropriations for the Fund since FY 1995.	Section I (D), page 40
Section 157, EPACT, 42 U.S.C., § 8262(c)	Federal agencies to establish and maintain programs to train energy managers and to increase the number of trained energy managers within each agency.	DOE's FEMP conducted 62 training workshops and symposia for more than 6,270 attendees in the efficient use and conservation of energy, water, and renewable energy in Federal facilities.	Section I (D), page 23; Section VI, Agency Reports, page 83
Executive Order 13123	20 percent reduction for Federal industrial/laboratory facilities by 2005 from 1990. 25 percent reduction by 2010 from 1990.	Findings are specific to individual agencies.	Section III (B), page 71

Statute/Directive	Requirement	FY 2002 Findings	Annual Report Discussion
Executive Order 13123	30 percent reduction in greenhouse gas emissions attributed to Federal facilities by 2010 from 1990.	Carbon emissions from energy used in non-exempt Federal facilities declined 19.3 percent in FY 2002 compared to FY 1990.	Section I(B), page 19
Executive Order 13123	Expand use of renewable energy by implementing renewable energy projects and by purchasing electricity from renewable sources. The Federal Government will strive to install 20,000 solar roofs by 2010.	Findings are specific to individual agencies. During FY 2002, 3,401 solar technology systems were identified on Federal Government facilities.	Section I(G), page 54 Section VI, Agency Reports, page 83
Executive Order 13123	Minimize petroleum use within Federal facilities through use of non-petroleum energy sources and eliminating unnecessary fuel use.	The consumption of petroleum-based fuels in standard buildings during FY 2002 decreased 62.5 percent compared to FY 1985 and 17.6 percent from FY 2001.	Section II(A), page 61
Executive Order 13123	Reduce total energy use and greenhouse gas emissions, as measured at the source. Agencies shall undertake projects to reduce source energy, even if site energy use increases.	Primary energy consumed in standard buildings in FY 2002 decreased 9.6 percent from FY 1985 and 0.9 percent from FY 2001. Measured in terms of source energy, Federal buildings show a reduction of 11.3 percent in Btu/GSF during FY 2002 compared to FY 1985.	Section II(A), page 57, 59, and 67
Executive Order 13123	Reduce water consumption and associated energy use.	Findings are specific to individual agencies.	Section I(F), page 52 Section VI, Agency Reports, page 83

B. Overall Federal Energy Consumption, Costs, and Carbon Emissions

As shown in Table 1-A, the total primary energy consumption of the Government of the United States, including energy consumed to produce, process, and transport energy, was 1.4 quadrillion British Thermal Units (quads) or 1,438,385.6 billion British Thermal Units (Btu) during FY 2002. Primary energy consumption considers all resources used to generate and transport electricity and steam. (The source conversion factors of 10,346 Btu per kilowatt hour for electricity and 1,390 Btu per pound of steam are used to calculate primary energy consumption. See Appendix B for conversion factors used to calculate site-delivered energy consumption.) Federal agencies reported a 19.9 percent decrease in total primary energy consumption compared to FY 1985, and a 3.1 percent increase from FY 2001. The 1.4 quads used in FY 2002 represent approximately 1.4 percent of the total 97.61 quads[8] used in the United States, and reflect Government energy consumption in buildings and operations to provide essential services to its citizens, including the defense of the Nation. In total, the Federal Government is the single largest energy consumer in the Nation, although its pattern of consumption is widely dispersed.

Based on reports submitted to the Department of Energy (DOE) by 29 Federal agencies, the Federal Government consumed 1.0 quads during FY 2002 when measured in terms of energy actually delivered to the point of use. As shown in Table 1-B, Federal agencies reported a 27.8 percent decrease in total site-delivered energy consumption compared to FY 1985, and a 4.3 percent increase from FY 2001.

The cost of this energy was $9.7 billion and represented approximately 0.5 percent of the total Federal expenditures of $1.938 trillion[9] for all purposes in FY 2002. The Federal energy bill for FY 2002 decreased 0.3 percent from the previous year, decreasing by $30.4 million in constant dollars compared to FY 2001.[10]

Overall, the unit cost of all fuel types used decreased 4.4 percent from the previous year, from $9.71 per million Btu to $9.28 per million Btu in FY 2002. Contributing to the overall decrease in unit costs were decreases in the prices paid by the Government for:

- Natural Gas (26.7 percent decrease)
- Diesel Fuel (3.8 percent decrease)
- Jet Fuel (2.4 percent decrease)
- Gasoline (1.5 percent decrease)
- Electricity (0.7 percent decrease).

[8] DOE/EIA-0035(2003/10), *Monthly Energy Review*, October 2003.

[9] *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2003*

[10] Appendix C indicates the annual cost of energy used in Federal standard buildings, energy intensive operations, exempt buildings, and vehicles and equipment for FY 1985 through FY 2002.

TABLE 1-A
TOTAL PRIMARY ENERGY CONSUMPTION BY FEDERAL AGENCIES
(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

Civilian Agency	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
USPS	**47,439.3**	54,767.8	65,828.1	67,412.9	71,636.0	71,861.1	72,898.5	81,165.0	**78,523.6**	**77,891.4**	64.2	-0.8
DOE	**90,831.6**	82,608.9	81,547.4	81,302.0	79,353.0	64,598.6	52,602.7	64,761.7	**65,030.8**	**65,490.3**	-27.9	0.7
VA	**40,266.0**	41,421.0	43,909.9	45,441.5	46,267.8	46,877.0	47,069.4	46,450.8	**48,526.2**	**48,574.3**	20.6	0.1
GSA	**43,052.8**	34,789.6	32,839.0	33,660.0	33,822.4	33,583.7	34,448.6	38,236.1	**38,955.4**	**38,399.6**	-10.8	-1.4
DOT	**27,287.3**	26,939.8	27,139.9	30,288.1	28,756.0	29,597.6	38,440.5	37,489.9	**29,890.5**	**28,590.5**	4.8	-4.3
DOJ	**10,595.9**	10,790.3	16,133.4	19,539.4	19,077.5	23,560.3	23,451.8	28,723.5	**28,603.1**	**27,182.6**	156.5	-5.0
NASA	**21,696.2**	25,972.0	26,641.6	24,632.7	26,048.4	25,322.0	24,680.7	23,611.5	**22,874.8**	**22,400.3**	3.2	-2.1
HHS	**9,692.6**	12,262.4	11,110.8	11,722.2	13,699.4	13,680.5	13,233.0	14,706.0	**15,331.2**	**15,117.1**	56.0	-1.4
DOI	**10,933.6**	10,337.7	9,810.3	7,038.3	9,608.7	9,542.0	10,611.1	11,297.0	**13,610.9**	**11,978.4**	9.6	-12.0
USDA	**11,576.9**	13,833.8	13,425.1	13,574.8	11,755.2	12,432.5	12,197.1	11,739.3	**11,364.3**	**10,941.0**	-5.5	-3.7
TRSY	**3,715.2**	6,627.1	7,469.3	6,946.5	8,918.0	8,496.8	8,729.3	9,225.3	**9,224.7**	**9,773.4**	163.1	5.9
TVA	**7,432.2**	6,894.8	6,737.9	6,464.1	6,282.8	6,074.4	6,737.4	7,119.6	**7,200.7**	**7,061.6**	-5.0	-1.9
DOL	**3,688.0**	3,842.5	3,992.2	4,094.5	4,123.2	4,168.6	3,337.1	4,357.0	**4,608.9**	**4,747.4**	28.7	3.0
DOC	**3,804.6**	6,110.9	5,173.4	4,930.3	4,866.3	4,558.3	4,777.1	3,726.8	**4,964.1**	**4,306.5**	13.2	-13.2
EPA	**1,621.0**	1,483.3	2,108.8	2,070.5	2,113.8	2,108.0	2,341.7	1,966.1	**2,269.6**	**2,058.3**	27.0	-9.3
ST[1]	**636.9**	770.3	1,109.8	1,583.7	6,552.8	6,550.3	6,196.8	6,858.1	**5,804.2**	**1,725.1**	170.9	-70.3
HUD	**315.2**	384.2	310.6	326.8	318.0	303.2	310.2	324.6	**332.8**	**324.2**	2.9	-2.6
OTHER*	**2,055.9**	5,103.6	7,773.6	10,057.1	10,739.8	8,785.0	8,583.6	8,368.8	**8,335.1**	**8,665.9**	321.5	4.0
Civilian Agencies Subtotal	**336,641.3**	344,940.2	363,061.0	371,085.3	383,939.2	372,099.8	370,646.4	400,127.2	**395,450.7**	**385,227.8**	14.4	-2.6
DOD	**1,459,945.7**	1,497,346.8	1,153,527.4	1,123,168.5	1,092,230.0	1,045,560.2	1,018,045.4	997,715.6	**1,000,015.7**	**1,053,157.8**	-27.9	5.3
ALL AGENCIES Total	**1,796,587.0**	1,842,287.1	1,516,588.4	1,494,253.8	1,476,169.1	1,417,660.0	1,388,691.8	1,397,842.8	**1,395,466.4**	**1,438,385.6**	-19.9	3.1
MBOE	**308.4**	316.3	260.4	256.5	253.4	243.4	238.4	240.0	**239.6**	**246.9**		
Petajoules	**1,895.3**	1,943.5	1,599.9	1,576.4	1,557.3	1,495.6	1,465.0	1,474.7	**1,472.2**	**1,517.4**		

DATA AS OF 04/14/04

*Other includes, for certain years, CFTC, CIA, EEOC, FEMA, FTC, NARA, NSF, NRC, OPM, RRB, SSA, USIA/IBB, and FERC.

[1]In 1998, the State Department developed a statistical method for estimating the energy consumption in the large number of foreign buildings it owns and leases. This method was subsequently applied to estimate FY 1991 energy consumption and is now used annually to assess progress. The FY 1991 foreign building estimates were combined with domestic building data for the fiscal years 1985 and 1990, since these are base years for performance goals.

Note: This table uses a conversion factor for electricity of 10,346 Btu per kilowatt hour and 1,390 Btu per pound of steam.

Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE 1-B

TOTAL SITE-DELIVERED ENERGY CONSUMPTION BY FEDERAL AGENCIES

(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

CIVILIAN AGENCY	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
USPS	**27,762.5**	30,616.2	36,220.9	36,427.1	40,760.0	39,487.3	39,774.0	43,284.2	**43,397.4**	**41,977.7**	51.2	-3.3
DOE	**52,201.6**	43,454.6	47,255.4	44,609.3	43,070.4	31,520.2	26,998.3	30,492.9	**31,065.5**	**30,787.3**	-41.0	-0.9
VA	**25,144.7**	24,898.4	25,428.9	26,832.9	27,261.1	27,597.2	27,472.4	27,043.9	**27,661.9**	**27,666.8**	10.0	0.0
DOT	**19,568.0**	18,965.2	18,688.7	19,564.1	19,125.9	18,509.8	22,570.8	21,215.6	**17,810.2**	**18,353.9**	-6.2	3.1
DOJ	**8,176.0**	6,961.6	10,193.3	12,127.7	11,999.9	15,805.1	15,366.2	19,693.0	**19,681.9**	**18,153.0**	122.0	-7.8
GSA	**19,256.1**	15,656.6	13,671.8	14,499.2	14,364.3	14,095.0	14,359.9	17,632.3	**18,415.8**	**17,511.8**	-9.1	-4.9
NASA	**10,855.1**	12,399.0	12,394.7	11,459.7	11,996.1	11,731.4	11,433.4	11,120.8	**10,934.5**	**10,587.0**	-2.5	-3.2
DOI	**7,816.3**	7,391.9	6,378.4	4,326.6	6,612.2	6,427.3	7,456.0	7,845.9	**9,504.5**	**8,050.5**	3.0	-15.3
HHS	**5,953.5**	7,119.0	6,129.7	6,628.9	7,852.7	7,400.8	7,131.2	7,952.5	**8,541.0**	**8,003.8**	34.4	-6.3
USDA	**8,358.7**	9,573.4	9,045.8	9,056.9	7,370.7	7,917.0	7,828.6	7,446.7	**7,373.6**	**7,097.5**	-15.1	-3.7
TRSY	**2,868.3**	3,576.4	4,132.6	3,764.1	4,597.6	4,816.3	4,899.4	5,337.0	**5,355.6**	**5,790.9**	101.9	8.1
TVA	**2,851.9**	2,605.4	2,607.3	2,547.8	2,396.9	2,295.9	2,510.1	2,921.5	**2,929.4**	**2,853.3**	0.0	-2.6
DOL	**2,385.2**	2,376.0	2,385.7	2,491.5	2,490.2	2,540.4	2,048.1	2,480.7	**2,671.4**	**2,770.7**	16.2	3.7
DOC	**2,489.1**	4,476.3	2,882.8	2,883.1	2,721.4	2,470.3	2,684.3	1,907.1	**2,521.9**	**2,197.3**	-11.7	-12.9
EPA	**904.5**	747.0	1,120.5	1,100.0	1,149.3	1,120.4	1,290.8	1,038.1	**1,228.3**	**1,090.6**	20.6	-11.2
ST1	**246.9**	302.7	437.3	653.3	2,938.8	2,934.2	3,053.1	3,379.1	**2,700.7**	**1,038.7**	320.7	-61.5
HUD	**116.9**	140.3	131.3	140.8	137.6	126.4	129.6	144.1	**149.0**	**143.3**	22.6	-3.8
OTHER*	**1,156.1**	3,072.0	4,108.4	4,814.5	5,040.5	3,889.4	3,865.9	3,731.3	**3,749.5**	**3,937.6**	240.6	5.0
Civilian Agencies Subtotal	**198,111.6**	194,331.9	203,213.5	203,927.7	211,885.5	200,684.4	200,872.3	214,667.0	**215,692.1**	**208,011.6**	5.0	-3.6
DOD	**1,250,613.8**	1,241,655.8	926,022.9	904,456.2	880,007.7	837,115.8	810,663.0	779,055.2	**787,216.4**	**837,946.7**	-33.0	6.4
Total	**1,448,725.4**	1,435,987.7	1,129,236.4	1,108,383.9	1,091,893.2	1,037,800.2	1,011,535.3	993,722.1	**1,002,908.5**	**1,045,958.3**	-27.8	4.3
MBOE	**248.7**	246.5	193.9	190.3	187.4	178.2	173.7	170.6	**172.2**	**179.6**		
Petajoules	**1,528.4**	1,514.9	1,191.3	1,169.3	1,151.9	1,094.8	1,067.1	1,048.3	**1,058.0**	**1,103.4**		

DATA AS OF 04/14/04

*Other includes, for certain years, CFTC, CIA, EEOC, FEMA, FTC, NARA, NSF, NRC, OPM, RRB, SSA, USIA/IBB, and FERC.

[1]In 1998, the State Department developed a statistical method for estimating the energy consumption in the large number of foreign buildings it owns and leases. This method was subsequently applied to estimate FY 1991 energy consumption and is now used annually to assess progress. The FY 1991 foreign building estimates were combined with domestic building data for the fiscal years 1985 and 1990, since these are base years for performance goals.

Note: This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour and 1,000 Btu per pound of steam. Agencies are listed in descending order of consumption for the current year. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

In addition to prices and Federal energy management activities, many other variables contribute to changes in annual energy use and costs, including changes in square footage, building stock, weather, tempo of operations, fuel mix, and vehicle, naval, and aircraft fleet composition.

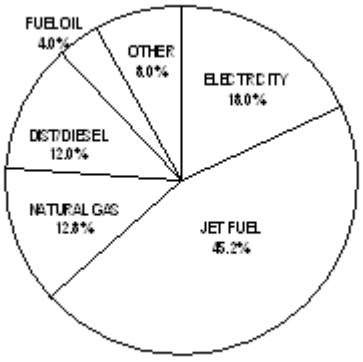
In FY 2002, the Department of Defense spent $7.1 billion for energy out of the total Federal energy expenditure of $9.7 billion. Overall, the Department of Defense used 33.0 percent less site-delivered energy in FY 2002 than in FY 1985—a reflection of reduced Defense-related activity and successful energy management efforts.

Figures 1 and 2 depict the percentage of total energy used by the Federal Government in FY 2002 and its cost. As illustrated, jet fuel and electricity account for approximately 63.2 percent of the total energy consumption represented in Figure 1 and approximately 73.4 percent of the total energy costs in Figure 2.

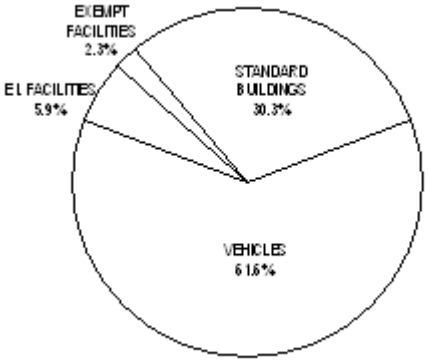
Petroleum-based fuels used by the Federal Government are shown in Table 2. In FY 2002, petroleum-based fuels accounted for 0.69 quads (687,886.4 billion Btu) of the total 1.0 quads consumed by the Federal Government. Of that, approximately 0.63 quads (629,000.4 billion Btu) were used by the Department of Defense primarily for jet fuel and distillate/diesel for vehicles and equipment energy. Only 0.04 quads (36,014.7 billion Btu) of petroleum-based fuels were used for Federal standard buildings energy.

FIGURE 1
Federal Energy Consumption, FY 2002

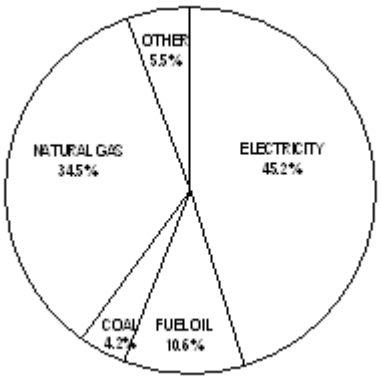
Total by Energy Type: 1.05 quads



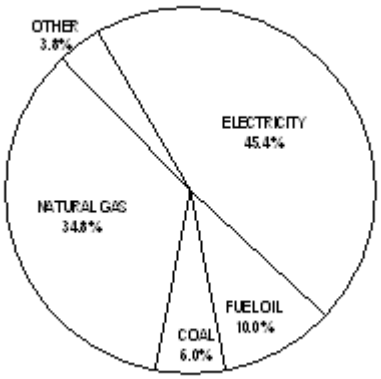
Total by Sector: 1.05 quads



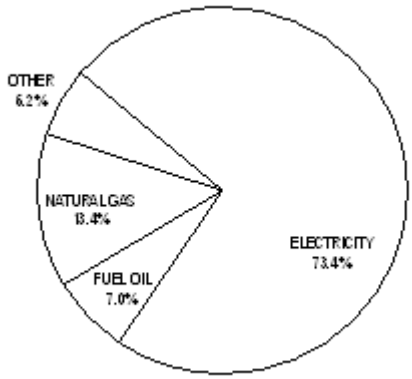
Standard Buildings: 0.32 quads



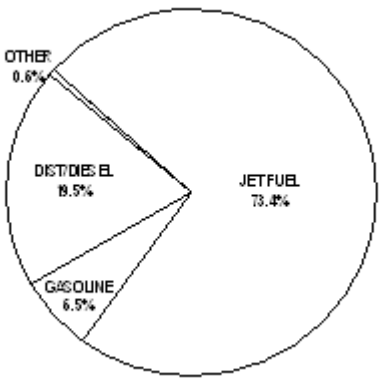
Energy Intensive Facilities: 0.06 quads



Exempt Facilities: 0.02 quads



Vehicles & Equipment: 0.64 quads

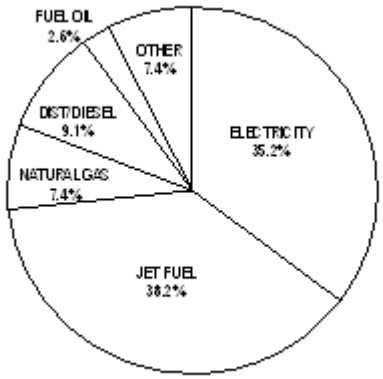


Data as of 04/14/04

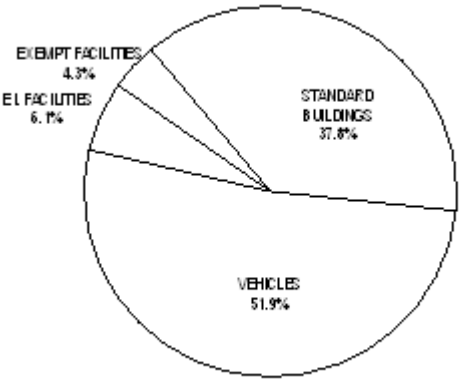
Source: Federal Agency Annual Energy Management Data Reports
Note: Sum of components may not equal 100 percent due to independent rounding.

FIGURE 2
Federal Energy Costs, FY 2002

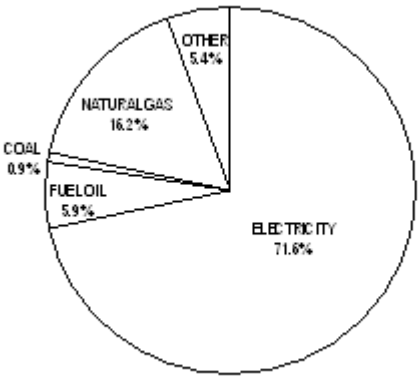
Total by Energy Type: $9.71 Billion



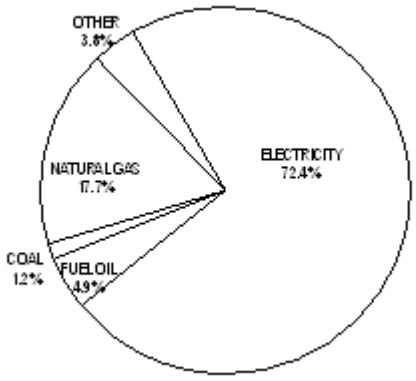
Total by Sector: $9.71 Billion



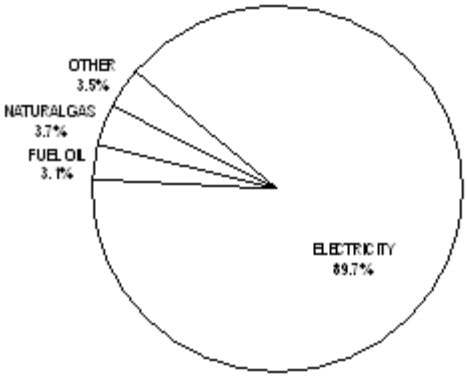
Standard Buildings: $3.66 Billion



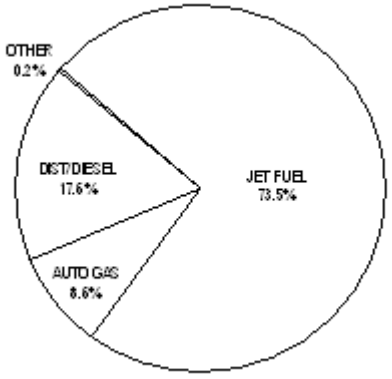
Energy Intensive Facilities: $0.59 Billion



Exempt Facilities: $0.41 Billion



Vehicles & Equipment: $5.04 Billion



Data as of 04/14/04

Source: Federal Agency Annual Energy Management Data Reports
Note: Sum of components may not equal 100 percent due to independent rounding.

TABLE 2
FEDERAL PETROLEUM USAGE IN FY 2002
(in Thousands of Gallons, Billions of Btu,
and Petajoules [Joule x 10^{15}])

	Unit Total (KGal)	BBTU* DOD	BBTU* Civilian	BBTU* Total	Petajoules* Total
Standard Buildings					
Fuel Oil	241,715.6	28,276.4	5,249.5	33,525.9	35.37
LPG/Propane	26,060.5	1,481.8	1,006.9	2,488.8	2.63
Energy Intensive Operations					
Fuel Oil	44,060.5	3,959.2	2,152.0	6,111.2	6.45
LPG/Propane	2,311.8	77.2	143.5	220.8	0.23
Exempt Buildings					
Fuel Oil	12,114.6	1,278.1	402.2	1,680.3	1.77
LPG/Propane	153.7	0.0	14.7	14.7	0.02
Vehicles & Equipment					
Motor Gas	336,038.4	13,862.9	28,142.0	42,004.8	44.31
Dist-Diesel & Petrol.	903,543.9	112,136.4	13,185.2	125,321.5	132.24
Aviation Gas	1,956.2	0.1	244.4	244.5	0.26
Jet Fuel	3,637,533.7	465,322.4	7,557.0	472,879.4	498.87
Navy Special	3.6	0.0	0.5	0.5	0.00
LPG/Propane	596.4	31.1	25.8	57.0	0.06
Other	3,337.0	2,574.7	762.3	3,337.0	3.52
Total		629,000.4	58,886.0	687,886.4	725.70

DATA AS OF 04/14/04

*Uses a conversion factor of:

95,500 Btu/gallon for LPG/propane
138,700 Btu/gallon for fuel oil, distillate-diesel & petroleum, and navy special
125,000 Btu/gallon for motor gasoline and aviation gasoline
130,000 Btu/gallon for jet fuel
947.9 Billion Btu/Petajoule

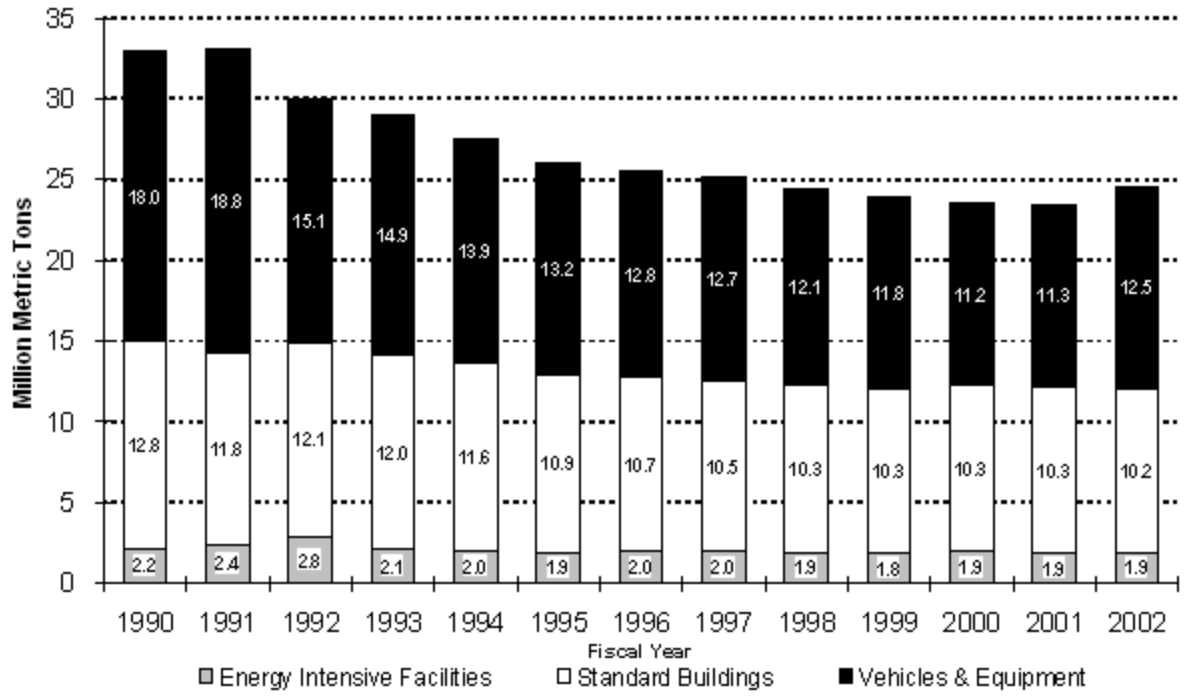
Note: FY 2002 contains estimated data for the following agencies: CIA, EEOC, FCC, and OPM.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

Carbon emissions from Federal Government energy consumption have decreased significantly since FY 1990. As shown in Figure 3, the Federal Government has reduced carbon emissions across the three non-exempt end-use sectors by 25.5 percent from 33.0 million metric tons of carbon equivalent (MMTCE) in FY 1990 to 24.6 MMTCE in FY 2002.[11] The largest contribution to this reduction is from the vehicles and equipment sector, which has seen a decrease in carbon emissions of 30.7 percent. This is a result of a reduction of almost 4.5 MMTCE emissions from jet fuel, as well as smaller reductions from diesel, aviation gasoline, navy special, and LPG/propane.

Carbon emissions have decreased by 20.3 percent in the standard buildings sector since 1990. Contributing to this reduction was a 8.4 percent reduction in gross square footage since FY 1990 and an 9.9 percent decrease in primary energy intensity (224,049 Btu/GSF in FY 1990, 201,946 Btu/GSF in FY 2002). Carbon emissions from energy intensive activities in industrial, laboratory, and other buildings decreased 13.1 percent (0.3 million metric tons) since FY 1990.

FIGURE 3
Carbon Emissions from Federal Energy Consumption by End-Use Sectors
FY 1990 through FY 2002
(Million Metric Tons of Carbon Equivalent [MMTCE])



[11]Carbon emissions were calculated by multiplying energy consumption for each fuel type by an associated carbon coefficient shown in Appendix B.

Section 201 of Executive Order 13123 establishes a greenhouse gas reduction goal for Federal Government facilities. This goal applies to standard buildings subject to the energy efficiency goals of Section 202 and industrial, laboratory, and other energy-intensive facilities subject to the goals of Section 203. The requirement states:

> "Through life-cycle cost-effective energy measures, each agency shall reduce its greenhouse gas emissions attributed to facility energy use by 30 percent by 2010 compared to such emissions levels in 1990. In order to encourage optimal investment in energy improvements, agencies can count greenhouse gas reductions from improvements in nonfacility energy use toward this goal to the extent that these reductions are approved by the Office of Management and Budget (OMB)."

As shown in Table 3, when the carbon emissions from non-exempt facilities are combined, the Government shows a reduction of 19.3 percent from 14.9 MMTCE in FY 1990 to 12.1 MMTCE in FY 2002.

Carbon emission calculations were adjusted in FY 2002 for 13 agencies to reflect purchases of renewable energy. These agencies, and their corresponding credit for renewable energy purchases are shown below:

Agency	MTCE
DOD	62,747
EPA	5,426
GSA	3,397
NASA	2,113
DOE	1,678
SSA	1,052
DOC	512
Treasury	382
USDA	354
Interior	151
TVA	81
RRB	4
DOT	1
Total	77,898

TABLE 3
CARBON EMISSIONS FROM FEDERAL AGENCY FACILITY ENERGY USE
(In Metric Tons of Carbon Equivalent [MTCE])

CIVILIAN AGENCY	**FY 1990**	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 90-02	%Change 01-02
USPS	**722,711**	725,690	754,657	810,286	823,895	827,214	855,771	784,543	830,133	831,527	963,258	**911,358**	**913,891**	26.5	0.3
VA	**687,514**	689,299	691,790	704,279	708,115	704,737	730,492	741,031	748,661	747,630	754,508	**802,866**	**792,661**	15.3	-1.3
DOE	**904,689**	862,869	887,049	884,790	871,935	856,948	832,095	793,466	748,870	732,857	710,856	**735,107**	**723,204**	-20.1	-1.6
GSA	**604,248**	562,655	557,841	566,280	553,366	534,068	558,009	565,674	563,041	572,475	622,160	**633,053**	**609,235**	0.8	-3.8
DOJ	**157,889**	199,009	156,968	198,055	213,756	221,666	272,141	272,379	280,253	290,088	334,196	**333,828**	**328,009**	107.7	-1.7
NASA	**292,829**	291,807	296,069	293,049	288,546	281,861	274,103	283,850	284,004	276,222	274,144	**269,084**	**259,847**	-11.3	-3.4
HHS	**224,596**	196,188	217,755	226,951	229,302	194,634	208,053	231,698	228,683	219,180	238,356	**244,630**	**251,778**	12.1	2.9
USDA	**145,906**	140,804	138,144	143,864	143,310	136,636	139,976	134,500	144,142	136,027	139,436	**145,852**	**136,348**	-6.6	-6.5
DOT	**111,387**	100,457	125,039	125,028	121,113	119,087	133,075	141,605	129,161	126,785	122,342	**125,872**	**135,130**	21.3	7.4
DOI	**128,167**	128,690	117,470	141,425	141,276	125,679	100,587	114,268	119,429	118,863	133,143	**160,813**	**158,565**	23.7	-1.4
TRSY	**81,682**	92,270	100,781	92,051	90,875	85,947	85,479	111,771	97,978	99,663	106,313	**102,202**	**110,513**	35.3	8.1
DOC	**49,109**	47,510	51,459	54,717	66,726	71,616	72,477	63,570	62,802	63,320	59,138	**72,264**	**64,335**	31.0	-11.0
DOL	**68,641**	66,055	66,797	69,054	69,250	66,308	68,164	69,483	70,171	54,382	74,037	**78,063**	**76,610**	11.6	-1.9
EPA	**26,700**	28,796	29,429	30,780	31,714	33,973	33,874	33,722	34,224	36,969	31,491	**35,743**	**26,351**	-1.3	-26.3
TVA	**20,014**	19,426	19,752	21,572	30,915	34,842	34,506	33,248	31,923	31,542	30,603	**31,132**	**30,818**	54.0	-1.0
IBB	**33,614**	22,529	22,506	22,314	20,608	21,253	23,012	27,423	25,282	22,735	23,133	**9,430**	**34,426**	2.4	265.1
FEMA	**7,862**	7,321	7,461	6,834	6,488	6,465	6,509	6,559	6,573	6,706	6,885	**6,608**	**7,161**	-8.9	8.4
ST	**15,589**	15,850	15,758	2,388	4,221	4,476	14,001	5,202	5,255	5,304	6,782	**5,676**	**11,060**	-29.1	94.8
HUD	**6,641**	6,164	5,742	5,366	5,012	4,736	5,137	4,944	4,725	4,753	4,923	**4,932**	**4,727**	-28.8	-4.2
OPM	**3,373**	3,426	3,523	3,813	3,729	3,715	3,742	3,773	3,782	4,429	3,374	**3,154**	**3,154**	-6.5	0.0
NRC	**1,961**	2,940	2,614	2,686	2,803	3,707	4,009	4,210	4,120	4,082	4,036	**3,652**	**3,663**	86.8	0.3
RRB	**1,405**	1,457	1,563	1,604	1,406	1,359	1,417	1,511	1,309	1,232	1,211	**1,128**	**1,138**	-19.0	0.9
FTC	**1,035**	998	991	981	961	957	964	972	974	979	1,286	**997**	**996**	-3.7	0.0
FCC	**617**	633	500	520	572	563	459	463	467	458	457	**440**	**455**	-26.3	3.3
Other	**20,877**	11,198	10,851	11,240	11,031	38,522	77,574	81,995	66,063	66,317	68,970	**64,353**	**62,114**	197.5	-3.5
Civilian Agencies Total	**4,319,055**	4,224,041	4,282,509	4,419,925	4,440,925	4,380,968	4,535,625	4,511,859	4,492,025	4,454,530	4,715,039	**4,782,238**	**4,746,189**	9.9	-0.8
DOD	**10,624,130**	10,029,510	10,650,088	9,692,082	9,150,419	8,501,381	8,193,372	7,958,137	7,785,738	7,628,420	7,535,656	**7,346,187**	**7,311,470**	-31.2	-0.5
Total	**14,943,185**	14,253,550	14,932,596	14,112,007	13,591,344	12,882,348	12,728,997	12,469,996	12,277,763	12,082,950	12,250,695	**12,128,424**	**12,057,659**	-19.3	-0.6

*Other includes, for certain years, CFTC, CIA, NSF, PCC, and SSA. DATA AS OF 04/14/04

Note: Sum of components may not equal total due to independent rounding.

Source: Calculated from energy consumption data from Federal Agency Annual Energy Management Data Reports, see Appendix B.

C. Energy Management Infrastructure and Tools

1. Federal Coordination

Federal Interagency Energy Policy Committee (656 Committee)
The Federal Interagency Energy Policy Committee (656 Committee) was established in accordance with Section 656 of the Department of Energy Organization Act (P.L. 95-91) to strengthen Government programs that emphasize productivity through the efficient use of energy, and concurrently, to encourage interagency cooperation in energy conservation. The 656 Committee did not meet in 2002. However, a meeting hosted by the Office of the Federal Environmental Executive (OFEE) brought together the Executive Order 13123 Senior Energy Officials in June 2002. For most agencies, the Senior Energy Official is also their 656 Committee member.

Federal Interagency Energy Management Task Force
The Federal Interagency Energy Management Task Force (Task Force) was established in accordance with the Federal Energy Management Improvement Act of 1988 to stimulate increased energy efficiency in the Federal sector. The Task Force serves as technical advisor to the 656 Committee by coordinating the activities of the Federal Government in promoting energy conservation and the efficient use of energy.

The Director of the Federal Energy Management Program (FEMP) serves as the Executive Director of the Task Force. The Task Force, composed of the chief energy managers of the agencies represented on the 656 Committee, addresses energy issues affecting Federal facilities and operations and provides the 656 Committee with in-depth analysis and recommendations concerning current and pending legislation, technical issues, and implementation of coordinated Federal activities.

The Task Force assesses the progress of agencies toward achieving energy savings, and collects and disseminates information on effective survey techniques, technologies that promote conservation and efficient use of energy, and innovative programs and contracting methods. To accomplish its mission, the Task Force establishes working groups to resolve specific technical or programmatic issues, to develop new initiatives for Federal implementation, and to address legislative requirements and topics presented by the 656 Committee, the Executive Director, or member agencies.

In FY 2002, meetings of the Task Force were held on October 9, 2001; January 23, 2002; April 24, 2002; and August 6, 2002. Issues highlighted in the these meetings included the following:

- FEMP's technical assistance project funding opportunities.
- The Federal Commercial Building Energy Standard (FEDCOM II).
- Progress toward the renewable energy goals of Executive Order 13123 and the status of the Federal Renewable Energy Project Registry.
- Integration of operations and maintenance functions into FEMP activities.
- FEMP's distributed energy resources market assessment.

- The Federal Energy and Water Management Awards and the Presidential Awards for Federal Energy Management Success.

- The provisions of the greenhouse gas reduction goal of Executive Order 13123.

- Implementation of Executive Order 13221 on Energy Efficient Standby Power Devices.

- Guidance for completing annual reports, complying with Executive Order 13123, and training opportunities in Federal energy management.

Senior Energy Officials
Section 304 of Executive Order 13123, states that "Each agency shall designate a senior official, at the Assistant Secretary level or above, to be responsible for meeting the goals and requirements of this order, including preparing the annual report to the President. Designated officials shall participate in the Interagency Energy Policy Committee. . . [and] shall communicate its activities to all designated officials to assure proper coordination and achievement of the goals and requirements of this order."

A meeting of the Senior Energy Officials was convened and chaired by the OFEE on June 14, 2002. The meeting included a briefing on energy savings performance contracts (ESPCs) and utility energy savings contracts (UESCs). Agencies with experience using UESCs and ESPCs as financing tools shared their success stories. The transportation Executive Order was discussed. A summary of the FY 2001 Federal Energy Scorecards was made available to the Senior Energy Officials at the meeting.

2. Training

Many agencies have their own internal training and recognition programs, discussed individually in Section VI of this report. Overall, Federal agencies reported spending $2.3 million to train 3,610 Federal personnel in energy efficiency, renewable energy, and water conservation subjects, including energy efficient product procurement and alterative financing techniques for energy and water projects.

During FY 2002, FEMP conducted 62 training workshops and symposia for more than 6,270 attendees in the efficient use and conservation of energy, water, and renewable energy in Federal facilities.

Two new training courses were added during FY 2002. Five Laboratories for the 21st Century workshops attracted 215 participants, and three Distributed Energy Resources workshops were attended by 231 participants.

FEMP supplemented its classroom workshops with "distance learning" training, via satellite. The Energy Management Teleworkshop, a six-module survey of FEMP courses, attracted 4,002 viewers. It included modules for life-cycle costing; buying energy efficient products; water resource management; operations and maintenance management; and financing.

Six workshops about ESPCs were conducted during FY 2002 for 802 participants. In each workshop, facility managers, contract specialists, and building engineers were instructed on the

statutory provisions for this innovative contracting/finance method and how to identify suitable projects. ESPCs allow energy-efficient improvements to be installed by private contractors with no up-front capital costs.

FEMP's Utility Project Financing/Utility Restructuring workshop was presented three times for 729 students. FEMP's Evolving Energy Markets Workshop was presented once for 27 attendees.

The Designing Low Energy Buildings course was presented three times for 107 participants. The two-day course included analyses and case studies of building design using passive solar heating, natural ventilation and cooling, daylighting, glazing, and overhangs.

The FEMP Lights course was conducted four times for a total of 79 participants. The objective was to provide guidance on energy-efficient lighting, consistent with other facility lighting considerations, quality and cost, and whole-building analysis. Topics included: basic lighting concepts; a comprehensive process for Federal relighting project development and implementation; and the use of professional lighting design services.

Two Facility Energy Decision Screening (FEDS) workshops were held during FY 2002 for 38 attendees. This is a training course for Federal facility managers on whole-site analysis of energy conservation, technical and financial opportunities utilizing the FEDS project screening software, and the project implementation software.

The Operations and Maintenance Management course was presented three times for 589 students.

FEMP, in conjunction with the National Institute of Standards and Technology, conducted three workshops on life-cycle costing and building retrofit simulation for 711 students.

The Implementing Renewable Energy Projects course was presented twice for 95 students.

FEMP continued to offer its Water Resource Management course with two workshops for 693 attendees during FY 2002. The course is designed to assist Federal site managers and agencies in meeting the water conservation requirements of EPACT and Executive Order 13123.

The Buying Energy Efficient Products teleworkshops attracted 667 participants.

During FY 2002, FEMP participated in the organization and presentation of 23 panel discussions on Federal energy efficiency, water conservation, and renewable energy topics at national energy management conferences around the country, attracting 1,100 attendees.

"Energy 2002," the energy efficiency workshop and exposition sponsored by FEMP, Department of Defense, and GSA was held June 2-5, 2002, in Palm Springs, CA. The conference provided participants with opportunities to explore such topics as strategies for energy projects, selling energy projects, and alternative financing. The conference had panel discussions, an exhibit hall showcasing energy technologies, and opportunities for relationship building. More than 1,200 were in attendance and more than 127 companies exhibited at the event.

FEMP continued to offer its Training Course Locator System to assist Federal agencies in training energy managers and in meeting the requirements of the EPACT and energy-related Executive Orders. The Locator system connects those seeking particular training courses with the organizations sponsoring the courses. Locator is a Web-based application which is readily available through the Internet. During FY 2002, 267 unique visitors to Locator logged on to the Locator Web site.

3. Awards and Recognition

Federal Energy and Water Management Awards
Outstanding accomplishments in energy efficiency and water conservation in the Federal sector were recognized with the presentation of the 2002 Federal Energy and Water Management Awards on October 23, 2002, in Washington, DC. The Awards Program is sponsored by the 656 Committee and DOE. Awards were selected from outstanding Federal energy managers and contributors who:

- Implemented proven energy efficiency, energy, and water conservation techniques;
- Developed and implemented energy-related training programs and employee energy awareness programs;
- Succeeded in receiving utility incentives, or awarding ESPC and other Federal-approved performance-based energy and water contracts;
- Made successful efforts to fulfill compliance with energy and water reduction mandates;
- Improved energy efficiency or reduction in energy costs for Federal mobile equipment including aircrafts, ships, and vehicles;
- Provided leadership in purchasing or supplying energy-efficient, renewable energy, or water-conserving products to one or more Federal agencies; and
- Demonstrated cost-beneficial landscape practices which utilize techniques that seek to minimize the adverse effects of landscaping.

Recipients of the 2002 awards were selected from 121 nominees submitted by 17 Federal agencies. There were 53 awardees representing 14 different Federal agencies. Distribution of awards among the Federal agencies for accomplishments in the previous fiscal year is indicated in the following table.

2002 Federal Energy and Water Management Awards by Group and Type

Agency	Individual	Small Group	Organization	Total	Energy Efficiency	Alternative Financing	Renewable Energy	Mobility	Water Mgmt.	Innovative Tech.	Program Imp.	Exceptional Service
Army	7	2	4	13	5	2	1	1	1		2	1
DOE	2	4		6	3		1		2			
DOI	1	1		2		1	1					
GSA		6		6		2	1			3		
HHS		1		1							1	
NASA		1		1	1							
Navy	1		6	7	1			2	1		2	1
Presidio			1	1	1							
State		1		1			1					
Treasury		2		2		1					1	
TVA			1	1			1					
USAF	1	3	2	6	1	3			1	1		
USMC	1	1	3	5		5						
VA			1	1		1						
TOTAL	**13**	**22**	**18**	**53**	**12**	**15**	**6**	**3**	**5**	**4**	**6**	**2**

Each award category contained a wide variety of innovative projects. Examples from each award category follow.

Energy Efficiency Award:
Presidio Trust Summer Initiative, Presidio Trust, San Francisco, California. As a resource protection organization, the Presidio Trust has always sought ways to minimize environmental impact and conserve water and energy, so it seemed natural for the organization to seek a creative financing solution that would help the Presidio save energy. In July 2000, the California Public Utilities Commission (CPUC) offered financing through a "Summer Initiative," which sought to achieve significant demand and energy reductions by summer 2001. Identifying opportunities to save hundreds of thousands of kilowatthours each year, the Presidio Trust formulated a plan for retrofitting both residential and non-residential buildings with energy-efficient lighting, controls, and energy management systems under the Summer Initiative. An extensive outreach campaign was also part of the Initiative. The Presidio faced added challenges from its designation as a National Historic Landmark, which requires the Presidio to be managed in compliance with historic guidelines, which at times are at odds with conservation goals. Despite the Presidio's hurdles, the lighting retrofits and outreach efforts were a success and will save the organization more than 1 million kilowatthours and $165,000 annually.

Alternative Financing Award:
Keith Yamanaka, Department of the Army, Schofield Barracks, Hawaii. Keith Yamanaka, Energy Manager at the U.S. Army Directorate of the Public Works, was the initiator and champion of the 25th Infantry Division's utility energy services contract project in Hawaii. Mr. Yamanaka led this project, a partnership between the U.S. Army and Hawaiian Electric Company, to design and construct a central 600-ton centrifugal chiller, cooling tower, condenser pump, chill water pump, and piping replacement. A second part of the UESC called for the installation of solar heating systems on 610 family housing units, 39 recreation cabins, and a fire station. This was the largest one-time installation of solar heating systems to take place anywhere in the country. These projects saved more than $1 million and close to 15 billion Btu during FY 2001.

Renewable Energy Award:
Green Power Switch®, Tennessee Valley Authority, Nashville, Tennessee. Green Power Switch® is a renewable energy initiative that offers consumers in the Tennessee Valley a choice in the type of power they buy. The Tennessee Valley Authority and local public power companies, working in cooperation with the environmental community, developed Green Power Switch® as a way to bring green power–electricity generated by cleaner, renewable resources–to Valley consumers. Green power is sold to residential consumers in 150-kilowatthour blocks (about 12 percent of a typical household's monthly energy use). Each block adds $4 to the customer's monthly power bills. Green Power Switch® is also being marketed to commercial and industrial consumers, who can buy blocks based on the amount of energy they use. Currently there are more than 5,000 residential customers signed up for almost 9,000 blocks of green power per month, and 226 business and commercial customers signed up for more than 6,000 blocks per month. Sources of green power include energy from a wind-powered turbine, solar generation, and a landfill methane gas site. Although no source of energy is impact-free, an investment of an additional $8 per month on a homeowner's power bill buys enough green power to equal the environmental benefits of planting an acre of trees in the Tennessee Valley.

Mobility Energy Management Award:
USS Blue Ridge, Department of the Navy. In spite of increased threat conditions, the USS Blue Ridge's energy team delivered dramatic energy and budget savings during FY 2001. The USS Blue Ridge saved $2.3 million and 1.5 million gallons of fuel, an impressive 50 percent improvement over the previous year's fuel use levels. Through the application of diligent conservation engineering, the use of electronic controls, improved boiler and main engine operation, and with the help of a command-to-enlisted commitment to Fleet leadership in energy conservation, the USS Blue Ridge energy team dramatically reduced emissions, fuel use, and water pollution. Additionally, the ship's 24-hour engineering trouble call log has significantly reduced turn-around time on fixing leaks and mitigating other energy conservation deficiencies.

Water Management Award:
Drain-Down Recovery of Heating and Cooling Circulating Water, Lawrence Livermore National Laboratory, Department of Energy, Livermore, CA. Using a non-traditional water conservation and cost-savings concept, DOE's Lawrence Livermore National Laboratory's (LLNL) Plant Engineering Instrument Shop and Energy Management Program saved an estimated 72,600 gallons of water per year through their Drain-Down Recovery Project. LLNL's project team came together to prevent water waste during the repair of heat and cooling water circulating systems. The team's drain water recovery program reuses most building system water, as well as anti-corrosion and scale-inhibiting chemicals. The idea of the project is simply to collect drain-down water and return it to the system following repairs, rather than waste it down the drain. The project realized savings in three areas: the cost of water; the costs of anti-corrosion and scale-inhibiting chemicals (which total more than $9,000); and reduced labor costs (by $52,600). With an amazing payback period of just three months, LLNL's project effectively conserves water, prevents pollution, and reduces maintenance costs.

Innovative Technology Award:
E-Commerce Reverse Auction Group, General Services Administration, Washington, DC. As a result of deregulation and the turbulent energy market in New York State, the General Services Administration (GSA), Energy Center of Expertise sought to mirror how industry procures and

sells energy as well as to meet Federal acquisition regulations. The Energy Center of Expertise awarded a delivery order to Science Applications International Corporation to use the World Energy Solutions electronic web-based reverse auction platform. ECOE's first e-commerce web-based energy procurement provided a quicker, more efficient way to solicit competitive bids on energy supply. The reverse auction electricity procurement avoided duplications of effort, saved time and resources, and allowed Federal agencies and organizations to focus their attention on critical missions. ECOE's $165 million energy procurement spanned six utility service territories and involved 20 competitive electricity suppliers, 10 qualified agencies, and approximately 900 electric accounts. It resulted in the fulfillment of approximately 624 gigawatthours of annual electricity requirements, which is enough power for 62,000 residential homes for one year. In certain service territories there was a 35 percent difference between the highest and lowest bids representing tens of millions of dollars in reduced pricing for GSA and its customers. The deregulated electricity industry in New York State combined with GSA's e-commerce reverse auction will save approximately $24 million over a three year period. This procurement proves that GSA can provide cost-effective solutions for energy services as demonstrated by program growth of approximately 700 percent in 12 months.

Program Implementation Award:
Naval Station Guantanamo Bay, Department of the Navy, Guantanamo Bay, Cuba. Naval Station Guantanamo Bay maintains self-sufficient water and energy operations, producing one million gallons of water and more than 250 megawatthours of electricity daily. During FY 2001 the Station began to realize enormous energy savings. Through more than $12 million in conservation investments that were largely focused on the repair and renovation of the Base's power and water production plants, the Station saved more than 300 billion Btu, reducing its energy demand from FY 2000 levels by 22 percent. These accomplishments resulted in energy budget savings of more than $1.8 million. The Station also agreed to move ahead with a $9.6 million wind turbine project that will save an additional $1.26 million per year. Guantanamo Bay's conservation programs result from comprehensive planning and are built on a foundation of mission awareness, vision, and training.

Exceptional Service Award:
John B. Nerger, Department of the Army, Washington, DC. John Nerger's leadership and visionary thinking has contributed to the Army's secure energy future by encouraging the use of clean, renewable technologies, increasing energy efficiency in facilities, and promoting energy awareness at Army facilities and housing worldwide. Under Mr. Nerger's leadership at the Army Facilities and Housing Directorate, the Army developed a strategic energy conservation plan that achieved more than $17 million in energy savings and reduced almost 2 trillion Btu of energy during FY 2001. The plan has a multi-faceted approach made up of several interrelated initiatives, which include awareness, energy management, training, energy engineering and project development efforts, project implementation, new contracting standards, and demonstrations of innovative technologies. Mr. Nerger's support and commitment to the Army Facilities Energy Program has been crucial in ensuring efficient energy management throughout the Army. The structure he has chosen for the execution of the energy plan allows commanders the flexibility to create their own unique energy programs, which fosters cooperation from most Army units and results in greater overall energy and cost savings throughout the agency.

Presidential Awards for Leadership in Federal Energy Management
On October 24, 2002, the White House honored five Federal agency energy management teams and more than 50 Federal employee participants of these teams for their support, leadership, and efforts in promoting and improving Federal energy management, and thereby saving millions of dollars in energy costs.

The Presidential Awards for Leadership in Federal Energy Management were presented for the third time as required by Executive Order 13123. Winners included representatives from the Department of Commerce, GSA, Department of Defense, and the Department of Health and Human Services along with the Department of the Army. Award recipients were recommended to the President by the Office of Management and Budget and FEMP.

Award winners were as follows:

- Department of Commerce
  "Institutionalization"

- Department of Defense
  Navy Shipboard Energy Conservation Team
  "Outstanding Performance"

- Department of Defense
  Pentagon Renovation Office
  "Outreach"

- Department of Health and Human Services
  Department of the Army
  National Cancer Institute/U.S. Army Garrison at Fort Detrick
  "Results"

- General Services Administration
  Public Buildings Service
  "Implementation"

4. Federal Energy Saver Showcase Facilities

To promote wise energy and water use throughout the Federal government, agencies are showcasing cost-effective energy efficiency, water-conserving, and renewable energy technologies in their facilities.

To highlight these successful energy efficiency projects, Section 406(e) of Executive Order 13123 requires that agencies designate "exemplary new and existing facilities with significant public access and exposure as showcase facilities to highlight energy or water efficiency and renewable energy improvements." The showcase program functions as a management strategy by assisting agencies in implementing the goals of Executive Order 13123. When facilities are designated as showcases, agencies can receive assistance from FEMP and obtain the advantage of partnering with other agencies, energy services companies, utilities, and national laboratories.

Since 1995, FEMP has recognized 123 sites throughout the country as Federal Energy Saver Showcases. Each Showcase site prominently displays a plaque notifying visitors that the Government building they are entering uses energy and water, as well as taxpayer dollars, wisely. A call for nominations has been distributed to urge agencies to identify and designate their best projects, or potential projects, so that others may benefit by example.

FEMP recognized 19 outstanding Federal facilities as Federal Energy Saver Showcases for 2002. These facilities are expected to save 32 million kilowatthours of energy annually, or about $2 million in yearly energy costs. The agencies and Showcase facilities are as follows:

Department of Commerce, National Oceanic and Atmospheric Administration

- National Marine Fisheries Service, Honolulu Laboratory; Honolulu, Hawaii

Department of Defense, United States Air Force

- Aircraft hangars 450, 452, 454, and 456, Columbus Air Force Base; Columbus, Mississippi

Department of Defense, United States Air Force

- DISA/Defense Enterprise Computing Center Ogden, Hill Air Force Base; Odgen, Utah

Department of Defense, United States Air Force

- Military Housing at Charleston Air Force Base; Charleston, South Carolina

Department of Defense, United States Army

- Arizona Army National Guard EcoBuilding; Phoenix, Arizona

Department of Defense, United States Army

- Building 110 at Watervliet Arsenal; Watervliet, New York

Department of Defense, United States Army

- Cleland Multipurpose Sports Complex; Fort Bragg, North Carolina

Department of Defense, United States Marine Corps

- Laurel Bay and Pine Grove II Housing at Marine Corps Air Station Beaufort; Beaufort, South Carolina

Department of Defense, United States Navy

- Naval Medical Center San Diego; San Diego, California

Department of Defense, United States Navy

- PV Covered Parking at Building 652, Naval Air Station North Island; San Diego, California

Department of Energy

- Bechtel Hanford Headquarters, Richland Corporate Center; Richland, Washington

Department of Energy

- Fermi National Accelerator Laboratory, Main Injector 8 GeV Beamline; Batavia, Illinois

Department of Energy

- Lawrence Berkeley National Laboratory; Berkeley, California

Department of Energy

- National Renewable Energy Laboratory, Thermal Test Facility; Golden, Colorado

Department of Energy

- Oak Ridge National Laboratory, Buildings Technology Center; Oak Ridge, Tennessee

Environmental Protection Agency and General Services Administration

- EPA New England Regional Laboratory; North Chelmsford, Massachusetts

Department of Health and Human Services, Indian Health Service

- David C. Wynecoop Memorial Clinic; Wellpinit, Washington

United States Postal Service

- Marina Processing and Distribution Center; Inglewood, California

Department of Transportation, Federal Aviation Administration

- Ft. Lauderdale/Hollywood Air Traffic Control Tower; Fort Lauderdale, Florida

5. Energy Awareness

The Federal Government, as the largest single employer in the United States, has the responsibility to set an example for the nation by conducting energy awareness programs. Most agencies have ridesharing, carpooling, and/or public transportation programs in effect. Many agencies also participate in recycling programs. The following exhibit shows the employee awareness activities at the various Federal agencies.

Agency	Award Programs	Recycling	Ridesharing	Transit Subsidies	Information Dissemination
USDA	✓	✓	✓	✓	✓
DOC	✓	✓	✓	✓	✓
DOD	✓	✓	✓	✓	✓
DOE	✓	✓	✓	✓	✓
HHS	✓	✓	✓	✓	✓
HUD		✓	✓	✓	
DOI	✓	✓	✓	✓	✓
DOJ	✓	✓	✓	✓	✓
DOL	✓	✓	✓	✓	✓
ST	✓	✓	✓		
DOT	✓	✓	✓	✓	✓
TRSY	✓	✓	✓	✓	✓
VA	✓	✓			
EPA	✓	✓	✓	✓	✓
GSA	✓	✓	✓		
NASA	✓	✓	✓	✓	✓
NARA	✓	✓		✓	✓
NRC	✓	✓	✓	✓	✓
RRB	✓	✓		✓	
SSA	✓	✓	✓	✓	✓
TVA		✓	✓		✓
USPS	✓	✓	✓		✓

6. Public Education Programs

NECPA, 42 U.S.C. § 8258(b), requires the Secretary of Energy to include in this and subsequent annual reports information on public education programs carried out by Federal agencies and previously reported under the authority of section 381 of the Energy Policy and Conservation Act (EPCA), 42 U.S.C. § 6361(b). EPCA requires the Secretary of Energy to establish and carry out public education programs to encourage energy conservation and energy efficiency and to promote vanpooling and carpooling arrangements. The Department of Transportation (DOT) has promoted ride sharing activities, while DOE has been responsible for other energy conservation education programs.

Through its Federal Highway Administration, DOT obligates Federal aid funds to assist State and local agencies in implementing programs designed to encourage the use of car pools, van

pools, and buses by commuters. DOT efforts have included van pool acquisition programs, fringe and corridor parking facilities, ride-matching projects, preferential treatment for high occupancy vehicles, and transit service improvement. Since 1974, nearly $1 billion in Federal aid highway funds have been spent on such projects in an effort to establish self-sufficient programs across the Nation.

The DOE's public education programs encompass a wide variety of services, objectives, and audiences, covering all major areas of conservation and renewable energy. DOE has organized its technology transfer programs to meet the specific information requirements of various audiences. Three services are managed through subcontracts at the National Renewable Energy Laboratory (NREL): DOE's Energy Efficiency and Renewable Energy Clearinghouse (EREC), DOE's Energy Efficiency and Renewable Energy Network (EREN), and the FEMP Help Desk.

EREC provides basic, technical, and financial information on various energy efficiency and renewable energy technologies and programs. The audience served by EREC includes the general public, business and industry, educational community, media, utility companies, and state and local governments. Information is provided in the form of fact sheets, DOE and National Laboratory books and brochures, bibliographies, and on-line computer-generated technology synopses. Some requests are handled completely over the phone and the caller receives no publications. EREC's telephone number is 800-DOE-EREC (800-363-3732) and its Web site is at www.eree.energy.gov/consumerinfo. In FY 2002, EREC staff responded to 33,197 inquiries and disseminated 457,157 publications.

DOE's Office of Energy Efficiency and Renewable Energy (EERE) hosts a Web site at www.eere.energy.gov. The audience served by the EERE Web site includes business and industry, the general public, the educational community, the media, and state and local governments. The site is a comprehensive resource for energy information, providing a gateway to hundreds of Web sites and thousands of online documents on energy efficiency and renewable energy. The site also allows keyword searches and offers a full range of information on topics such as building energy efficiency, wind power, and alternative fuels. In addition, EERE provides it organizational chart, major initiatives, and budget. The site also features current press releases, consumer information, and lists of discussion groups on various energy-related topics. There are even forms to submit energy-related questions and to subscribe to the EERE Network News e-mail newsletter.

The FEMP Help Desk provides Federal energy managers with specialized information on effective energy management practices, technical assistance on implementing Federal sector energy projects, financing information, energy modeling software, publications, and energy management training programs. The Help Desk responds to requests for information via a toll-free telephone service, electronic mail, and through the Internet. The telephone number is 800-DOE-3732. The Web site is www.eere.energy.gov/femp.

The National Energy Information Center (NEIC) responds to public and private sector questions on energy production, consumption, prices, resource availability, and projections of supply and demand. It also makes available the publications produced by the DOE Energy Information Administration (EIA). NEIC provides information to Federal employees and the public at www.eia.doe.gov. Electronic inquiries may be sent to infoctr@eia.doe.gov. In FY 2002, NEIC

staff responded to 25,300 inquiries and distributed approximately 60,000 publications. EIA is transitioning from providing paper reports to providing electronic copies of reports on the EIA Web site. The EIA web site recorded 9.2 million user sessions during FY 2002.

The Office of Scientific and Technical Information (OSTI), as part of the Office of Science, provides leadership and coordination for the Department-wide Scientific and Technical Information Program (STIP). In this capacity, OSTI assures access by DOE, the scientific research community, academia, U.S. industry, and the public to DOE research results in support of the DOE mission. This includes coordination with appropriate DOE organizations.

Key collections developed and maintained by OSTI on behalf of DOE include *Energy Citations Database* (*ECD*), the *DOE Information Bridge*, the *E-print Network*, *Research and Development (R&D) Project Summaries*, and *EnergyFiles*. Approximately 3.8 million citations to worldwide energy research reside in data files at OSTI, and more than 11,000 are added annually. Most of these are contained in *ECD*; the information dates back to 1948. Since 1995, the full text of more than 68,000 DOE reports has also been available to the public in the *DOE Information Bridge* through the joint sponsorship of DOE and the Government Printing Office (GPO). OSTI's vault protects 1.5 million older reports in hard copy. The *E-Print Network: Research Communications for Scientists and Engineers* searches e-print documents in Deep Web databases and across 10,000 Web sites, while the *DOE R&D Project Summaries* contains information about more than 20,000 active DOE-sponsored research projects. *EnergyFiles* searches or links to over 500 information resources in both government and private sectors.

These and other related DOE information resources at OSTI are searchable and available for reuse by appropriate audiences. OSTI serves the public directly or indirectly through agreements with the National Technical Information Services, the GPO, depository libraries, and commercial vendors. FY 2002 data show approximately 8.1 million user transactions were accommodated.

In addition to the core program activities, OSTI provides scientific and technical information services to DOE elements in support of DOE mandates, missions and objectives, disseminates research project-generated software through the DOE Energy Science and Technology Software Center (ESTSC).

FY 2002 initiatives included the test release and, in December 2002, the official launch of *science.gov*, the FirstGov portal for science. In addition to being an active member of the Science.gov Alliance, OSTI hosts, maintains, and provides Deep Web search capability to *science.gov. Science.gov,* a collaboration of fourteen information organizations from ten R&D federal agencies, provides integrated searching of and access to government-sponsored research results and project information through a single query. The Deep Web search allows a user to search government databases that are not typically accessible to popular search engines on the Web. Regardless of which agency has the data or how it is stored, the user can now find it in one easy, free search.

The DOE public information mechanisms include several direct service programs designed to provide technical assistance to specific target groups. Two of these programs are the State Energy Program (SEP) and the Industrial Assessment Center.

SEP provides funding to States to design and implement their own energy efficiency and renewable energy programs. The results from this program are directly linked to a large number of diverse and innovative projects in local communities throughout the United States. A national study quantifies energy and cost savings from SEP at $7.23 for every dollar of federal investment. The outcome of this DOE funding is a rapid and inventive deployment of energy efficiency and renewable energy technologies.

Formula grants are given to states using Congressionally-appropriated funds and are distributed according to a formula that depends on criteria such as the state's size and population. States can use formula grants to meet the specific needs of their particular end-use energy sectors. Each state sets its own priorities, and, according to its individual State Energy Plan, emphasizes development and deployment of technologies appropriate for its region. There are both mandatory and optional activities that can be funded by formula grants.

Special Projects grants are the second type of SEP grant. Unlike formula grants, Special Projects are funded entirely by EERE technology programs and are awarded on a competitive basis. Each year, states submit proposals identifying how specific technologies could be implemented in their region of the country. These projects are designed to utilize the state's skills in forming and sustaining partnerships with local governments, industry, utilities, and private organizations. Many of these projects involve the dissemination of information about, and/or the demonstration of the viability of a variety of energy efficiency and renewable energy applications. Additional information is provided on the program Web site at www.eere.energy.gov/buildings/state_energy.

The Office of Industrial Technology's (OIT) Industrial Assessment Center (IAC) Program provides no-cost energy, waste, and productivity assessments to help small and mid-sized manufacturers identify measures to maximize energy-efficiency, reduce waste, and improve productivity. The assessments are conducted by local teams of engineering faculty and students from 26 participating universities across the country. OIT awards cost-shared funding for R&D projects through a competitive solicitation process. Projects are performed by collaborative partnerships and must address industry-specified priorities. In this way, OIT maintains a balanced portfolio of R&D projects that will help realize national goals for energy and the environment. This program not only improves manufacturing efficiency, but at the same time provides valuable, hands-on technical training and experience for engineering students throughout the U.S. Additional information is provided on the program Web site at www.eere.energy.gov/industry.

D. Financing Mechanisms for Energy Efficiency Improvements in Federal Facilities

During FY 2002, Federal agencies had three primary options for financing energy efficiency, water conservation, and renewable energy projects in buildings and facilities: direct appropriated funding, ESPCs, and UESCs). The latter two options utilize non-Government sources of funding and can be used to supplement Government funding. Each of these three sources can be combined with another, if permitted by law.

To the extent that agencies have been able to provide complete reporting, funding from the three sources totaled approximately $524 million in FY 2002. While these three categories of funding are not entirely comparable, they do indicate that ESPCs and UESCs were the dominant source of support for efficiency investments throughout the Federal Government in FY 2002. Energy efficiency investment from ESPCs and UESCs in FY 2002 comprised $402.5 million, 76.9 percent of the total investment.

Since 1985, the Government has invested approximately $5.1 billion in energy efficiency, $2.8 billion of which was direct appropriations and $2.3 billion from alternative financing mechanisms ($1.4 billion from ESPCs and $0.9 billion from UESCs).

1. Direct Appropriations

The National Energy Conservation Policy Act requires each agency, in support of the President's annual budget request to Congress, to specifically set forth and identify funds requested for energy conservation measures. Table 4-A presents agency funding (in nominal dollars) reported from FY 1985 through FY 2002 for energy conservation retrofits and capital equipment. Table 4-B presents the same information in constant 2002 dollars. In constant dollars, funding for energy conservation declined from $388.2 million in FY 1985 to a low of $69.4 million in FY 1989. Reports from Federal agencies indicated that $121.1 million was spent on retrofit expenditures in FY 2002, compared with $132.8 million in FY 2001. In some cases, the data provided by the agencies include funding from operation and maintenance accounts that was specifically identified as contributing to energy efficiency. Figure 4 illustrates agency spending trends for the five largest energy-consuming agencies and the remaining group of Federal agencies.

The Department of Defense funded $60.6 million for energy efficiency projects in FY 2002, $2.8 million more than the previous year (Table 4-B).

Table 4-A
Agency Direct Appropriations for Energy Conservation Retrofits and Capital Equipment, FY 1985 through FY 2002 (Thousands of Nominal Dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DOD	**136,100**	**120,000**	**5,550**	**5,280**	**1,500**	**1,020**	**10,000**	**49,669**	**14,444**	**109,000**	**189,600**	**112,487**	**118,970**	**191,446**	**91,243**	**44,442**	**57,113**	**60,600**
DOI	3,198	5,535	0	0	4,338	0	1,272	9,800	4,859	1,662	779	891	0	160	1,730	23,999	3,220	22,800
NASA	11,800	12,100	1,700	1,400	4,499	2,943	7,556	7,086	25,072	24,658	20,666	30,266	15,919	13,813	18,509	11,731	6,045	9,389
TRSY	0	0	2,977	2,393	2,823	1,134	836	0	1,344	4,826	2,810	170	2,990	1,400	1,495	2,152	4,670	8,678
GSA	**6,700**	**6,100**	**2,900**	**9,400**	**4,868**	**11,125**	**30,123**	**37,000**	**30,000**	**37,000**	**7,242**	**7,400**	**20,000**	**0**	**25,000**	**17,000**	**5,000**	**4,500**
USDA	2,500	0	0	500	500	1,547	1,752	7,300	7,045	7,277	2,894	5,983	3,891	1,765	994	1,954	2,100	3,818
DOT	13,650	15,000	12,104	12,700	2,908	0	460	143	593	5,970	3,793	2,585	3,176	3,000	9,005	2,664	4,321	2,085
DOC	0	0	0	0	0	0	0	872	0	51	0	0	0	330	0	257	257	1,883
HHS	0	0	0	427	427	427	427	0	1,813	1,915	1,271	2,676	2,879	2,200	4,793	8,440	8,640	1,771
EPA	0	0	0	0	0	0	0	0	500	0	1,720	1,600	1,600	0	0	0	1,963	1,684
DOE	**14,800**	**14,500**	**16,500**	**18,900**	**19,400**	**19,500**	**20,400**	**20,650**	**20,950**	**24,850**	**30,200**	**0**	**0**	**0**	**0**	**0**	**2,000**	**1,400**
DOJ	0	0	0	195	484	6,100	26,400	0	0	1,284	994	1,559	2,091	1,500	1,615	1,170	489	968
VA	**13,000**	**11,500**	**9,500**	**9,860**	**5,500**	**11,200**	**9,970**	**10,000**	**12,100**	**9,050**	**11,960**	**3,700**	**7,400**	**13,000**	**10,500**	**0**	**15,000**	**898**
SSA	0	0	0	0	0	0	0	0	0	0	0	0	0	2,776	1,000	1,000	1,000	500
NARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	68
HUD	0	0	0	0	0	0	0	0	43	30	43	0	2,418	0	0	0	55	22
RRB	0	0	0	0	0	0	0	0	16	13	33	0	38	23	0	0	35	10
STATE	0	0	0	0	0	0	0	0	0	67	0	0	1,902	51	1,238	0	260	4
CIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,600	0
TVA	0	0	0	0	0	0	0	0	475	844	4,277	522	1,158	1,466	1,022	284	300	0
NRC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	226	0
DOL	238	31	106	142	584	17	35	16	0	0	0	366	0	0	40	0	0	0
PCC	1,274	73	1,174	600	378	361	807	249	500	608	14	23	3	104	0	0	0	0
USPS	**55,300**	**9,300**	**5,100**	**3,800**	**4,000**	**4,000**	**4,000**	**2,293**	**1,116**	**1,123**	**10,050**	**9,000**	**16,000**	**31,000**	**38,000**	**6,000**	**0**	**0**
Total	258,560	194,139	57,611	65,597	52,209	59,374	114,038	145,078	120,870	230,228	288,346	179,228	200,435	264,034	206,184	121,093	131,302	121,077

Notes: **Bold** indicates top five primary energy users in buildings and facilities (DOD, DOE, VA, USPS, GSA). In past years, DOE also included funds for energy surveys. Does not include energy savings performance contracts and utility demand side management incentives.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

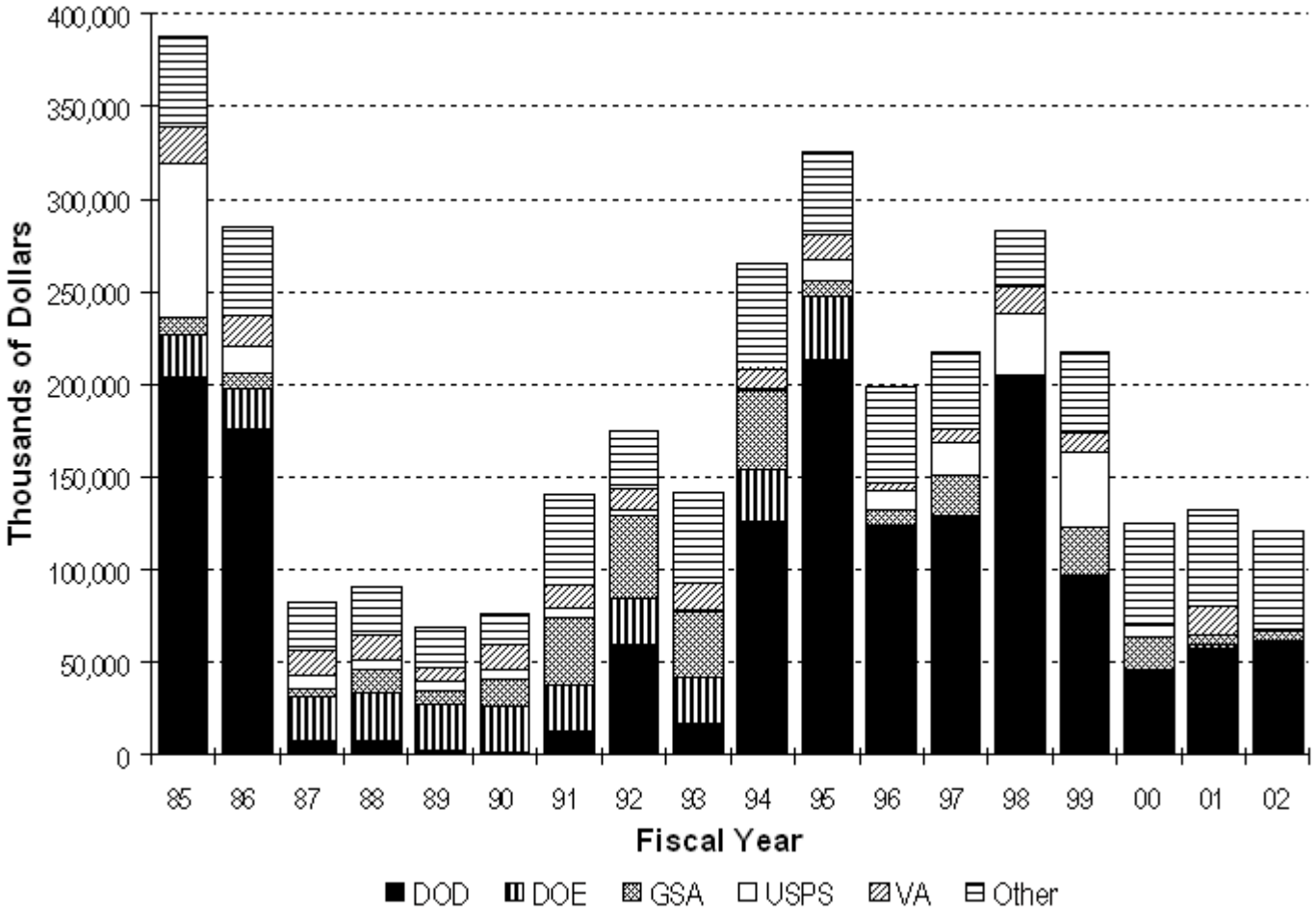
Table 4-B
Agency Direct Appropriations for Energy Conservation Retrofits and Capital Equipment, FY 1985 through FY 2002 (Thousands of Constant 2002 Dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DOD	**204,362**	**176,311**	**7,916**	**7,284**	**1,993**	**1,305**	**12,341**	**59,842**	**16,993**	**125,621**	**213,856**	**124,467**	**129,122**	**205,266**	**96,437**	**46,005**	**57,755**	**60,600**
DOI	4,802	8,132	0	0	5,764	0	1,570	11,807	5,717	1,915	879	986	0	172	1,828	24,843	3,256	22,800
NASA	17,718	17,778	2,425	1,931	5,978	3,764	9,325	8,537	29,497	28,418	23,310	33,489	17,277	14,810	19,563	12,144	6,113	9,389
TRSY	0	0	4,246	3,301	3,751	1,450	1,032	0	1,581	5,562	3,169	188	3,245	1,501	1,580	2,228	4,722	8,678
GSA	**10,060**	**8,962**	**4,136**	**12,967**	**6,469**	**14,229**	**37,175**	**44,578**	**35,295**	**42,642**	**8,168**	**8,188**	**21,707**	**0**	**26,423**	**17,598**	**5,056**	**4,500**
USDA	3,754	0	0	690	664	1,979	2,162	8,795	8,288	8,387	3,264	6,620	4,223	1,892	1,051	2,023	2,124	3,818
DOT	20,496	22,039	17,264	17,520	3,864	0	568	172	697	6,880	4,278	2,860	3,447	3,217	9,518	2,758	4,370	2,085
DOC	0	0	0	0	0	0	0	1,051	0	59	0	0	0	354	0	266	260	1,883
HHS	0	0	0	589	567	546	527	0	2,133	2,207	1,434	2,961	3,125	2,359	5,066	8,737	8,737	1,771
EPA	0	0	0	0	0	0	0	0	588	0	1,940	1,770	1,737	0	0	0	1,985	1,684
DOE	**22,223**	**21,304**	**23,533**	**26,073**	**25,779**	**24,941**	**25,176**	**24,879**	**24,648**	**28,639**	**34,064**	**0**	**0**	**0**	**0**	**0**	**2,022**	**1,400**
DOJ	0	0	0	269	643	7,802	32,580	0	0	1,480	1,121	1,725	2,269	1,608	1,707	1,211	494	968
VA	**19,520**	**16,896**	**13,550**	**13,602**	**7,308**	**14,325**	**12,304**	**12,048**	**14,236**	**10,430**	**13,490**	**4,094**	**8,031**	**13,938**	**11,098**	**0**	**15,169**	**898**
SSA	0	0	0	0	0	0	0	0	0	0	0	0	0	2,976	1,057	1,035	1,011	500
NARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	68
HUD	0	0	0	0	0	0	0	0	51	35	49	0	2,624	0	0	0	56	22
RRB	0	0	0	0	0	0	0	0	19	15	37	0	41	25	0	0	35	10
STATE	0	0	0	0	0	0	0	0	0	77	0	0	2,064	55	1,308	0	263	4
CIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,809	0
TVA	0	0	0	0	0	0	0	0	559	973	4,824	578	1,257	1,572	1,080	294	303	0
NRC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	229	0
DOL	357	46	151	196	776	22	43	19	0	0	0	405	0	0	42	0	0	0
PCC	1,913	107	1,674	828	502	462	996	300	588	701	16	25	3	112	0	0	0	0
USPS	**83,036**	**13,664**	**7,274**	**5,242**	**5,315**	**5,116**	**4,936**	**2,763**	**1,313**	**1,294**	**11,336**	**9,959**	**17,365**	**33,238**	**40,163**	**6,211**	**0**	**0**
Total	388,244	285,241	82,169	90,491	69,376	75,942	140,735	174,792	142,204	265,334	325,234	198,316	217,539	283,094	217,922	125,353	132,778	121,077

Notes: **Bold** indicates top five primary energy users in buildings and facilities (DOD, DOE, VA, USPS, GSA). In past years, DOE also included funds for energy surveys. Does not include energy savings performance contracts and utility demand side management incentives.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

FIGURE 4
Direct Appropriations for Energy Conservation Retrofit
(In Constant 2002 Dollars)



Source: Federal Agency Annual Energy Management Data Reports

2. Energy Savings Performance Contracting

Section 155 of EPACT amended Title VIII of NECPA, sections 801 and 804, relating to energy savings contracts. Section 801, as amended, gives agencies the authority to enter into ESPCs and describes the methodology of contract implementation. The ESPC program was created to provide agencies with a quick and cost-effective way to increase the energy efficiency of Federal buildings. Under an ESPC, a private sector energy service company (ESCO) will assume the initial capital costs of installing energy conservation equipment and renewable energy systems. The ESCO guarantees the agency a fixed amount of energy cost savings throughout the life of the contract and is paid from those cost savings. Agencies retain the remainder of the energy cost savings.[12]

On April 10, 1995, DOE published in the *Federal Register* (10 CFR Part 436) a final rule that sets forth the regulations for energy savings performance contracting. An application process for a Qualified List of ESCOs was also released with the ESPC regulations. Only firms on the Qualified List may receive an ESPC contract award. Firms that wish to be on the Qualified List must submit an application to DOE and possess the required experience and expertise. The List is continually updated.

Section 403(a) of Executive Order 13123 states that "Agencies shall maximize their use of available alternative financing contracting mechanisms, including Energy Savings Performance Contracts. . . ." This section goes on to state that "Energy Savings Performance Contracts. . .provide significant opportunities for making Federal facilities more energy efficient at no net cost to taxpayers."

During FY 2002, 59 ESPC contracts or delivery orders were awarded at nine agencies. These include delivery orders awarded through the DOE/FEMP Super ESPC programs as well as projects awarded by the DOD and other agencies. Total contractor investment from these projects was approximately $291.6 million, providing the Government with an opportunity to save almost 1.7 trillion Btu each year. These ESPCs include 32 by DOD, 12 by the Department of Veterans Affairs, seven by the GSA, three by the Postal Service, two by NASA, and one each by DOE and DOT, and the National Archives and Records Administration. DOD and the National Gallery of Art also issued modifications on delivery orders issued in previous years that increased project investment.

[12]Even though this report is for FY 2002, it should be noted that ESPC authority expired on October 1, 2003. As of the time of this report issuance, various proposals to reauthorize ESPCs were pending in Congress.

Energy Savings Performance Contracts and Delivery Orders Awarded by Federal Agencies in FY 2002

Agency	Number of Delivery Orders/ Contracts	Project Investment Value(Thou. $)	Allocation of Project Cost Savings (Thousand $)			Annual Energy Savings (MMBtu)
			Guaranteed Total Cost Savings	Payment to Contractor	Net Savings to Government	
Defense	32	$249,285	$640,535	$596,533	$44,002	1,619,060
Energy	1	$983	$1,683	$1,637	$46	5,666
GSA	7	$34,281	$117,532	$118,081	-$549	-12,917
National Gallery of Art	0	$60	$107	$107	$1	0
Archives	1	$1,250	$2,634	$2,632	$2	11,002
NASA	2	$2,238	$4,840	$4,794	$46	19,800
Transportation	1	$1,341	$2,539	$2,440	$99	17,105
Veterans Affairs	12	NA	NA	NA	NA	NA
Postal Service	3	$2,207	$7,158	$4,086	$3,072	29,344
Total	59	$291,645	$777,029	$730,309	$46,720	1,689,060

Awarding ESPCs on a one-by-one basis has often proven to be complex and time consuming. To make it easier to use ESPCs, DOE/FEMP developed Regional and Technology-Specific Super ESPCs. Both Regional and Technology-Specific Super ESPCs share the same general contract terminology and provisions with conventional ESPCs and they present several significant advantages to Federal agencies.

Regional Super ESPCs are unlike conventional ESPCs in two fundamental ways. First, a Super ESPC blankets a large geographic territory; a conventional ESPC is used for a specific site. Second, Super ESPCs substantially reduce the lead time to contract with an ESCO for energy services. Super ESPCs are broad area indefinite delivery, indefinite quantity (IDIQ) contracts that allow agencies to negotiate site-specific delivery orders with an ESCO without having to start the contracting process from scratch. Demand on agency resources to develop and award contracts, as well as lead times, are greatly reduced, and energy savings are realized more quickly.

Technology-Specific Super ESPCs emphasize a particular advanced energy-efficiency or renewable energy technology to advance these proven, yet still emerging, technologies in the Federal marketplace. They blanket the entire nation and carry the same agency resource and time saving benefits as Regional Super ESPCs. ESCOs chosen for these awards have unique capabilities and experience in providing energy savings through installation of the technology, thereby greatly reducing the risks of misapplying emerging technologies. Technology-Specific Super ESPCs can also be comprehensive projects employing multiple energy conservation measures, as long as the named technology is the focus of the project.

As shown in the exhibit on the next page, 16 Regional Super ESPC delivery orders were awarded during FY 2002, along with three modifications that add project investment to delivery orders awarded in previous years. Total contractor investment totaled $96.9 million, providing annual savings of almost 1.3 trillion Btu to the Government. These delivery orders include five by the Department of Defense, seven by the GSA, and one each by the Departments of Energy and Transportation, NASA, and the National Archives and Records Administration.

Delivery Orders Awarded in FY 2002 with DOE Super ESPC Program Support

Agency/Site/Location	Project Description	Investment Value	Energy Savings (MMBtu/yr.)
DOD; Ft. Hamilton; Fort Hamilton, NY	BAS/EMCS, Lighting Improvements, Water & Sewer Systems	$2,300,105	25,694
DOD; Navy Region Southwest #2, NAVSTA; San Diego, CA	Modification to 26-Sep-01 Award	$1,171,411	NA
DOD; Rock Island Arsenal; Rock Island, IL	GHP Systems, Appliance Plug Load Reductions	$7,822,429	68,853
DOD; Fort Lewis; Tacoma, WA	BAS/EMCS, Chilled/Hot/Staem Piping & Dist Systems	$3,891,447	39,638
DOD; Carlisle Barracks; Carlisle Barracks, PA	GHP Systems, Building Automation Systems/EMCS, Lighting Improvements, Building Envelope Mods	$9,359,579	82,383
DOD; Navy Region Southwest #2, NAVSTA; CA	Modification to 01-Mar-01	$4,587,016	NA
DOD; Marine Corps Naval Base; Quantico, VA	BAS/EMCS, Chilled/Hot/Steam Piping & Dist Systems, Water and Sewer Systems	$27,706,795	243,875
DOE; NNSA/NV Facilities; Las Vegas, NV	Lighting	$982,744	5,666
DOT; FAA Northwest Mountain Region; Salt Lake City, UT and sites in CO	Boiler, Chiller, and Lighting Improvments, BAS/EMCS, HVAC, Chilled/Hot/Steam Piping & Dist Systems	$1,340,832	15,719
GSA; U.S. Courthouse; Seattle, WA	Chiller Plant Improvements, BAS/EMCS, Lighting Improvements, Electric Motors & Drives	$1,565,494	848,324
GSA; Whipple Federal Building, Burger Building, Minneapolis Courthouse; Ft. Snelling, MN	Lighting, HVAC, BAS/EMCS, Electric Motors & Drives	$3,039,743	26,756
GSA; Various Sites; LA, AR, TX	Boilers, Chillers, Lighting, Chilled/Hot/Steam Piping & Dist Systems, Water & Sewer Systems	$1,023,871	3,333
GSA; FDA Consolidation Site; White Oak, MD	Cogeneration Plant, BAS/EMCS, HVAC and Lighting Improvements, Building Envelope Modifications, Electric Motors & Drives, Renewable Energy Systems	$24,616,413	-85,720 (Site MMBtu) 171,922 (Source MMBtu)
GSA; National Capitol Region - HOTD; Mid-Atlantic	Chilled/Hot Steam Piping & Dist Systems	$1,736,044	19,163
GSA; Downtown Denver Buildings; Denver, CO	Chiller Improvements, Building Automation Systems/EMCS, HVAC, Lighting Improve-ments, Chilled/Hot/Steam Piping & Dist Systems	$1,530,323	13,470
GSA; Various Sites in Kansas; Kansas City, MO	Chiller and Lighting Improvements, BAS/EMCS, Water & Sewer Systems	$769,510	1,598
NARA; Ronald Reagan Library; Simi Valley, CA	Lighting, BAS/EMCS	$1,249,924	11,002
NASA; Ames Research Center #2, Moffet Field Bldgs; CA	Lighting	$2,185,853	19,240
National Gallery of Art, Washington, DC	Modification to 02-Nov-00 Award	$59,644	NA

3. Utility Energy Service Contracts

Section 403(a) of Executive Order 13123 requires that Federal agencies maximize their use of available alternative financing contracting mechanisms, including UESCs, when life-cycle cost-effective, to meet the energy reduction goals of the order. Agencies are encouraged to partner with the private sector to implement facility and energy improvements, streamline contracts, and maximize purchasing power. UESCs provide significant opportunities for making Federal facilities more energy efficient at no net cost to taxpayers.

UESCs enable agencies to implement energy and water efficiency projects without obtaining direct appropriations in advance. The net cost to the participating Federal agency remains minimal, as the projects pay for themselves from a share of the energy cost savings. Utility services range from rebates on energy-efficient equipment to energy audits, feasibility studies, design, finance, and delivery of complete turn-key projects, with contract terms generally limited to 10 years. Projects typically begin with an energy audit and feasibility study, and proceed to engineering, design, and installation phases.

FEMP helps Federal agencies and their utility companies work together to save energy and dollars at Federal facilities. FEMP supports agencies and their utilities by promoting Federal/utility partnerships through the Federal Utility Partnership Working Group and supplying alternative financing information. FEMP provides comprehensive assistance and services to agencies with the support of partners, including DOE offices, DOE national laboratories, and private sector contractors. Six DOE regional offices serve as the initial customer contact points and customer advocates. FEMP also sponsors utility-related training, helps remove regulatory barriers, and provides information on utility restructuring and its effects on Federal agencies to help agencies to take advantage of the partnerships.

In FY 2002, a total of 54 UESCs were implemented by all Federal agencies. Private sector investment in the projects totaled approximately $110.9 million. The estimated annual energy savings from the 54 projects is 595.6 billion Btu. Cumulative cost savings from these projects will be approximately $198.3 million.

Projects were undertaken by agencies to accomplish a wide variety of energy efficiency improvements. Of the 54 UESCs awarded in FY 2002, 41 were implemented by the Department of Defense. Contracts were put in place to perform infrastructure upgrades and purchase new equipment to help installations reduce energy and water consumption. Examples of equipment purchased with the UESC financing tool include: new thermal storage systems, chillers, boilers, lights, motors, energy management control systems, and water reducing devices.

4. Life-Cycle Costing (LCC)

Section 544 of NECPA, as amended in 1988, requires DOE to establish practical and effective methods for determining the cost-effectiveness of energy and water conservation and renewable energy projects in Federal buildings. The prescribed method of economic evaluation estimates and compares life-cycle costs using the sum of all capital and operating costs of new or retrofitted buildings or building systems over their expected lives or during a period of 25 years, whichever is shorter. The method uses energy price projections and a discount rate determined by the Secretary of Energy. In addition, section 544 requires that procedures be developed in applying and implementing the methods that are established. EPACT further amends NECPA to require, after January 1, 1994, that agencies that lease buildings to fully consider the cost-effectiveness of all potential building space at the time of renewing or entering into a new lease.

FEMP publishes updated fuel energy price indices and discount factors for life-cycle cost analyses on April 1 of each year. The most recent *Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis, Annual Supplement to Handbook 135* was published and distributed to Federal energy managers in April 2002.

A set of Building Life-Cycle Cost (BLCC) computer programs have been developed and supported by the National Institute of Standards and Technology (NIST) under FEMP sponsorship. The programs are valuable economic tools to assist Federal energy managers in performing LCC analyses. The latest update of the BLCC5 version of the software, which incorporates the 2002 DOE/FEMP discount rate and the latest energy price projections from the Energy Information Administration, was released April 1, 2002. Version BLCC 5.1-02 includes two new modules for evaluating Military Construction (MILCON) projects. BLCC5.1-02 now contains the following four modules for analyzing energy and water conservation and renewable energy projects:

- Analyses for Federal agency-funded projects;
- Analyses for Federal agency projects financed through ESPCs or UESCs;
- MILCON analyses for Department of Defense-funded projects; and
- MILCON analyses for projects under DOD's Energy Conservation Investment Program.

Executive Order 13123 required DOE to provide guidance to clarify how agencies determine the life-cycle cost for investments required by the Order, including how to compare different energy and fuel options and assess the current tools (section 502(d)); and "assist agencies in ensuring that all project cost estimates, bids, and agency budget requests for design, construction and renovation of facilities are based on life-cycle costs (Section 505(a)." Such guidance was delivered to agency heads by the Secretary of Energy on July 31, 2000.

E. ENERGY STAR® and Energy Efficient Product Procurement

Section 403(b) of Executive Order 13123 directs Federal agencies to purchase ENERGY STAR®-labeled products, or, for those product types not covered by the EPA/DOE ENERGY STAR® labeling program, products "in the upper 25 percent of energy efficiency as designated by FEMP." In July 2001, President Bush added new requirements for buying products with low standby power by issuing Executive Order 13221. This Order directs agencies to buy products that use "no more than one watt in their standby power consuming mode" wherever available and cost-effective, or otherwise to select products with the lowest available standby power. In consultation with GSA, DLA, and their Federal customers, the ENERGY STAR® program, and industry, FEMP has developed purchasing criteria for an initial group of 12 low-standby office and consumer electronic equipment. Future purchasing recommendations will address other low-standby products, such as appliances with electronic sensors, controls, and displays.

Recent changes in the Federal Acquisition Regulations (48 CFR 23.203) mandate that all Federal agencies comply with the Executive Order by purchasing ENERGY STAR® or other energy-efficient products designated by FEMP, whenever "life-cycle cost-effective and available." These same requirements also apply to all agency contracts for services that include provision of energy-using products, such as ". . . contracts for design, construction, renovation, or maintenance of a public building."

The ENERGY STAR® labeling program is a joint effort between EPA and DOE to help manufacturers identify and market efficient products with the easily recognizable ENERGY STAR® logo. Since this is a nationwide labeling program covering multiple products, it makes it very simple for customers to identify truly efficient models among those offered—for instance, in a retail showroom or among various models listed in a product catalog. The program includes a wide variety of office equipment and home heating and cooling products, as well as many consumer audio and video products (e.g., TVs, VCRs, and DVD players), appliances, and residential windows. Some commercial equipment is also covered, such as unitary (rooftop) air conditioners, reach-in refrigerators, commercial cooking equipment, exit signs, low-voltage distribution transformers, and roofing products.

To assist Federal agencies in meeting the requirements of the Executive Order and FAR directives, FEMP publishes a series of Product Energy Efficiency Recommendations which set forth the efficiency levels that meet the ENERGY STAR® and "upper 25%" requirements of the Executive Order, as well as the new requirements for low-standby products. The Recommendations also provide cost-effectiveness examples, tips on important product selection parameters such as sizing and fuel choice, and information about buying efficient products from the Federal supply agencies: the Defense Logistics Agency (DLA) and GSA. The Recommendations, which now cover 45 products, are available on FEMP's Web site at www.eere.energy.gov/femp/procurement, as well as in print, through a loose-leaf binder called "Buying Energy Efficient Products." The binder is available free of charge from FEMP's clearinghouse (800-363-3732); subscribers receive new and updated material about twice per year.

To be most effective, FEMP's product energy efficiency recommendations need to be incorporated into other purchasing guidance, such as agency-specific policies, construction

specifications, and services contracts. In addition, FEMP has partnered with DLA and GSA to incorporate energy efficient purchasing in training workshops and promotional material designed for Federal procurement officials. These training workshops help agencies comply with the FAR and Executive Orders, as well as educate Federal buyers on the ENERGY STAR® labeling program and FEMP's Recommendations.

During FY 2002, FEMP worked with GSA's Federal Supply Service to identify energy-efficient equipment in supply catalogs and product offerings listed in GSA's online shopping network, GSA *Advantage!* DLA's customers rely heavily on the information in the Federal Logistics Information System (FLIS) database to procure products and equipment. The FLIS catalogs millions of items by "national stock numbers" (NSNs), which can be accessed by vendor name or code. DLA has established a database field within the FLIS that highlights positive environmental attributes, including energy efficiency and low standby power using the FEMP efficiency criteria.

Encouraging energy-efficient Federal purchasing means working with suppliers as well as buyers. FEMP published a reference guide on *How to Sell Energy-Efficient Products to the Federal Government*, and sponsored a training session for suppliers and manufacturers at its annual Energy 2002 Conference. FEMP also assisted GSA Acquisition Centers in providing information and contractual guidance to vendors on reporting information on the energy efficiency of their products.

Among FEMP's biggest success with energy-efficient purchasing was the incorporation of FEMP-recommended product efficiency levels into agency guide specifications for construction and major renovation. When an agency writes a FEMP recommendation into a "guide spec" for a given product, it helps assure that virtually all the buildings constructed by that agency will use energy-efficient HVAC, lighting, and other equipment that complies with the requirements of the Executive Order; this affects millions of dollars worth of products and construction projects. Following the early lead of the Army Corps of Engineers and the Naval Facilities Engineering Command, FEMP is working with DOD's Tri-Service Committee on Unified Facilities Guide Specifications to assure that the updated guide specs will incorporate these same FEMP-recommended efficiency levels for equipment such as electric chillers, rooftop unitary air conditioners, fluorescent and HID lighting, motors, exit signs, distribution transformers, and roofing products.

FEMP has partnered with DLA and the DOE Buildings Program to promote Federal purchases of newly introduced unitary (commercial rooftop) air conditioners that are significantly more energy-efficient than traditional models (www.pnl.gov/uac). The intent, in keeping with Section 127(c)(3) of the Energy Policy Act of 1992, is not only to save tax dollars, but also to use Federal buying power to help establish an initial market for promising new technology. This can help reduce the risk to manufacturers of developing and marketing a more efficient, cost-effective line of products. To achieve this objective, the participating agencies have organized a competitive procurement for "packaged" air conditioners, which are often used in low-rise Federal and commercial buildings. In the past, such units have typically been selected based on lowest first-cost rather than lowest life-cycle cost—including substantial energy operating costs. In contrast, the request for proposals (RFP) issued in January 2002 focused on life-cycle cost, including electricity consumption based on typical weather conditions. A

technical and economic evaluation of the proposals resulted in basic ordering agreements for two products, one with high efficiency and lower first-cost than in the past, and a second product, introduced in response to the RFP, that is more costly than the other to purchase, but is cost-effective for many applications due to its exceptionally high energy efficiency (SEER 13.5). The agreement also allows non-Federal buyers to contract directly with the supplier for these same high-efficiency units, at the same purchase price negotiated for DLA and their Federal customers.

F. Integrated Whole Building Efficiency

1. Federal Building Energy Performance Standards

EPCA as amended by EPACT, mandates that new Federal buildings must contain energy saving and renewable energy specifications that meet or exceed the energy saving and renewable energy specifications of the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)/ Illuminating Engineering Society of North America (IESNA) Standard 90.1-1989 and the Council of American Building Officials Model Energy Codes (MEC) 1992.

A final rule on 10 CFR 434, *Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings* was published in the *Federal Register* on October 6, 2000, and became effective on October 8, 2001. The *Energy Code* revised the prior interim Federal standards to conform generally with the codified version of ASHRAE Standard 90.1-1989 and incorporated changes in the areas of lighting, mechanical ventilation, motors, building envelope, and fenestration rating test procedures, and test procedures for heating and cooling equipment. Additionally, the new lighting provisions are more stringent than those in Standard 90.1-1989 and reflect new information concerning energy requirements needed to achieve adequate lighting levels. DOE is also initiating another update of the Federal commercial building standards using ASHRAE 90.1-1999 as the model.

A separate proposed rule for new Federal residential buildings was issued by DOE in the *Federal Register* in May 1997. DOE has determined that the 1997 proposed rule does not contain sufficient cost effective, energy efficient requirements for new Federal residential buildings. Therefore, DOE plans to propose a new rule containing updated energy efficient measures.

2. ENERGY STAR® Buildings

Section 403 of Executive Order 13123 calls upon agencies to strive to meet the ENERGY STAR® building criteria for energy performance and indoor environmental quality in their eligible facilities to the maximum extent practicable by the end of 2002. Agencies have the option of using ESPCs, UESCs, or other means to conduct evaluations and make improvements to their buildings in order to meet the criteria. Buildings that rank in the top 25 percent in energy efficiency relative to comparable commercial and Federal buildings qualify to receive the ENERGY STAR® building label. More than 100 Federal buildings have earned the ENERGY STAR® building label.

The ENERGY STAR® building program was developed by EPA with DOE as a co-sponsor to promote energy efficiency through the use of online software that benchmarks and ranks buildings by type in terms of energy efficiency. Many types of buildings are now eligible for the ENERGY STAR® label, including offices, K-12 schools, supermarkets, and hospitals. Other building types will be included in the program in future years. ENERGY STAR® building certification and labeling is based upon measured building data and a comparison with archetypes in various regions of the country. Many agencies are using the five-stage ENERGY STAR® implementation strategy, which consists of lighting upgrades, building tune-up, other load reductions, fan system upgrades, and heating and cooling systems upgrades.

The ENERGY STAR® building program is currently being implemented and utilized by many different agencies. To spotlight a few examples:

- The USDA's Forest Service, Forest Products Laboratory in Madison, Wisconsin, Research Demo House/Laboratory was awarded the ENERGY STAR® building label in FY 2002, and is certified as a Green Built House. The design and construction incorporated environmentally sensitive practices, reducing pollutants, and improving indoor air quality, while conserving water, energy, and other natural resources.

- The Departments of the Army, Navy, and Air Force signed criteria directing the use of ASHRAE Standard 90.1-2001, Energy Standard for Buildings (except Low-Rise Residential Buildings). Also in FY 2002, a Memorandum of Understanding between EPA and the Pentagon Renovation Office was signed agreeing to use the Portfolio Manager rating tool, adopt the ENERGY STAR® strategy, educate staff and public, provide metering/sub-metering, and conform to current indoor environmental standards.

- By the end of 2002, GSA earned the ENERGY STAR® building label for 93 of its owned facilities and one leased facility. This represents approximately 19 percent of the eligible square footage, and 15 percent of facilities.

- The VA worked with DOE's Oak Ridge National Laboratory to identify VA medical centers that qualify for the ENERGY STAR® label for buildings. Forty-nine medical centers were identified as ENERGY STAR®-worthy during a preliminary evaluation.

3. Sustainable Building Design

As required by Section 403(d) of Executive Order 13123, DOD and GSA, in consultation with DOE and EPA, have developed sustainable design principles. Agencies are required to apply such principles to the development, design, and construction of new facilities. Agencies shall optimize life-cycle costs, pollution, and other environmental and energy costs associated with the construction, life-cycle operation, and decommissioning of the facility. Agencies have the option of using ESPCs or UESCs to aid in the construction of sustainably-designed buildings.

Nineteen agencies are either developing or have implemented the Whole Building Design Guide (WBDG) and the U.S. Green Building Council's Leadership in Energy and Environment Design (LEED™) programs into their facilities' design standards and master planning process, and are applying integrated design approaches to the life-cycle of buildings and infrastructures. The WBDG and LEED™ are Internet resources which provide a wide range of building-related design guidance, criteria, and technology for the integration of sustainable building design. The WBDG is an up-to-date, knowledge-based tool, creatively linked to information across disciplines and traditional professional boundaries. It is intended to encourage the "whole building approach" to design and construction, and is used by Federal, military, and private sector architects, engineers, and project managers. The approach directs members of the planning, design, and construction team to look at the project materials, systems, and assemblies from many different perspectives. The design is evaluated for cost, quality of life, flexibility, efficiency, overall environmental impact, productivity, creativity, and the benefit to the facility's occupants.

Examples of sustainable design measures incorporated into facilities include the installation of high performance windows; direct-digital control systems; high efficiency electric lighting; energy efficient HVAC equipment; and increased insulation in roofs, walls, and foundations. Many agencies are also incorporating low-cost projects such as replacing high volume water fixtures, installing solar lighting, upgrading lighting with motion detectors and occupancy sensors, installing or replacing insulation, replacing mechanical ventilation systems with natural ventilation, and installing water conserving toilets. In support of this effort, several agencies have also conducted training on implementing the sustainable design principles.

The Department of the Treasury has mandated use of the WBDG for its new facilities. The new Alcohol Tobacco and Firearms (ATF) Headquarters building is being designed to meet or exceed the LEED™ silver level. The building will incorporate daylighting, plants on the roof, utilization of captured rainwater for irrigation, high efficiency irrigation, digital controls, individual HVAC controls, green power use, and occupancy sensors for lighting. ATF's new laboratory and fire research center were also designed following sustainable design guidelines.

The Department of the Army has embraced the design, construction, operation and reuse/removal of the built environment in an environmentally and energy efficient manner and has identified projects in FY 2002 and beyond as Army Sustainable Design and Development Showcase Facilities. This program will facilitate awareness of how facility systems and materials affect initial project and life-cycle costs, operations and maintenance practices, and ultimate facility performance over the facilities lifetime. The Army's policy requires all projects to be scored against its Sustainable Project Rating Tool, achieving at least a bronze level but

encourages striving for higher sustainable rating levels (Silver, Gold, and Platinum). Additionally, approximately 450 design engineers and installation personnel were trained in FY 2002 through the U.S. Army Corp of Engineers' three-day sustainable design workshop.

GSA has incorporated sustainable design guidance into the following documents: The Design Excellence Program Guide; Facilities Standards for the Public Buildings Service; and GSA's Solicitation for Offers for Leasing. GSA has incorporated sustainable design criteria into all guide specifications, facilities standards, and other construction requirements for new construction and renovation efforts. GSA's goal is to have all new design projects starting in FY 2003 meet criteria for LEED™ Green Building Certification.

4. Highly Efficient Systems

Under Section 403(g) of Executive Order 13123, agencies are directed to implement district energy systems and other highly efficient systems in new construction or retrofit projects. Agencies are to consider combined cooling, heat, and power when upgrading and assessing facility power needs and survey local natural resources to optimize use of available biomass, bioenergy, geothermal, or other naturally occurring energy sources.

Highly efficient systems are being installed and used by nearly every reporting agency. For example, in FY 2002, the Department of Defense's Naval Medical Center, San Diego, upgraded its cogeneration plant. Three 850-kilowatt gas turbines were replaced with one 4.6-megawatt gas turbine and a 25,000 lb/hr heat recovery boiler. Two 2.5-megawatt diesel generators will provide stand-by power. The Marine Corps' Marine Air Ground Task Force Training Command, 29 Palms, California, will add two 600-ton absorption chillers to the 7.5-megawatt cogeneration plant to make further use of waste heat from the plant. The resulting system will be a combined cooling, heat, and power plant capable of handling increased loads envisioned in the base master plan. The plant will dramatically improve reliability of the cooling system, and reduce grid demand, avoiding costly peak charges.

The VA Medical Center at Mountain Home, Tennessee, is planning to build, operate, and maintain an on-site energy center. The project will be the first privately-financed and operated energy plant on VA property, and the first using VA's unique enhanced-use authority. The energy center will use the most recent cogeneration technologies and provide utilities to the Medical Center and other neighboring facilities. The project will replace existing inefficient systems with high efficiency units, and enable the center to reduce its energy consumption and achieve operational cost savings of more than $15 million over the term of the lease with no capital cost to VA. The project will also result in a cost avoidance of more than $3 million in major construction funding, to be used for renovations at the research and educational facilities located at the Center.

HHS' Food and Drug Administration's White Oak Campus, Maryland, will use cogeneration. As designed, one 5,800 kilowatt dual fuel (natural gas and diesel) engine-driven generator will produce 100 percent of the power for the main office building on the campus. The free waste heat recoverable from the engine oil cooler and water jacket is transferred to the hot water heating system. Recoverable higher temperature waste heat from the exhaust stack gases is used

in warm weather to power a 900-ton absorption chiller. In cold weather, the recoverable engine stack gas heat is added to the water heating system.

5. Water Conservation

Under Section 207 of Executive Order 13123, agencies are required to reduce water consumption and associated energy use in their facilities to reach the goals set under Section 503(f) of the order.

The water conservation goals require agencies to implement life-cycle cost-effective water efficiency programs that include developing a comprehensive water management plan and at least four separate Water Efficiency Improvement Best Management Practices (BMP), as defined in DOE guidance documents. The goals include the following schedule for program implementation in agencies' facilities: five percent of facilities by 2002, 15 percent of facilities by 2004, 30 percent of facilities by 2006, 50 percent of facilities by 2008, and 80 percent of facilities by 2010.

Thirteen agencies reported that at least five percent of their facilities have implemented comprehensive water management plans. One agency reported that 3.7 percent of their facilities have implemented comprehensive water management plans, and one agency reported eight facilities with comprehensive water management plans, but the total number of facilities is unavailable. Four agencies reported that no facilities had implemented comprehensive water management plans. Six agencies were unable to report whether their facilities had implemented comprehensive water management plans.

Nine agencies reported that at least five percent of their facilities have implemented four or more BMPs. Four agencies reported that between 4.7 percent to 0.2 percent of their facilities had implemented four or more BMPs, and one agency reported two facilities with four or more BMPs implemented, but the total number of facilities is unavailable. Four agencies reported that no facilities had implemented four or more water BMPs. Seven agencies were unable to report whether their facilities had implemented four or more water BMPs.

FY 2000 water consumption data are used by agencies as baseline usage to measure progress in water conservation efforts. Agencies use actual data where available or develop estimates where actual data are not available. Water usage was reported to the DOE in the FY 2002 annual energy reports. Water conservation measures implemented and water saved on an annual basis are also reported.

During FY 2002, all reporting agencies combined consumed more than 254.0 billion gallons of water at a cost of $425.8 million. This was a decrease compared to the FY 2000 water consumption level of 256.4 billion gallons, and an decrease in cost, from the FY 2000 cost of $432 million.

Conservation efforts undertaken by agencies during FY 2002 included the installation or implementation of the following:

- Low-flow, water-efficient faucets, showers, and toilets in facilities;
- Motion-sensor faucets;
- Rooftop recovery system;
- Early leak detection and repair;
- Replacing once-through cooling systems with recycling cooling towers;
- Eliminating once-through cooling;
- Converting turf landscaping to low water requirement xeriscaping;
- Using reclaimed water for landscaping;
- Improving the accuracy of water metering, including meter calibration, certification, and installing automated meter reading systems;
- Reducing leakage losses from surface water cooling systems;
- Saving water drained from circulating chilled and hot water systems for refilling the systems following repairs;
- Revising scientific operating procedures by keeping autoclaves on stand-by to reduce the supply of water to the equipment;
- Installing gray water recycling systems that treat wastewater generated on site and recycle it back to the facility;
- Water conservation showcase exhibits;
- Water conservation awareness programs;
- Innovative passive storm water retention areas;
- Recycling industrial waste water;
- Repairing steam trap leaks;
- Non-potable water replacing city water in once-through cooling systems research;
- Reusing treated effluent from groundwater remediation facilities for irrigation and/or as condenser water research; and
- Examining the feasibility of recycling the water wipe solution for printing presses.

Water conservation measures not only reduce water use and cost, but also reduce energy consumption (for pumping) and sewage treatment costs. Additionally, water conservation helps to reduce the quantities of wastewater treatment chemicals (most notably chlorine) being released into the environment, and reduces the risk of drawing down aquifers or saltwater intrusion into aquifers.

G. Renewable Energy

Section 503 of Executive Order 13123 directed the Secretary of Energy in collaboration with the heads of other agencies to develop a goal for increased renewable energy use in the Federal Government. The Renewable Energy Working Group of the Interagency Energy Management Task Force worked with agency and industry representatives to develop an appropriate renewable energy goal and guidance on how to measure progress toward the goal. In July 2000, the Secretary of Energy approved a goal that the equivalent of 2.5 percent of electricity consumption from Federal facilities should come from *new* renewable energy sources by 2005. Based on FY 2002 Federal facility electricity consumption of 50,135.6 gigawatthours (GWh), the goal for new renewable energy use in the Federal Government is currently 1,253 GWh by 2005. New renewable energy only includes energy from projects or purchases of renewable energy contracted or built after 1990. Although the goal is based on Federal electricity consumption, non-electric renewable energy use is also eligible to be counted toward progress in meeting the goal.

Federal agencies purchased or produced 663 GWh of new renewable energy in FY 2002, 53 percent of the way to the goal. Renewable energy sources included purchases of renewable energy or renewable energy credits (310.9 GWh), biomass projects (201.0 GWh), ground source heat pumps (88.8 GWh), photovoltaics (23.5 GWh), wind energy (14.1 GWh), biomass transportation fuels (18.0 GWh), and solar thermal applications (6.5 GWh). FY 2002 consumption of new renewable energy increased 83 percent over the amount of new renewable energy the Federal Government used in FY 2001.

The renewable energy goal encourages agencies to acquire new renewable energy, but it is important to note that agencies continue to support and use renewable energy sources developed in the 1970s and 1980s as well. Large-scale geothermal is an important source of energy for Federal facilities at China Lake, California and Keflavik, Iceland. Waste to energy systems have provided heat and power to facilities in Virginia for over 20 years. Photovoltaic systems have played an integral role in powering navigation aids and remote equipment in many agencies since the mid 1980s. The energy from these older projects far exceed the amount of new renewable energy added since 1990. These older systems provide a solid base of experience that help the credibility of new projects using similar technologies.

In order to better track Federal renewable energy use, FEMP, with technical support from the National Renewable Energy Laboratory (NREL), integrated information from the Million Solar Roofs Initiative solar system project registry, Sandia National Laboratory's assessment of solar systems at U.S. Department of the Interior and U.S. Department of Agriculture Forest Service facilities and other disparate data sources into a single database and Web-enabled project registry. The database contains information on renewable energy usage at more than 25,000 sites, including information on green power purchases, on-site power generation, and thermal applications. FEMP and NREL are continuing to enter system data into the registry to more accurately reflect a baseline for Federal renewable energy use.

Million Solar Roofs

Section 204 of Executive Order 13123 restated a goal of 2,000 solar roof installations in the Federal Government by 2000, and 20,000 installations by 2010. The goal was first articulated in the 1997 announcement of the Million Solar Roofs Initiative. In the period from June 1997 to April 2000 the Federal government installed 1,745 solar energy systems. This total included 1,682 solar hot water systems, 58 photovoltaic power systems and 5 transpired solar thermal collectors. The U.S. Navy installed an additional 1,000 solar hot water systems by the end of FY 2000. This brought total installations to just over 2,700 systems by the end of 2000, accomplishing the Federal goal. In FY 2001 the total increased to 3,151 systems, including 3,041 solar water heaters, 105 PV systems, and 5 transpired collectors. In FY 2002, solar water heating systems increased to 3,085, PV systems to 309, and transpired collectors to 7, for a total of 3,401.

II. ENERGY MANAGEMENT IN STANDARD BUILDINGS

A. Energy Consumption and Costs for Standard Buildings

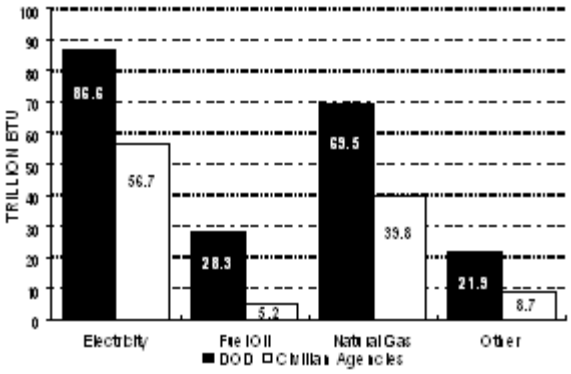
The Federal Government provides energy to approximately 500,000 buildings and facilities comprising approximately 3.4 billion square feet of floor area. Of this, approximately 3.0 billion square feet was reported as standard building space in FY 2002. The remaining space is reported as energy intensive facilities or exempt facilities and is discussed in Sections III and IV respectively. The energy is used in standard buildings provides lighting, heating, ventilation, air conditioning, and other standard building services, and is used for certain process operations that are not reported separately.[13] Federal buildings include both Federally-owned and leased buildings. However, in many instances the lessor pays the energy bill, and consumption and cost data may not be available to the Government. Accordingly, Federal agencies report data for leased space to the maximum extent practicable.[14]

Table 5-A shows the total primary energy consumed in Federal buildings and facilities, including energy resources used to generate, process, and transport electricity and steam.[15] Primary energy consumed in buildings and facilities in FY 2002 decreased 9.6 percent from FY 1985 and 0.9 percent from FY 2001.

Table 5-B shows that agencies have decreased site-delivered energy consumption in buildings by 23.8 percent, from 415.5 trillion Btu in FY 1985 to 316.8 trillion Btu in FY 2002. A comparison to FY 2001 shows an decrease of 2.5 percent in total buildings energy consumption.

Of the 29 agencies represented on the tables for FY 2002, 11, including the Department of Defense, consume 99 percent of the reported buildings energy use. Energy used in buildings accounts for 30.3 percent of the total 1.0 quads used by the Federal Government. The mix of Federal buildings energy use for Defense and civilian agencies is depicted in Figure 5.

FIGURE 5
Defense and Civilian Energy Consumption in Standard Buildings by Fuel Type, FY 2002



[13]Process energy is that energy used in buildings for operations other than standard building services. In cases where separate reporting was not possible, due to the lack of meters or estimation techniques, process energy was reported as though it was part of the energy used for standard building services.

[14]The General Services Administration (GSA) is the primary leasing agent for the Federal Government, although most of the other agencies do have some leasing authority. In some cases, GSA will delegate operations and maintenance responsibility to individual agencies for leased space, requiring the agency to be responsible for paying the utility bills and reporting energy consumption.

[15]Conversion factors of 10,346 Btu per kilowatt hour for electricity and 1,390 Btu per pound of steam are used to calculate primary energy consumption. See Appendix B for conversion factors for site-delivered energy consumption.

TABLE 5-A
FEDERAL PRIMARY ENERGY CONSUMPTION IN STANDARD BUILDINGS
(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

Civilian Agency	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
USPS	**35,915.2**	42,631.6	51,256.8	53,195.9	48,869.8	50,939.9	52,058.2	58,913.2	**55,566.5**	**55,287.8**	53.9	-0.5
VA	**39,673.2**	40,902.8	43,556.3	44,780.8	45,068.6	45,496.7	45,731.8	45,527.5	**47,612.6**	**47,773.7**	20.4	0.3
DOE	**44,808.8**	43,723.9	40,585.5	40,172.2	37,645.3	36,996.0	35,949.1	34,366.7	**35,623.1**	**33,443.7**	-25.4	-6.1
GSA	**36,001.5**	28,471.0	29,845.2	31,186.6	31,339.2	31,278.2	31,527.5	28,241.8	**28,277.8**	**27,655.6**	-23.2	-2.2
DOJ	**8,531.9**	8,692.4	10,996.1	13,343.0	13,678.7	14,132.4	14,696.6	16,987.3	**17,354.0**	**17,192.0**	101.5	-0.9
NASA	**7,999.3**	9,640.0	10,182.8	10,386.6	10,251.3	10,266.1	9,957.4	9,787.0	**10,050.6**	**9,667.5**	20.9	-3.8
DOI	**7,879.7**	6,985.2	7,028.1	5,690.7	6,665.0	6,862.1	6,949.6	7,457.8	**8,798.6**	**8,844.0**	12.2	0.5
DOT	**8,012.0**	6,601.8	7,617.9	8,652.6	8,942.8	8,121.7	8,076.2	7,903.5	**7,975.1**	**8,377.0**	4.6	5.0
USDA	**3,770.7**	4,674.2	4,657.8	4,831.6	4,293.5	4,538.2	4,045.5	4,416.3	**4,401.6**	**4,692.0**	24.4	6.6
DOL	**3,455.8**	3,603.6	3,635.3	3,756.8	3,786.9	3,818.4	2,986.9	3,988.1	**4,250.0**	**4,388.5**	27.0	3.3
TVA	**1,180.5**	1,260.5	2,202.4	2,133.7	2,007.6	1,981.0	1,959.6	1,861.4	**1,887.9**	**1,702.5**	44.2	-9.8
TRSY	**1,560.2**	672.0	3,399.3	3,287.8	4,363.8	4,126.0	4,172.5	1,297.3	**1,345.0**	**1,242.5**	-20.4	-7.6
DOC	**1,092.9**	855.4	1,231.1	1,190.5	1,175.6	1,090.5	1,125.3	1,094.0	**1,221.3**	**1,176.6**	7.7	-3.7
ST[1]	**622.1**	735.4	230.4	706.0	266.8	268.1	272.1	347.4	**288.5**	**651.0**	4.6	125.6
HHS	**603.9**	653.9	525.2	520.0	508.9	477.9	465.7	518.2	**526.3**	**510.7**	-15.4	-3.0
HUD	**315.2**	384.2	285.2	301.4	289.7	279.9	286.8	286.8	**299.4**	**290.8**	-7.7	-2.9
OTHER*	**966.9**	1,522.5	2,904.9	4,678.3	4,924.0	4,597.6	4,834.2	4,716.0	**4,743.9**	**4,687.0**	384.8	-1.2
Civilian Agencies Subtotal	**202,389.6**	202,010.4	220,140.3	228,814.5	224,077.6	225,270.7	225,095.1	227,710.3	**230,222.3**	**227,582.7**	12.4	-1.1
DOD	**475,614.7**	541,109.0	441,755.4	420,185.3	405,417.0	397,287.8	395,675.6	388,867.4	**388,282.8**	**385,173.2**	-19.0	-0.8
Total	**678,004.3**	743,119.4	661,895.7	648,999.8	629,494.6	622,558.5	620,770.7	616,577.7	**618,505.1**	**612,755.9**	-9.6	-0.9
MBOE	**116.4**	127.6	113.6	111.4	108.1	106.9	106.6	105.9	**106.2**	**105.2**		
Petajoules	**715.3**	784.0	698.3	684.7	664.1	656.8	654.9	650.5	**652.5**	**646.4**		

DATA AS OF 04/14/04

*Other includes for certain years the CFTC, CIA, EEOC, FEMA, FTC, NARA, NSF, NRC, OPM, RRB, SSA, USIA/IBB, and FERC.

Note: This table uses a conversion factor for electricity of 10,346 Btu per kilowatt hour and 1,390 Btu per pound of steam. Contains estimated data for the following agencies: FEMA (1997, 1998), FCC (1997, 1998, 1999, 2000, 2001, 2002), FTC (1997, 1998, 1999, 2000, 2001, 2002), and OPM. (1997, 1998, 1999, 2000, 2001, 2002).

Sum of components may not equal total due to independent rounding.

[1]In 1998, the State Department developed a statistical method for estimating the energy consumption in the large number of foreign buildings it owns and leases. This method was subsequently applied to estimate FY 1991 energy consumption and is now used annually to assess progress. The FY 1991 foreign building estimates were combined with domestic building data for the fiscal years 1985 and 1990, since these are base years for performance goals.

Source: Federal Agency Annual Energy Management Data Reports

TABLE 5-B

FEDERAL SITE-DELIVERED ENERGY CONSUMPTION IN STANDARD BUILDINGS

(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

Civilian Agency	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
VA	**24,552.0**	24,380.1	25,075.4	26,172.3	26,062.0	26,216.9	26,134.8	26,120.6	**26,748.3**	**26,866.2**	9.4	0.4
USPS	**16,238.3**	18,480.0	21,649.7	22,210.0	22,006.4	22,683.9	23,127.0	25,238.3	**24,974.3**	**23,671.1**	45.8	-5.2
DOE	**28,603.8**	25,610.7	23,740.0	21,456.5	19,818.3	19,363.7	18,533.5	17,350.2	**18,356.4**	**17,021.6**	-40.5	-7.3
GSA	**15,897.7**	11,174.5	12,366.7	13,439.4	13,353.7	13,123.7	13,083.9	11,728.0	**12,024.9**	**11,436.9**	-28.1	-4.9
DOJ	**6,112.0**	4,863.8	6,303.9	7,490.6	8,003.7	7,783.0	8,047.1	9,374.6	**9,798.9**	**9,547.8**	56.2	-2.6
DOI	**4,762.4**	4,039.4	3,596.3	2,979.1	3,668.5	3,747.4	3,794.6	4,006.6	**4,692.2**	**4,916.0**	3.2	4.8
NASA	**3,760.1**	4,381.0	4,381.2	4,436.1	4,350.7	4,404.8	4,303.3	4,263.7	**4,418.3**	**4,231.6**	12.5	-4.2
DOT	**4,614.5**	3,750.4	3,669.1	4,058.0	3,959.6	3,779.5	3,828.1	3,716.4	**3,913.8**	**3,971.4**	-13.9	1.5
DOL	**2,153.0**	2,137.1	2,028.8	2,153.9	2,153.9	2,190.2	1,697.9	2,111.8	**2,312.5**	**2,411.8**	12.0	4.3
USDA	**1,953.6**	2,204.9	2,083.1	2,261.3	1,996.0	2,111.1	1,901.8	2,052.5	**2,070.8**	**2,410.8**	23.4	16.4
TVA	**402.4**	427.8	748.5	728.4	665.6	658.4	650.8	617.7	**626.2**	**565.0**	40.4	-9.8
TRSY	**713.4**	396.0	1,418.3	1,484.9	1,904.4	1,741.2	1,815.0	530.0	**573.0**	**498.0**	-30.2	-13.1
DOC	**540.3**	399.4	494.9	490.1	457.2	429.9	449.4	437.0	**471.4**	**442.0**	-18.2	-6.2
ST[1]	**232.2**	267.8	92.9	289.2	114.0	113.2	114.7	152.9	**123.2**	**245.5**	5.8	99.3
HHS	**253.0**	273.1	201.7	204.7	200.1	188.8	184.8	212.3	**219.6**	**200.9**	-20.6	-8.5
HUD	**116.9**	140.3	105.9	115.4	109.3	103.1	106.3	106.3	**115.6**	**109.9**	-6.0	-4.9
OTHER*	**406.8**	660.0	1,235.8	1,929.8	2,035.7	1,911.5	1,982.6	1,946.3	**1,967.3**	**1,940.1**	376.9	-1.4
Civilian Agencies Subtotal	**111,312.5**	103,586.2	109,191.8	111,899.6	110,859.1	110,550.2	109,755.6	109,965.3	**113,406.7**	**110,486.6**	-0.7	-2.6
DOD	**304,190.0**	321,101.6	247,166.9	235,994.1	227,070.0	220,567.6	217,958.2	210,965.0	**211,528.2**	**206,315.2**	-32.2	-2.5
Total	**415,502.5**	424,687.7	356,358.8	347,893.7	337,929.1	331,117.8	327,713.8	320,930.3	**324,934.9**	**316,801.8**	-23.8	-2.5
MBOE	**71.3**	72.9	61.2	59.7	58.0	56.8	56.3	55.1	**55.8**	**54.4**		
Petajoules	**438.3**	448.0	375.9	367.0	356.5	349.3	345.7	338.6	**342.8**	**334.2**		

DATA AS OF 04/14/04

*Other includes for certain years the CFTC, CIA, EEOC, FEMA, FTC, NARA, NSF, NRC, OPM, RRB, SSA, USIA/IBB, and FERC.

Note: This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour. Contains estimated data for the following agencies: FEMA (1997, 1998), FCC (1997, 1998, 1999, 2000, 2001, 2002), FTC (1997, 1998, 1999, 2000, 2001, 2002), and OPM. (1997, 1998, 1999, 2000, 2001, 2002).

Sum of components may not equal total due to independent rounding.

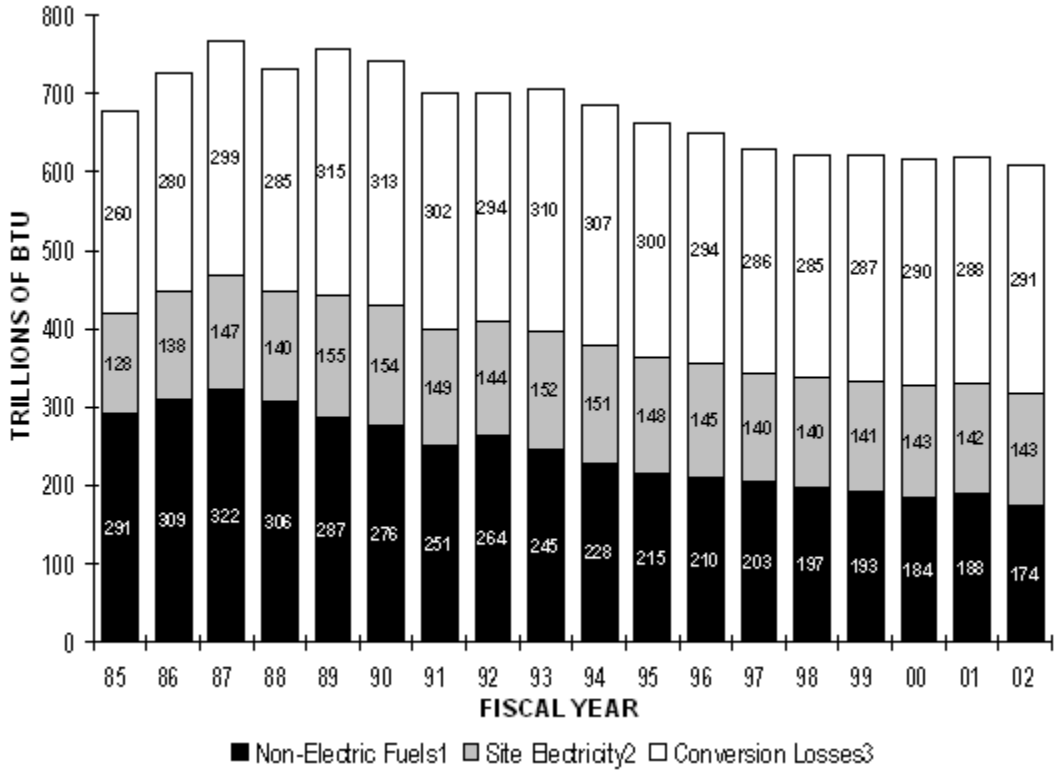
[1]In 1998, the State Department developed a statistical method for estimating the energy consumption in the large number of foreign buildings it owns and leases. This method was subsequently applied to estimate FY 1991 energy consumption and is now used annually to assess progress. The FY 1991 foreign building estimates were combined with domestic building data for the fiscal years 1985 and 1990, since these are base years for performance goals.

Source: Federal Agency Annual Energy Management Data Reports

Electricity constitutes 45.2 percent (143.3 trillion Btu) of Federal buildings energy use; 34.5 percent is accounted for by natural gas (109.4 trillion Btu), and 10.6 percent by fuel oil (33.5 trillion Btu). Coal, purchased steam, liquefied petroleum gas (LPG)/propane, and energy reported as "other" (comprised mainly of chilled water), account for the remaining 9.7 percent.

Figure 6 illustrates the proportion of energy consumption in buildings and facilities that is attributable to electricity for FY 1985 through FY 2002. The figure also breaks out the amount of Btu lost through the generation process and amount of Btu delivered to the site. In FY 2002, electricity consumption, including energy used at the source of generation, accounted for

FIGURE 6
Consumption of Electricity and Other Fuels in Standard Buildings, FY 1985 through FY 2002



[1]Includes Fuel Oil, Natural Gas, LPG/Propane, Coal, Purchased Steam, and Other. Uses a conversion factor for steam of 1,390 Btu per pound (source conversion).

[2]Uses a conversion factor of 3,412 Btu per kilowatt hour. Amount of energy which reaches the site of use when generation and transmission losses are subtracted.

[3]Amount of energy lost through generation and transmission processes. When added to amount of energy reaching the point of use, the total equals amount of Btu consumed at the source. The source conversion factor is 10,346 Btu per kilowatt hour.

Source: Federal Agency Annual Energy Management Data Reports

approximately 70.9 percent (434,416.5 billion Btu) of the total primary Btu used in buildings and facilities (612,755.9 billion Btu; see Table 5-A). Of this amount, 33.0 percent or 143.3 trillion Btu reached the site of use. The remaining 67.0 percent, 291.2 trillion Btu, was lost during the generation and transmission processes. Decreases in consumption relative to FY 2001 were seen in fuel oil (18.0 percent), LPG/propane (11.2 percent), coal (10.8 percent), and purchased steam (6.3 percent). Electricity and natural gas consumption remained steady with increases of less than 1 percent. Fuels reported under the category of "other" increased 30.1 percent from FY 2001.

The mix of fuels consumed by Government buildings has changed notably from FY 1985 through FY 2002. The actual consumption of electricity in FY 2002 increased 12.1 percent since FY 1985. The proportion of energy consumed in Federal buildings and facilities that was electricity increased from 30.7 percent in FY 1985 to 45.2 percent in FY 2002. Over the same period, fuel oil use decreased from 22.4 percent of the total in FY 1985 to 10.6 percent in FY 2002. The portion of the Federal buildings fuel mix comprised by natural gas has increased from 30.7 percent in FY 1985 to 34.5 percent in FY 2002. The use of coal as a fuel source, which accounted for 12.6 percent of the total energy consumed in FY 1985, has declined to 4.2 percent of the total in FY 2002. Contributing to this has been the practice of agencies, such as DOD and DOE, to purchase steam rather than generating their own in coal-fired plants.

As shown in Table 6 the consumption of petroleum-based fuels in buildings during FY 2002 decreased 62.5 percent compared to FY 1985, and decreased 17.6 percent from FY 2001. Efforts by agencies to utilize natural gas as a cost-effective substitute for petroleum-based fuels in buildings, as well as conservation of fuel oil and LPG/propane in buildings contributed to the reductions from FY 1985. Petroleum fuel consumption in buildings during FY 2002 represented only 11.4 percent of all energy consumed in Federal standard buildings compared to 23.1 percent in FY 1985. Of this amount for FY 2002, 93.1 percent is attributed to fuel oil and the remaining 6.9 percent to LPG/propane.

TABLE 6
PETROLEUM-BASED FUEL* CONSUMPTION IN STANDARD BUILDINGS
(In Billions of Btu)

Civilian Agency	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
DOD	**84,366.6**	69,030.1	42,939.0	42,861.7	35,214.4	32,354.5	30,506.7	27,982.5	**34,839.8**	**29,758.3**	-64.7	-14.6
VA	**2,176.7**	2,219.3	1,292.9	2,098.2	1,186.3	954.6	954.8	1,045.4	**3,040.5**	**1,206.2**	-44.6	-60.3
DOT	**2,380.4**	1,524.1	912.2	709.9	670.9	817.2	824.3	815.0	**928.2**	**1,014.2**	-57.4	9.3
DOE	**1,153.9**	1,492.9	1,746.1	1,313.8	1,182.7	511.9	566.4	619.1	**1,289.8**	**798.8**	-30.8	-38.1
USPS	**1,673.2**	1,502.2	813.9	595.2	819.0	1,139.4	821.7	857.9	**1,425.5**	**719.9**	-57.0	-49.5
DOI	**1,591.6**	1,273.9	1,574.3	1,177.7	799.6	964.7	835.1	996.7	**1,324.0**	**1,382.5**	-13.1	4.4
DOL	**437.8**	331.2	210.8	220.6	254.2	226.1	188.9	193.2	**210.0**	**405.0**	-7.5	92.9
DOJ	**381.7**	371.6	182.8	234.3	134.9	103.1	115.0	129.5	**147.4**	**188.7**	-50.6	28.0
NASA	**328.1**	495.6	166.8	132.2	83.6	100.0	88.4	77.7	**82.6**	**101.5**	-69.1	22.8
USDA	**414.2**	260.0	244.1	242.5	272.2	270.6	114.1	122.8	**143.4**	**282.0**	-31.9	96.6
CIA	**0.0**	0.0	49.6	87.9	84.6	60.2	53.6	57.0	**57.0**	**57.0**	NA	0.0
GSA	**944.2**	668.1	199.0	242.3	143.0	54.8	68.4	68.2	**125.1**	**44.0**	-95.3	-64.8
FEMA	**56.7**	72.3	49.1	49.1	49.1	49.1	30.6	32.2	**32.6**	**38.8**	-31.6	19.0
SSA	**0.0**	0.0	0.0	8.2	11.8	8.9	3.5	3.4	**4.7**	**6.2**	NA	32.4
TRSY	**22.5**	138.4	116.6	116.2	57.0	44.8	60.3	64.3	**15.0**	**5.2**	-76.8	-65.3
DOC	**130.3**	22.5	10.8	33.4	9.3	8.7	6.1	5.3	**32.4**	**4.9**	-96.3	-85.0
TVA	**4.2**	3.2	3.9	4.1	0.0	3.0	2.9	1.9	**1.5**	**1.5**	-65.1	0.0
FCC	**1.7**	1.9	1.3	1.7	1.7	1.7	1.7	0.2	**0.2**	**0.2**	-91.2	0.0
HHS	**34.5**	39.3	0.0	2.9	1.9	1.9	1.9	0.0	**0.0**	**0.0**	-100.0	0.0
ST	**0.0**	0.0	0.0	21.8	0.0	0.0	0.0	0.0	**0.0**	**0.0**	0.0	0.0
TOTAL	96,098.4	79,446.6	50,513.1	50,153.7	40,976.4	37,675.4	35,244.3	33,072.3	43,699.6	36,014.7	-62.5	-17.6

DATA AS OF 04/14/04

*Petroleum-based fuels include fuel oil and LPG/propane.

Note: Contains estimated data for the following agencies: FEMA (1997, 1998), FCC (1997, 1998, 1999), FTC (1997, 1998, 1999), and OPM. (1997, 1998, 1999, 2000).

Sum of components may not equal total due to independent rounding.

[1]In 1998, the State Department developed a statistical method for estimating the energy consumption in the large number of foreign buildings it owns and leases. This method was subsequently applied to estimate FY 1991 energy consumption and is now used annually to assess progress. The FY 1991 foreign building estimates were combined with domestic building data for the fiscal years 1985 and 1990, since these are base years for performance goals.

Source: Federal Agency Annual Energy Management Data Reports

The energy used in standard buildings in FY 2002 accounted for approximately 37.8 percent of the total Federal energy bill. Tables 7-A and 7-B show that the Federal Government spent approximately $3,664.9 million for buildings energy during the fiscal year, a 6.8 percent decrease ($265.7 million) from FY 2001 expenditures.

Overall, the unit cost of all fuel types used decreased 4.4 percent from the previous year, from $12.10 per million Btu to $11.57 per million Btu. The main contributor to the overall decrease in unit costs was natural gas, for which the prices paid by the Government declined by 25.9 percent. Prices paid by the Government for electricity also declined 0.8 percent and the unit costs of LPG/propane, purchased steam, and "other" combined decreased 5.1 percent. Increases in unit costs were seen in coal (19.0 percent) and fuel oil (0.9 percent).

In constant 2002 dollars, Federal energy costs for buildings and facilities decreased 30.9 percent from $5,305.3 million in FY 1985 to $3,664.9 million in FY 2002. The average cost for buildings energy across all fuels was $11.57 per million Btu in FY 2002, down 9.4 percent from $12.77 per million Btu in FY 1985 (in constant dollars).

TABLE 7-A
DEFENSE AND CIVILIAN FEDERAL COSTS FOR STANDARD BUILDINGS ENERGY IN FY 2002
(In Millions of Dollars)

	ELECTRICITY	FUEL OIL	NATURAL GAS	LPG/ PROPANE	COAL	PURCHASED STEAM	OTHER	TOTAL
DEFENSE	1,494.963	183.804	390.662	13.658	29.617	96.767	15.105	2,224.575
CIVILIAN	1,127.874	31.478	204.333	8.597	3.398	52.503	12.131	1,440.313
	2,622.837	215.283	594.994	22.254	33.015	149.269	27.236	3,664.888

AVERAGE COST PER UNIT, BASED ON REPORTS FROM AGENCIES

ELECTRICITY	=	62.47	/ MWH
FUEL OIL	=	0.89	/ GALLON
NATURAL GAS	=	5.61	/ THOUSAND CUBIC FEET
LPG/PROPANE	=	0.85	/ GALLON
COAL	=	61.50	/ SHORT TON
PURCHASED STEAM	=	12.12	/ MILLION BTU
OTHER	=	10.27	/ MILLION BTU

DATA AS OF 04/14/04

Note: Contains estimated data for the following agencies: FCC, FTC, CIA, and OPM.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports.

TABLE 7-B
CONSUMPTION AND COSTS OF FEDERAL BUILDINGS ENERGY BY FUEL TYPE IN FY 2002, FY 2001, AND FY 1985
(Constant 2002 Dollars)

ENERGY TYPE	BILLIONS OF BTU	COST PER MMBTU	COST (IN MILLIONS OF DOLLARS)
FY 2002			
ELECTRICITY	143,265.9	18.3075	2,622.837
FUEL OIL	33,526.0	6.4214	215.283
NATURAL GAS	109,357.3	5.4408	594.994
LPG/PROPANE	2,488.8	8.9418	22.254
COAL	13,194.8	2.5021	33.015
PURCHASED STEAM	12,316.8	12.1192	149.269
OTHER	2,652.2	10.2692	27.236
TOTAL	316,801.8		3,664.888
AVERAGE COST PER MMBTU = $11.568			
FY 2001			
ELECTRICITY	141,934.5	18.4642	2,620.704
FUEL OIL	40,896.9	6.3630	260.229
NATURAL GAS	109,336.4	7.3437	802.937
LPG/PROPANE	2,802.7	10.8514	30.414
COAL	14,784.6	2.1028	31.089
PURCHASED STEAM	13,141.8	12.8302	168.613
OTHER	2,038.0	8.1446	16.599
TOTAL	324,934.9		3,930.583
AVERAGE COST PER MMBTU = $12.096			
FY 1985			
ELECTRICITY	127,761.0	25.1296	3,210.578
FUEL OIL	92,952.4	8.9646	833.272
NATURAL GAS	127,692.8	6.9275	884.586
LPG/PROPANE	3,165.4	10.3935	32.899
COAL	52,380.1	3.4875	182.679
PURCHASED STEAM	7,335.6	17.7986	130.565
OTHER	4,215.1	7.2994	30.767
TOTAL	415,502.5		5,305.347
AVERAGE COST PER MMBTU = $12.769			

DATA AS OF 04/14/04

Note: FY 2002 and FY 2001 contain estimated data for: FCC, FTC, CIA, and OPM.

This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

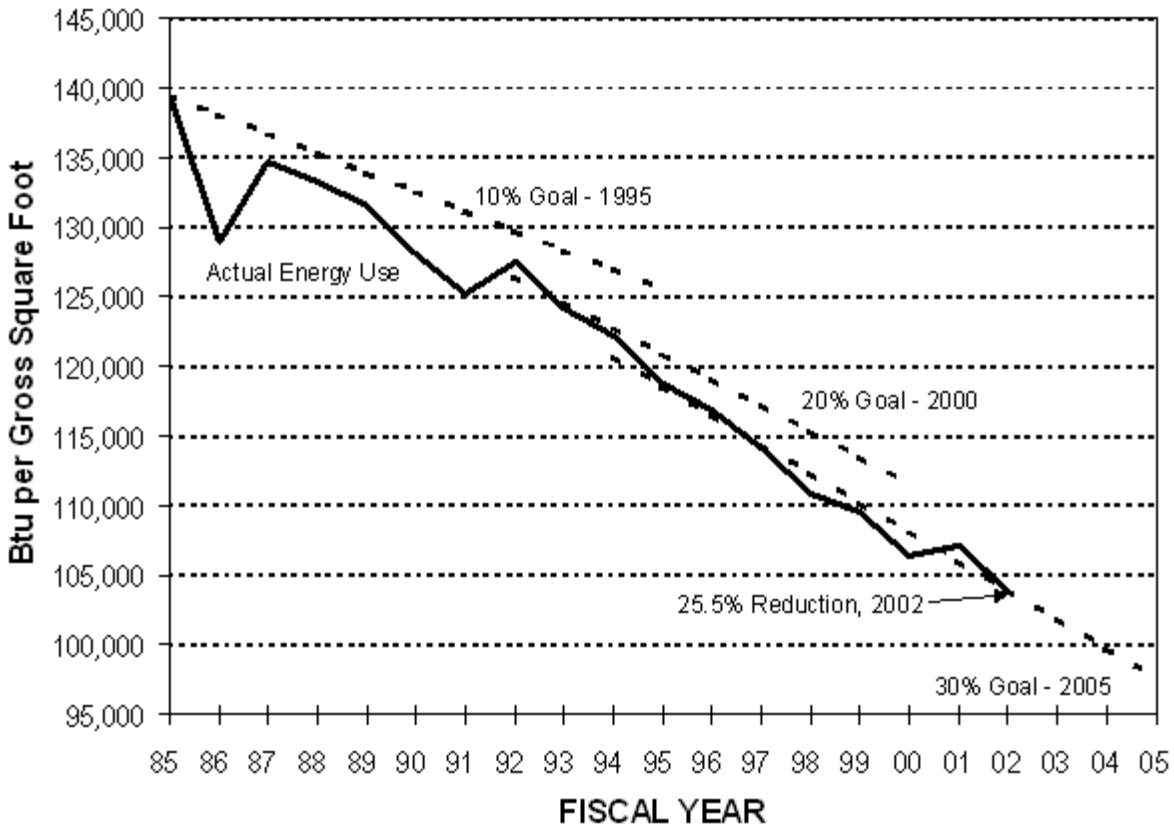
Electricity costs of $2,622.8 million represent approximately 71.6 percent of total expenditures of $3,664.9 million for buildings energy in FY 2002. Natural gas costs account for approximately 16.2 percent of the total, expenditures for fuel oil account for 5.9 percent, with the remaining 6.3 percent attributable to expenditures for LPG/propane, coal, purchased steam, and "other."

In FY 2002, the cost of all energy used in Federal buildings was $1.21 per gross square foot. Of the $1.21 spent per square foot Government-wide, $0.86 was spent for electricity, $0.20 was spent for natural gas, $0.07 was spent for fuel oil, and the remaining $0.08 was spent for purchased steam, coal, LPG/propane, and other fuels.

B. Progress Toward the Mandated Goals for Buildings and Facilities

Both the magnitude of energy consumption and the potential for energy savings have prompted legislative and executive branch initiatives to achieve energy conservation in the Federal buildings sector.[16] Federal Government progress toward the 10, 20, and 30 percent energy reduction goals of NECPA and Executive Order 13123 is illustrated in Figure 7.

FIGURE 7
Progress Toward the Energy Reduction Goals for Federal Standard Buildings, FY 2002



[16]The legislative authorities for Federal agencies are detailed in Appendix A.

(Executive Order 13123 also establishes a 35 percent reduction goal for 2010.) Overall, the Federal Government reduced its site-delivered energy consumption in buildings and facilities by 25.5 percent by FY 2002 compared to FY 1985 when measured in terms of British Thermal Units consumed per gross square foot (Btu/GSF) of floor area.

Table 8-A shows the FY 2002 performance of the individual agencies in site-delivered Btu/GSF compared to FY 1985. Site-delivered Btu reflects the amount of energy delivered to the point of use and is used to measure agency performance toward the mandated goals.

Table 8-B shows the performance of the agencies measured in terms of primary Btu/GSF. Primary Btu represents the average amount of energy required at the source of generation (primary energy) rather than the actual Btu delivered to the site. Primary Btu includes energy resources used to generate, process, and transport electricity and steam. Measured in terms of source energy, the Federal Government shows a reduction of 11.3 percent in FY 2002 compared to FY 1985. This large difference from the site-delivered Btu/GSF reduction of 25.5 percent reflects the significant declines in direct use of fossil fuels and the offsetting increases in the share of the fuel mix contributed by electricity.

Contributing to the overall reduction of 25.5 percent in site-delivered Btu/GSF were the percentage reductions greater than 25 percent made by the following six agencies: the Departments of Agriculture, Commerce, Defense, Energy, Justice, and the Tennessee Valley Authority. The progress of each agency toward the goal for standard buildings is illustrated in Figure 8.

The agencies used a variety of strategies to reduce their energy consumption. Operations and maintenance (O&M) procedures continued to be emphasized as a major component in the effort to achieve the energy reduction goals. Improvements in energy efficiency were achieved through improved energy systems operations and both preventive maintenance and improved maintenance. O&M funding, used for the replacement of boilers, HVAC equipment, windows, and lighting systems, continued to benefit energy conservation.

In FY 2002, the implementation of many no-cost and low-cost energy conservation measures was continued, such as reducing lighting levels, lowering hot water temperatures, turning off unused equipment, and installing energy-efficient windows, insulation, weather stripping, and set-back thermometers.

Numerous energy-efficient building retrofits and energy conservation projects were undertaken to supplement the no-cost, low-cost measures. These initiatives can be categorized by lighting system replacement, HVAC equipment modernization, building envelope improvements, and other miscellaneous projects, such as installation of energy management control systems. Energy savings performance contracts were often pursued as supplemental sources of funding, as well as utility energy service contracting initiatives. Other activities include energy awareness programs featuring energy awareness seminars, publication of materials promoting energy efficiency, the procurement of energy-efficient goods and products, increased maintenance training, and increased engineering assistance.

TABLE 8-A
FEDERAL STANDARD BUILDINGS SITE-DELIVERED ENERGY USE PER GROSS SQUARE FOOT, FY 1985 AND FY 2002

	FISCAL YEAR 1985			FISCAL YEAR 2002			
	GSF (Thousands)	BTU (Billions)	**BTU/GSF**	GSF (Thousands)	BTU (Billions)	**BTU/GSF**	%CHANGE 1985-2002
VA	123,650.0	24,552.0	**198,560**	156,359.5	26,866.2	**171,823**	-13.5
USPS	189,400.0	16,238.3	**85,736**	349,547.0	23,671.1	**67,719**	-21.0
DOE†	60,457.1	28,603.8	**473,126**	68,378.3	*16,977.3*	***248,285***	-47.5
GSA†	189,976.9	15,897.7	**83,682**	172,829.9	*11,365.8*	***65,763***	-21.4
DOJ	20,768.8	6,112.0	**294,289**	54,860.1	9,547.8	**174,039**	-40.9
DOI†	54,154.4	4,762.4	**87,940**	53,086.0	*4,914.0*	***92,566***	5.3
NASA†	14,623.4	3,760.1	**257,130**	20,996.3	*4,231.5*	***201,537***	-21.6
DOT†	32,291.1	4,614.5	**142,904**	36,500.4	*3,971.4*	***108,804***	-23.9
DOL	18,268.3	2,153.0	**117,852**	21,476.2	2,411.8	**112,302**	-4.7
USDA†	24,061.0	1,953.6	**81,195**	41,801.9	*2,403.6*	***57,500***	-29.2
TVA†	4,886.6	402.4	**82,357**	9,295.7	*563.3*	***60,599***	-26.4
TRSY†	7,182.6	713.4	**99,317**	6,518.7	*492.9*	***75,610***	-23.9
DOC†	4,522.6	540.3	**119,476**	5,650.0	*435.1*	***77,016***	-35.5
ST	2,597.0	232.2	**89,392**	1,882.5	245.5	**130,437**	45.9
HHS	2,649.8	253.0	**95,491**	2,700.1	200.9	**74,393**	-22.1
HUD	1,432.0	116.9	**81,668**	1,432.0	109.9	**76,772**	-6.0
OTHER*†	3,172.0	406.8	**128,249**	15,573.4	*1,925.9*	***123,668***	-3.6
CIVILIAN AGENCIES							
TOTAL†	*754,093.6*	111,312.5	**147,611**	1,018,888.0	*110,334.1*	***108,289***	-26.6
DOD†	2,224,527.3	304,190.0	**136,744**	2,015,368.7	*204,787.6*	***101,613***	-25.7
TOTAL†	2,978,620.9	415,502.5	**139,495**	3,034,256.7	*315,121.7*	***103,855***	-25.5

DATA AS OF 04/14/04

*Other includes the Federal Communications Commission, Federal Trade Commission, Federal Emergency Management Agency, National Archives and Records Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Panama Canal Commission, Railroad Retirement Board, Social Security Administration, the U.S. Information Agency, and the Federal Energy Regulatory Commission.

†Indicates that reductions were made to FY 2002 energy use and Btu/GSF (shown in italics) to reflect purchases of renewable energy. When calculating Btu/GSF, the following amounts were subtracted from agency energy use for FY 2002: DOC, 6.9 BBtu; DOD, 1,527.6 BBtu; DOE, 14.2 BBtu; DOI, 2.0 BBtu; DOT, 0.01 BBtu; GSA, 71.1 BBtu; NASA, 30.4 BBtu; TRSY, 5.1 BBtu; TVA, 1.7 BBtu; USDA, 7.2 BBtu; RRB, 0.1 BBtu; and SSA, 14.1 BBtu. RRB and SSA are included under the Other category because they lack FY 1985 baseline data.

Note: This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE 8-B
FEDERAL STANDARD BUILDINGS PRIMARY ENERGY USE PER GROSS SQUARE FOOT, FY 1985 AND FY 2002

	FISCAL YEAR 1985			FISCAL YEAR 2002			
	GSF (Thousands)	BTU (Billions)	**BTU/GSF**	GSF (Thousands)	BTU (Billions)	**BTU/GSF**	%CHANGE 1985-2002
USPS	189,400.0	35,915.2	**189,626**	349,547.0	55,287.8	**158,170**	-16.6
VA	123,650.0	39,673.2	**320,851**	156,359.5	47,773.7	**305,537**	-4.8
DOE	60,457.1	44,808.8	**741,167**	68,378.3	33,443.7	**489,098**	-34.0
GSA	189,976.9	36,001.5	**189,504**	172,829.9	27,655.6	**160,016**	-15.6
DOJ	20,768.8	8,531.9	**410,805**	54,860.1	17,192.0	**313,379**	-23.7
NASA	14,623.4	7,999.3	**547,022**	20,996.3	9,667.5	**460,439**	-15.8
DOI	54,154.4	7,879.7	**145,504**	53,086.0	8,844.0	**166,597**	14.5
DOT	32,291.1	8,012.0	**248,118**	36,500.4	8,377.0	**229,504**	-7.5
USDA	24,061.0	3,770.7	**156,714**	41,801.9	4,692.0	**112,245**	-28.4
DOL	18,268.3	3,455.8	**189,167**	21,476.2	4,388.5	**204,344**	8.0
TVA	4,886.6	1,180.5	**241,575**	9,295.7	1,702.5	**183,151**	-24.2
TRSY	7,182.6	1,560.2	**217,217**	6,518.7	1,242.5	**190,599**	-12.3
DOC	4,522.6	1,092.9	**241,648**	5,650.0	1,176.6	**208,239**	-13.8
ST	2,597.0	622.1	**239,555**	1,882.5	651.0	**345,791**	44.3
HHS	2,649.8	603.9	**227,888**	2,700.1	510.7	**189,127**	-17.0
HUD	1,432.0	315.2	**220,090**	1,432.0	290.8	**203,041**	-7.7
OTHER*	3,172.0	966.9	**304,811**	15,573.4	4,687.0	**300,960**	-1.3
CIVILIAN AGENCIES TOTAL	754,093.6	202,389.6	**268,388**	1,018,888.0	227,582.7	**223,364**	-16.8
DOD	2,224,527.3	475,614.7	**213,805**	2,015,368.7	385,173.2	**191,118**	-10.6
TOTAL	2,978,620.9	678,004.3	**227,624**	3,034,256.7	612,755.9	**201,946**	-11.3

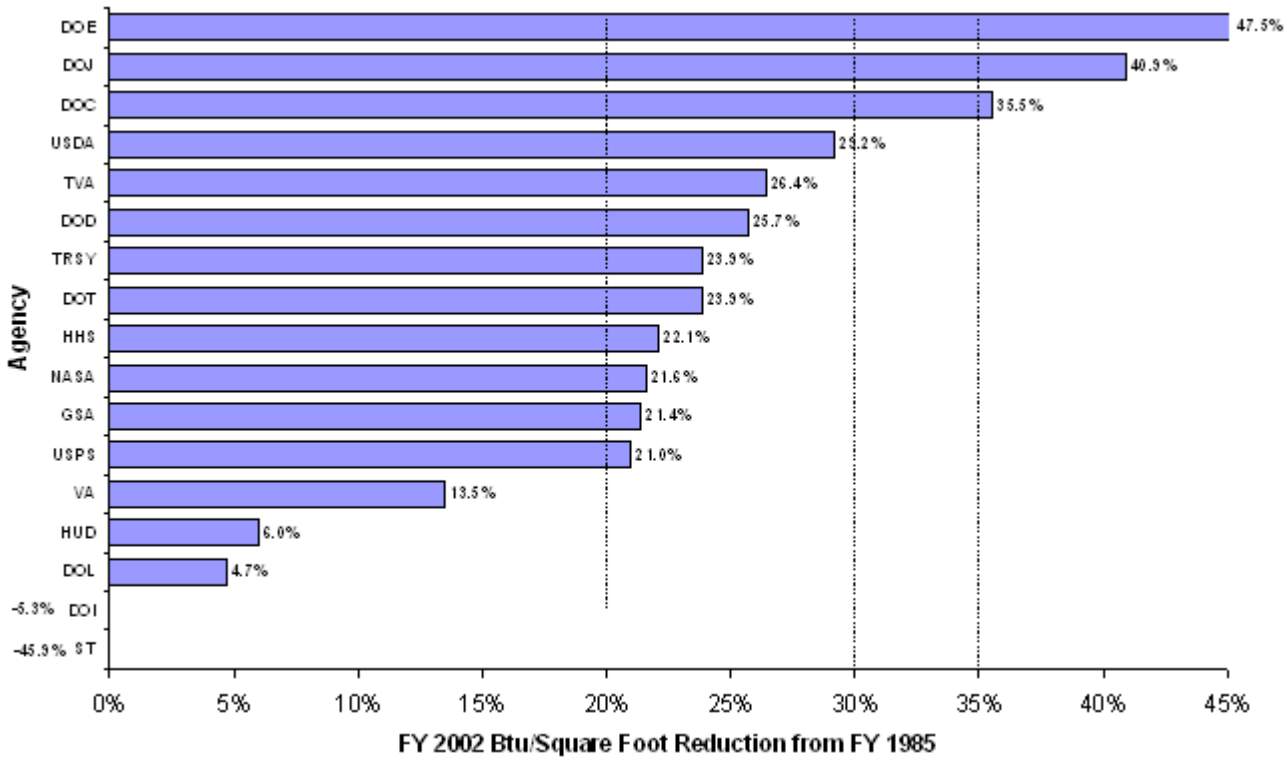
DATA AS OF 04/14/04

*Other includes the Federal Communications Commission, Federal Trade Commission, Federal Emergency Management Agency, National Archives and Records Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Panama Canal Commission, Railroad Retirement Board, Social Security Administration, the U.S. Information Agency, and the Federal Energy Regulatory Commission.

Note: This table uses a conversion factor for electricity of 10,346 Btu per kilowatt hour and 1,390 Btu per pound of steam. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

FIGURE 8
Progress of Individual Agencies Toward the Federal Reduction Goal for Standard Buildings
FY 2002 Compared to FY 1985



A number of agencies began submitting energy data to DOE starting in FY 1989 in compliance with NECPA as amended by the Federal Energy Management Improvement Act of 1988 (Pub. L. 100-615). Among these agencies are the Department of State, the Office of Personnel Management, and the Federal Energy Regulatory Commission. These three agencies submitted historical energy data back to FY 1985. For FY 1990 and forward, Federal Energy Regulatory Commission energy consumption is reported as part of DOE and is therefore grouped under the category of "Other" for the years prior to FY 1990. Other agencies grouped under the category of "Other" in the tables had no buildings data to report for FY 1985. These agencies include the Federal Trade Commission, the National Archives and Records Administration, the Nuclear Regulatory Commission, the Railroad Retirement Board, Social Security Administration, and the U.S. Information Agency. The National Science Foundation, Federal Communication Commission, Federal Emergency Management Agency, and Office of Personnel Management also are grouped under this category due to lack of reporting in more recent years.

In FY 2002, GSA continued to delegate building management authority to agencies that occupy buildings owned and operated by GSA. As a result, several agencies reported increased gross square footage and energy consumption relative to FY 1985, while GSA reported decreases in these categories during the same period. The GSA delegation accounts for the significant inter-year changes in energy consumption reported by various individual agencies.

III. INDUSTRIAL, LABORATORY, AND OTHER ENERGY INTENSIVE FACILITIES

A. Energy Consumption and Costs for Energy Intensive Facilities

NECPA, as amended, 42 U.S.C. § 8253, allows agencies to exclude from the buildings goal, facilities which house energy intensive activities. The energy consumed in these facilities is reported under the category of "industrial, laboratory, and other energy intensive facilities."

The designation of these facilities is at the discretion of each agency. Currently, 13 agencies are excluding specific facilities from the NECPA goal and reporting them as energy intensive facilities under Executive Order 13123: the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Justice, and the Treasury, EPA, Federal Communications Commission, GSA, NASA, the Social Security Administration, and the International Broadcasting Bureau (formerly known as the U.S. Information Agency). Lists of the energy intensive facilities that have been identified by the agencies are included in Appendix D.

Table 9 shows that energy consumed in industrial, laboratory, and other energy intensive facilities have decreased 11.9 percent compared to FY 1990 and increased 1.7 percent from FY 2001. During FY 2002, the Department of Defense consumed 28.5 trillion Btu of this category's energy, 46.5 percent of all energy used by the Federal Government in energy intensive facilities.

Some of the fluctuations in energy consumption in energy intensive facilities resulted from agencies changing data collection and reporting procedures. The Social Security Administration began reporting its energy separately from the HHS in FY 1996 and has elected to designate the Social Security Administration's National Computer Center as energy intensive. The Department of Justice commenced reporting energy consumption in its energy intensive facilities during FY 1994, but has not backed out the consumption for these facilities from the standard buildings category for previous years. NASA began reporting energy under this category in FY 1989 and has revised its prior year data to reflect the removal of its energy intensive facilities from the standard building category. GSA began reporting energy in energy intensive facilities in FY 1990 and has backed out this energy consumption from its FY 1985 standard buildings data. The Departments of Agriculture and Commerce both began reporting energy intensive facilities separately from standard buildings in FY 1992. USDA revised all of its prior year buildings data back to FY 1985 to reflect the exclusion of the Agricultural Research Service. The Commerce Department revised its standard buildings data for FY 1985, FY 1990, and FY 1992 forward to reflect the removal of its energy intensive facilities. EPA has removed all of its facilities (laboratories) from the standard buildings category and classified them as energy intensive facilities from FY 1985 forward.

TABLE 9

FEDERAL SITE-DELIVERED ENERGY CONSUMPTION IN ENERGY-INTENSIVE FACILITIES

(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

CIVILIAN AGENCY	**FY 1990**	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 90-02	%Change 01-02
HHS	**6,845.9**	5,998.0	6,578.2	6,824.1	7,170.6	5,822.6	6,405.6	7,217.7	6,764.3	6,498.6	7,138.8	**7,597.8**	**7,612.2**	11.2	0.2
DOE	**7,507.9**	6,810.1	7,445.3	7,063.0	6,878.9	6,939.1	7,262.5	7,429.3	6,415.8	2,431.6	6,663.3	**5,090.0**	**7,242.2**	-3.5	42.3
GSA[1]	**4,354.0**	746.2	677.6	994.6	1,060.2	1,213.8	961.0	890.7	849.2	1,150.8	5,093.8	**5,799.4**	**5,453.3**	25.2	-6.0
NASA	**4,142.9**	3,910.8	4,012.9	3,816.2	4,070.7	3,900.6	3,535.9	3,835.6	3,897.9	3,794.5	3,585.5	**3,413.9**	**3,382.0**	-18.4	-0.9
USDA	**2,416.2**	2,133.3	1,966.3	2,166.9	2,119.3	2,141.0	2,140.8	2,221.6	2,416.5	2,589.0	2,368.5	**2,826.7**	**2,216.1**	-8.3	-21.6
TRSY	**1,707.2**	1,026.8	814.1	923.7	771.8	941.0	928.3	1,131.8	996.5	964.2	2,303.7	**2,204.8**	**2,130.1**	24.8	-3.4
DOC	**976.6**	0.0	976.6	770.8	1,110.2	1,627.4	1,823.0	1,335.2	1,332.0	1,400.4	1,315.8	**1,454.6**	**1,395.3**	42.9	-4.1
IBB	**1,406.9**	850.6	828.5	796.8	861.1	878.2	936.2	1,092.2	1,020.4	951.4	951.4	**951.4**	**1,229.6**	-12.6	29.2
EPA	**747.0**	822.4	839.7	894.1	943.3	1,020.9	1,023.5	1,012.1	1,022.7	1,170.2	940.3	**1,118.3**	**979.7**	31.2	-12.4
DOJ	**0.0**	0.0	0.0	0.0	668.4	707.8	944.1	846.9	850.7	862.8	862.2	**845.1**	**838.7**	NA	-0.8
SSA	**0.0**	0.0	0.0	0.0	0.0	0.0	215.5	204.7	211.4	199.1	237.5	**201.9**	**190.6**	NA	-5.6
FCC	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	**6.3**	**6.3**	NA	0.0
CIVILIAN AGENCIES TOTAL	**30,295.2**	22,495.2	24,333.1	24,447.8	25,855.6	25,401.6	26,395.1	27,438.7	25,777.4	22,012.8	31,466.8	**31,510.2**	**32,751.4**	8.1	3.9
DOD	**39,209.1**	56,372.1	67,913.1	41,159.3	39,781.4	37,962.6	37,260.1	35,702.3	36,588.4	32,919.0	32,280.9	**28,649.8**	**28,459.4**	-27.4	-0.7
TOTAL	**69,504.3**	78,867.3	92,246.2	65,607.1	65,637.1	63,364.2	63,655.1	63,141.0	62,365.8	54,931.8	63,747.8	**60,160.0**	**61,210.8**	-11.9	1.7
MBOE	**11.9**	13.5	15.8	11.3	11.3	10.9	10.9	10.8	10.7	9.4	10.9	**10.3**	**10.5**		
Petajoules	**73.3**	83.2	97.3	69.2	69.2	66.8	67.2	66.6	65.8	58.0	67.3	**63.5**	**64.6**		

DATA AS OF 04/14/04

Note: This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour. Sum of components may not equal total due to independent rounding.

[1] GSA's large increase in energy reported under this category beginning in FY 2000 is a result of the agency reclassifying buildings from the standard buildings inventory for FY 1990 and FY 2000 forward without adjusting data for the intervening years.

Source: Federal Agency Annual Energy Management Data Reports

Energy used in energy intensive facilities accounts for approximately 5.9 percent of the total 1.0 quads used by the Federal Government. Electricity constitutes 45.4 percent of the energy used in energy intensive facilities, 34.8 percent is accounted for by natural gas, 6.0 percent by coal, and 10.0 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and "other" energy account for the remaining 3.8 percent.

The energy used in energy intensive operations in FY 2002 accounted for approximately 6.1 percent of the total Federal energy bill. Table 10 shows that the Federal Government spent approximately $590.1 million for this category's energy during the fiscal year. The combined cost of energy intensive facility energy in FY 2002 was $9.64 per million Btu, down 9.2 percent from the combined cost of $10.62 reported in FY 2001 (see Appendix C).

TABLE 10
DEFENSE AND CIVILIAN FEDERAL COSTS FOR ENERGY INTENSIVE FACILITIES ENERGY IN FY 2002
(In Millions of Dollars)

	ELECTRICITY	FUEL OIL	NATURAL GAS	LPG/ PROPANE	COAL	PURCHASED STEAM	OTHER	TOTAL
DEFENSE	167.547	15.259	36.696	0.691	6.777	4.694	0.085	231.749
CIVILIAN	259.705	13.909	67.515	1.128	0.123	15.110	0.828	358.317
TOTAL	427.252	29.168	104.211	1.819	6.900	19.803	0.913	590.066

AVERAGE COST PER UNIT, BASED ON REPORTS FROM AGENCIES

ELECTRICITY	=	52.44	/ MWH
FUEL OIL	=	0.66	/ GALLON
NATURAL GAS	=	5.04	/ THOUSAND CUBIC FEET
LPG/PROPANE	=	0.79	/ GALLON
COAL	=	45.88	/ SHORT TON
PURCHASED STEAM	=	9.68	/ MILLION BTU
OTHER	=	22.57	/ MILLION BTU

DATA AS OF 04/14/04

Note: Sum of components may not equal total due to independent rounding.
Source: Annual energy cost data submitted to DOE by Federal agencies.

B. Statutory Background and Progress Toward Goals for Energy Intensive Facilities

Under section 543(a)(2) of NECPA, as amended by EPACT, 42 U.S.C. § 8253, buildings that house energy-intensive activities may be excluded from NECPA's performance goal for buildings. These buildings are listed in Appendix D. Most energy used in excluded buildings is process energy. Process energy is consumed in industrial operations, laboratories certain R&D activities, and in electronic-intensive facilities.

Executive Order 12902 expanded the scope of Federal energy management activities beyond the NECPA mandates by establishing goals for industrial operations. It required industrial facilities to increase in energy efficiency by at least 20 percent by 2005 as compared to 1990. Section 203 of Executive Order 13123 further expands this goal by requiring each agency to reduce energy consumption per square foot, per unit of production, or per other unit as applicable by 20 percent by 2005 and 25 percent by 2010 relative to 1990. This goal covers laboratory and other energy-intensive facilities in addition to industrial facilities. Measures undertaken to achieve this goal must be life-cycle cost-effective, and agencies are also directed to implement all cost-effective water conservation projects.

During 1999, the Energy Intensive Facilities Working Group worked to produce a guidance document entitled *Guidelines: Executive Order 13123, Section 203 Performance Goals for Industrial, Laboratory, Research, and Other Energy-Intensive Facilities*. The document was reviewed and approved by the Interagency Energy Management Task Force and issued in January 2000. The guidelines fulfill two requirements under the Executive Order. These are that the Secretary of Energy shall:

- Issue guidelines to assist agencies in measuring energy per square foot, per unit of production, or other applicable unit in industrial, laboratory, research, and other energy-intensive facilities (Section 502(a)); and

- Develop guidance to assist agencies in calculating appropriate energy baselines for previously exempt facilities and facilities occupied after 1990 in order to measure progress toward goals (Section 502(c)).

The guidance presents three options for measuring performance. These are: a rate-based measure of annual energy consumed per number of production units; a rate-based measure of annual energy consumed per number of other applicable units (for example, number of experiments, labor hours, customers served); and Btu per gross square foot. The guidance provides advise on which measurement option is appropriate, depending on agency-specific factors. The guidance also advises agencies on the proper manner of calculating appropriate energy baselines for previously exempt buildings and facilities. The Executive Order contains strict criteria for exemption that will mean agencies having to re-examine previously exempt buildings and possibly reassign them to one of the goal categories.

More detail on each agency's approach to tracking and achieving progress toward the energy intensive facility goals are contained in the individual agency's narratives in Section VI.

The Department of Defense reports facilities that perform production or industrial functions under the energy intensive facilities category. Because the relationship between energy consumption and production varies widely between processes, the Department of Defense has decided to use energy usage per gross square foot as the performance measure for the industrial and laboratory facility category. Additionally, to simplify data collection, and the associated metering and reporting costs, the Department of Defense considers an entire base an industrial facility if 60 percent or more of the base-wide energy use is for industrial purposes. The Department of Defense established a FY 1990 baseline of 213,349 Btu/GSF for the energy intensive facilities category. During FY 2002, the Department of Defense achieved a 20.7 percent reduction in Btu/GSF consumption relative to the FY 1990 base year.

In FY 2002, DOE reported a reduction in its laboratory and industrial facilities Btu per gross square foot of 22.4 percent compared to FY 1990. These facilities comprised 18.9 million square feet in FY 2002 and consumed 7.2 trillion Btu.

Almost 87 percent of the HHS's square footage is energy intensive facilities including laboratories, hospitals, animal centers, health clinics, and other related support space. The performance measure used for the HHS energy intensive facilities is Btu/GSF. In FY 2002, the energy consumption of HHS energy intensive facilities declined 10.5 percent compared to FY 1990.

At USDA, Agricultural Research Service (ARS) and Animal Plant and Health Inspection Service (APHIS) facilities energy performance is measured based on Air-Quality-Adjusted Btu/GSF, which removes the impact of present day requirements for increased laboratory ventilation air for safety and health reasons. Since 1990, ARS and APHIS have undertaken an extensive conversion program of systematically modifying space-conditioning systems in its laboratory facilities to use far less re-circulating air, and more fresh air from outside the building, in order to protect researchers from the health and safety risks of hazardous chemicals and airborne pathogens. These requirements have become more stringent and require greater energy use than the standards that were in place in 1990, the base year of the goal. Removing the effect of the modernization-related increase results in an decrease of 39.6 percent from the baseline consumption in FY 1990 based on Air-Quality Adjusted Btu/GSF. Without the adjustment, the decrease would have been 8.5 percent.

The Department of Justice's energy intensive facilities are comprised of large data centers, FBI labs, the FBI headquarters facility, and the training facility in Quantico, Virginia. These facilities operate 24 hours per day, 365 days per year and are not typical office buildings. The Department of Justice has not developed a baseline for FY 1990 or designated a performance indicator for these facilities. On a Btu/GSF basis, Justice increased the energy intensity of its energy intensive facilities by 1.3 percent from 180,979 Btu/GSF in FY 2001 to 183,259 Btu/GSF in FY 2002.

The Department of the Treasury reports energy consumption for 10.0 million square feet of industrial space. Approximately 5.6 million square feet of space for the Internal Revenue Service (IRS) was managed directly by the Treasury under the GSA Buildings Delegation Program. The reclassification of the IRS Service Centers to this category was completed in FY 2002. The remaining 4.4 million square feet of space belongs to the Bureau of Engraving and

Printing, the U.S. Mint, and the U.S. Secret Service. As of FY 2002, Treasury's industrial facilities have achieved a 19.5 percent reduction in consumption over their FY 1990 baseline on a Btu/GSF basis. Treasury reports that the lack of a common unit of production continues to require the use of the Btu/GSF as their reporting unit and does not appropriately reflect the improvement some bureaus have made.

Since 1985, the EPA has measured and reported laboratory energy and water consumption using its standard facility 1985 baseline and reduction requirements. Beginning in FY 2000, EPA stopped reporting its laboratory energy consumption under the standard facility designation and is now using the more appropriate energy intensive facility designation. Energy use at EPA laboratory complexes decreased by 22.1 percent from 357,414 Btu per gross square foot per year in 1990 to 278,453 Btu per gross square foot per year in 2002. EPA's energy intensity for FY 2002 was adjusted to reflect purchases of 79.6 billion Btu of renewable electricity.

GSA's energy usage in its energy intensive facilities during FY 2002 was 271,666 Btu/GSF compared to 432,313 Btu/GSF in FY 1990. This represents a decrease of 37.2 percent compared with the 1990 base year. The agency achieved this reduction by directly investing in energy and water conservation opportunities with paybacks of 10 years or less.

NASA has elected to use Btu/GSF as the agency-wide aggregate performance measure for energy intensive facilities. Other performance measures are utilized for individual industrial facilities, space flight tracking stations, and clean rooms. The average energy intensity for NASA's energy intensive buildings was 273,333 Btu/GSF by the end of FY 2002, as compared to the FY 1990 baseline value of 323,971 Btu/GSF. This represents a decrease of 15.6 percent.

The Department of Commerce's energy intensive facilities are operated by two of its agencies: the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA). NIST installations are comprised of general purpose and special laboratories that require constant environmental space control and base electrical loads for scientific equipment and computer systems. NOAA Weather Service facilities operate 24 hours a day and consist of radar towers, computers, special gauges, meters and other sophisticated equipment. Marine Fisheries and Laboratories conduct marine biology research and utilize refrigerators, freezers, incubators, coolers, seawater pumps, and compressors that operate 24 hours a day. During FY 2002, Commerce energy intensive facilities decreased energy intensity 26.8 percent from FY 1990, from 315,975 Btu/GSF to 231,298 Btu/GSF.

The International Broadcasting Bureau (formerly the U.S. Information Agency) designates domestic and overseas Voice of America Relay Stations as energy-intensive facilities.

The Social Security Administration, which began reporting energy consumption in 1996 as an independent agency, has designated its National Computer Center as an energy intensive facility. The Center contains SSA's main database and operates 24 hours per day and 365 days per year.

IV. EXEMPT FACILITIES

A. Energy Consumption and Costs for Exempt Facilities

Sec. 704 of Executive Order 13123 defines "Exempt facility" as "a facility. . .for which an agency uses DOE-established criteria to determine that compliance with the Energy Policy Act of 1992 or [the Order] is not practical." Section 502(b) of Executive Order 13123 requires the Secretary of Energy, in collaboration with other agency heads, to "establish criteria for determining which facilities are exempt from the Order. In addition, DOE must provide guidance for agencies to report proposed exemptions." This guidance was issued in December 1999. The following facilities may be exempted from Section 201, Greenhouse Gas Reduction Goal, Section 202, Energy Efficiency Improvement Goals for standard buildings and facilities, and the goals of Section 203, Industrial and Laboratory Facilities of Executive Order 13123:

- Structures such as outside parking garages which consume essentially only lighting energy, yet are classed as buildings.

- Buildings where energy usage is skewed significantly due to reasons such as: buildings entering or leaving the inventory during the year, buildings down-scaled operationally to prepare for decontamination, decommissioning and disposal, and buildings undergoing major renovation and/or major asbestos removal.

- Federal ships that consume "Cold Iron Energy," (energy used to supply power and heat to ships docked in port) and airplanes or other vehicles that are supplied with utility-provided energy.

- Buildings and facilities in which it is technically infeasible to implement energy efficiency measures or where conventional performance measures are rendered meaningless by an overwhelming proportion of process-dedicated energy. For these exemptions, a finding of impracticability must be approved by DOE as outlined in Section 543(c) of the National Energy Conservation Policy Act, as amended by the Energy Policy Act of 1992. For buildings where exemptions are granted, agencies should undertake energy audits and are strongly encouraged to implement all life-cycle cost-effective measures per the recommendation of the audit.

Nine agencies, the Departments of Defense, Energy, Health and Human Services, State, and Transportation, NASA, NARA, GSA, and the Tennessee Valley Authority have chosen to exempt facilities from Executive Order requirements. These facilities are listed in Appendix E. In addition, the United States Postal Service has reported electricity consumption used in mail processing automation under the exempt category without reporting associated facility square footage. Table 11 presents an accounting of energy use and costs in exempt facilities for FY 2002 and shows what percentage of each agency's facility energy use, costs, and space is considered exempt.

TABLE 11
ENERGY CONSUMPTION, COSTS, AND GROSS SQUARE FOOTAGE OF FEDERAL EXEMPT FACILITIES, FY 2002

	Energy Consumption		Energy Costs		Facility Gross Square Feet	
Agency	(BBtu)	% of Agency's Total Facility Use	($ Million)	% of Agency's Total Facility Costs	(Thou. Sq. Ft.)	% of Agency's Total Facility Space
DOD	9,244.6	3.8%	$157.822	6.0%	0.0	0.0%
DOE	4,817.5	16.6%	$60.487	21.0%	10,516.7	10.3%
DOT	3,419.4	46.3%	$76.693	54.0%	16,232.0	30.8%
GSA	508.9	2.9%	$10.984	4.0%	13,630.8	6.6%
HHS	8.3	0.1%	$0.143	0.2%	882.8	3.4%
NARA	529.2	100.0%	$7.111	100.0%	3,787.6	100.0%
NASA	1,691.2	18.2%	$20.087	17.9%	5,040.6	13.1%
ST	331.6	57.5%	$5.672	61.3%	2,598.8	58.0%
TVA	1,435.9	69.2%	$25.251	69.3%	21,957.8	69.4%
USPS	2,114.5	8.2%	$49.462	10.6%	0.0	0.0%
Total	24,101.0		$413.710		74,647.1	

DATA AS OF 04/14/04

TABLE 12
CONSUMPTION AND COSTS OF FEDERAL EXEMPT FACILITY ENERGY
BY FUEL TYPE IN FY 2002

ENERGY TYPE	BILLIONS OF BTU	COST PER MMBTU	COST (IN MILLIONS OF DOLLARS)
ELECTRICITY	17,684.6	20.9819	371.056
FUEL OIL	1,680.3	7.5821	12.740
NATURAL GAS	3,241.2	4.7511	15.399
LPG/PROPANE	14.7	10.7173	0.157
COAL	22.6	2.0121	0.045
PURCHASED STEAM	704.1	9.6261	6.778
OTHER	753.6	9.9981	7.535
TOTAL	24,101.0		413.710

AVERAGE COST PER MMBTU = $17.166

DATA AS OF 04/14/04

This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour. Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

Table 12 illustrates total exempt energy consumption and costs by fuel type for FY 2002. Energy used in exempt facilities accounts for approximately 2.3 percent of the total 1.0 quads used by the Federal Government. Electricity constitutes 73.4 percent of the energy used in exempt facilities, 13.4 percent is accounted for by natural gas, and 7.0 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and "other" energy account for the remaining 6.2 percent.

The energy used in exempt facilities in FY 2002 accounted for approximately 4.3 percent of the total Federal energy bill. The Federal Government spent approximately $413.7 million for this category's energy during the fiscal year. The average cost of exempt facility energy across all fuels in FY 2002 was $17.17 per million Btu.

Under the Department of Defense, the Navy is the only Military Service to list facilities classified as exempt. The Navy exempts mission-critical, concentrated energy use transmitters, simulators, cold iron support to ships, and some privately-owned facilities. These are non-production-oriented facilities with little or no square footage, making conventional performance measures meaningless. (The Department of Defense did not report any square footage for this category.) The mission criticality of these end users is such that energy efficiency measures are evaluated on a case-by-case basis.

Most of the facilities exempted by DOE have been scaled back operationally to prepare for decontamination and decommissioning. These facilities have traditionally housed energy intensive operations that will in many cases dominate the energy consumption being reported at the site and the site consumption will vary in direct relationship to the processes undertaken at these facilities. Traditional energy conservation measures will not significantly effect the energy consumption that will be reported for these facilities, and it would be impossible to meet the goals with these facilities included in other than the exempt category.

Within the Department of Transportation, the Federal Aviation Administration excludes all buildings involved in implementing the National Airspace System Plan. A sampling survey was conducted of typical facilities that indicated an overwhelming proportion of process dedicated energy for National Airspace System electronic and plant support systems. These buildings house energy-intensive electronic equipment with the associated HVAC requirements to maintain an environment for reliable equipment operation. The Federal Highway Administration exempts a research facility that is a mixture of indoor and outdoor laboratories for testing of various highway systems with heavy process energy use. The St. Lawrence Seaway Development Corporation exempts energy used to maintain two river locks. The Maritime Administration exempts cold iron energy for the National Reserve Fleet.

The Tennessee Valley Authority exempts its power plants and associated station service energy use.

GSA exempts those buildings and facilities where energy usage is skewed significantly due to reasons such as: buildings entering or leaving the inventory during the year; buildings down-scaled operationally to prepare for disposal; buildings undergoing major renovation and/or major asbestos removal; or buildings functions like that of outside parking garages which consume essentially only lighting energy, yet are classed as buildings.

The State Department includes in this category the Harry S. Truman Headquarters Building, the Potomac Lot, and Building C of the Charleston Regional Center.

NASA exempts 5.0 million square feet of its mission-variable (MV) facilities or 13.1 percent of its total facility space. These facilities are highly specialized and energy intensive, having been constructed for specific space flight and research programs. Examples are wind tunnels driven by multi-thousand horsepower electric motors, space simulation chambers, and space communication facilities. Energy consumption in these facilities varies directly with the level and intensity of program activities. NASA provided justifications for each MV facility exemption to explain why it is either technically infeasible to implement energy efficiency measures or to apply conventional performance measures due to the overwhelming proportion of process-dedicated energy consumed in these facilities.

The National Archives and Records Administration exempts all 13 of its facilities, which preserve, store, and display historical documents and artifacts. These documents and artifacts are maintained in a controlled environment 24 hours per day, 365 days per year. NARA exempts these facilities because of the stringent environmental requirements for storage and preservation.

The only exempted facilities at HHS are outdoor multilevel parking garages on the NIH Bethesda Campus that consume lighting energy only. These facilities are not metered separately. Therefore, the energy consumption of these structures has been estimated based on the number of lighting fixtures and the time of use.

The United States Postal Service energy consumption reported under this category reflects process energy consumed by mail processing equipment. This consumption has been factored out of energy consumption of Postal Service standard buildings in order to provide a better measure of their energy efficiency status.

V. ENERGY MANAGEMENT IN VEHICLES AND EQUIPMENT

A. Energy Consumption and Costs for Vehicles and Equipment

Vehicle and equipment energy consists of energy used by equipment ranging in size and function from aircraft carriers to forklifts. It includes aircraft and naval fuels, automotive fuels consumed by Federally-owned and leased vehicles and privately-owned vehicles used for official business, and the energy used in Federal construction.

Table 13 shows that in FY 2002, the Federal Government used approximately 643.8 trillion Btu of energy for vehicles and equipment, a decrease of 31.1 percent relative to FY 1985. The Department of Defense's vehicle and equipment energy consumption decreased 33.3 percent from FY 1985, while the civilian agencies increased consumption by 14.5 percent. Overall, vehicle and equipment consumption increased 9.5 percent from FY 2001. The increase from the previous year is attributable mainly to increased activity by the Department of Defense, which saw an increase in mobility fuels of 10.6 percent over FY 2001. Jet fuel consumption increased 13.9 percent from 415.2 trillion Btu in FY 2001 to 472.9 trillion Btu in FY 2002.

Agencies have taken many tangible steps to keep the use of vehicle fuels to a minimum. For example, the United States Postal Service continues to modernize its fleet, adding diesel delivery vans and long-life vehicles to its inventory, both of which are more fuel efficient than the older vehicles they replaced. The Department of Defense continues to increase the use of flight simulators, as well as the use of new propulsion technologies and strategies in order to lessen the growth of vehicle and equipment fuel consumption.

Figure 9 depicts the vehicles and equipment fuel mix within DOD and civilian agencies. Jet fuel accounted for 472.9 trillion Btu or 73.4 percent of the total energy usage in the category, with 19.5 percent attributed to diesel and distillate fuel, 6.5 percent to auto gasoline, and 0.6 percent to aviation gasoline, navy special, LPG/propane and other fuels, combined.

As shown in Tables 14-A and 14-B, the Federal Government spent $5,037.5 million on vehicles and equipment energy in FY 2002, 7.2 percent more than the FY 2001 expenditure of $4,698.5 million constant dollars. In FY 2002, the combined price for all types of vehicles and equipment energy was $7.82 per million Btu, down 2.1 percent from FY 2001. The average real cost of gasoline to the Federal Government increased from $1.28 per gallon in FY 2001 to $1.29 in FY 2002. The unit cost for diesel/distillate fuel fell 3.8 percent while the unit cost for jet fuel decreased 2.4 percent.

When compared to FY 1985 using constant 2002 dollars, energy costs for vehicles and equipment decreased 44.7 percent from $9,104.3 million to $5,037.5 million in FY 2002. During that same period, the Government's average cost per million Btu for vehicles and equipment energy across all fuels fell 19.7 percent from $9.75 to $7.82 in constant dollars.

Vehicle and equipment fuel costs in FY 2002 represent 51.9 percent of the Government's total energy costs of $9.7 billion.

TABLE 13
FEDERAL ENERGY CONSUMPTION IN VEHICLE AND EQUIPMENT OPERATIONS
(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

Civilian Agency	**FY 1985**	FY 1990	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	**FY 2001**	**FY 2002**	%Change 85-02	%Change 01-02
USPS	**11,524.2**	12,136.2	14,571.2	14,217.1	16,779.2	14,777.2	14,583.7	15,976.3	**16,192.1**	**16,192.1**	40.5	0.0
DOT	**11,957.0**	12,150.8	12,193.7	12,222.9	12,347.9	10,145.0	10,870.5	11,122.9	**8,739.3**	**10,963.0**	-8.3	25.4
DOJ	**2,064.0**	2,097.9	3,181.6	3,693.0	3,149.3	7,171.4	6,456.3	9,456.3	**9,037.9**	**7,766.4**	276.3	-14.1
TRSY	**2,155.0**	1,473.2	1,773.4	1,350.9	1,561.4	2,078.6	2,120.2	2,503.3	**2,577.8**	**3,162.9**	46.8	22.7
DOI	**3,053.9**	3,352.5	2,782.2	1,347.5	2,943.7	2,679.9	3,661.4	3,839.3	**4,812.3**	**3,134.4**	2.6	-34.9
USDA	**4,319.6**	4,952.3	4,821.7	4,654.8	3,153.0	3,389.4	3,337.9	3,025.7	**2,476.2**	**2,470.6**	-42.8	-0.2
DOE	**2,882.0**	2,520.4	1,841.9	1,561.0	1,971.0	1,955.6	1,444.6	1,803.4	**1,714.4**	**1,706.0**	-40.8	-0.5
NASA	**1,972.7**	1,736.7	1,750.9	1,539.3	1,622.1	1,428.3	1,412.8	1,490.1	**1,455.1**	**1,282.2**	-35.0	-11.9
VA	**592.8**	518.3	353.6	660.7	1,199.1	1,380.3	1,337.6	923.4	**913.6**	**800.7**	35.1	-12.4
TVA	**578.5**	476.6	541.7	583.8	479.5	429.1	423.3	850.1	**822.3**	**777.3**	34.4	-5.5
ST	**14.8**	34.9	0.0	0.0	44.7	40.9	40.9	486.4	**37.1**	**461.5**	NA	1,143.9
DOC	**1,010.2**	3,100.3	760.6	570.1	929.1	708.4	834.5	154.3	**595.8**	**360.0**	-64.4	-39.6
DOL	**232.2**	239.0	356.9	337.7	336.2	350.2	350.2	368.9	**358.9**	**358.9**	54.6	0.0
HHS	**373.3**	0.0	105.5	18.6	435.0	447.7	447.7	593.2	**715.2**	**182.4**	-51.1	-74.5
GSA	**144.1**	128.1	91.3	98.8	119.9	122.2	125.2	127.0	**112.7**	**112.7**	-21.8	0.0
EPA	**132.3**	0.0	99.6	76.5	137.2	97.7	120.6	97.9	**110.0**	**110.9**	-16.2	0.8
HUD	**0.0**	0.0	25.4	25.4	28.3	23.3	23.3	37.8	**33.4**	**33.4**	NA	0.0
OTHER*	**582.1**	732.4	992.9	951.4	914.0	154.2	150.6	45.3	**48.8**	**41.7**	-92.8	-14.5
Civilian Agencies Total	**43,588.5**	45,649.7	46,244.1	43,909.5	48,150.6	47,379.4	47,741.4	52,901.5	**50,753.0**	**49,917.1**	14.5	-1.6
DOD	**890,679.9**	881,345.1	640,893.4	631,202.0	617,235.4	579,959.8	559,785.8	526,234.1	**537,168.4**	**593,927.6**	-33.3	10.6
TOTAL	**934,268.4**	926,994.8	687,137.4	675,111.5	665,386.0	627,339.2	607,527.2	579,135.6	**587,921.5**	**643,844.7**	-31.1	9.5
MBOE	**160.4**	159.1	118.0	115.9	114.2	107.7	104.3	99.4	**100.9**	**110.5**		
Petajoules	**985.6**	977.9	724.9	712.2	702.0	661.8	640.9	611.0	**620.2**	**679.2**		

DATA AS OF 04/14/04

*Other includes for certain years the CFTC, CIA, FEMA, NSF, NRC, OPM, and USIA/IBB.

Note: Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

FIGURE 9
Defense and Civilian Consumption in
Vehicles and Equipment by Fuel Type, FY 2002

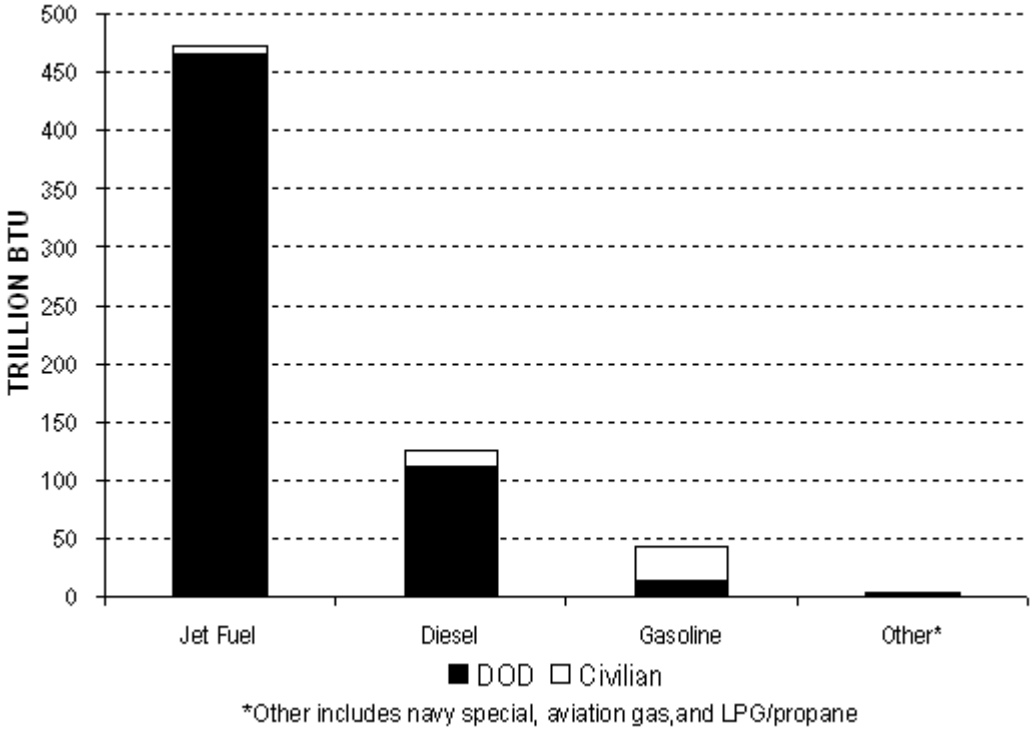


TABLE 14-A
DEFENSE AND CIVILIAN FEDERAL COSTS FOR VEHICLE AND EQUIPMENT ENERGY IN FY 2002 (In Millions of Dollars)

	AUTO GAS	DIST. DIESEL	LPG/ PROPANE	AVIATION GAS	JET FUEL	NAVY SPECIAL	OTHER	TOTAL
DEFENSE	120.056	783.254	0.181	0.001	3,626.557	0.000	1.836	4,531.885
CIVILIAN	314.421	102.497	0.291	3.986	78.154	0.008	6.225	505.580
TOTAL	434.477	885.751	0.471	3.987	3,704.711	0.008	8.061	5,037.465

AVERAGE COST PER UNIT, BASED ON REPORTS FROM AGENCIES

GASOLINE	=	1.29	/ GALLON
DIST/DIESEL	=	0.98	/ GALLON
LPG/PROPANE	=	0.79	/ GALLON
AVIATION GAS	=	2.04	/ GALLON
JET FUEL	=	1.02	/ GALLON
NAVY SPECIAL	=	2.14	/ GALLON
OTHER	=	2.42	/ MILLION BTU

DATA AS OF 04/14/04

Note: Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

TABLE 14-B
CONSUMPTION AND COSTS OF VEHICLE AND EQUIPMENT
ENERGY BY FUEL TYPE IN FY 2002, FY 2001, AND FY 1985
(Constant 2002 Dollars)

ENERGY TYPE	BILLIONS OF BTU	COST PER MMBTU	COST (IN MILLIONS OF DOLLARS)
FY 2002			
AUTO GASOLINE	42,004.8	10.3435	434.477
DIST/DIESEL	125,321.5	7.0678	885.751
LPG/PROPANE	57.0	8.2774	0.471
AVIATION GASOLINE	244.5	16.3051	3.987
JET FUEL	472,879.4	7.8344	3,704.711
NAVY SPECIAL	0.5	15.4210	0.008
OTHER	3,337.0	2.4156	8.061
TOTAL	643,844.7		5,037.465
AVERAGE COST PER MMBTU = $7.824			
FY 2001			
AUTO GASOLINE	42,517.2	10.5017	446.505
DIST/DIESEL	118,575.8	7.3486	871.369
LPG/PROPANE	54.4	9.9507	0.541
AVIATION GASOLINE	246.0	14.5884	3.588
JET FUEL	415,204.8	8.0263	3,332.545
NAVY SPECIAL	6,518.9	4.7426	30.916
OTHER	4,804.4	2.7107	13.023
TOTAL	587,921.5		4,698.487
AVERAGE COST PER MMBTU = $7.992			
FY 1985			
AUTO GASOLINE	50,420.1	11.3471	572.126
DIST/DIESEL	169,215.0	9.0590	1,532.914
LPG/PROPANE	149.2	10.5272	1.571
AVIATION GASOLINE	1,882.3	16.7688	31.563
JET FUEL	705,675.5	9.7893	6,908.047
NAVY SPECIAL	6,687.7	8.4012	56.185
OTHER	238.6	8.0989	1.932
TOTAL	934,268.4		9,104.339
AVERAGE COST PER MMBTU = $9.745			

DATA AS OF 04/14/04

Note: Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

VI. FEDERAL AGENCY ENERGY MANAGEMENT ACTIVITIES

A. DEPARTMENT OF AGRICULTURE (USDA)

Management and Administration
The designated Senior Energy Official for the U.S. Department of Agriculture (USDA) is the Assistant Secretary for Administration (ASA). The ASA has the authority to implement Federal energy management policy related to internal operations and to exercise full agency-wide contracting and procurement authority.

Within the ASA organization, the Office of Procurement and Property Management (OPPM) has responsibility for policy, planning, and reporting, and serves as the primary inter- and intra-Departmental liaison on energy matters related to the facilities and internal operations of USDA. The USDA agencies, in concert with OPPM, are responsible for the identification of appropriate energy conservation actions and programming, budgeting, and implementing Executive Order 13123 requirements and the USDA Energy Management Plan within their own organizations.

Management Tools

Awards
USDA participates in the Department of Energy's (DOE's) Federal Energy and Water Management Awards program and the *You Have the Power* awareness program. Agency personnel are encouraged to submit nominations for these events to recognize outstanding contributions to energy and water conservation efforts.

The 2002 USDA Agricultural Research Service (ARS) Energy Champion - "Distinguished Leader" is the Director of Beltsville Area (BA), ARS, Phyllis E. Johnson, Ph.D. Dr. Johnson encouraged and fostered the minimization of energy waste at the ARS facility, resulting in savings of more than $250,000 annually.

Individual Departmental agencies conduct their own employee award and recognition programs as well. ARS incentive and awards program is utilized in recognizing and rewarding employees for their energy saving contributions and is implemented in varying ways in each ARS geographic area.

Performance Evaluations
ARS is continuing to update position descriptions and performance standards to incorporate an energy management performance element for employees considered critical for the successful implementation of the ARS energy management and conservation program.

Training
In FY 2002, OPPM enhanced the USDA Energy and Environment (E&E) Web site, which was launched the previous year. E&E uses the Web site's scrolling news feature to keep site visitors informed of upcoming training opportunities. In addition, an "e-mail tree" has been established to forward information on energy training to appropriate USDA agency personnel.

USDA was represented at the Energy 2002 Conference in Palm Springs, California. E&E staff and several ARS engineering project managers attended "Laboratories for the 21st Century" (Labs21) conferences in 2002. ARS and APHIS have agreed to become partners with DOE/FEMP and EPA in this initiative.

ARS personnel participated in a variety of training opportunities throughout the year. At the Beltsville Agricultural Research Center (BARC), ten employees received energy management training in FY 2002 at an expenditure of approximately $8,000. In FY 2002, BARC established an Energy Conservation Committee to serve as liaison between management and employees to facilitate energy conservation throughout BARC.

Personnel from several Forest Service (FS) Regions received training in FY 2002, including:

- Region 1 held a Region-wide facilities meeting where FEMP and the local energy coordinator discussed energy conservation/energy saving features in buildings. Approximately 30 people participated.
- The Southern Region 8 presented energy awareness training to approximately 50 engineers at the forest engineer's meeting in Biloxi, Mississippi. This training discussed incorporation of the latest in energy efficient technologies and building science related to construction in hot humid and mixed humid climates.

Showcase Facilities
In FY 2002, ARS designated facilities at the National Center for Agriculture Utilization Research (NCAUR), Peoria, Illinois, as energy showcase facilities. The design of the ARS renovated complex will include the opportunity to incorporate a water/energy conservation showcase exhibit within the complex.

The new laboratory facility in Ames, Iowa, is being designed to qualify for the Leadership in Energy and Environmental Design (LEED™) silver rating, and also designed in accordance with the Labs21 criteria.

The Forest Service has designated the Soda Springs District Office on the Caribou-Targhee National Forest as a Showcase facility. Exterior walls feature R-27

insulation, ceilings have R-44 insulation, windows have a U-value of 0.32, furnaces feature 90 percent or greater efficiency, and point-of-use water heaters are used for all domestic hot water. Air conditioning units are of the highest available efficiency, and the building uses daylighting.

Energy Efficiency Performance

Standard Buildings
In FY 2002, USDA reported a 29.2 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. USDA received credit for purchases of 7.2 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 57,673 Btu/GSF to 57,500 Btu/GSF. USDA continues to strive for improved reporting while coping with the constraints of outdated energy data feeder systems. Although USDA implemented a new energy cost reporting system in FY 2001, which provides energy costs for specific facility sites, the consumption data often has to be estimated. Additionally, utility purchases made with the Government Purchase Card provide no consumption data. However, more detailed identification of specific facilities has become available through new real property reports.

Industrial and Laboratory Facilities
All of the Animal and Plant Health Inspection Service (APHIS) and ARS facilities are classified as industrial and laboratory facilities. For FY 2002, USDA reported energy consumption of 108,941 Btu/unit in its industrial facilities, a 39.6 percent reduction compared to FY 1990, almost double the 20 percent reduction target for FY 2005. This Btu/unit calculation is based on a combination of unadjusted energy use for APHIS and adjusted energy use for ARS explained below.

Performance for the ARS facilities is measured based on air-quality-adjusted Btu/GSF that removes the impact of present day requirements for increased laboratory ventilation air for safety and health reasons. These requirements have become more stringent and require greater energy use than the standards that were in place in 1990, the base year of the goal.

Based on ARS's best engineering judgment, laboratory and research space accounts for more than 90 percent of ARS's building energy consumption and the impact of modifying existing space-conditioning systems to improve indoor air quality more than doubles the energy intensity of the buildings affected by the modernization program. To eliminate the distorting impact of air-quality improvements, and to allow a more accurate comparison of current energy use with the baseline year, annual consumption data is adjusted accordingly to reflect actual progress of the modernization program.

Renewable Energy

Self-Generated Renewable Energy
USDA agencies strive to select products, materials, and systems that maximize the use of renewable sources. Consideration is given to incorporating solar and other renewable technologies when life-cycle cost effective. The FS continues to install photovoltaic systems at remote sites, and uses passive solar to the greatest extent possible in new facility design/construction. Recent examples include the installation of photovoltaics at the Apache-Sitgreaves National Forest (1,000 kilowatthours), Coronado National Forest (3,000 kilowatthours), Lincoln National Forest (480 kilowatthours), and Tonto National Forest (387,968 kilowatthours).

The Tongass National Forest operates six alternative energy systems. Four systems utilize solar panels and wind turbines and two sites solely use solar panels. Combined, these systems generate more than 1,500 kilowatthours of power. The use of these systems eliminates the need for the operation of small generators in the field, saving about 500 gallons of fuel annually. Other benefits of these systems are the reduction of fuel transported to the field and the risk of ground contamination from spills.

Purchased Renewable Energy
USDA Headquarters entered into an agreement with PEPCO Services to purchase renewable power, covering 10 percent of the facility's electric power. Seventy-five percent of the renewable power is from new landfill gas resources and 25 percent is from wind resources. In FY 2002, this totaled 903 megawatthours of landfill gas resources and 301 megawatthours of wind resources.

ARS locations reporting purchases of renewable energy in FY 2002 included the Southern Plains Area which purchased 905 megawatthours of renewable electricity. A location at Kimberly, Idaho, reported hydroelectric power usage of 650 megawatthours. The National Soil Tilth Laboratory (NSTL) in Ames, Iowa, uses a combination of renewable resources and coal.

Petroleum
Since 1985, USDA has reduced its use of petroleum-based fuels in its facilities. In FY 2002, USDA used 676,200 gallons of fuel oil, compared to 886,500 gallons in FY 1985.

In USDA laboratory facilities, fuel oil consumption decreased from 3.5 million gallons in FY 1985 to 999,000 gallons in FY 2002. ARS continues to pursue switching to a less greenhouse gas-intensive, non-petroleum energy source, such as natural gas or renewable energy sources, and by decreasing

unnecessary fuel use through energy efficiency projects.

Water Conservation
In FY 2002, USDA used an estimated 1.6 billion gallons of water in standard buildings and energy intensive buildings combined. This is a dramatic increase from FY 2001 reported usage of 951.1 million gallons that has yet to be programmatically explained and verified. USDA does not have a departmental system for tracking water use, and struggles with reporting for this category.

In FY 2002, ARS water consumption is estimated at 308.3 million gallons totaling $1.2 million. ARS also lacks information to establish meaningful and reliable water consumption data. Consumption records for individual buildings cannot be obtained and data is not kept for ARS facilities. Many of ARS facilities are co-located with land-grant university agricultural research facilities. Water usage is variable and mixed among ARS and University functions.

Implementation Strategies

Life-Cycle Cost Analysis
ARS uses life-cycle cost (LCC) analysis to identify opportunities for conserving energy and reducing operating costs and has agency policies and procedures in place regarding use of LCC analysis for evaluating energy conservation opportunities and decision making.

USDA's Headquarters Office of Operations focused its resources in FY 2002 on continuing the modernization of the Headquarters South Building, USDA's major multi-year renovation project. LCC analysis was used during the concept/design phases of these projects.

The FS uses LCC analysis in the decision making and design of its construction projects. FS Region 3 uses the "Choosing by Advantages" decision-making process to select construction projects.

For the FS North East Research Station, LCC analysis is always a major factor in making investment decisions about products, services, construction, and other projects. LCC analysis was used, along with other considerations, in the selection of HVAC equipment and electrical lighting at four of the North East Laboratory sites. The selection of roofing materials in three large re-roofing projects was directly influenced by LCC analysis.

Facility Energy Audits
In FY 2002, energy audits were conducted at the ARS National Center for Genetic Preservation in Fort Collins, Colorado. In the ARS South Atlantic Area, energy conservation reports were completed for facilities in Athens and Watkinsville, Georgia. A facility in Lane, Oklahoma, was also audited during the year.

The FS had energy audits at the Lolo National Forest, the Ninemile Ranger Station/Remount Depot, and the Seeley Lake Ranger Station, which led to retrofitting light fixtures and other measures. The FS also completed a desk audit of energy usage for the past five years at all sites. The Lewis and Clark National Forest conducted inspections, including energy audits, of 40 of its Fire Administrative and Other facilities and 25 recreation toilets. All North East facilities received partial energy audits during FY 2002, resulting in implementation of a variety of energy saving projects.

Financing Mechanisms
USDA did not enter into any new energy savings performance contracts (ESPCs) in FY 2002, however, USDA agencies continue to receive annual benefits in reduced energy usage from previously awarded ESPCs and utility energy services contracts (UESCs). The E&E staff continue to encourage USDA agencies to take advantage of this financing mechanism to implement more energy saving projects.

In January 2002, APHIS awarded a $1.2 million UESC contract to the Hawaii Electric Company for detailed design and concept design phases of the renovation of the Hawaii Sterile Fruit Fly Facility in Waimanalo, Hawaii. The full project was projected to be a $20 million renovation that would incorporate significant energy and water savings. However, only an estimated $500,000 was expended before it was determined that the project had outgrown UESC guidelines. The UESC was terminated and a different financing mechanism will be used for the remainder of the project. The design work done under the UESC will be used in the implementation of the full project.

ARS' South Atlantic Area (SAA) has a 10-year agreement with Gainesville Regional Utilities for electrical discounts that realized a total savings of more than $31,000 in FY 2002.
ENERGY STAR® and Other Energy-Efficient Products
USDA continues its acquisition policy of buying computer equipment and other products that meet ENERGY STAR® requirements. ARS purchases of equipment through operations and maintenance contracts are being monitored to ensure that they meet ENERGY STAR® requirements. The FS is promoting the purchase of ENERGY STAR® products and products that are in the upper 25 percent of energy efficiency. The FS North East Station has incorporated energy efficiency criteria into all guide specifications and product specifications developed for new construction and renovation. Energy efficiency is also a consideration for the purchase of new equipment.

The ARS, Beltsville Area, has a policy to replace approximately 25 percent of its computers annually. Procurement agents are instructed to purchase ENERGY STAR®-computer equipment. Additionally, all laboratory equipment purchases are reviewed for energy efficiency ratings.

ARS facilities in Lincoln, Nebraska, use GSA Advantage as a resource for equipment purchases. GSA Advantage has search engines that include ENERGY STAR® and energy-efficient products. This resource is utilized to assist cardholders in the purchase of equipment that is energy efficient. Plans for FY 2003 will help promote these purchases by including an energy statement on request for quotations when seeking bids from vendors for equipment.

ENERGY STAR® Buildings
The Forest Service, Forest Products Laboratory in Madison, Wisconsin, Research Demo House/Laboratory was awarded the ENERGY STAR® label, and is certified as a Green Built House. The design and construction incorporated environmentally sensitive practices, reducing pollutants, and improving indoor air quality, while conserving water, energy, and other natural resources. Many of the materials are produced from recycled products.

Sustainable Building Design
Appropriate sustainable design considerations have been and will continue to be given in the siting, design, and construction of new ARS facilities. These principles have been incorporated in the ARS' facilities design standards manual.

At the FS North East Station, sustainable building design principles are incorporated into all aspects of construction of new facilities and, where feasible, into existing facility reconstruction/renovation projects.

Energy Efficiency in Lease Provisions
USDA agencies have leasing authority and continue to address energy and environmental issues in lease solicitations. FS-Region 4 is utilizing GSA guidelines for energy conservation in all new leases. Region 8 also utilizes energy efficiency as a factor in evaluating lease proposals.

Industrial Facility Efficiency Improvements
As part of the agency's ongoing facilities modernization and repair and maintenance program effort, ARS invested more than $2.5 million in building energy conservation/efficiency improvement projects during FY 2002. ARS activities in FY 2002 included:

- The Beltsville Agricultural Research Center (BARC) utilized biodiesel products in its steam generation plants, emergency generators, and vehicle fleet. Lower natural gas rates were realized as a result of the ability to switch fuels at the boiler plants from natural gas to biodiesel as needed.

- At the ARS National Center for Agriculture Utilization Research (NCAUR), facility renovations were completed in March 2002. This project included switching to variable speed systems that control speed based on demand for cooling and upgrading lighting fixtures. A 150 HP boiler was placed online to supply steam during the warmest months and to turn off a 300 HP boiler. NCAUR also purchased an infra-red camera that allows maintenance personnel to identify and correct maintenance problems, reducing both electrical and gas consumption.

- In the Pacific West Area, ARS facilities in Albany, California, implemented reduced summer hours (4 hours/day) of high pressure steam operation, reducing gas consumption by one-third for 6 months with substantial reduction in cost. Motion sensors were also installed in common areas, reducing electrical usage. Facilities in Riverside, California; Kimberly, Idaho; and Dubois, Idaho; also reported implementing significant facility efficiency improvements in FY 2002.

- The Plant Introduction Station in Pullman, Washington, purchased Argus Controls for 12 of the 18 greenhouse bays maintained at Washington State University. Argus is a computer controlled system built for greenhouse operation. The system enhances control and data retrieval from each greenhouse bay. The facility now stages daytime heating of greenhouses in conjunction with morning sunlight to take advantage of solar heating to bring greenhouses up to daytime temperature. Argus also anticipates incoming heat units through light measurements taken from information gathered by its outdoor weather station. This

information is used in energy equations to avoid overshooting the set daytime temperature for each bay.

The Station also installed horizontal airflow fans (HAF) to maintain even temperatures throughout eight bays. Updates with Argus and the HAF systems have resulted in a noticeable decrease in heating and cooling equipment operation as well as more comfortable and efficient greenhouses.

Highly Efficient Systems
In the North East Station, combined heat and power systems were designed and installed at the Morgantown, West Virginia, laboratory/office at a cost of more than $260,000. At a facility in Parsons, West Virginia, a boiler system replacement was installed for $27,000.

In the ARS Pacific West Area (PWA), the Land Management and Water Conservation unit in Pullman, Washington, upgraded a furnace that increased heating efficiency from 60 percent to 92 percent, and installed a programmable thermostat in one of the shops to regulate unnecessary heating of the building.

Off-Grid Generation
ARS continues its practice of considering off-grid electricity opportunities that provide energy and environmental benefits when life-cycle cost-effective. For example, at Athens, Georgia, during generator replacement, peak shaving was studied at length using natural gas generators, but it was determined that the increased cost of the equipment would not pay off during the equipment's life expectancy.

A facility in Bushland, Texas, operated five utility connected-wind machines, providing power to local irrigation pumping and sold the excess to the utility. The FS reported that the alternative energy system on the Nakwasina Barge Housing Facility in the Tongass National Forest is composed of a 1,024 watt solar array, diesel generator, DC/AC inverter, and battery bank, which provides 24-hour power. This system replaced an all generator system that also operated 24 hours per day. The system reduced fuel consumption by about 80 percent. Annual savings are approximately $8,000.

Electrical Load Reduction Measures
ARS locations continue to pursue and implement electrical load reduction measures. The BARC joined with PEPCO in an Energy Reduction Plan designed to limit electricity use during non-occupied periods. As a result of this on-going initiative, BARC realized a 2 percent cost savings, or approximately $49,000 in FY 2002.

The National Center for Genetic Resources Preservation in Fort Collins, Colorado, turned off half of the lights in many areas and initiated an energy audit of the entire facility lighting system. Cost recovery is 1.78 years based on a five-year summary. The facility also initiated a power usage watch for peak load, installed a "hot shot" signal device from the supplier alerting them when peak power loads are approaching, and upgraded the facility's control system to step off highest load equipment as peak loads approach to avoid peak charges.

At the ARS facilities in Athens, Georgia, electrical load reduction measures include:

- Prioritization of energy use so that emergency power and electrical loads can be dropped or power supplemented by the emergency generator;
- Enhanced communications with the local utility company to better understand their needs for load reductions during peak times;
- Identification of load reduction measures appropriate for the facility;
- A system to alert employees of expected high demand days via e-mail, voice mail, or public bulletin boards; and,
- Encouragement to employees to take steps to reduce the use of lighting, personal computers, and appliances.

The National Animal Disease Center in Ames, Iowa, completed co-generation and standby systems in FY 2001 under an ESPC. The systems provide the Center with full capability to operate stand-alone from the electric utility, and can also be operated to reduce the electrical load to the utility system.

During the summer of FY 2002, the Office of Operations participated in reducing electric loads at the USDA Headquarters Complex at the request of the local power company, PEPCO, although there were no power emergencies.

Water Conservation
ARS has been and will continue to conserve water in its operations. The BARC has drastically reduced its boiler plant feed water load on a continual basis as a result of a program that utilizes effluent from its wastewater treatment plant. This initiative saves approximately $40,000 per year in water purchases. Other actions undertaken to conserve water include: installation of automatic sprinklers in greenhouses; recycling effluent water for use in steam production; installation of an automated irrigation control system in its research fields; and installation of water treatment equipment to boilers, reducing the number of blow-downs needed to adequately maintain the system.

ARS facilities in Leetown, West Virginia, modified water piping at the aqua cultural center to re-circulate water during drought conditions. At Mandan, North Dakota, a new water pumping system for the entire location was installed at a cost of about $23,000 in FY 2002.

Facilities in Fort Pierce, Florida, installed a ground irrigation system which uses surface water collected in retention ponds. The building was designed and built with low water use fixtures wherever possible. At Canal Point, Florida, water for greenhouses is obtained from a well and crops are watered from irrigation ditches.

A trickle irrigation system designed to reduce water usage has been installed in an 1,800 square foot greenhouse at the PIS in Ames, Iowa. Water conservation activities at NSTL, include the removal of existing chilled water circulation system backups that utilize domestic water when campus chilled water fails. Other activities include a study of the Water Management Plans and Best Management Practices to determine an appropriate implementation plan at NSTL.

Energy Management Contact

Ms. Sharon Holcombe
Chief, Energy and Environment Staff
Office of Procurement and Property Management
U.S. Department of Agriculture
Mail Stop 9301
1400 Independence Avenue, SW
Washington, D.C. 20250
Phone: 202-720-3820
Fax: 202-690-1209
E-mail: sharon.holcombe@usda.gov

B. DEPARTMENT OF COMMERCE

Management and Administration

The Department of Commerce (Commerce) has an Administrative Order which prescribes policies, assigns responsibility, and provides program guidelines for energy and water management. Responsibility for energy and water management in Commerce facilities include the Headquarters, Herbert C. Hoover Building, National Oceanic and Atmospheric Administration (NOAA), National Institute of Standards and Technology (NIST), National Technical Information Service, and the Bureau of the Census.

The Senior Official for the Commerce energy team is the Chief Financial Officer and Assistant Secretary for Administration. The senior official participates at the Interagency Energy Policy Committee meetings and ensures all actions under the Strategic Implementation Plan for Energy Management are accomplished to meet Federal energy goals.

Management Tools

Awards

Each Commerce bureau takes advantage of its own incentive programs to reward its exceptional employees. In addition, Commerce actively participates in the *You Have the Power* and the Federal Energy and Water Management Awards programs.

Performance Evaluations

Key Department and Bureau energy managers have energy efficiency elements in their position descriptions and performance evaluations. An energy reduction goal has been a part of the performance criteria for senior management officials for several years.

Training

Commerce recognizes that access to job-related training is important for employee job performance. The energy team is attempting to ensure that facility energy management personnel are aware of appropriate training opportunities as they arise. In some cases, basic energy management training is provided informally by Bureau energy management staff.

Showcase Facilities

The design for NOAA's National Marine Fisheries Service Honolulu Laboratory was designated as a Federal Energy Saver Showcase facility in FY 2002. This redesign of an existing research laboratory makes use of low-energy building design strategies, energy-efficient technologies, and renewable energy. The project team's goal was to attain a U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) gold level rating for the facility through the use of such strategies as natural daylighting, solar water heating, liquid desiccant dehumidification, occupancy sensors, and a new building management system.

NOAA has also internally designated the Weather Forecasting Station in Caribou, Maine, as a showcase facility. This facility has incorporated the LEED™ design guidance by including energy and water efficiency and other sustainable design features.

Energy Efficiency Performance

Standard Buildings

In FY 2002, Commerce reported a 35.5 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. Commerce received credit for purchases of 6.9 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 78,228 Btu/GSF to 77,016 Btu/GSF. Some energy consumption data is estimated based on previous energy audit reports.

Industrial and Laboratory Facilities

Energy use for energy intensive buildings was 315,975 Btu per gross square foot for FY 1990 and 231,299 Btu per gross square foot for FY 2002. This is a 27 percent reduction compared to FY 1990, and a 7 percent reduction compared to FY 2001. Some energy consumption data is estimated based on previous energy audit reports.

Tactical Vehicle and Equipment Fuel Use

Commerce has developed a strategy for meeting and maintaining the requirement that 75 percent of all eligible vehicle acquisitions be alternative fuel vehicles. Commerce also strives to meet Executive Order 13149, *Greening the Government Through Federal Fleet and Transportation Efficiency,* requirement by replacing light-duty trucks with sedans and minivans, and four-wheel-drive vehicles with two-wheel drive vehicles, where feasible.

Renewable Energy

During recent years, Commerce and its Bureaus have considered various opportunities for using renewable energy sources.

Self-Generated Renewable Energy

Small-scale projects that use renewable sources or renewable energy thermal projects continue to be implemented at Commerce whenever possible. During FY 2002, NOAA repaired and reinstalled a 10-kilowatt photovoltaic unit in American Samoa.

This system was fully operational in FY 2002. NIST began operating its newly-installed 33-kilowatt photovoltaic array on the roof of the Administration

Building at its Gaithersburg, Maryland, facility in November 2001. NOAA has also installed a 10-kilowatt photovoltaic system in San Diego, California, with assistance from DOE. The system became operational in FY 2003.

Purchased Renewable Energy
NIST is currently purchasing wind-generated renewable power to supply a portion of the electrical needs at facilities in Boulder, Colorado. In FY 2002, this site consumed 882 megawatthours of purchased renewable energy. NOAA is also purchasing wind-generated renewable power to supply a portion of the electrical needs of facilities in Boulder, Colorado. In FY 2002, this site consumed 1,129 megawatthours of purchased renewable energy.

Petroleum
Consumption of petroleum-based fuels in Commerce buildings in FY 1985 was 130.3 billion Btu. In FY 2002, this was reduced to 32.1 billion Btu, a 75 percent reduction since FY 1985.

Water Conservation
Commerce's FY 2002 water consumption was 429.6 million gallons, at a cost of more than $870,000, not including the Herbert C. Hoover Building in Washington, D.C. The General Services Administration (GSA) has retained responsibility for the water and sewer systems at this facility.

Implementation Strategies

Life-Cycle Cost Analysis
Commerce Bureaus employ life-cycle cost analysis as an integral part of making investment decisions in products, services, construction, and other projects to lower the Federal Government's costs and to reduce energy and water consumption.

Facility Energy Audits
NIST completed an audit of 79 percent of the square footage at its Gaithersburg, Maryland, campus in conjunction with its energy savings performance contract (ESPC) project. This facility has been completely audited since 1992. NIST's Boulder, Colorado, campus is scheduled to be audited in FY 2003 as part of a planned ESPC project.

NOAA conducted seven energy audits in FY 2002, representing 10 percent of total NOAA facility square footage. By the end of FY 2002, NOAA had completed energy audits of 50 percent of total NOAA facility square footage.

Financing Mechanisms
In FY 2002, Commerce requested $1.2 million for the performance of energy audits and implementation of energy conservation measures and received $400,000. The FY 2003 funding request was $1.4 million. To compensate for the lack of energy project funding, NIST continued to develop a campus-wide ESPC project for its Gaithersburg, Maryland, facility. Award of the contract was expected in early-FY 2003. NIST has also laid the groundwork to begin developing an ESPC project for its Boulder, Colorado, facility in FY 2003. NOAA has a utility energy service contract (UESC) with the Bonneville Power Administration. Using GSA's area-wide contract, the NOAA Sand Point facility in Seattle, Washington, signed a contract to replace inefficient lights and its outdated HVAC systems with energy-efficient systems.

ENERGY STAR® and Other Energy-Efficient Products
Commerce supports the use of ENERGY STAR® and other energy-efficient products. Information on the availability and benefits of purchasing ENERGY STAR® products has been distributed to the appropriate functional managers and their contracting officers.

ENERGY STAR® Buildings
Commerce has elected to use the U.S. Green Building Council's LEED™ criteria instead of the ENERGY STAR® building criteria.

Sustainable Building Design
Commerce is a strong supporter of sustainable building design. Most new buildings and major renovations target a LEED™ silver rating. NOAA has adopted sustainable building design principles developed under the LEED™ certification program that are being incorporated into the siting, design, and construction of new facilities.

Energy Efficiency in Lease Provisions
Energy and water efficiency are considered along with other factors when entering into new leases or renegotiating/extending existing leases. GSA leasing guidance is followed for buildings leased by and for Commerce.

Industrial Facility Efficiency Improvements
NOAA is researching the possibility of using a heat recovery system for fishery water. No suitable replacement systems had been identified by the end of FY 2002. In prior years, NIST made significant improvements in its boiler and chiller operations at its Gaithersburg, Maryland, facility and is now concentrating efforts on reducing water consumption. NIST installed a dry pre-cooler on a reactor cooling system in FY 2002, and is exploring the use of non-potable water to replace city water in once-through cooling systems.

Highly Efficient Systems
Geothermal heat pumps are being considered for retrofit use in all NOAA facilities, and are being specified in construction contracts where appropriate.

Off-Grid Generation
NOAA has reinstalled a 10-kilowatt photovoltaic unit in American Samoa and NOAA also installed a 10-kilowatt photovoltaic system in San Diego, California, with assistance from DOE. NIST began operating a 33 kilowatt photovoltaic array at its Gaithersburg, Maryland, facility in November 2001.

Electrical Load Reduction Measures
NOAA facility managers coordinate participation with local utility companies to reduce electricity load during power emergencies. At NOAA's facility in Miami, Florida, a thermal storage system is planned for electricity load reduction during peak hours.

Energy Management Contact
Ms. Regina Larrabee
Energy Manager
Office of Real Estate Policy and Major Programs
U.S. Department of Commerce
Room 1036
14th and Constitution Avenue, NW
Washington, D.C. 20230
Phone: 202-482-2345
Fax: 202-482-1969
E-mail: RLarrabee@doc.gov

C. DEPARTMENT OF DEFENSE (DOD)

Management and Administration

In the Department of Defense (DOD), the facilities energy program is decentralized, with Defense Component headquarters providing guidance and funding, and installations managing site-specific energy and water conservation programs. Energy project funding comes from a combination of Government and alternative financing initiatives. Military installations are responsible for maintaining awareness, developing and implementing projects, and ensuring that new construction meets sustainable design criteria.

The Principal Deputy Under Secretary of Defense (Acquisition, Technology and Logistics) is the DOD Senior Agency Official responsible for meeting the goals of Executive Order 13123. The existing DOD Installations Policy Board (IPB), chaired by the Deputy Under Secretary of Defense (Installations and Environment) and chartered to address a broad spectrum of installation issues, has been designated as the DOD agency energy team. The membership of the IPB contains the cross-section of DOD senior leadership necessary to make decisions needed to remove obstacles hindering compliance with Executive Order 13123.

Management Tools

Awards

Energy conservation awards are presented to individuals, organizations, and installations in recognition of their energy-savings efforts. In October 2002, the Department of the Navy held its annual Secretary of the Navy awards ceremony in Washington, D.C. The Under Secretary of the Navy presented eight awards to Navy and Marine Corps winners in the categories of facilities, ships, and air squadrons. In July 2002, Active Army, U.S. Army Reserve, and Army National Guard commands were presented with the Secretary of the Army's Energy and Water Management Awards for FY 2001 accomplishments in energy management. Air Force Major Commands have annual energy award programs that distribute funds to their base winners.

The Services also participate in the Federal Energy and Water Management Awards Program. For FY 2002, DOD received 31 of the 54 awards. In addition, the White House recognized DOD with three Presidential Awards for Leadership in Federal Energy Management. The Army National Cancer Institute/Garrison at Fort Detrick was presented the "Award for Results" for energy savings exceeding $60 million under their Partnership for Energy Performance program. The award for "Outstanding Energy Management" was presented to the Navy Shipboard Energy Conservation Team for its efforts to deliver substantial cost and pollution avoidance, and more available fuel for increased steaming hours and ship endurance range. The Pentagon Renovation Office received the "Outreach Award" for its projects that are Federal showcases for sustainable design, environmental protection, energy conservation, and transportation alternatives.

Additionally, the Defense Commissary Agency (DeCA), the National Imagery and Mapping Agency (NIMA), Washington Headquarters Service (WHS), and the National Security Agency (NSA) present on-the-spot awards and incentive awards to recognize exceptional performance and participation in the energy management program.

Performance Evaluations

Energy and water management provisions are included in performance plans of the DOD Energy Chain of Command, including major command, base, and site energy managers. To ensure the inclusion of management provisions, the Army conducts scheduled assistance visits to installations.

Training

Awareness and training programs are a critical part of DOD's efforts to achieve and sustain energy-efficient operations at the installation level. In FY 2002, a total of 2,175 personnel were trained through commercially available or in-house technical courses, seminars, conferences, software, videos, and certifications. The U.S. Army Logistics Integration Agency (USALIA), Naval Civil Engineer Corps Officer School (CECOS), Air Force Institute of Technology (AFIT) Civil Engineering School, Air Force Civil Engineer Support Agency (AFCESA), and DeCA sponsored in-house courses, workshops and seminars. Certified Energy Manager training was provided by Association of Energy Engineers instructors. The Services held installation energy management conferences and DOD personnel attended the Energy 2002 Workshop in Palm Springs, California. DOD was a co-sponsor of Energy 2002, along with DOE and GSA, with WHS an active participant on the planning committees for both Energy 2002 and Energy 2003.

Showcase Facilities

DOD continues to be a leader in DOE-designated showcase facilities demonstrating new and innovative energy saving technologies. Nine outstanding Federal facilities received the designation of Federal Energy Saver Showcases in 2002:

- Arizona Army National Guard EcoBuilding, Phoenix, Arizona;
- Building 110 at Watervliet Arsenal, Watervliet, New York;
- Cleland Multipurpose Sports Complex, Fort Bragg, North Carolina;
- Parking Complex Naval Air Station (NAS) North Island, California;
- Family Housing, Marine Corps Air Station (MCAS) Beaufort, South Carolina;
- Naval Medical Center, San Diego, California;
- Hangars 450, 452, 454, and 456, Columbus AFB, Ohio;
- Administration Building, Hill Air Force Base (AFB), Utah; and,
- Family Housing, Charleston AFB, South Carolina.

Continuing Showcase facilities include the Pentagon Building, Washington D.C., the Naval Base Ventura County, California, and the U.S. Naval Academy, Maryland. A recent Public Broadcasting System documentary was made to publicize the sustainable development features of the public works showcase facility at Naval Base Ventura County. The facility also won an award from the American Institute of Architects and was featured at a recent Green Building Council symposium.

Energy Efficiency Performance

Standard Buildings
In FY 2002, DOD reported a 25.7 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. DOD received credit for purchases of 1.5 trillion Btu or renewable electricity. This lowered the energy intensity of its standard buildings from 102,371 Btu/GSF to 101,613 Btu/GSF. DOD's target goal for FY 2002 was a 25.5 percent reduction relative to the 1985 baseline.

Industrial and Laboratory Facilities
After applying renewable energy purchase credits of 331 million Btu, energy consumption in DOD's energy intensive facilities was 167,138 Btu per gross square foot, a 21.7 percent reduction as compared to the 1990 baseline energy use of 213,349 Btu per gross square foot. This is a 1.7 percent reduction as compared to the FY 2001 energy consumption.

DOD considers an entire base an industrial facility if 60 percent or more of the base-wide energy use is for industrial purposes.

Exempt Facilities
The Navy is the only component in DOD to list facilities classified as exempt. Navy exempts mission critical, concentrated energy use transmitters, simulators, cold iron support to ships, and some private party facilities. These are non-production-oriented facilities with little or no square footage, making conventional performance measures unsuitable. The mission critical activities of these end users is such that energy efficiency measures are evaluated on a case-by-case basis.

Tactical Vehicle and Equipment Fuel Use
DOD's total tactical vehicle fuel usage was 581.7 trillion Btu in FY 2002, increasing 9.8 percent from FY 2001. This usage is attributed to mission surges increasing jet fuel consumption, which increased 12.4 percent from FY 2001. New missions and surges in operations will continue to drive jet and motor vehicle fuel consumption. These factors are not considered in the petroleum reduction goals of Executive Order 13149, *Greening the Government Through Federal Fleet and Transportation Efficiency*. However, DOD continues to make steady progress toward meeting the requirements of Executive Order 13149, despite obstacles such as the availability of suitable alternative fuel vehicles (AFV) models and the availability of adequate alternative fuel infrastructure.

For FY 2002, the Services reported the acquisition of 5,422 AFVs and 648 additional Energy Policy Act (EPAct) credits for dedicated AFVs and biodiesel use. The acquisitions and the credits resulted in a DOD compliance rate of 67 percent—a 13 percent increase over 2001. Use of biofuels, especially biodiesel, will have a significant positive impact on DOD's acquisition rate and petroleum consumption for FY 2003.

The Navy and Marine Corps acquired 1,637 AFVs. With additional credits for dedicated AFVs and biodiesel use, the Navy had a 68 percent AFV acquisition rate and the Marine Corps had a "Government best" rate of 182 percent.

The Army has acquired 2,843 AFVs, which is 60 percent of the 4,777 vehicles that are subject to EPAct and expects to meet the 75 percent goal in FY 2003 through the lease of more than 3,000 vehicles with extensive additional biodiesel credits. The Army has installed both biodiesel and E-85 fuel tanks at Fort Leonard Wood, Missouri, and will continue to look for opportunities to develop alternative fuel infrastructure.

The Air Force was unable to meet the 75 percent AFV acquisition requirement for 1,104 vehicles, but did acquire 60 percent, or 931 AFV credits, and established the groundwork for future success. Projections indicate that the 75 percent requirement will be exceeded in FY 2003 (81 percent) and FY 2004.

A DOD AFV working group was created, allowing all DOD fleet agencies to develop a short- and long-term strategy. Principal to this was the participation of the Defense Energy Support Agency, Army Air Force Exchange Service (AAFES), and Navy Exchange Service (NEX). The teaming effort of this working group has resulted in gaining industry support for building AFV infrastructure and other alternatives.

Renewable Energy

DOD continues to install renewable energy technologies and purchase electricity generated from renewable sources when life-cycle cost effective. The Army has approximately 3,800 solar roofs in use at its installations, and has requested assistance from DOE's Sandia National Laboratory to bring existing inoperable photovoltaic systems back to operational status. DOD anticipates more growth in the implementation of renewable energy and active solar technologies due to the recently implemented Sustainable Design and Development Guidance. However, since DOD policy is to privatize utility systems whenever economical, power generation systems will generally be contractor-owned or located at remote, grid independent sites.

Self-Generated Renewable Energy
DOD has integrated photovoltaic power systems, solar water heating systems, and transpired solar collectors (solar walls) into its facilities. Self-generated power is often coupled with ground source heat pumps, solar water heating systems, and photovoltaic arrays to generate electricity at isolated locations, such as range targets, airfield landing strip lighting, and remote water pumping stations. Active solar heating applications have included maintenance facility solar walls, swimming pool heating, and hot water heating. In FY 2002, DOD generated an estimated 68,493 megawatthours in self-generated electrical power, 420 billion Btu in thermal energy, 2.1 million Btu of energy from biomass, and 1,829 billion Btu in power generated from refuses derived fuel and wood.

Many self-generating renewable energy projects were installed and brought online during FY 2002, including:

- Schofield Barracks, Hawaii, installed 650 solar heating units in Army Family Housing and at the Wheeler Fire Station.
- Fort Huachuca, Arizona, installed a new prototype Dish/Stirling solar thermal electric generator.
- Arizona National Guard installed three 200-kilowatt fuel cells and a 12-kilowatt photovoltaic array in Northern Arizona. MAGTFTC 29 Palms, California, awarded a 1-megawatt photovoltaic system which will be the largest Federal photovoltaic system to date.
- Pentagon, Virginia, awarded contracts for an additional 70-kilowatt photovoltaic array; a solar-powered guard shack, an inspection station supplied by approximately 400 square feet of solar thermal tile, and a 75.6-kilowatt solar thermal hot water installation using evacuated tube technology.

The Naval Air Weapons Center, China Lake, California, facilitates the production of 180 megawatts of electricity from its geothermal energy resources. This facility has fed more than 18,000 gigawatthours of electricity into the western power grid since its inception, equivalent to saving approximately 4.2 million barrels of oil. Future expansion of this plant is being evaluated, as well as construction of a new geothermal power plant at NAS Fallon, Nevada. The Army is developing portable photovoltaic technology to serve as the primary power source of a battalion-size Tactical Operations Center (TOC). The current units under field test will meet 80 percent of the TOC's power requirements. The units are tactically quiet, reduce the logistic footprint, and prevent pollution. The USAF Academy, Colorado, generated and captured 2.1 million cubic feet of digester gas onsite that was used in lieu of natural gas to fire a process hot water boiler for the Waste Water Treatment Plant. At approximately 1,000 Btu per cubic foot, this on-site biomass energy application replaced 2,126 million Btu of fossil-derived fuel use while simultaneously reducing environmental emissions.

Purchased Renewable Energy
In FY 2002 DOD purchased 253,098 megawatthours (864 billion Btu equivalent) of renewable electricity and 664 billion Btu of renewable thermal energy. Of this amount, 1,197 billion Btu was credited to standard buildings and 331 billion Btu was credited to industrial and laboratory facilities when determining the consumption per gross square rates. The Army has entered into a contract with Washington Gas Energy Services to purchase 5 million kilowatthours of wind power and 14 million kilowatthours of landfill gas annually through December 2004. The wind farm will deliver 5 million kilowatthours of renewable power annually to Walter Reed Army Medical Center, Maryland, Adelphi Laboratories, and Fort McNair, D.C., beginning in FY 2003. Lackland AFB, Texas,

purchased wind-generated renewable electricity from San Antonio City Public Service. The base received $54,000 for the first year of the renewable energy source project, part of a five-year, $500,000 program included in the FY 2002 Defense Appropriation Bill. The base purchased approximately 1,800 megawatthours of wind-generated electricity in FY 2002.

Petroleum

Petroleum-based fuel use in DOD facilities decreased 65.3 percent in FY 2002 from the FY 1985 baseline. Facility consumption was 101.4 trillion Btu in FY 1985 (buildings/facilities and excluded buildings/industrial/) and 35.1 trillion Btu in FY 2002 (standard buildings/facilities, industrial/ laboratory/research/other energy-intensive facilities, and exempt facilities). Fuel oil use increased in FY 2001 from previous years as installations switched from natural gas to less expensive fuel oil. The price of natural gas has stabilized and installations have switched back to natural gas in FY 2002. Further reductions were accomplished primarily through boiler plant de-centralization, boiler plant tune-ups and improved controls, and steam trap replacements. A significant factor in this reduction was Defense Energy Support Center's (DESC) Natural Gas Competitive Procurement Program. The objective of this program is to obtain a cost-effective supply of natural gas for DOD installations while maintaining supply reliability. In FY 2002, DESC competitively procured 44.5 trillion Btu of natural gas for the 180 DOD installations that participated in the program (approximately 56 percent of the DOD total annual natural gas consumption) and achieved more than $28.3 million in cost avoidance. Fuel oil use in facilities decreased 6.7 trillion Btu compared to FY 2001, while natural gas consumption increased 1.2 trillion Btu.

Water Conservation

In FY 2002, DOD consumed 160.6 billion gallons of potable water and spent $292 million on water related services. Water consumption was 7.3 percent less than the FY 2000 baseline year, reported as 173,261 million gallons.

In FY 2002, DOD Components concentrated on water conservation methods such as early leak detection and repair, installation of low-flow water-efficient fixtures in housing and administration buildings, and public awareness programs. For instance, the Marine Corps continues to audit installations for water projects. Since 1997, these audits have identified more than $15 million in projects and completed repairs saving more than 487 million gallons in water leaks. The Navy implemented a range of projects from replacing a once through cooling system at the Naval Shipyard Portsmouth, New Hampshire, with a recycling cooling tower to replacing all the inefficient plumbing fixtures at Naval Station Guantanamo Bay, Cuba, with high efficiency fixtures. The Navy is making water conservation a standard feature in most alternatively financed projects, bundling those savings with other infrastructure improvements to maximize the benefits. During the last two years, WHS has been working with the various municipalities to improve the accuracy of the water metering in the Pentagon including meter calibration, certification, and the installation of an automated meter reading system. Water-efficient plumbing fixtures and infrared controllers are included in the Pentagon renovation.

Implementation Strategies

Life-Cycle Cost Analysis

DOD facilities utilize life-cycle cost analysis in making decisions about their investment in products, services, construction, and other projects to lower costs and to reduce energy and water consumption. DOD considers the life-cycle costs of combining projects, and encourages bundling of energy efficiency projects with renewable energy projects, where appropriate. Projects are generally prioritized for capital funding and execution is based upon the greatest life-cycle savings to investment ratio. The use of passive solar design and active solar technologies are recommended where cost-effective during the life of the project. Sustainable development projects use life-cycle costing methodology and follow the Whole Building Design Guide. For example, the Air Force used life-cycle analysis for a $1.22 million waste heat recovery project at Thule AFB, Greenland, and a $19 million Military family housing replacement program at the USAF Academy, Colorado.

Facility Energy Audits

DOD conducted comprehensive audits on 130.5 million square feet, 10.1 percent of facility square footage, in FY 2002. Since 1992, comprehensive audits were completed on a total of 1.1 billion square feet, or 79 percent of facility square footage. Some audits were repeat audits, several years apart, or investigations into additional conservation measures not cost effective previously. Components obtain audits as part of alternative-financed energy savings projects whenever feasible.

Financing Mechanisms

In FY 2002, DOD Components awarded 41 utility energy service contracts (UESCs) and 32 energy service performance contracts (ESPCs) producing an estimated total life-cycle savings of $837 million and an annual energy savings of 2.1 trillion Btu. These contracts include many infrastructure upgrades and new equipment to help the installations reduce energy and

water consumption. Examples include new thermal storage systems, chillers, boilers, lights, motors, peak shaving, Energy Monitoring and Control Systems, and water reducing devices. Of the $837 million estimated total life-cycle savings, the contractors' share will be $719 million (including interest charges which on average increase the project cost by a factor of 2.4 above the initial investment cost). Normally, cost savings are used to first pay the contractor, and then are used to offset other base operating support expenses. In most cases, installations decide to seek a shorter contract term and defer all Government cost savings until after contract completion. In these cases, the savings generated by UESCs and ESPCs help to reduce the energy consumption, but do not reduce the total costs of operation until the contracts expire. After contract expiration and the retrofits are paid for, DOD will be able to obtain full cost savings.

In FY 2002, DOD installations utilized ESPC contracting vehicles from DOE (3), Naval Facilities Engineering Command (NAVFAC) (1), Huntsville Engineering and Support Center (8), Air Force Civil Engineer Support Activity (AFCESA) (12), and Defense Energy Support Center (DESC) (2). Six installations/ major commands awarded their own internally developed ESPCs.

In recent years, Congress has shown an upward trend in appropriating funding for DOD's Energy Conservation Investment Program (ECIP). After zeroing out DOD's request for $50 million for ECIP in FY 2000, Congress appropriated $15 million of the requested $33.5 million in FY 2001, $27 million of the requested $35 million in FY 2002, and $35.4 million of the requested $50 million in FY 2003. The FY 2002 program funded 22 projects with an average savings-to-investment ratio of 3.9 and a $6 million renewable energy assessment.

ENERGY STAR® and Other Energy-Efficient Products
When life-cycle cost-effective, DOD Components select ENERGY STAR® and other energy-efficient products when acquiring energy-consuming products. Guidance generated by DOE, GSA, and DLA for energy-efficient products are being incorporated into the sustainable design and development of new and renovated facilities. The components are procuring energy-consuming products that are in the upper 25 percent of energy efficiency.

All family housing appliances, HVAC equipment, domestic hot water equipment, and building lighting fixtures comply with ENERGY STAR® product standards. Army procurement regulations mandate procurement of only energy-consuming products which are in the upper 25 percent of energy efficiency. Navy energy managers utilized the DLA lighting CD ROM and Washington State Energy Office MotorMaster database to assist in purchasing energy-efficient equipment. MCB Camp Butler purchased 310 high-efficiency washers for renovated family housing and 20 stack washer/dryers for the Bachelor Enlisted Quarters and Bachelor Officers Quarters to replace old top-loading washers.

ENERGY STAR® Buildings
In FY 2002, the Army, Navy, and Air Force signed criteria directing the use of ASHRAE Standard 90.1-2001, Energy Standard for Buildings (except Low-Rise Residential Buildings). In 2001, the Navy and EPA signed a Memorandum of Understanding (MOU) certifying that Navy family housing construction criteria meets or exceeds ENERGY STAR® Homes requirements. All homes built to the criteria will be certified ENERGY STAR® homes. In FY 2002, a MOU between the EPA and the Pentagon Renovation Office was signed agreeing to use the Portfolio Manager rating tool, adopt the ENERGY STAR® strategy, educate staff and public, provide metering/sub-metering, and conform to current indoor environmental standards.

Sustainable Building Design
The concepts of sustainable development as applied to DOD installations have been incorporated into the master planning process of each of the Services. Installations are encouraged to approach land use planning and urban design in a holistic manner and integrate it with energy planning. ASHRAE Standard 90.1 is the Tri-Service energy criteria for new construction and major renovation. On July 5, 2002, NAVFAC officially adopted the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) rating system. All Navy Military Construction projects will include a line item identifying the cost of sustainable development on DD 1391 Project Data Forms in an effort to retain these features through commissioning.

The Army has embraced the design, construction, operation, and reuse/removal of the built environment in an environmentally and energy efficient manner and has identified projects in FY 2002 and beyond as Army Sustainable Design and Development Showcase Facilities. This program will facilitate awareness of how facility systems and materials affect initial project and life-cycle costs, operations and maintenance practices, and ultimate facility performance during the facilities' lifetime. The Army's policy requires all projects to be scored against its Sustainable Project Rating Tool, achieving at least a bronze level but encourages striving for higher sustainable rating levels (silver, gold, and platinum). Additionally, approximately 450 design engineers and installation personnel were trained in FY 2002 through the U.S.

Army Corp of Engineers' three-day sustainable design workshop.

BEQ Naval Base Norfolk, Virginia, achieved a LEED™ gold rating at a premium cost of only 2.8 percent. Energy conserving features resulted in a 43 percent reduction as compared to a computer modeled base case and $278,000 savings per year in energy costs with a life-cycle energy savings of $4.5 million. Sustainable features that proved to be cost effective include steam condensate heat recovery, exhaust air heat recovery, occupancy sensors for HVAC and lighting, gray-water recycling, and ENERGY STAR®-rated roofing. The USAF Academy, Colorado, is constructing a $32 million athletic facility expansion that will include the most efficient and latest technology in HVAC controls, lighting, roofing and building envelope materials, and window glazing. The USAF Academy is also constructing a $19 million Military family housing replacement project that includes sustainable design for landscape, architecture, envelope materials, and ENERGY STAR®-rated or equivalent appliances, HVAC, and lighting.

Energy Efficiency in Lease Provisions

DOD emphasizes energy and water conservation in leased facilities and each Service has issued guidance directing that all leased spaces comply with the energy and water efficiency requirements of the Energy Policy Act of 1992. It is DOD's intent to have the landlord make appropriate investments in energy efficiency which can be amortized in the lease, provided the new total cost (energy costs plus lease cost) does not exceed total costs without improvements. These leases should amortize the investments over the economic life of the improvements. Build-to-lease solicitations for DOD facilities will contain criteria encouraging sustainable design and development, energy efficiency, and verification of building performance. DOD relies upon GSA to ensure the above provisions are included in buildings that they lease for DOD. As an example, DeCA's Eastern Region incorporated the requirement, through GSA, to use current commercial energy-efficient design standards with set back thermostats and HVAC equipment with high SEER ratings as part of negotiations for the lease for additional office space for their headquarters. The leased space also includes new low flow plumbing fixtures. The energy and utility costs are currently included in the lease agreement.

Industrial Facility Efficiency Improvements

Several major initiatives for industrial facility efficiency improvements are underway, including the decentralization of the central heat plant at Westover ARB, Massachusetts; Fairchild AFB, Washington; and Kirtland AFB, New Mexico; with energy savings of 347 trillion Btu per year. The Army continues to use the Process Energy and Pollution Reduction software developed by CERL to evaluate their energy reduction potential in industrial facilities. NSY Portsmouth, Maine, added 5.5 megawatts of capacity to their FY 1999 cogeneration plant project bringing the total plant capacity to 11 megawatts. In addition to the cogeneration plant, this $42 million project provides 2-70K lb/hr package boilers, two 2.5-megawatt diesel back-up generators, eliminates a hot water distribution system, and includes contracted maintenance and repair of the plant. DeCA, with a large inventory of commissary stores, installs dual-path air conditioning to control humidity as an alternative to natural gas or propane fired desiccant dehumidification systems. Domestic hot water heat reclaim systems are standard in most large commissary store systems. Remote diagnostic monitoring of Refrigeration Monitoring and Control Systems is used at approximately 191 individual commissaries to assure that refrigeration and lighting systems are being operated and maintained at their design specification. Lighting controls were monitored and discrepancies were forwarded to DeCA's maintenance contractors on a daily basis for correction. This surveillance continues to result in improved contractor maintenance and improved equipment operation and less energy consumed.

Highly Efficient Systems

DOD encourages the components to combine cooling, heating, and power systems in new construction and/or retrofit projects when cost effective. The Army is currently in the final year of a five-year, $300 million central boiler plant modernization program. The goals of this program are to update the aging central boiler plant infrastructures at select, large installations. Central heating systems at 14 major Army installations have been modernized under this initiative from FY 1998 to FY 2002. In addition to the centrally funded program, the installations also used their operations and maintenance funds to implement energy saving projects such as upgrading boilers and distribution systems, improving high efficiency pumps and motors, and updating system controls. Naval Medical Center, San Diego, upgraded its cogeneration plant. Three 850-kilowatt gas turbines were replaced with one 4.6-megawatt gas turbine and a 25,000 lb/hr heat recovery boiler. Two 2.5-megawatt diesel generators will provide stand-by power. MAGTFTC 29 Palms, California, will add two 600 ton absorption chillers to the 7.5-megawatt cogeneration plant to make further use of waste heat from the plant. The plant will be operational in May 2003. The resulting system will be a combined heat and power plant capable of handling increased loads envisioned in the base master plan. The plant will dramatically improve reliability of the cooling system, and reduce grid demand, avoiding costly peak charges. DeCA's new refrigeration systems utilize electronic

controls, heat reclaim and "floating head" to reduce energy usage.

Off-Grid Generation

DOD is pursuing off-grid generation where it is life-cycle cost-effective to provide peak shaving opportunities and energy security. Typical applications include microturbines, fuel cells, cogeneration plants, fly wheels, and back-up generators.

Fort McPherson, Georgia, completed an ESPC project to use the primary back-up generators on the post to control the peak load. This 4.4-megawatt system is capable of supporting the complete load of Marshall Hall, the U.S. Army Forces Command (FORSCOM) Headquarters building, in an emergency. The system can work in curtailment mode (based on the utility peak demand) or peak shaving mode (based on the installation peak). Fort McPherson also installed a flywheel system as part of the uninterruptible power supply (UPS) for Marshall Hall, the FORSCOM Headquarters building. The UPS serves as temporary bridge power for critical systems in the building until the building diesel generators come online. The flywheel system replaced approximately 750 heavy-duty lead-acid batteries that took up 2,400 square feet in the building basement.

The Navy is validating the performance and cost of microturbines and PEM fuel cells. Microturbines were installed and instrumented at NAB Coronado, California, and SUBASE New London, Connecticut. Nine 5-kilowatt PEM fuel cells were purchased, and start-up is expected in November 2002. These fuel cells are combined heat and power, grid parallel, natural gas-fueled units. They are in the process of being installed at NAS North Island, California; SUBASE Point Loma, California; and NAWS China Lake, California. These one-year demonstration projects will assess the performance, and operations, maintenance, and repair requirements of the PEM fuel cells. Although PEM technology has made progress toward viable commercial products, there are still substantial durability, reliability, and availability issues that remain (e.g., the lifetime of a PEM fuel stack is about 6 months under continuous operation). The Navy is fostering development of heat recovery and use of liquid fuel sources. A preliminary report will be available by the end of FY 2003, with a follow-on report in late-FY 2004.

Electrical Load Reduction Measures

DOD installations in the West responded to the President's Memorandum of May 3, 2001 and reduced summer peak demand. DOD Services met the conservation challenge by instituting an aggressive energy awareness campaign and monitoring program, installing vending machine misers, adjusting energy management control system set points, and hiring regional efficiency managers. California commissaries turned off 50 percent of sales area lighting during load reduction warning periods. Peak demand reduction investments for the program included installation of automating controls, demand meters, compact fluorescent lighting, solar reflective window film, and thermal energy storage systems. Additional investments included utilizing passive sky lighting in hangars and upgrading/repairing energy intensive equipment. Back-up generators were used for peak load shedding operations. The Services procured additional generators and invested in distributed energy resources such as microturbines, fuel cells, and solar PV systems. As a result of these efforts, DOD reduced its summer 2001 and summer 2002 peak demand compared to the summer 2000 peak baseline by 9.2 percent and 5.3 percent, respectively.

Fort Lewis, Washington, installed more than 100 Vending Misers—a new technology designated to efficiently manage energy use of refrigerated vending machines and adjusted their set points on the installation's energy management control system to achieve maximum energy conservation. Fort Irwin, California, instituted an aggressive campaign to encourage energy awareness, reduce peak demand usage of electricity, and implemented a monitoring program to identify and shut off unoccupied building loads. Fort Irwin also installed more than 50,000 feet of solar reflective window film throughout the commercial buildings and barracks on the main post to reduce air conditioning loads. Dugway Proving Grounds, Utah, completed installation of a 6-megawatthour generator with the capability to significantly reduce peak load.

The three cogeneration systems at NSY Portsmouth, Maine; MAGTFTC 29 Palms; and Naval Medical Center, San Diego; will add 22.6 megawatt generating capacity to the national grid. Navy Region Southwest, San Diego, installed a 750-kilowatt photovoltaic system that will reduce grid demand beginning in November, 2002. MCB Camp Pendleton, California, disconnected 20,285 lights base-wide and installed 1,745 motion detectors/photo cells, replaced several hundred electric clothes dryers with natural gas dryers, replaced 177 traffic lights with LED lights, replaced steam boilers with domestic hot water boilers, and replaced more than 20,000 incandescent lights in Bachelor Enlisted Barracks with compact fluorescent lights. Navy Region Northwest installed 12,676 compact fluorescent light bulbs at SUBASE Bangor, Washington; and NAVSTA Bremerton, Washington. NIMA's St. Louis facility has an established electrical load shed plan consisting of using the EMCS to cycle or shed all non-essential loads.

The FY 2001 Supplemental Appropriations Act as well as the FY 2002 Defense Appropriations Act provided funds for energy and sustainability audits for Installations connected to the Western power grid and beyond. This initiative will survey 58 west coast installations for potential energy projects and assist in project development that will reduce demand in FY 2004 and beyond.

Energy Management Contact

Dr. Get Moy
Director, Utilities and Energy
Office of the Deputy Under Secretary of Defense
(Installations and Environment)
3400 Defense Pentagon, Room 3D784
Washington, D.C. 20301-3400
Phone: 703-697-6195
Fax: 703-695-1493
E-mail: get.moy@osd.mil

D. DEPARTMENT OF ENERGY

Management and Administration

The Assistant Secretary for Energy Efficiency and Renewable Energy is the Department of Energy's (DOE) Senior Agency Official, and is responsible for advocating policy, programs, and new initiatives to take appropriate actions to conserve energy at DOE facilities to the maximum extent consistent with the effective discharge of public responsibilities. The Program Manager of DOE's Federal Energy Management Program (FEMP), is the agency official responsible for implementing the policies, programs, and new initiatives of the Assistant Secretary at DOE facilities and for accomplishing the requirements of Executive Order 13123.

The agency energy team at headquarters is the Energy Management Steering Committee (EMSC), comprised of senior level representatives from each of the major DOE programs responsible for implementation of DOE's mission at the sites.

DOE also has a team of energy management professionals from headquarters, DOE Field Offices, and sites called the Energy Efficiency Working Group (EEWG), sponsored by FEMP. The group promotes excellence in energy management through the active exchange of timely management and technical information.

Management Tools

Awards

The Departmental Energy Management Awards were established in FY 1979. Each year, these awards are presented to DOE personnel in recognition of their outstanding contributions toward energy and dollar savings at DOE facilities and field organizations.

Many DOE organizations have employee incentive programs to reward exceptional performance in implementing Executive Order 13123.

Performance Evaluations

Many DOE sites incorporate energy management criteria into employee performance evaluations and position descriptions.

Training

Technical training and energy awareness activities continue to be a large component of DOE site programs, and many DOE organizations have training programs in place, or take advantage of training and education opportunities as they arise.

Showcase Facilities

Many DOE facilities do not qualify as Showcase facilities because visitation is restricted because of national security or safety reasons. In FY 2002, the following five DOE facilities were designated as Federal Energy Saver Showcase Facilities:

- Bechtel Hanford Headquarters, Richland Corporate Center, Richland, Washington;
- Fermi National Accelerator Laboratory (Fermilab), Main Injector 8 GeV Beamline, Batavia, Illinois;
- Lawrence Berkeley National Laboratory (LBNL), Building 46, Berkeley, California;
- National Renewable Energy Laboratory (NREL), Thermal Test Facility, Golden, Colorado; and,
- Oak Ridge National Laboratory (ORNL), Buildings Technology Center, Oak Ridge, Tennessee.

Energy Efficiency Performance

Standard Buildings

In FY 2002, DOE reported a 47.5 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. This reduction is partially due to reduced mission-related activities and overall downsizing of operations and facilities. DOE received credit for purchases of 21.0 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 248,592 Btu/GSF to 248,285 Btu/GSF.

Laboratory and Industrial Facilities

DOE's laboratory and industrial facilities saw a reduction in Btu per gross square foot of 22.4 percent since FY 1990. This reduction is mainly attributable to reduced mission-related activities and overall downsizing of operations and facilities.

Exempt Facilities

Most of the facilities proposed for exemption are currently reported under the metered process category and have been scaled back operationally to prepare for decontamination and decommissioning. These facilities have traditionally been energy intensive operations that will in many cases dominate the energy consumption being reported at the site and the site consumption will vary in direct relationship to the energy consumption of these facilities. Traditional energy conservation measures will not significantly affect the energy consumption that will be reported for these facilities, and it would be impractical to meet the goals with these facilities other than in the exempt category.

Tactical Vehicle and Equipment Fuel Use
Over-the-road vehicles at Idaho National Engineering and Environmental Laboratory (INEEL) are switching from gasoline and diesel to compressed natural gas (CNG) and liquefied natural gas (LNG). It is anticipated that off-road equipment will make similar changes once the equipment becomes available. Also, INEEL installed a CNG fueling station in Idaho Falls in partnership with several local businesses and the Greater Yellowstone–Teton Clean Cities Coalition. This effort resulted in an alternative fuel source for a growing commercial alternative fuel infrastructure and in support of vehicle pool and alternative fuel research for the INEEL. Los Alamos National Laboratory (LANL), Argonne National Laboratory-East (ANL-E), and Argonne National Laboratory-West (ANL-W) also reported use of CNG, electrical vehicles, or other alternative fuels for automobile gas, in combination with fleet reduction.

Renewable Energy

Self-Generated Renewable Energy
NREL generates about 50 megawatthours of electricity from a grid-connected photovoltaic system per year. NREL purchased an additional 720 watts of photovoltaic panels in FY 2002 that were installed at the Site Entrance Building to help offset electrical usage. The NREL National Wind Technology Center (NWTC) has approximately 1,600 kilowatts of installed wind turbine capacity used for research purposes. NREL and DOE's Golden Office are currently negotiating a purchase power agreement with Xcel Energy for any excess energy produced at the NWTC.

Fermilab's on-going use of permanent magnet technology in its Recycler and 8 GeV Beamline continues to displace 500 kilowatts of purchased electric power capacity; saving more than $100,000 annually.

The Lawrence Livermore National Laboratory (LLNL) Environmental Remediation Department has deployed nine solar treatment tnits (STUs). The STUs are photovoltaic-powered, portable, groundwater contamination treatment units. Each unit's photovoltaic array is capable of generating about 400 watts of electric power. Thus, total STU PV-generated power capacity at LLNL is about 3.6 kilowatts. LLNL also received funding from DOE's pollution prevention programs to install a demonstration-scale, 3.6-kilowatt photovoltaic system at the Visitor's Center. Photovoltaic parking lot and walkway lighting has also been installed.

The Savannah River Site (SRS) uses self-generated renewable energy in remote locations across the site where utilities are not available. SRS uses small photovoltaic arrays in applications such as traffic signals, railroad crossings, and environmental monitoring stations.

The INEEL Records Storage Facility includes a solar wall that avoids electricity consumption that would be needed for HVAC space conditioning. The wall has been instrumented to obtain trending data that may lead to additional solar wall applications at the INEEL either in new construction or retrofits.

Purchased Renewable Energy
On April 20, 2000, the Secretary of Energy directed DOE to purchase 3 percent of its total electricity needs from non-hydropower renewable energy sources by 2005, and 7.5 percent of its total electricity purchases from renewable sources by 2010. In instances where renewable power costs more than electricity from conventional sources, DOE will fund the incremental costs with money saved from energy projects, savings obtained through lower energy costs as a result of retail electric competition, contract negotiations with utility companies, and utility rate reductions. By combining the lower cost electricity with some portion of moderately more expensive renewable electricity, DOE will not increase its overall utility budget. During FY 2002, DOE purchased 22,594 megawatthours of renewable power at a cost of $996,900.

The Richland Operations Office negotiated a 10-year contract with Bonneville Power Administration (BPA) in which the Hanford Site will purchase Environmentally Preferred Power for a five-year rate period. An addendum to the contract increased the purchase of "green power" capacity from 1 megawatt per year to 1.5 megawatts per year for the first two years. The BPA power contract achieves or exceeds the 3 percent goal for the Hanford Site. Pacific Northwest National Laboratory (PNNL) began negotiations with the City of Richland to purchase green power generated by wind turbines to supply PNNL buildings. The wind power purchase began in FY 2003.

In signing up to the Green Power Switch program, ORNL became the Tennessee Valley Authority's (TVA's) first industrial green power participant. The TVA program includes three wind turbines atop Buffalo Mountain in the Southeast's first commercial-scale use of wind power to generate electricity. Also, the TVA program includes several solar collectors, including those at the ORNL photovoltaic DER showcase project, with additional sites and a landfill gas-to-energy facility planned in the near future. In support of the Green Power Switch program, in FY 2002 ORNL used 675 megawatthours at a total incremental cost of $18,000. ORNL plans to

participate in TVA's green power program on a long-term basis.

In FY 2002, NREL purchased 1,981 megawatthours of wind-generated electricity from the local utility company. This purchase represents 10 percent of NREL's annual electrical usage. NREL has committed to purchase another 1,981 megawatthours of wind-generated electricity for FY 2003 and will be negotiating agreements for FY 2004 and beyond.

Xcel Energy currently provides the Waste Isolation Pilot Plant (WIPP) with 1,500 megawatthours of wind energy, with payments by Sandia National Laboratories through the Wind Power New Mexico Initiative.

Petroleum

Since FY 1985, DOE has substantially reduced its use of petroleum-based fuels in its facilities. In FY 2002, DOE reduced consumption of fuel oil in its standard buildings by 27.7 percent from almost 7.5 million gallons in FY 1985 to 5.5 million gallons in FY 2002. The use of LPG/propane was reduced 66.9 percent during the period, a reduction of 741,679 gallons.

Water Conservation

DOE recognizes the potential to save money and natural resources through water conservation. Facilities are using life-cycle cost-effective measures to reduce water consumption and associated energy use. In FY 2002, DOE also encouraged its field offices and sites to include water management plans in their facility management plans. DOE sites reported using almost 5.9 billion gallons of water during FY 2002, costing $10.4 million.

DOE's National Nuclear Security Administration, Nevada Operations Office (NNSA/NV) and Bechtel Nevada have established a water conservation and efficiency program and plan. A project to xeriscape a large portion of the landscape at North Las Vegas has resulted in a substantial savings in water consumption at that site. This xeriscaping project in FY 2002 converted 47,200 square feet of turf landscaping to xeriscape at two buildings. Total estimated savings are approximately 2.6 million gallons of water per year.

ANL-E continues to add metering to individual facilities to track water use. The total unaccounted usage of domestic water has been reduced from 35 percent to 8 percent. FEMP funded a $210,000 water conservation project at the Laboratory in late-FY 2002. The project is expected to save more than 11 million gallons of water annually (approximately 6 percent of usage) when completed in FY 2003.

Fermilab pursued several initiatives to improve water efficiency on site in FY 2002. Under its Utility Incentive Program site-wide surveys were performed to identify water conservation opportunities. Resources needed to facilitate a site surface water management plan were also identified. Leakage losses from accelerator surface water cooling systems were reduced. This was reflected in a reduction of industrial make-up water use by 29 million gallons from the previous year despite Fermilab's operation of its accelerator complex in FY 2002 at the most intense level in the history of the site, resulting in increased evaporative cooling loads.

Conservation procedures have been practiced at LLNL for many years. Recently, point-of-use water conservation has been funded (retrofitting of ultra low-flow toilets and urinal sensor flush valves). Reuse of treated effluent from groundwater remediation facilities is being considered for irrigation and/or as condenser water. Reclamation of sanitary wastewater may be considered in the future, however treatment facility siting is sensitive as LLNL is located in a developed area with a new residential subdivision located across the street.

Brookhaven National Laboratory (BNL) has been very successfully reduced potable water consumption 25 percent from FY 1999 to FY 2002. In FY 2002, BNL surveyed 4,300 linear feet of water main for leaks and no significant leaks were found. In addition, a project to eliminate once-through cooling in one of the facilities was completed. It is estimated that this project will save 43.2 million gallons of water per year. BNL will begin to develop a comprehensive water management plan in FY 2003.

Implementation Strategies

Life-Cycle Cost Analysis

DOE encourages facilities to use life-cycle cost (LCC) analysis when making decisions about their investments in products, services, construction, and other projects to lower the Agency's costs and to reduce energy and water consumption. Sites and facilities also implement programs to retire inefficient equipment on an accelerated basis where replacement results in lower life-cycle costs.

ANL-E uses LCC analysis in its implementation of energy and water conservation projects. LCC analysis is required for all energy and water conservation projects that are proposed for implementation at ANL-E including those projects developed by utility energy services contact (UESC) and Super Energy Savings Performance Contract (ESPC) contractors. Additionally, the ANL-E requires that the UESC and

ESPC contractors screen each audited facility for the application of renewable energy as part of any facility upgrade project proposal.

Procedures are in place to ensure that funds controlled by the LLNL Energy Management Program (EMP) use LCC analyses in making investment decisions. An example of the effective use of life-cycle cost analysis led to the investment decision that new facilities are now to routinely specify premium efficiency motors. The EMP has had several recent successes in convincing project teams to specify modulating condensing boiler systems rather than conventional boilers. Specifically, new Building 140 and a replacement boiler for existing Building 361 will be modulating condensing boilers. The new modulating condensing boilers are more expensive than their conventional alternatives, but exhibit superior performance, providing life-cycle fuel cost savings far in excess of their initial cost premium.

At Y-12 National Security Complex (Y-12), the major effort to modernize Y-12 includes projects that use state-of-the-art life cycle cost planning techniques. Smaller modular facilities with high-efficiency energy designs are an integral part of the Y-12 Modernization Program.

Facility Energy Audits

DOE sites are working to meet the Executive Order 13123 goal of conducting energy and water audits for approximately 10 percent of their facilities each year. Audits are conducted independently, through ESPCs or UESCs. In FY 2002, more than two percent of DOE facilities were audited. From FY 1992 to FY 2002, more than 90 percent of space received energy audits.

Seven facilities at the Idaho National Engineering and Environmental Laboratory (INEEL) were audited including the Willow Creek Office Building. Total building area audited for FY 2002 comprised 501,156 square feet, approximately 10 percent of INEEL building area. Several energy conservation opportunities have been identified from these audits and have been included in a retrofit project proposal submitted to DOE's Departmental Energy Management Program for funding consideration in FY 2003. Approximately 30 percent of INEEL facilities have now had comprehensive facility audits performed to date.

Comprehensive facility audits have been completed for all 3 million square feet of the Pantex Plant buildings. The balance of the plant was audited in FY 2002 within an ESPC energy study, which was completed in November 2002.

To prepare for an ESPC delivery order at Y-12, Honeywell conducted energy audits on more than 10 percent of Y-12 facilities and included 15 facilities where significant energy savings potential exists. For a second delivery order at Y-12, energy audits were conducted for another 16 buildings. Facility energy audits were begun in the production facilities in FY 2002 using an ESPC to determine which facilities should have priority as subsequent delivery orders are established.

Financing Mechanisms

DOE's Departmental Energy Management Program received $1.4 million in appropriations for FY 2002. This was a decrease of 30 percent from FY 2001 appropriations of $2.0 million. Funds received in FY 2002 were distributed between activities to introduce new energy management practices into DOE sites through Model Program Development, and funding support for energy projects through Energy Retrofit Project Support, that provide known energy savings and reductions in energy use. In this way, DOE sustains an effective program balance between implementing new initiatives for energy management emphasizing best practices and achieving known quantifiable energy savings through retrofit projects.

By the end of FY 2002, DOE facilities awarded and completed five UESC projects with a total private sector investment of almost $60 million. DOE has awarded six site-specific ESPCs to date and five Super ESPC delivery orders totaling almost $60 million. One of the ESPC delivery orders, for a lighting project at NNSA Nevada facilities in Las Vegas, was awarded during FY 2002. Johnson Controls was awarded the delivery order under the Western Regional Super ESPC. The 12-year contract has an investment value of a little more than $1.0 million and will result in annual savings of 5.7 billion Btu.

Through an Agency-wide competition, five sites received Energy Retrofit Project support funds and four sites received funds for Model Program Development. The retrofit projects will save 6,171 megawatthours of electricity, 9.2 billion Btu of oil or natural gas, and 11.2 million gallons of water annually. The Government will save approximately $360,000 per year in avoided utilities and maintenance costs. The combined simple payback period of the investments is less than four years, with a 29 percent return on investments.

At Richland Operations Office/PNNL, 15 energy savings projects totaling $3.18 million were supported by alternative financing in FY 2002. BPA provided $1.28 million to purchase the value of the energy savings of these projects, and is arranging another $1.25 million in third party financing to support one

project. Upon completion of these projects, annual energy savings of more than 12,000 megawatthours will be realized. The associated annual cost savings is more than $422,000. Four of the alternative financed projects were completed during FY 2002.

ENERGY STAR® and Other Energy-Efficient Products
Energy efficient computer products continue to be purchased at the SRS. Nearly 100 percent of all site computers are provided to site employees via a lease agreement. This lease contract specifically states that all computers must be ENERGY STAR® compliant. Also, an ESPC delivery order will result in the installation of more than 1,000 ENERGY STAR® labeled compact fluorescent lamps and nearly 200 ENERGY STAR® labeled exit signs.

SRS joined the EPA Waste Wise program in FY 2002. The three goals of the SRS Waste Wise program include: reduction of paper waste (waste prevention), improvements in recycling collection to divert more material to a recycle stream, and the purchase or manufacture of recycled products (affirmative procurement). During FY 2002, SRS recycled 42 percent of the routine industrial waste stream.

The INEEL Procurement Department successfully purchases products that are ENERGY STAR® rated or are in the upper 25 percent of energy efficiency as designated by FEMP. INEEL regularly purchases more than 75 percent of energy-efficient products.

Stanford Linear Accelerator Center (SLAC) has an ongoing program to procure wide variety of products that increase energy efficiency and conservation. SLAC also purchases energy-efficient computers, peripheral equipment, copy machines and other ENERGY STAR®-compliant product through a Blanket Ordering Agreement negotiated by DOE's Integrated Contractor Purchasing Team on a regular basis.

ENERGY STAR® Buildings
INEEL submitted and obtained qualification for one ENERGY STAR® building at the end of FY 2001. The award and media recognition were received during FY 2002. Several other facilities have been identified as candidates for the label with retrofit project proposals submitted for minor upgrades to assist with obtaining qualifying scores.

LBNL has one facility, Building 69, designated as an ENERGY STAR® building. An assessment of the energy efficiency of buildings at ORNL led to one building being officially designated as an ENERGY STAR® building in FY 2000. PNNL has evaluated and is in the process of qualifying its Sigma-5 facility for ENERGY STAR® certification. The certification to ENERGY STAR® is expected to be achieved in FY 2003.

Funding through FEMP's Departmental Energy Management Program is providing metering equipment to monitor several WIPP administrative buildings to meet ENERGY STAR® building criteria. Data is being collected and reviewed to determine if the buildings are candidates. The information also provides an audit of the building system to ensure that equipment is running properly, on schedule, and targets future conservation opportunities.

Sustainable Building Design
At SRS, a Pollution Prevention/Sustainable Design report was completed in FY 2002 for the Highly Enriched Uranium Blend Down project. A site team was formed to evaluate potential sustainable design upgrades to this project during initial design phases. A total of 114 opportunities for improvement were selected from the P2-EDGE program, and upon further evaluation, 74 potential design opportunities and 23 design features were identified. The use of minimum materials, non-toxic materials, recycled materials, and special epoxy coatings were written into the bid requirements and specifications. Project savings were generated from the use of existing or surplus tanks, pumps, agitators, GVC piping, and other process jumpers. These eliminated the need for decontamination activities. The savings was approximately $388,000.

Through ROI-funding, LLNL's Environmental Protection Department has modified Master Construction Specifications through an Affirmative Procurement project. Specific sustainable building material selections are incorporated into the Master Construction Specifications. Coupled with suggested changes for energy efficiency during FY 1999 and FY 2000, LLNL's Master Construction Specifications will institutionalize sustainable design, energy efficiency and water conservation practices. Several are currently in the design stages. Requests for A/E design services for several new building projects have required a Sustainable Design Report and/or adherence to LEED™ design principals, if not the acquisition of LEED™ certification. LLNL is currently involved in a Laboratory-funded design/build effort to construct a new Central Cafeteria. The project team has embraced an energy-efficient design and has incorporated many LEED™ design principals in the design development.

Sandia National Laboratories (SNL) is tracking the sustainable design criteria for the Joint Computational Engineering Laboratory and the Microsystems and Engineering Sciences Applications (MESA) projects, to increase the likelihood of advanced energy efficient

design. Both projects began design in FY 2001; the MESA project has a goal of 30 percent reduction in energy intensity from a design compliant with American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) energy standards.

NREL will continue to incorporate sustainable building design principles when considering location, design, and construction of new facilities. The Laboratory's experiences in applying sustainable design principles to the Science and Technology Facility (STF), and its internal sustainability studies, are reflected in the revisions to NREL's design standards and specifications, design process, and site planning principles. Some of the specific additional practices that have been incorporated include the following:

- NREL is requiring all new NREL facilities (10,000 square feet and larger) to be scored using the LEED™ rating system, and a minimum rating of silver is required.

- Criteria for selection of A/E firms for building design includes sustainability criteria equally weighted with environmental safety and health, technical experience, and project management considerations. Specific sustainability criteria were included in the recent solicitation for the STF project engineering design.

- STF as well as future buildings will include extensive energy metering, both whole building energy use and subsystem energy use. This will enable NREL to monitor and optimize building performance, including the R&D process loads. The data will also help to refine the DOE-2 energy design model and, as new technologies are developed, evaluate future energy-saving opportunities within buildings.

- The System Interconnection Test Laboratory (SITL) was designed during FY 2002. The 10,650 square foot Laboratory achieved a LEED™ score that qualifies for a gold rating. The SITL has a projected energy reduction of 50 percent compared to ASHRAE 90.1-1999. If the electrical output from the 10-kilowatt BIPV system is included, the energy reduction is 70 percent. The energy reduction compared to 10 CFR 434 would be even greater.

Energy Efficiency in Lease Provisions
As part of the Facility Revitalization Project at ORNL, new facilities will be developed, constructed, and leased. Project management investigated how to best incorporate energy-efficient criteria into the project. One method being implemented is to require new building(s) to be LEED™ certified where appropriate. Requiring a new building developer to provide a LEED™-certified building will help incorporate many energy efficient, pollution prevention, and sustainable aspects into the design. Additionally, specifications for new buildings require that the design lead to a completed building that could receive the ENERGY STAR® label.

PNNL negotiated with its leased building owners to incorporate night setbacks on a schedule for traditional unoccupied times and to replace burned out light bulbs with energy efficient lights and fixtures. PNNL also teamed with BPA to secure funding to install energy conservation measures in two leased facilities. Installation of these improvements began in FY 2002 and is expected to be completed in FY 2003.

Industrial Facility Efficiency Improvements
A number of activities have been undertaken at BNL with regard to efficiency in energy intensive facilities in FY 2002. These include:

- Chilled water bypass at the Central Chilled Water Facility to improve return temperatures to the chillers.

- Additional building connected to the Central Chilled Water Facility to eliminate older, inefficient R11 chillers.

- Reschedule of 30 megawatts of demand to avoid coinciding with the utility summer peak.

- Analysis of steam system distribution losses to evaluate additional potential saving opportunities.

- Initiated feasibility study of more efficient cryogenic refrigeration at RHC.

- Receipt of $235,000 in funding for energy and water conservation projects.

The LLNL Energy Management Program performed energy and water conserving retrofits and was involved in numerous other activities. Seven energy efficiency projects were completed during FY 2002. These projects addressed retrofits for energy efficiency in building HVAC, vending machine systems, central compressed air plant and distribution system piping and boiler/chilled water system repair procedures. The seven projects' combined investment was about $373,000. Expected energy savings are about 2.13 million kilowatt hours per year of electric power and 97,200 therms per year of natural gas. Energy and O&M cost savings total about $226,500 per year.

One of the more successful projects required the smallest investment. The Drain-Down recovery project represents a simple concept of saving water drained from circulating chilled and hot water systems for refilling the systems following repairs. Savings are achieved in water use, scale and corrosion inhibiting chemicals use, and in labor costs no longer needed to assure that discharged circulating water is compatible with discharge water quality requirements. This project, funded through DOE's pollution prevention program benefitted from the acquisition of surplus equipment; the investment pays back in about 3-months. The project received a 2002 Federal Energy and Water Management Award.

In FY 2002 ORNL continued with the implementation of a 10-year master plan to convert the central steam plant from coal to natural gas as the primary fuel. This conversion has been completed and has allowed the burning of coal and the handling of coal to be eliminated and will save significant energy, maintenance, operation, and environmental-related expenses in future years. As part of this effort, two coal-fired boilers were modified so that they could burn natural gas more efficiently. Finally, boiler control improvements began in FY 2002 will be completed in early FY 2003.

The Thomas Jefferson National Accelerator Facility is designing a central chiller utility to improve control and efficiency, to take advantage of load diversity, and to remove ozone depleting refrigerant chillers from service. All heating boilers have been converted to natural gas or were originally purchased as gas furnaces. Cogeneration has been investigated and shown to be uneconomical; however, natural gas fired backup generators were installed at five locations for standby use.

Highly Efficient Systems

Fermilab worked with Exelon Services during the year to develop preliminary concepts for the possible use of biogas powered cogeneration on-site. A request was submitted to FEMP under the Model Programs initiative towards developing a contract under the new Biomass and Alternative Methane Fuels (BAMF) Super ESPC vehicle for a 15 megawatt on-site plant using landfill gas currently being flared to the atmosphere at the Settler's Hill facility in Batavia, Illinois, which is located near the site.

Two projects currently under construction at Fermilab use sustainable design principles. One project also includes an innovative, sustainable approach to domestic water heating. An abandoned concentrating-solar-through array is being renovated to provide domestic hot water for the building. This project feature will save water heating energy, utilize an existing unused resource and provide a functional example of sustainable building practices.

At the Kansas City Plant (KCP), water chillers were replaced this year using Facilities and Infrastructure Funds. The chillers were selected using LCC analysis and based on their high energy efficiency as well as chlorofluorocarbon issues. Construction continues to replace the boilers and controls that provide steam to the KCP. Two new boilers have been installed and tested and are supplying steam to the KCP. Two additional new boilers will be installed, tested and put online in FY 2003. The boiler systems were selected and designed to provide the highest energy efficiency.

Off-Grid Generation

At BNL, two microturbine demonstration units were installed in 2002. One of the units provides electricity generation and heat recovery, while the other unit currently provides electricity only. In addition, a $1 million grant from the New York State Energy Research and Development Administration was secured for a 250-kilowatt fuel cell demonstration project. There was also a commitment from the electric utility to provide up to $400,000 in construction and engineering services. Additional funding is needed for the balance of the project costs.

Fermilab completed a new emergency generator at the Feynman Computing Center this year that was specifically designed to allow the Laboratory to reduce site electrical load under curtailment scenarios. Opportunities for application of both dedicated and peak shaving on-site generation continued to be explored during the year.

NREL uses hot water heat from natural gas-fired boilers in its STM site buildings. Hot water heat is provided through electric boilers at the NTWC. No absorption chillers are used on site; all building cooling is done with cooling towers.

Electrical Load Reduction Measures

BNL participated in Long Island Power Authority's (NYPA's) peak load curtailment program during the summer of FY 2002. The Laboratory contracted to reduce electric demand by 4 megawatts during critical periods, and earned rebates of nearly $56,000 by successful participation. BNL rescheduled major experimental programs and reduced allocation of electrical power from NYPA during the peak summer months by as much as 37 megawatts.

SRS continued the longstanding and successful Peak Alert program during the summer of FY 2002. This program has been effective in reducing utility costs.

Demand has been reduced by as much as 10 percent on a hot day. SRS also prepared an Energy Curtailment Plan in FY 2002. The plan defines the appropriate response measures for declared energy emergencies involving the Savannah River Site and provides much flexibility for future site changes and energy loads since decisions would be made at the time of the emergency based on current usage by fuel type.

During electrical power emergencies, Rocky Flats has an emergency electrical load reduction program that will be implemented. This program includes turning off all non-essential equipment, adjusting thermostats to reduce electrical consumption, and reducing lighting levels. The program also includes placing buildings on stationary emergency generators.

Energy Management Contact
Mr. Victor P. Petrolati
Team Leader, Departmental Energy Management
U.S. Department of Energy, EE-91
1000 Independence Avenue, SW
Washington, D.C. 20585
Phone: 202-586-4549
Fax: 202-586-0233
E-mail: victor.petrolati@hq.doe.gov

E. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Management and Administration

The Department of Health and Human Services (HHS) has established a centralized energy program to coordinate energy and water conservation efforts, facilitate alternative financing of energy and water projects, promote Federal energy programs, manage an extensive energy awareness campaign, and provide information and assistance to meet energy reduction goals. The HHS Senior Agency Official is the Assistant Secretary for Administration and Management.

The six HHS Operating Divisions (OPDIVs) that manage real property are the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Indian Health Service (IHS), the National Institutes of Health (NIH), the Office of the Secretary (OS), and the Program Support Center (PSC).

Management Tools

Awards

The annual HHS Energy and Water Management Awards Program rewards the exceptional performance of HHS energy management personnel. In FY 2002, 12 nominations were submitted, double the number received in 2001. Awards were presented to individuals, small groups, and one organization for their exceptional performance in energy efficiency/energy management, water conservation, and alternative financing.

Also in FY 2002, two employees from the IHS David C. Wynecoop Memorial Clinic in Wellpinit, Washington, received a Federal Energy and Water Management Award.

The HHS NIH National Cancer Institute and the DOD Army Garrison at Fort Detrick, Maryland, received a 2002 Presidential Award for Leadership in Federal Energy Management for their "Partnership for Energy Performance" (PEP) initiative. PEP has a dedicated team consisting of employees from the National Cancer Institute, the U.S. Army Garrison, Allegheny Power, and SAIC Frederick, working together in a public-private partnership to successfully implement facility improvements. Under a utility area-wide agreement, PEP developed a utility energy service contract (UESC) to acquire energy conservation services and more than $25 million in facility improvements. The program has achieved energy and maintenance cost savings of more than $3.6 million and expects to save more than $60 million during the term of the contract. Annual electricity savings exceed 19 gigawatthours and more than 163 million pounds of steam. This initiative also received a 2002 Federal Energy and Water Management Award.

HHS uses the *You Have the Power* campaign energy champion posters to recognize individuals and small groups for their outstanding efforts in energy and water efficiency. In FY 2002, one energy champion poster and one energy project poster was published for HHS.

In addition, CDC, IHS, and OS used internal awards programs in FY 2002 to recognize individuals for their work on improving central plant efficiency and increasing energy awareness.

Performance Evaluations

Several key OPDIV energy management personnel positions contain critical performance elements that address energy and water efficiency, particularly within CDC, IHS, NIH, PSC, and OS. Each year, additional positions within the OPDIVs are revised to include performance measurements for energy and water conservation and consumption.

Training

In FY 2002, 61 HHS energy personnel received training in energy and water efficiency. Training included OPDIV specific workshops, DOE FEMP classes, and utility or manufacturer-sponsored training. Outreach and energy awareness programs are widely used throughout the OPDIVs and by the HHS Energy Program.

Showcase Facilities

In FY 2002, HHS designated the IHS David C. Wynecoop Memorial Clinic a 2002 Federal Energy Saver Showcase. The team at the Wynecoop Clinic diligently pursued and implemented highly successful energy management practices with limited personnel and operational resources, which resulted in a 68 percent reduction in energy intensity. Specific projects implemented include replacement of inefficient heat pumps, expansion of HVAC zoning to optimize operational control, installation of energy-efficient lighting and windows, and retrofit of plumbing fixtures with low-flow models.

Two facilities were under consideration in FY 2003. The first, the IHS Blackfeet Hospital in Browning, Montana, which was awarded the 2002 ENERGY STAR® label.

The second candidate facility is the Mark O. Hatfield Clinical Research Center, currently under construction at the NIH Bethesda Campus in Bethesda, Maryland. The facility will utilize innovative energy conservation

initiatives such as steam driven electric generating turbines as a means of conserving steam energy.

Energy Efficiency Performance

Standard Buildings
In FY 2002, HHS reported a 22.1 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot.

FY 2002 energy consumption for standard facilities was 8.5 percent lower than the FY 2001 usage. This decrease was driven by an efficiency project at PSC that replaced a three-way hot water diverter valve that was leaking hot water into the building hot water loop, thus wasting natural gas. In addition, a milder winter reduced heating energy consumption.

Industrial and Laboratory Facilities
Eighty-nine percent of the HHS square footage is considered energy intensive and includes laboratories, hospitals, animal centers, health clinics, and other related support space. In FY 2002, the energy consumption of HHS energy intensive facilities was 7.8 trillion Btu and 344,167 Btu per gross square foot. The FY 1990 baseline for energy intensive facilities had a total energy consumption of 6.8 trillion Btu and a consumption rate of 374,400 Btu per gross square foot. This equates to a 8.1 percent decrease compared to the baseline year of FY 1990.

The FY 2002 energy consumption was 1.5 percent higher than the FY 2001 usage due to continued new construction on CDC and NIH campuses, which has offset the energy efficiency reductions realized from implemented projects. In addition, much of the construction or renovations were focused on bringing HHS laboratories up-to-date with current ventilation standards for laboratory and animal care. Therefore, these projects result in greater energy consumption due to the increased ventilation required, even when energy efficiency technologies are introduced.

Exempt Facilities
The only exempted facilities at HHS are outdoor multilevel parking garages on the NIH Bethesda Campus that consume lighting energy only. These facilities are not metered separately. Therefore, the energy consumption of these structures has been estimated based on the number of lighting fixtures and the time of use. Total energy use is estimated at 8.3 billion Btu or 9,380 Btu per gross square foot.

Renewable Energy

Self-Generated Renewable Energy
CDC provided management assistance for the design and installation of a 2-kilowatt solar photovoltaic system at a small CARE-CDC health clinic in Kenya. DOE FEMP's Distributed Energy Resources Program funding covered half of the installation costs, while CDC funded the balance. The project required extensive organization and cooperation from several Federal entities to complete the installation and was the agency's *You Have the Power* poster project in FY 2002.

In FY 2002, the design for the FDA White Oak Campus included a photovoltaic energy savings performance contract (ESPC) between General Services Administration and SEMPRA Energy Services to finance energy efficient projects at the new facility. Construction will include a 10-kilowatt photovoltaic system to augment the electrical distribution system.

The IHS Santa Fe and Acoma-Canoncito-Laguna (ACL) hospitals use solar energy collection systems. Maintenance and performance improvements have been made to both systems during the past few years. The IHS ACL Hospital also installed solar powered outdoor lighting. The Nashville area hospitals have solar collection systems that reduce heating costs of the facilities by up to 10 percent when fully functional.

Purchased Renewable Energy
The purchase of electricity is performed by each OPDIV and site separately as required to maintain the mission of the facilities. In FY 2002, there were no separate purchases of electricity generated from renewable energy sources. Very few HHS facilities are located in states where electrical utilities have been deregulated. However, as the domain of the deregulated electricity market increases, the HHS Energy Program's interaction and facilitation will increase in the area of procurement of deregulated energy and electricity generated from renewable energy sources.

CDC in Atlanta, Georgia, requires design contractors to evaluate economically feasible renewable energy resources for all new buildings. By the end of FY 2002, no renewable energy sources had been found to be economically feasible due to low utility rates.

Petroleum
In FY 1990, HHS energy intensive facilities used 2.2 trillion Btu of fuel oil and LPG/propane. In FY 2002, these facilities used 636.5 billion Btu of petroleum products, resulting in a 72 percent reduction in consumption.

Water Conservation

The HHS OPDIVs reported usage of 1.6 billion gallons of water at a cost of $8.7 million in FY 2002. This value is a low reading or estimate of the actual water used for the entire Agency. Due to a lack of manpower and data, IHS was unable to provide accurate estimated data on water consumption. IHS areas will attempt to gather water consumption data in FY 2003, however, it is expected that accurate data and sound estimates will be very difficult to obtain.

In FY 2002, FDA reported major decreases in water consumption at the National Center for Toxicological (NCTR) in Dauphin Island, Atlanta; Winchester Engineering and Analytical Center (WEAC) in Winchester, Massachusetts; and San Juan facilities.

FDA laboratories are reviewing their water consumption and formalizing water management plans. Many sites have implemented water efficiency projects. For example, the Dauphin Island laboratory has revised scientific operating procedures by keeping the autoclaves, a large water consuming device, on stand-by to reduce the supply of water to the equipment. In addition, scientists are now using vacuum pumps and recirculating refrigerated coolers to operate the rotary evaporators critical to conducting experiments, eliminating the use of tap water for the system.

At the NIH Animal Center (NIHAC) in Poolesville, Maryland, a non-potable water system project was completed in FY 2002 at a cost of $1.3 million. The project installed a gray water recycling system that treats wastewater generated on site and recycles it back to the facility. Major building systems at the NIHAC now use recycled, non-potable water instead of potable well water extracted from the on-site aquifer. It is estimated that roughly 19 million gallons of potable water will not be extracted from the aquifer each year.

Implementation Strategies

Life-Cycle Cost Analysis

All HHS OPDIVs use life-cycle cost (LCC) analysis to prioritize and justify the implementation of energy efficiency projects. Most CDC facility designers and program managers have been trained in the use of LCC analysis to accurately analyze new building and retrofit designs. In FY 2002, CDC used LCC analysis to acquire high efficiency chillers in a new central chilled water plant and justify the use of a chilled water storage system for the plant. A similar chilled water storage system was justified for another CDC facility using LCC analysis. CDC also used LCC analysis to evaluate water reduction methods.

LCC analysis is used by FDA in the early design phases of new construction projects. For example, an HVAC system renovation for the Dauphin Island laboratory is undergoing life-cycle costing to determine the most cost effective 100 percent outdoor air system. LCC analysis was also used in the design of the White Oak Laboratory and the FDA laboratory in Irvine, California.

The IHS Aberdeen area used LCC analysis to rank energy conservation opportunities as part of an ESPC contract with Johnson Controls. The IHS Oklahoma Area used LCC analysis to determine the most cost effective HVAC system upgrade.

Facility Energy Audits

In FY 2002, 3.5 million square feet, or 14 percent, of HHS facilities were audited. IHS and NIH performed the most comprehensive audits in conjunction with UESCs. By the end of FY 2002, 70 percent of the HHS facility square footage received energy and water efficiency audits. OPDIVs are responsible for ensuring that 10 percent of their facilities are audited each year according to the OPDIV Ten Year Audit Plans established in FY 1994.

Financing Mechanisms

In FY 2002, HHS used $1.8 million of direct agency funding to implement energy and water efficiency projects and audits. The funding projected for FY 2003 was $5.3 million. It is anticipated that most energy and water efficiency work will be completed under alternative financing contracts.

In FY 2002, the HHS Energy Program continued efforts to promote and facilitate the use of alternative financing mechanisms to implement energy and water efficiency projects, and five new contracts were signed. Several GSA area-wide contracts and Super ESPCs were also initiated.

Approximately 60 percent of all CDC facilities have implemented alternative financing contracts. In FY 2002, the Chamblee and Lawrenceville campuses completed the construction phase of an ESPC that upgraded lighting, water fixtures, HVAC equipment, and optimized utility rates. The contract will save roughly 9.5 billion Btu, or 7 percent of energy consumption, and $80,000 in the first year.

Larger projects within FDA have been funded through alternative financing contracts. In FY 2002, the NCTR in Jefferson, Arkansas, completed an extensive lighting retrofit project that included T-8 lamps, electronic ballasts, and occupancy sensors. New capacitors were also added to the electrical power station to increase the site's power factor. Also in FY 2002, negotiations were

initiated, continued, or completed for alternative financing projects at NCTR, Module One (MOD1) in Beltsville, Maryland, and the new White Oak campus.

In FY 2002, NIH entered into four UESCs totaling $3.3 million with a projected energy savings of 21,800 Btu per gross square foot. NIH is using UESCs to identify, evaluate, and implement economically feasible energy and water conservation measures. The local utility has been requested to perform audits at NIH facilities to identify feasible energy and water efficiency projects that can be implemented using UESCs.

ENERGY STAR® and Other Energy-Efficient Products
The HHS Energy Program communication tools relate the significance of using ENERGY STAR® and other energy-efficient products and the procurement of these products. In general, OPDIVs use the GSA Schedule to procure energy-efficient products and have revised project specifications and standard procurement contracts to include their purchase. Many HHS facilities purchase standard stock items, such as light bulbs and ballasts, as recommended by FEMP and ENERGY STAR® guidelines.

FDA NCTR operations and maintenance practices include the replacement of motors with high efficiency models as determined by the MotorMaster+ software from DOE. In addition, the procurement of other HVAC replacement equipment covers high efficiency models.

PSC educates building occupants about the importance of using ENERGY STAR® capabilities on their computers and monitors. In addition, PSC is investigating the use of the DOE FEMP software that restores the ENERGY STAR® capabilities of computers through the local access network.

ENERGY STAR® Buildings
In FY 2002, the IHS Blackfeet Hospital in Browning, Montana, received the first ENERGY STAR® label for an HHS building. The Blackfeet Hospital was able to earn this honor by maintaining indoor environment requirements for air quality, thermal comfort, and lighting, and has the distinction of being the first HHS building and the first hospital to receive the label.

The Blackfeet Hospital is part of the IHS Billings area. In addition to the Blackfeet Hospital, there are two other hospitals in the Billings area that are in the EPA's ENERGY STAR® database. At this time the other hospitals do not meet the top 25 percent ranking, but the area engineers and managers will continue to improve the efficiency of these sites in hopes of achieving the required energy savings for the ENERGY STAR® label.

In FY 2002, the IHS Albuquerque area completed a benchmarking of the area hospitals using the designated EPA performance rating tool, and the results showed that the Albuquerque Indian Hospital is eligible to apply for the ENERGY STAR® label.

Sustainable Building Design
In FY 2002, the HHS Energy Program continued to highlight the concept of sustainable building design and the use of the *Whole Building Design Guide* through the awareness newsletters, training, and direct facility management correspondence.

In FY 2002, CDC joined the U.S. Green Building Council (USGBC) and is actively promoting the use of their *Whole Building Design Guide* and Leadership in Energy and Environmental Design (LEED™) rating system. Three new major construction projects were registered with USGBC in FY 2002, with a goal of achieving a LEED™ certification. CDC will continue to use these sustainable design guides as standard tools for future new building designs.

FDA uses basic sustainable building design criteria when planning new construction. For example, the FDA Irvine Laboratory is tall and narrow to take advantage of natural lighting and the walls will be constructed of architectural concrete, which will not require insulation and drywall. In addition, native vegetation will be planted to reduce maintenance and irrigation requirements of the landscaping, and reclaimed water will be used for the plants. In FY 2003, a study was performed to determine the ability to use additional reclaimed water for cooling tower make-up requirements.

The *NIH Design Policy and Guidelines* require that new building siting, design, and construction conform to design and development principles that are included in the *Whole Building Design Guide* Web site. To the greatest extent practicable, these principles have been applied to those portions of existing facilities undergoing renovation or upgrade. The design for the proposed construction of the National Library of Medicine Addition is being analyzed to determine if a LEED™ certification is prudent for this building.

Energy Efficiency in Lease Provisions
Only 7 percent of the HHS square footage is leased space. Where appropriate, OPDIVs review lease agreements to give preference to buildings with sustainable and energy efficient designs.

FDA leases 9.5 percent of its square footage. When feasible, energy and water efficiency measures are implemented in the leased facilities. The Atlanta laboratory is a leased facility which will be up for

renewal in FY 2005. FDA is currently working with GSA and has issued a requested scope of work to implement several energy and water efficiency measures in the new lease.

The White Oak Campus in Maryland, is a GSA leased property. GSA, FDA, and SEMPRA Energy Services are working together to design an energy efficient state-of-the art laboratory and office campus. FDA has outlined specific requirements and energy efficient technologies to be included in the design. Once the construction is completed, FDA will pay for utilities as part of the lease payment to GSA. The utility portion of the lease payment will be significantly less than that for a standard laboratory facility under GSA rates, due to the increased energy efficiency.

Industrial Facility Efficiency Improvements
The majority of HHS square footage is considered energy intensive. Therefore, most HHS energy projects address energy intensive systems such as steam systems, boiler operation, fuel switching, and cogeneration.

In new energy-intensive construction, HHS looks to improve automated control methods, night setback operations, and energy recovery methods. Due to changes in laboratory functions and layouts, many new laboratories have higher airflow requirements than older buildings. This has been predominantly the case with major renovation projects. It has been found that older laboratory facilities did not meet the existing standards and therefore, renovations result in even more energy-intensive facilities.

FDA laboratories are continually studying new methods to save energy in the facilities. In FY 2002, the MOD1 Laboratory in Beltsville, Maryland, retrofitted the top floor of the vivarium wing into chemistry/microbiological laboratory space. The renovation required the installation of a dedicated air handling unit to reduce the number of air changes to the 100 percent outdoor space and increase space temperature and humidity control, thereby saving energy. In addition, 15 solar tubes were added in the laboratory space to take advantage of natural light and reduce the need for artificial lighting.

FDA's WEAC applied tinted solar film to the main entrance vestibule to address extreme afternoon temperatures. The solar film has worked so well that the facility management plans to apply the film to the other windows on the front of the building in FY 2003. Facility management has also initiated a boiler replacement project in FY 2002. A boiler survey and design has been completed, and is currently under review by facility management.

The FDA Division of Facilities Planning, Engineering, and Safety focused FY 2002 efforts on new construction design projects and integrating energy efficient technologies. The Irvine Laboratory currently under construction has been designed to maximize natural lighting and includes low-e windows. The White Oak Campus will include a 10-kilowatt photovoltaic system, cogeneration, absorption chiller, variable frequency drives on chilled and condenser water pumping and cooling tower fans, reduced lighting loads, variable air volume systems with variable frequency drives, demand control ventilation, night-setback strategies, and an economizer cycle.

During the past ten years, NIH has taken steps to reduce its energy use through gradual replacement of inefficient chillers with ultra-efficient large capacity chillers. Oil burning boilers have been retrofitted to use natural gas as the primary fuel and have been upgraded with state-of-the-art low nitrogen oxide burners. Utility distribution system is being replaced with larger capacity lines to reduce head-loss and reduce overall chilled water operating pressures. Additionally in FY 2002, construction continued for a 23 megawatt cogeneration unit that will be approximately 85 percent efficient.

Highly Efficient Systems
The FDA White Oak Campus will use cogeneration. As designed, one 5,800 kilowatt dual fuel (natural gas and diesel) engine-driven generator will produce 100 percent of the power for the main office building on the campus. The free waste heat recoverable from the engine oil cooler and water jacket is transferred to the hot water heating system. Recoverable higher temperature waste heat from the exhaust stack gases is used in warm weather to power a 900-ton absorption chiller. In cold weather, the recoverable engine stack gas heat is added to the water heating system.

At the IHS Anchorage area, a ground water cooling project is currently under construction for the Alaska Native Medical Center, and is expected to be completed in FY 2003. The estimated savings of the project is $50,000 annually.

In FY 2002, construction continued on the 23-megawatt cogeneration unit for the NIH Bethesda Campus. This project is a prime example of a highly efficient energy system with an approximate efficiency rating of 85 percent, which will save more than 640 billion Btu and approximately $3.6 million per year. In addition, the plant will reduce greenhouse gas emissions by roughly 100,000 tons per year and other pollutant emissions and particulate matter by an estimated 600 tons per year. Another example of a system such as this is under construction at the NIH Mark O. Hatfield Clinical

Research Center (CRC), and involves the use of steam driven electric generating turbines to conserve steam energy that would otherwise be lost in the normal pressure reducing process.

Off-Grid Generation
The new FDA White Oak Campus will include a photovoltaic system on the roof of the main office building. The PV system will generate savings by producing electricity during peak and intermediate hours supplementing power provided by the cogeneration plant and utility grid. The annual estimated savings is $1,133.

The NIH 23-megawatt cogeneration unit under construction by the local utility under a UESC, will generate off-grid power to supply the NIH Bethesda Campus with its base electrical load. Also, a steam driven electrical generating turbine is under construction at the NIH Mark. O. Hatfield CRC facility to convert steam pressure reduction energy to electricity.

Electrical Load Reduction Measures
In FY 2002, HHS facility managers reviewed existing load reduction plans and made improvements as necessary. These plans were used to respond to high demand days and curtailment periods. Since 89 percent of the HHS square footage is energy-intensive space that includes hospitals, laboratories, and animal centers, the bulk of the electrical loads in these facilities are mission critical or life, health and safety driven. Therefore, these facilities are limited in the extent to which equipment can be powered down.

Most HHS facilities have established communications with local utility companies regarding peak load periods and demand load reduction programs. In response to these discussions, OPDIV facility managers have developed individual facility plans to reduce peak demand on high load days.

Where available, energy management control systems were used to monitor total facility demand and loads for individual pieces of major equipment. This allowed facility managers to determine target levels for demand reduction and to monitor daily use patterns. When electrical demand approached high levels, or during utility curtailment periods, the control systems were programmed to automatically power down nonessential equipment.

The HHS Energy Program's strong awareness efforts were used to communicate load reduction measures that employees could take to reduce lighting, personal computer and appliance electrical demand at workstations. The HHS energy newsletters, flyers, and *You Have the Power* campaign materials were used to communicate these conservation steps.

The CDC Roybal campus in Atlanta, Georgia, used back-up fuel oil emergency generators (capable of powering the entire campus) to generate electricity on high demand days and reduce summer peak electrical loads. The local electric utility provided CDC with an advanced notice of the next day's hourly rates. When the rates soared on hot summer afternoons, CDC activated the emergency generators to relieve the electric load.

FDA laboratories work to reduce electrical load during peak periods wherever possible. However, in a laboratory it is often difficult to identify and shed significant loads that are not critical to the facility mission. Lighting, fans, and miscellaneous motors are powered down when permissible, and space and chilled water temperatures are increased to limit electrical demand. New design projects are focusing on reducing energy loads which will ultimately reduce overall electrical demand at all times.

Energy Management Contact
Mr. Scott Waldman
HHS Energy Officer
U.S. Department of Health and Human Services
Hubert H. Humphrey Building, Room 729D
200 Independence Avenue, SW
Washington, D.C. 20201
Phone: 202-619-0719
Fax: 202-619-2692
E-mail: scott.waldman@hhs.gov

F. DEPARTMENT OF THE INTERIOR (DOI)

Management and Administration

In the Department of the Interior (DOI), the Assistant Secretary for Policy, Management, and Budget serves as the Senior Energy Official. DOI has an energy team comprised of bureau representatives at the Assistant Director for Administration level, and the Departmental Energy Conservation Committee (DECC), comprised of bureau representatives ranging from property management specialists to engineers. The DECC provides advice and recommendations to DOI officials on energy management initiatives and policies and guidance on bureau energy management operations.

Management Tools

Awards

The Interior Energy Awards Program was established in 2002, with inaugural award winners selected during the last quarter of FY 2002. The awards program was developed specifically for energy management and water conservation. DOI also participates in the Federal Energy and Water Management Awards program. Two projects were honored in FY 2002 with awards in the alternative financing and renewable energy-small group categories:

- The Fish and Wildlife Service's (FWS) Eastern Neck Wildlife Refuge Renewable Group was honored for its efforts in the use of renewable energy including wind generation, photovoltaics, educational opportunities, and demonstration projects at the Eastern Neck National Wildlife Refuge.
- The Bureau of Indian Affairs was recognized for the bureau energy coordinator's success with the Sherman Indian School energy efficiency program.

Performance Evaluations

DOI recognizes the energy management responsibilities of facility managers, energy managers, designers, and their superiors through the identification and incorporation of their responsibilities in performance evaluations and position descriptions.

FWS has determined that environmental leadership, including energy management, should be a significant factor in the annual performance evaluation of each program manager and project leader. FWS managers will be evaluated on the inclusion of environmental leadership principles including energy efficiency in their management decisions. This approach is being explored by other DOI bureaus and could serve as a model for linking performance evaluations with efforts to achieve greater energy efficiency.

Training

DOI energy managers involved in building energy efficiency and water conservation have attended workshops offered by the Department of Energy (DOE) Federal Energy Management Program (FEMP). Others have also attended training offered by other organizations such as the General Services Administration, Environmental Protection Agency, the Association of Energy Engineers, public utilities, and Bureau energy coordinator's meetings. In FY 2002, 235 employees received training in energy and water management.

Energy management was included on the agenda at the Interior Property Management Conference in May 2002.

Showcase Facilities

Although no new facilities were designated in FY 2002, DOI continues to showcase energy efficiency at 11 different sites located throughout the country.

Energy Efficiency Performance

Standard Buildings

In FY 2002, DOI reported a 5.3 percent increase in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. DOI received credit for purchases of 2.0 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 92,604 Btu/GSF to 92,566 Btu/GSF. Analysis of the data shows a decrease in the use of fuel oil, coal, and steam between FY 1985 and FY 2002, but an increase in the use of electricity.

DOI was one of only four agencies to meet the mandated goal of a 20 percent reduction in energy use in buildings from 1975 to 1985. Meeting that goal set DOI's 1985 baseline energy use at a level of efficiency that poses a considerable challenge for increased efficiency in energy management.

Renewable Energy

The Bureau of Land Management (BLM) and DOE's National Renewable Energy Laboratory (NREL) established a partnership effort in FY 2002 to conduct assessments of renewable energy resources, excluding hydropower, on public lands in the western United States and to identify land use planning units with the highest potential for renewable energy development. BLM also issued guidelines that will help the agency respond to a growing interest in the commercial development of wind energy projects on the nation's public lands.

Self-Generated Renewable Energy
DOI has implemented 40 renewable energy projects, including stand-alone and grid-connected photovoltaic systems, solar thermal projects, geothermal heat pumps, and wind related projects.

Examples of renewable projects include the following from the BLM, National Park Service, and FWS:

- White River Facility, Mt. Rainier National Park, Washington – A 15.5 kilowatt photovoltaic system provides power for housing, water pumping, a ranger station, an entrance station, and restrooms;
- Solvilleta National Wildlife Refuge, Arizona – The site converted windmills to solar pumps for well pumping; and,
- Denali National Park, Alaska – The site implemented fuel switching to propane and photovoltaics to provide trickle charge to batteries that are subject to temperatures of less than 60 degrees Fahrenheit in winter.

Purchased Renewable Energy
DOI has committed to purchase a portion of its monthly electric power needs from wind-generated electricity, through the Wind Source Program offered by the Public Service Company of Colorado.

In September 2002, the FWS Great Lakes Region developed draft "Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines," to assist the wind industry to minimize impacts to wildlife through proper evaluation of potential Wind Resource Areas, proper siting and design of turbines within development areas, and pre- and post-construction research and monitoring to identify and assess impacts to wildlife.

As a demonstration wind project at the Eastern Neck National Wildlife Refuge, a Bergey Excel 10-kilowatt wind turbine was installed in March 2002. The turbine provides power to the administrative building during the winter months.

Petroleum

DOI consumed 694 billion Btu of fuel oil in FY 2002, a 35.2 percent decrease from FY 1985. LPG/propane use was 688 billion Btu, an increase of 32 percent compared to FY 1985.

Water Conservation
DOI issued policy for baseline water usage in March 2000. Many of DOI's buildings do not have metered water consumption, so these facilities must estimate water usage. In FY 2002, DOI reported consumption of 4.4 billion gallons of water at a cost of $10 million. Water consumption was 220,000 gallons greater than the 2000 baseline level. DOI has 76 facilities with water management plans in place.

Examples of water conservation at DOI facilities include designing buildings with low-flow plumbing fixtures, landscaping that emphasizes the use of native plant species and maximizes efficient irrigation, precipitation detection systems, and optimal timing.

Implementation Strategies

Life-Cycle Cost Analysis
The DOI Departmental Plan identifies goals for the use of life-cycle cost (LCC) analysis and identifies the benefits of utilizing life-cycle costing techniques for the purchase of energy-efficient products and purchases.

DOI policy dictates a formal value analysis on all capital improvement projects of $1 million or higher, estimated construction cost, and strongly recommends this analysis for projects greater than $500,000.

DOI has also incorporated language into the annual budget formulation guidance and into the five-year deferred maintenance plan that identifies planned energy projects and emphasizes LCC analysis. Projects identified as cost effective are ranked in accordance with their payback and funded within resource limitations. Bureaus will retire inefficient equipment on an accelerated basis where replacement results in lower life-cycle costs.

Facility Energy Audits
DOI prioritizes audits based on facility energy consumption rates and water use. DOI has been an active participant in the SAVEnergy audit working group. In FY 2002, DOI received funding from DOE's SAVEnergy program for assessing the potential use of renewable energy. During the year, 10.5 percent of facility space was audited and, since 1992, 67 percent of space has been audited.

Financing Mechanisms
Seven energy savings performance contracts (ESPCs) have been implemented at DOI, with a total contractor investment of $13.5 million. NPS initiated an ESPC for $1 million in FY 2002. DOI has used the SAVEnergy audit program to identify potential sites for ESPC projects.

DOI has faced low returns on investment for prospective ESPCs, because of the relatively small size of DOI facilities.

A source of success for DOI has been the Green Energy Parks Program, a partnership between DOI, NPS, and DOE. The partnership has resulted in funding and technical support for parks nationwide from DOE and

other public and private partners. The projects promote the use of energy-efficient and renewable energy technologies and educate park visitors about these efforts. Four renewable energy projects were completed in FY 2002 under the Green Energy Parks Program.

ENERGY STAR® and Other Energy-Efficient Products
DOI continues to participate with other agencies to increase Federal agency purchase and use of energy-efficient and environmentally preferable products.

DOI also pursues the goals established in its Strategic Plan for incorporating energy efficiency considerations into all levels of procurement. Under the Acquisition Intern Program, participants are provided with training on purchasing environmentally preferable and energy-efficient products and services.

DOI's Integrated Charge Card (Government Purchase Card) Program Guidelines require employees to buy recycled-content, environmentally preferable, and energy-efficient products in accordance with Executive Order 13123. The guide was updated in FY 2002 to include Executive Order 13221 requirements and Internet addresses for information on purchasing energy-efficient products.

DOI also has established policy that only re-refined oil be used in its vehicles and equipment, and has encouraged its bureaus to replace many of its gasoline-fueled vehicles with alternative fueled vehicles. DOI has procured 80,000 gallons of domestically produced biodiesel for motor vehicle fleet use in Washington, D.C.

ENERGY STAR® Buildings
DOI has requested its bureaus to consider office buildings that could qualify as ENERGY STAR® buildings. One DOI bureau has developed a draft policy that would require any new construction or rehabilitation of buildings to be consistent with industry standard building ratings, such as the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System, and be ENERGY STAR® compliant.

Sustainable Building Design
DOI's Green Energy Parks program provides an excellent opportunity to deploy sustainable energy technologies into the National Parks. More than 60 visitor centers are incorporating low-cost projects such as replacing high-volume water fixtures, purchasing solar power generation and installing solar lighting, upgrading lighting with motion detectors and occupancy sensors, installing or replacing insulation, and installing water conserving toilets. With more than 260 million visitors each year, the parks present an unparalleled opportunity to educate the public about the importance and promise of green energy.

Energy Efficiency in Lease Provisions
DOI's Strategic Plan for Greening includes provisions that DOI must ensure that leased building space incorporates sustainable design, green products and services, recycling, energy management and water conservation in building development and operation.

Highly Efficient Systems
DOI has used many tools to identify the potential use of highly efficient systems, including the use of biomass, geothermal, or other renewable energy sources. The National Business Center used the LEED™ rating system to provide guidance for a renovation project that began in 2002. Bureaus analyze the potential for use of district energy systems and other highly efficient systems in new construction or retrofit projects. Combined heat and power systems are to be considered when upgrading and assessing facility power needs. Other steps include incorporation of certification procedures to ensure that major projects are reviewed for energy efficiency.

Off-Grid Generation
In FY 2002, the BLM Red Hills Pumping Station in Idaho used photovoltaic panels for a water pumping station. The FWS Petit Manan National Wildlife Refuge in Maine also used solar power for island cabins for the Seabird Restoration Project.

Electrical Load Reduction Measures
DOI's Bureaus have been instructed to adopt aggressive strategies to minimize the use of electricity during peak load periods. Strategies implemented include: specific identification of short- and long-term electricity load reduction measures, monitoring of total facility demand, strengthened coordination with local utilities, and enhanced communications with employees about the benefits and best practices for energy efficiency.

Energy Management Contact
Ms. Debra Sonderman
Director, Office of Acquisition and
Property Management
U.S. Department of the Interior
Main Interior Building, Room 5512
1849 C Street, NW
Washington, D.C. 20240
Phone: 202-208-3336
Fax: 202-208-6301
E-mail: debra_sonderman@ios.doi.gov

G. DEPARTMENT OF JUSTICE (DOJ)

Management and Administration

The Assistant Attorney General for Administration is the Senior Energy Official for the Department of Justice (DOJ). Members of the DOJ energy team represent the facilities and administrative, procurement services, budget, finance, and personnel sections of the agency.

Management Tools

Awards

DOJ implemented a combined Energy and Environmental Awards program during FY 2002 to recognize excellence in implementing Executive Order 13123. DOJ employees are nominated for the Federal Energy and Water Management Awards and are recognized within the agency for outstanding performance.

Performance Evaluations

The performance evaluation of the DOJ energy program manager includes performance measures for the successful implementation of Executive Order 13123. DOJ is considering expanding this element to other energy team members and appropriate employees. Performance evaluations for the in-house engineering staff of the Federal Bureau of Investigation (FBI) also include performance measures for energy management.

Training

DOJ conducts meetings with its bureaus to disseminate energy information, and provides direction and assistance to the bureaus to meet energy efficiency goals and requirements. Energy conservation remains an important topic at the Facilities Management Training Courses and at the National Facilities Managers Conference.

Showcase Facilities

Due to the nature of the Bureau of Prisons (BOP) mission and security requirements, it is not feasible to designate prisons as Showcase facilities. The BOP complies with national model codes for construction and mandates the use of life-cycle costing in the selection of energy consuming systems. Security issues also preclude the FBI from obtaining the designation for its facilities. The DOJ strives to designate at least one Showcase facility per year. Potential candidates include the Batavia, New York, Federal Detention Facility, built with energy-efficient materials and equipment; the Krome Service Processing Center in Florida; and the Border Patrol Station in Remey, Puerto Rico, both currently in the design phase. When built, these two facilities will incorporate energy-efficient materials and use solar energy.

Energy Efficiency Performance

Standard Buildings

In FY 2002, DOJ reported a 40.8 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. A 2.1 percent decrease in gross energy consumption from FY 2001 levels was achieved while the facilities' net square footage remained almost constant. The BOP, with 88.6 percent of DOJ's total space, is continuing with efforts to meet the reduction goals.

Industrial and Laboratory Facilities

DOJ's industrial and laboratory facilities are large data centers, FBI laboratories, the FBI Headquarters facility, and the FBI training facility in Quantico, Virginia. The facilities operate 24 hours per day, 365 days per year. Several energy efficiency projects have been undertaken at these locations to improve HVAC systems, lighting, and electrical distribution. New data centers have been constructed using energy-efficient equipment and construction materials. Future plans include the relocation of FBI laboratories into a newly constructed energy-efficient facility, and involvement in the Laboratories for the 21st Century program.

Renewable Energy

Self-Generated Renewable Energy

The Federal Correctional Institute (FCI) in Phoenix, Arizona, uses solar energy for water heating. The project was accomplished through an energy savings performance contract (ESPC) in FY 1999, and plans to expand the contract are underway. The BOP is also working on using the contracting tool for a solar water system at the FCI in La Tuna, Texas, and for a solar water-heating system and wind generation projects at the FCIs in Englewood, Colorado, and Victorville, California.

BOP has contracted with a local utility company to use the landfill methane gas resource located at the Federal Prison Camp in Allenwood, Pennsylvania. The project was delayed in FY 2002 and is now expected to become operational during FY 2003 or early FY 2004.

Petroleum

The DOJ has several projects underway to reduce the use of petroleum in its facilities. The BOP has a solar hot water system at FCI in Phoenix, Arizona. The FBI is converting its central heating and cooling plant at Quantico, Virginia, from fuel oil to natural gas, and the Immigration and Naturalization Service is implementing a geothermal heat pump project at its U.S. Virgin Islands facility.

The BOP is continuing efforts to reduce the use of petroleum within its facilities by using alternative fuels where applicable. The use of life-cycle cost (LCC) analysis has also limited the use of petroleum-based fuels.

Water Conservation
DOJ has placed an increased emphasis on implementing Department of Energy (DOE)-established best management practices to reduce water consumption at DOJ facilities.

The BOP has completed a total of 80 energy and water conservation surveys of its facilities. Many of the water conservation opportunities identified can be implemented as extensions of regular maintenance programs.

Implementation Strategies

Life-Cycle Cost Analysis
The BOP mandates the use of LCC analysis. LCC analyses are conducted on all projects involving replacement of major energy-consuming equipment, new construction, renovation, and expansion.

Financing Mechanisms
The BOP has taken part in rebate programs and utility incentives to complete energy conservation projects. The cost savings from the efforts allow for the funding of additional projects. The BOP is working with DOE and the local utility company on a utility energy service contract (UESC) at the FCI in Englewood, Colorado, and is reviewing additional sites for potential UESCs.

The BOP entered into an ESPC in FY 1996 at the FCI in Phoenix, Arizona. The delivery order provided for the installation of a solar energy system that will supply a large percentage of the hot water for the facility. Operation began in FY 1999. Energy cost savings for FY 2001 were estimated to be more than $61,000, with an additional $500 per month in savings due to decreased maintenance and service to the system. The BOP is evaluating the potential to replicate this type of project in additional facilities. ESPCs are also being considered for the FCI in Victorville, California.

All DOJ real property-holding bureaus have the management structure and authority to implement ESPCs, and they are encouraged to take full advantage of alternative financing tools.

ENERGY STAR® and Other Energy-Efficient Products
DOJ procurement officials purchase ENERGY STAR® products whenever available.

ENERGY STAR® Buildings
The INS has plans to designate an ENERGY STAR® building during FY 2003.

Sustainable Building Design
DOJ bureaus incorporate sustainable design principles into new design and construction projects.

Energy Efficiency in Lease Provisions
The General Services Administration model lease provisions are used by DOJ in new leases and renewals.

Water Conservation
DOJ plans to increase its emphasis on implementing best management practices to reduce water consumption at DOJ facilities nationwide.

Energy Management Contact
Mr. Bill Lawrence
Energy Manager
U.S. Department of Justice
National Place Building, Suite 1050
1331 Pennsylvania Avenue, NW
Washington, D.C. 20530-0001
Phone: 202-616-2417
Fax: 202-514-1778
E-mail: bill.lawrence@usdoj.gov

H. DEPARTMENT OF LABOR (DOL)

Management and Administration
In the Department of Labor (DOL), the Assistant Secretary for Administration and Management is the Senior Official for energy conservation and energy management, and provides overall management of the agency's energy team. The other members of the agency energy team are the Director, Business Operations Center; and representatives from DOL's procurement, budget, legal, and facilities management departments.

DOL's energy team also consists of representatives from the Occupational Safety and Health Administration, the Employment Standards Administration, the Job Corps, the Bureau of Labor Statistics, the Employment and Training Administration, and the Mine Safety and Health Administration.

Management Tools

Awards
Thomas Pruitt, Director of Facilities Management, received DOL's first Energy Award at the Secretary of Labor's Annual Awards Ceremony in April 2002 for his significant contribution to energy conservation at DOL. This award will be presented annually to individuals or teams who have made significant contributions in energy conservation at DOL.

Performance Evaluations
DOL Senior Energy Officials' and team members' performance standards will reflect appropriate measures to accomplish goals and objectives of Executive Order 13123.

Training
In FY 2002, training was provided to Job Corps' engineering support contract employees and regional office employees involved in energy consumption projects. Training included offerings from the Federal Energy Management Program and EPA, and seminars provided by professional associations and advocacy organizations. Energy team members were also encouraged to attend energy conferences and participate in e-training. DOL's outreach information to employees during Energy Awareness Month included an exhibit at the Frances Perkins Building.

Showcase Facilities
Although there were no DOL Showcase facilities identified in FY 2002, plans continued for designation of the Potomac Job Corps Center. This center was identified as a potential Showcase facility during FY 2001. A geothermal heat pump is in the development plans for the center, with the potential to save approximately $520,000 during the life of the project, with a nine-year payback on investment.

Energy Efficiency Performance

Standard Buildings
In FY 2002, DOL reported a 11.0 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot.

Renewable Energy

Self-Generated Renewable Energy
Job Corps Centers were evaluated for potential renewable energy projects in the Super Energy Savings Performance Contract (ESPC) audits. No opportunities were identified as economically viable.

Purchased Renewable Energy
Utility contracts are negotiated by the individual Job Corps Centers. The energy audit process has not identified any available utility programs that offer opportunities to purchase renewable or green energy. A significant percentage of electricity however, is produced by hydropower from the Pacific Northwest. The amount of consumption, however, has not been quantified.

Petroleum
Many centers have converted fuel oil heating systems to propane as buildings have been modernized and the total building square footage increased. DOL reported consumption of 1.1 million gallons of fuel oil during FY 2002, a 60 percent decrease compared to FY 1985, and 5 percent less than in 2001. Propane use was 419,000 gallons, 127 percent greater than in FY 1985, and 1 percent less than in 2001.

Water Conservation
DOL sites reported water consumption of 31.9 million gallons at a cost of $38,500 during FY 2002. Water consumption data is collected quarterly with the center's energy consumption information. Also, some centers operate wells or water service is included in their leases. These centers are not metered for water, so consumption data is not available. For these centers, water consumption is estimated based on square footage.

Design and construction projects were required to utilize approved low-flow fixtures, such as 1.6 gallons per flush (GPF) toilets, 1.0 GPF urinals, 2.5 gallons per minute (GPM) shower heads, and 0.5 GPM faucet aerators. The provisions for water conservation as

stated in Executive Order 13123 were incorporated in DOL's Design Scopes of Work.

Implementation Strategies

Life-Cycle Cost Analysis
A life-cycle cost (LCC) analysis was required for all construction projects implemented for Jobs Corps Centers. All Design Scopes of Work were reviewed for compliance with the provisions of Executive Order 13123.

Facility Energy Audits
In FY 2002, 18 Job Corps Centers were evaluated utilizing Super ESPCs. Of these, 14 centers have been identified for a detailed energy study.

Since 1992, 49 percent of the Job Corps Centers have been audited. Facility energy audits were completed utilizing SAVEnergy audits, General Services Administration (GSA) area-wide contracts, and Super ESPCs.

Financing Mechanisms
Two energy service companies (ESCOs) were selected to implement Super ESPC contracts at DOL centers in the Northeast, Southeast, and Central regions. Negotiations are in progress with the ESCOs to proceed with detailed energy studies for each participating center. An ESCO selection was postponed for the Midwest region because the centers were not of a sufficient size for the projects to be economically viable for the ESCOs.

GSA area-wide contracts will be used at centers where using the Super ESPCs or the SAVEnergy audits is not an option. The Job Corps Centers have the advantage of utilizing funded building deficiencies to leverage conservation improvements where possible.

DOL's Frances Perkins Building (FPB) continues participation, through GSA, in a PEPCO energy services contract which guarantees a 4 percent savings off electrical generation charges. During FY 2002, DOL/FPB's savings were approximately $60,000. Pending approval, a portion of DOL's savings can be used to procure a portion of its power requirements from renewable generation resources.

ENERGY STAR® and Other Energy-Efficient Products
DOL is required to purchase minimum 30 percent post-consumer content paper. Some DOL contracts have incorporated energy-efficient criteria into contract specifications. The purchase and use of recycled carpet and other recycled products continues at DOL. DOL uses energy-efficient lighting and signs throughout the Frances Perkins Building. All new purchases of computers and peripherals are ENERGY STAR® compliant.

Sustainable Building Design
Sustainable building design standards were incorporated into Design Scopes of Work issued for construction and renovations on Job Corps Center facilities.

Energy Efficiency in Lease Provisions
Currently there are no special provisions for leased property. Independent contractors are responsible for utility arrangements. Facility systems are reviewed in the pre-selection process. Operating cost for all facility issues are considered.

Highly Efficient Systems
GSA has scheduled DOL's Frances Perkins Building for chiller replacement. The Job Corps Centers have not identified any highly efficient systems. The Super ESPC projects and the SAVEnergy audits were used to identify any potential opportunities.

Off-Grid Generation
The energy audit process was used to identify opportunities to utilize off-grid alternatives. SAVEnergy Audits have identified three Job Corps Centers in Puerto Rico with potential to use solar water heaters.

Electric Load Reduction Measures
DOL participated in PEPCO's Curtailment Load Program at the Frances Perkins Building.

The Job Corps Centers have relatively small buildings used for education, residences, and administrative support. As such, there were no opportunities found for load reduction measures in the energy audits performed in FY 2002.

Energy Management Contact
Ms. Patricia Clark
Building Manager
U.S. Department of Labor
200 Constitution Avenue, NW
Room S-1521
Washington, D.C. 20210
Phone: 202-219-5205, Ext. 126
Fax: 202-501-6886
E-mail: clark-patricia-c@dol.gov

I. DEPARTMENT OF STATE (STATE)

Management and Administration

The Department of State (State) has designated the Assistant Secretary for Administration as the Senior Energy Official, responsible for ensuring effective integration of energy and water conservation measures in State activities and initiatives.

The Deputy Assistant Secretary, Office of Operations; the Director of the Office of Overseas Buildings Operations; and a team of specialists in procurement, legal, budget, management, and technical areas assist the Senior Energy Official. They expedite and encourage the use of appropriations, energy savings performance contracts (ESPCs), alternative financing mechanisms, and other initiatives to advance compliance with Executive Order 13123.

Management Tools

Awards

State uses several employee incentive programs to reward exceptional performance in implementing Executive Order 13123. Financial awards include the Extra Mile, Franklin Awards, and awards given in conjunction with performance evaluations.

Performance Evaluations

Position descriptions of employees with responsibilities for energy conservation include requirements for implementing strategies designed to meet the goals of Executive Order 13123. The performance evaluations of these employees include assessments of their activities in these areas.

Training

State employees are encouraged to attend training to implement Executive Order 13123.

Showcase Facilities

State has two Showcase facilities. The first is the National Foreign Affairs Training Center (NFATC), Arlington, Virginia. The facility uses energy-efficient lighting, variable speed drives, motion sensors, and daylighting schemes. The second Showcase facility, the Florida Regional Center, Oakland Park, Florida, uses photovoltaic (PV) cells to power the parking lot and exterior building lighting. In addition, a solar trough supplies hot water for the facility.

Energy Efficiency Performance

Standard Buildings

In FY 2002, State re-categorized parts of its building inventory which resulted in a 45.9 increase in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. The increase in energy intensity reflects changes in the types of buildings reported in this category between the two years. Overall energy consumption has also risen due to increased activity related to recent terrorism and security concerns.

Exempt Facilities

State has classified the Harry S Truman (Main State) Building, Building C at the Charleston Regional Center, and the Potomac Lot as exempt facilities. In FY 2002, four formerly exempt facilities were classified as standard buildings. These were the Columbia Plaza, International Chancery Center, the Blair House, and the Beltsville Information Center.

Renewable Energy

Self-Generated Renewable Energy

The PV array and solar trough at the Florida Regional Center generate approximately 159 million Btu per year for lighting and hot water heating use.

In FY 2002, State tested the installation of solar PV lighting at the Beltsville Information Management Center for parking lot lighting. The test was unsuccessful because the equipment could not provide sufficient light for security cameras.

Million Solar Roofs

The solar roof on the Florida Regional Center is a solar trough hot water heating unit.

Water Conservation

State has installed water saving devices and curtailed exterior watering for plants, grass, and shrubbery in facilities. State water consumption is not measured at Federal facilities in Washington, D.C.

Implementation Strategies

Life-Cycle Cost Analysis

State dedicates a portion of its annual capital budget to energy conservation improvements for projects that meet the Energy Policy Act criteria for life-cycle cost effectiveness. State has installed solar PV panels for electrical power supply and solar troughs for hot-water supply, which has a 17-year payback. The Department will continue to install solar equipment when the life-cycle cost (LCC) is close to the 15-year payback goals established in Executive Order 13123. The Department also will retire inefficient equipment on an accelerated basis when replacement results in lower life-cycle costs.

Facility Energy Audits
Approximately 94 percent of the available space in State's inventory has been surveyed at least once. The Harry S. Truman Building and the NFATC have been audited numerous times.

The Department will procure audit services in FY 2003 for the remainder of the properties in its inventory, which include mostly warehouses and new buildings. In addition, partial audits for energy technology installation will be done for smaller building projects.

Financing Mechanisms
State has awarded three ESPCs. The first ESPC delivery order was for an electronic relamping project at the Harry S. Truman Building facility, begun in FY 1996. The last task order of the ESPC was completed in November 2001.

The second ESPC, the Beltsville Information Management ESPC, was completed in FY 2000 with the operational activation of the heat exchange project to reclaim heat from the air conditioning unit for winter heating.

The third ESPC, at the NFATC, was also completed in FY 2000. The project replaced every lighting fixture in the complex and upgraded HVAC systems by installing variable speed controllers on the air handler motors and integrating communication to an energy management control system.

ENERGY STAR® and Other Energy-Efficient Products
State has distributed catalogs of ENERGY STAR® and other energy-efficient products to purchasing personnel.

ENERGY STAR® Buildings
State pursues design and construction methods that result in energy-efficient facilities, including meeting environmental criteria consistent with the ENERGY STAR® program.

Sustainable Building Design
State encourages the adoption of sustainable building practices by training staff in the use of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) as a framework for sustainability analysis, developing sustainability standards for projects, and providing opportunities for vendors of sustainable products to present their products to State personnel.

Energy Efficiency in Lease Provisions
State leases are secured through the General Services Administration (GSA), which considers energy and water efficiency factors when procuring space.

Off-Grid Generation
State will evaluate off-grid generation by testing the capability of by-product steam generation for the Harry S. Truman Building.

State is negotiating with GSA to have fuel cells for the electrical and hot water power source for two cottages on the NFATC property, if life-cycle economic justification can be reasonably determined. GSA has been funded for renovation cost of the project. Preliminary analysis indicates that a payback of less than 20 years is obtainable.

Electrical Load Reduction Measures
All State facilities have developed plans for 10, 20, and 30 percent electrical load reduction in accordance with the President's May 3, 2001 Memorandum for Energy Conservation at Federal facilities.

Water Conservation
Water saver wash basin fixtures, automatic urinal flushing devices, and other water-saving devices have been installed in State facilities.

Energy Management Contact
Mr. Tim Arthurs
Energy Conservation and Policy Officer
Office of Facility Management & Support Services
Department of State
A/OPR/FMSS
2201 C Street, NW
Washington, D.C. 20520
Phone: 202-647-8970
Fax: 202-647-1873
E-mail: r.tim.arthurs@state.gov

J. DEPARTMENT OF TRANSPORTATION (DOT)

Management and Administration

The Department of Transportation (DOT) is organized into 12 operating administrations, with seven that operate facilities and the Transportation Administrative Service Center, which manages the headquarters building. Each of these operating administrations has active energy and water management programs.

The Assistant Secretary for Administration is the designated Senior Agency Official responsible for implementation of energy and environmental requirements at DOT.

DOT established a technical support team at the headquarters level to assist the operating administrations to implement the requirements of National Energy Conservation Policy Act and Executive Order 13123. The team consists of the DOT energy manager and procurement policy, budget operations, and general counsel representatives. Each of the operating administrations has also developed similar structures within their organizations.

Management Tools

Awards

Within DOT, incentive awards are widely used to reward conscientious and innovative energy management activities. Each year, the Federal Aviation Administration (FAA) presents an Administrator's Environmental Excellence Award.

In FY 2002, the FAA recognized the Southern and Great Lakes regional energy managers and an administrative officer at the Aeronautical Center for outstanding achievements. Additionally, six employees received the FAA Administrator's Award for Environmental Excellence.

At the FAA's Aeronautical Center, letters of appreciation and certificates are given for noteworthy contributions. In addition, two employees received *You Have the Power* awards in FY 2002 in recognition of their exemplary contributions.

As an incentive for the implementation of proactive energy efficiency and conservation measures, the Coast Guard offers public recognition, the ENERGY STAR® building plaque, and unit operational budget incentives.

Performance Evaluations

DOT's operating administrations require the addition of energy and environmental responsibilities to management position descriptions as they are updated. FAA's Air Traffic Service is preparing an energy conservation performance goal for inclusion in the Airway Facilities Senior Executives Performance Agreements.

Training

With limited training and travel funds, DOT relies heavily on training opportunities offered by the Department of Energy (DOE), the General Services Administration (GSA), and the Department of Defense. The FAA Airway Facilities Energy Management Program Office funded, organized, and facilitated two national training workshops in FY 2002. The winter workshop included education and training on sustainable design, light emitting diode (LED) technology, and efficient HVAC design. The summer workshop, held in conjunction with DOE's Energy 2002 Workshop and Exposition, included education and training on ENERGY STAR® buildings, bill scanning, and a demonstration of the latest in FAA-approved LED obstruction and runway lighting.

Showcase Facilities

The Fort Lauderdale Air Traffic Control Tower (ATCT) was designated a Showcase facility in FY 2002. The Fort Lauderdale ATCT was retrofitted with the installation of a new generator. The A/C units were replaced, new air handlers were installed, and the pneumatic control system was replaced with a new, state-of-the-art electronic system that monitors and controls all of the zones. The roof, water fountains, water heaters, refrigerators, and many other units were replaced with energy-efficient equipment.

Energy Efficiency Performance

Standard Buildings

During FY 2002, DOT reported a 23.9 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. Records of increased use of electricity and fuel oil were partially offset by reductions in natural gas usage in the standard building category reported by FAA and the Coast Guard. DOT received credit for purchases of 12.3 million Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 108,805 Btu/GSF to 108,804 Btu/GSF.

Exempt Facilities

DOT exempts FAA mission critical electronic systems for air traffic control within the continental United States. DOT performs energy and water audits and implements cost effective conservation projects in exempt facilities. Energy use reduction planning and conservation measures are being implemented for exempt spaces, as well as for facilities in the standard building category.

Tactical Vehicle and Equipment Fuel Use

Jet fuel used by the Coast Guard and FAA represents the majority of vehicle and equipment consumption for DOT. Consumption levels are highly dependent on mission requirements and efficiency of the fleet. Significant energy reductions have been made through improved operations such as combining missions and training flights. Future reductions will be made through equipment replacement and modernization.

Renewable Energy

Self-Generated Renewable Energy
The FAA generated approximately 234.4 megawatthours of renewable energy in FY 2002 from a combination of photovoltaic and wind power systems.

Solar panel/battery combinations power 96 percent of the lighted buoys and 91 percent of the lighted-fixed aids to navigation maintained by the Coast Guard. The Coast Guard has also installed solar water heating systems in multiple locations, a solar roof in Boston, Massachusetts, and a solar light house in New London, Connecticut. The St. Lawrence Seaway Development Corporation also utilizes solar power for all its fixed and floating aids to navigation.

Purchased Renewable Energy
The FAA is purchasing renewable power in the Northwest Mountain region.

Petroleum
In FY 2002, DOT used 56 percent less fuel oil and 1 percent less LPG compared to the 1985 baseline. Since 1985, many DOT facilities have switched to natural gas for heating.

Water Conservation

Accurate water consumption data has been difficult to develop for the FAA and the Coast Guard. This is due to the wide variation in units of measure used by water authorities, and the lack of metering at some locations. Similarly, DOT's attempts to develop a baseline consumption figure have been hampered by similar issues.

Implementation Strategies

Life-Cycle Cost Analysis
Life-cycle cost (LCC) analysis is formalized in DOT's Transportation Acquisition Manual (TAM). Each of the operating administrations has requirements for LCC analysis in alteration, construction, and the procurement of energy consuming equipment. Employees also use the National Institute of Standards and Technology's LCC materials and software. FAA's Mike Monroney Aeronautical Center has a complete staff of licensed architects and professional engineers who provide design and construction services in accordance with Executive Order 13123 and other mandates.

Facility Energy Audits
Approximately 72 percent of DOT facility square footage was audited by the end of FY 2002. DOT first audited large facilities, and is now auditing smaller facilities. This method is resulting in a lower percentage of square footage completed each year.

Financing Mechanisms
The Coast Guard obligated $1.4 million in FY 2002 towards its Facility Energy Efficiency Fund (FEEF) projects. FEEF projects are low-cost, high return-on-investment facility retrofits. These projects yielded an annual estimated savings of $300,000.

ENERGY STAR® and Other Energy-Efficient Products
DOT's TAM requires the purchase of products in the top 25 percent of efficiency. Energy efficiency criteria have been incorporated into the FAA In-Service Master Specification for new systems.

Sustainable Building Design
All new FAA buildings are designed to exceed the requirements for ENERGY STAR® building certification. The FAA's Northwest Mountain region is incorporating sustainable building features into several new designs. In addition, the Aeronautical Center in Oklahoma City is using sustainable building principles while designing its security control center and the screening facility.

Energy Efficiency in Lease Provisions
DOT has been working with GSA to incorporate energy efficiency and sustainable design principles into the lease for the new DOT headquarters facility.

Off-Grid Generation
In FY 2002, FAA's Northwest Mountain region entered into an agreement with the Construction Engineering Research Laboratory to participate in a Government and industry test bed program for proton exchange membrane fuel cell technology. Avista Laboratories proposed to test a 1-kilowatt fuel cell at a remote radio site on McCord Air Force Base. The fuel cell will be used to charge the uninterruptible power supply battery system in the event of a power outage.

Coast Guard Air Station Cape Cod, Massachusetts, is the Coast Guard's Showcase facility. In coordination with the Coast Guard Research and Development Center, as well as industry and regional governments, Air Station Cape Cod has developed a fuel cell system designed to provide electric power and heat to the base. This 250-kilowatt, molten carbonate fuel cell will reduce emissions, fuel consumption, and facility life-cycle costs.

Electrical Load Reduction Measures

The Coast Guard's regional headquarters in Alameda, California, the largest agency facility in the state, has taken an active role in preparing load reduction measures to help provide grid relief during Stage 2 and Stage 3 alerts. This included the development of load reduction procedures for its own location as well as assisting other California facilities in preparing their responses. Attention is given to protect the mission execution ability, while providing vital grid relief.

Facility managers agency wide have developed energy consumption reduction measures that can quickly be implemented during power emergencies.

Water Conservation
The Coast Guard began monitoring water consumption through the FASER system located at its finance center. In FY 2002, FAA added water consumption as another category under the National Energy Management Reporting System, which will enable the agency to monitor savings from water conservation more accurately.

Energy Management Contact
Mr. Richard Pemberton
Associate Director for Administrative Management
U.S. Department of Transportation
Room 7404, M40
400 7th Street, SW
Washington, D.C. 20590
Phone: 202-366-4243
Fax: 202-493-2006
E-mail: richard.pemberton@ost.dot.gov

K. DEPARTMENT OF THE TREASURY (Treasury)

Management and Administration

The Department of the Treasury's (Treasury) Senior Agency Official is the Acting Assistant Secretary for Management and Chief Financial Officer. Each of the Treasury bureaus has designated a Senior Bureau Energy Official to direct their energy program. The Senior Agency and Bureau Officials provide policy guidance for meeting the goals of Executive Order 13123. Treasury's Departmental-level energy teams include staff from the procurement, legal, budget, management, and technical sections of Treasury.

Management Tools

Awards

Treasury has been utilizing the existing performance awards system to recognize individual employees. The Bureau of Engraving and Printing (BEP) and the U.S. Mint (Mint) use their gain-sharing programs to award cash for energy savings. Two Treasury bureaus, the Internal Revenue Service (IRS) and Mint, won Federal Energy and Water Management Awards in FY 2002.

Performance Evaluations

All Treasury energy managers now have an energy management element in their performance criteria. The Treasury Office of the Inspector General and the Treasury Inspector General for Tax Administration conducted an audit of Treasury's energy program in FY 2002 resulting in increased oversight of Bureau programs by the Office of Safety, Health, and Environment (OSHE) and an added emphasis on implementing energy saving retrofits and new projects.

Training

In FY 2002, Treasury sent 16 employees to energy training at a cost of $22,800. Additionally, in an effort to improve the quality of the information the Bureaus submit to the Department, OSHE sponsored a class on how to complete the Annual Energy Report for the Bureaus. Treasury takes advantage of Federal Energy Management Program courses whenever available because of their high quality and low cost. Energy training are maintained on the Office of Procurement's and OSHE's Web sites to assist the Bureaus. Treasury remains an active participant in the *You Have the Power* energy awareness campaign, nominating one "Energy Champion" in FY 2002.

Energy Efficiency Performance

Standard Buildings

In FY 2002, Treasury reported a 23.9 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. Treasury received credit for purchases of 5.1 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 76,390 Btu/GSF to 75,610 Btu/GSF.

During FY 2002, Treasury and its Bureaus occupied approximately 55 million square feet of space, the majority of which was in General Services Administration (GSA) assigned facilities. Treasury reports energy statistics only for the Treasury-owned and GSA-delegated space for which it controls the utilities. In FY 2002, Treasury reported consumption for 6.5 million square feet in the standard buildings category.

Some 2.0 million square feet of space for the Internal Revenue Service (IRS), the Bureau of the Public Debt (BPD), and the Financial Management Service (FMS) was managed directly by the Bureaus under the GSA Buildings Delegations Program. IRS occupied the majority of delegated space for standard buildings. Treasury-owned or leased standard buildings consisted of 4.5 million square feet of space in Departmental Offices (DO) (the Main Treasury and Annex buildings), the Federal Law Enforcement Training Center (FLETC), the Office of the Comptroller of the Currency (OCC), the Office of Thrift Supervision (OTS), and the U.S. Secret Service (USSS). FY 2002 was the first year that OCC has reported. In FY 2002, all of the U.S. Customs Service's (Customs) facilities were reclassified from standard buildings to industrial/energy intensive buildings.

In FY 2002, DO continued the renovation of the Main Treasury Building which includes energy-efficient windows and updated wiring and lighting. OTS updated 50 percent of their variable frequency drives in their HVAC system.

Industrial and Laboratory Facilities

Treasury reports energy consumption for 10 million square feet of industrial space. The IRS under the GSA Buildings Delegations Program directly managed 5.6 million square feet of space. The remaining 4.4 million square feet of space belongs to the Bureau of Alcohol, Tobacco and Firearms (ATF), BEP, Customs, the Mint, and USSS. The Customs' facilities were reclassified to industrial in FY 2002. The lack of a common unit of production across the Bureaus continues to require the use of the Btu per square foot as the reporting unit for Treasury's industrial/energy intensive facilities.

For FY 2002, Treasury's industrial facilities achieved a 15.9 percent reduction in energy consumption over the FY 1990 baseline on a Btu per square foot basis.

Customs is having difficulty achieving energy reductions due to expanding operation requirements since September 11, 2001, including:

- Increased border security requirements with expanded hours of operation to 24 hours per day at Border Stations;
- Increased security with Customs installation of energy-intensive equipment such as X-ray Gamma Ray non-intrusive detection equipment at its Border Stations, while facilitating trade through streamlining the inspection process;
- Increased lighting levels at Border Stations to improve safety and security; and,
- Increased air operations.

Tactical Vehicle and Equipment Fuel Use

Treasury tactical vehicle and equipment fuel use is predominately accounted for by Customs aircraft operations. The FLETC's pursuit training vehicle use is reported in this category and BEP reported a small amount of gasoline and diesel fuel used in armored vehicles transporting currency.

Consumption of gasoline and jet fuel have increased significantly due to the increased training load at FLETC and increased mission requirements for Customs since September 11, 2001.

Renewable Energy

The Mint purchased 1,500 megawatthours of wind power at the Denver, Colorado, Mint during FY 2002.

Petroleum

Treasury continues the conversion of oil to natural gas or renewable sources wherever economically justified. The IRS Andover Service Center completed the conversion of its three low-pressure boilers from oil to natural gas.

Water Conservation

In FY 2002, Treasury consumed 647 million gallons of water at a cost of $2.7 million. Six percent of Treasury facilities met the requirement for water management plans and implementation of best management practices. The consumption was up from FY 2001; however, this is attributed primarily to more complete data reporting this year.

BEP continued to examine the feasibility of recycling water wipe solution for printing presses. If feasible, the process may allow a 90 to 95 percent reduction in water use. Currently 70,000 gallons per day are used. The Bureau also renovated its restrooms, installing water-conserving fixtures and energy-efficient lighting. USSS continues to install motion-sensored water faucets in all new buildings and retrofits of several older buildings at its training center. The Mint reported implementing conservation measures that are saving 3 million gallons of water annually.

Implementation Strategies

Life-Cycle Cost Analysis

Treasury's energy directive specifically requires the use of life-cycle cost (LCC) analysis for all energy projects and procurement. During FY 2002, all Bureaus continued to use LCC analysis for their energy projects. For example, all Mint facility projects with a cost of $25,000 or more are subject to the "Project Approval Request" process which includes the LCC and benefit analysis. In addition, the following are completed for each project:

- Alternatives and Assumptions,
- Return-on-Investment,
- Investment Analysis and Recommendation, and
- Net Present Value.

Facility Energy Audits

In FY 2002, Treasury performed energy audits in 11 percent of its space. This brings the total space audited to 95 percent since 1992. The IRS Andover Service Center was audited by the Bay State Gas Company as part of a potential utility energy service contract (UESC) in FY 2004. The DOE-funded industrial audits at the BEP and Mint continued in FY 2002. By the end of the year, the Western Currency Facility had implemented four of the no cost/low cost recommendations. USSS audited their computer facility identifying a possible air conditioner replacement project. OSHE performed an audit of FMS' Liberty Loan Building and identified a lighting retrofit project for FY 2003.

Financing Mechanisms

In FY 2002, Treasury did not execute any ESPCs or utility energy service contracts (UESCs). The four non-appropriated bureaus continued to self-fund their projects to save financing costs.

ENERGY STAR® and Other Energy-Efficient Products

Treasury has implemented a policy of purchasing only ENERGY STAR®-compliant computers since 1995. The Department also purchases ENERGY STAR® copiers and fax machines, and follows the product recommendations in DOE's Energy Efficient Products Guide. Links to the DOE, GSA, and Defense Logistic Agency Web sites have been added to OSHE's and the Office of Procurement's Web sites to assist the bureaus in obtaining information on energy-efficient products.

ENERGY STAR® Buildings

OTS applied for and received ENERGY STAR® designation for its Washington, D.C., headquarters building. The new USSS field office in Miami, Florida,

was designed to ENERGY STAR® standards. The headquarters building for OCC was evaluated for ENERGY STAR® certification, but did not qualify.

Sustainable Building Design
Treasury has mandated use of the Whole Building Design Guide for its new facilities. The new ATF Headquarters building is being designed to meet or exceed the Leadership in Environmental and Energy Design (LEED™) silver level. The building will incorporate daylighting, plants on the roof, capture rainwater for irrigation, and include high efficiency irrigation, digital controls, individual HVAC controls, green power use, and occupancy sensors for lighting. ATF's new laboratory and fire research center were also designed following sustainable design guidelines.

GSA performs most of the design work for Treasury facilities using the LEED™ standards. The consultant that designs facilities for the USSS follows sustainable design principles for the Beltsville, Maryland, Training Center.

Energy Efficiency in Lease Provisions
Treasury has provided Model Green Lease provisions to each of its Bureaus, to be used at sites where Treasury has independent leasing authority, to ensure that GSA follows the provisions when obtaining space for the Bureau.

Industrial Facility Efficiency Improvements
BEP replaced two refrigerated compressed air dryers at the Washington, D.C., facility and installed a network control system for their new chillers with an estimated $16,000 annual savings. During FY 2002, BEP began replacing its roof, built in 1914, with a metal standing seam roof with increased insulation.

The BEP and Mint received free industrial audits, through DOE's Office of Industrial Technology, identifying a number of cost-effective projects. The Bureaus plan to self-fund these projects through their revolving funds. BEP's Western Currency Facility has implemented four of the no-cost/low-cost measures identified by the DOE energy audit.

The IRS' Brookhaven, New York Service Center installed a new 800-ton electric chiller with direct digital controls and a variable frequency drive on their cooling tower. The Andover, Massachusetts Service Center completed an audit which resulted in a proposal for a UESC in FY 2004.

The Mint began replacement of old air compressors and continued upgrading HVAC control in their facilities.

Highly Efficient Systems
BEP replaced two old compressed air dryers with new water-cooled refrigerated compressed air dryers. An additional benefit of this upgrade was the reduction in the use of ozone-depleting substances (R-22) in the old system. BEP also installed a Carrier control system called "ChillerVisor" on its four new chillers to better manage their energy use under partial loads. OTS upgraded 50 percent of the variable speed drives in the HVAC system.

Off-Grid Generation
Treasury did not install any off-grid generation capability in FY 2002. BEP continues to generate steam from burning security paper. USSS is considering the use of solar outdoor lighting systems and solar panels on the roofs of the guard booths.

Electrical Load Reduction Measures
Every Treasury-owned or fully delegated facility continues to follow the electrical load reduction plan developed in FY 2001 based on DOE's "Plan of Action Energy Conservation at Federal Facilities" and the load reduction measures detailed on FEMP's Web site. Peak demand reduction and conservation awareness materials from the *You Have the Power* campaign were distributed throughout Treasury. All Treasury bureau facilities participated in their utility load reductions programs.

Energy Management Contact
Mr. J. Stuart Burns
Director, Office of Safety, Health, and Environment (MBH)
U.S. Department of the Treasury
1500 Pennsylvania Avenue, SW
6136 Metropolitan Square, Room 6179
Washington, D.C. 20220
Phone: 202-622-0412
Fax: 202-622-4060
E-mail: stuart.burns@do.treas.gov

L. DEPARTMENT OF VETERANS AFFAIRS (VA)

Management and Administration

The Assistant Secretary for Management serves as the Senior Energy Official for the Department of Veterans Affairs (VA). The agency's energy team is composed of representatives from the technical, legal, procurement, and budget sections.

Management Tools

Awards

VA initiated an Employee Incentive Awards Program in 1975, and since that time has recognized individuals and medical centers for their energy savings efforts. VA also participates in the Medical Center Director, Veterans Integrated Service Network (VISN) Director and/or Secretary of the VA Energy Conservation Awards, and the Department of Energy (DOE) Federal Energy Management Program (FEMP) Federal Energy and Water Management Awards.

Performance Evaluations

VA includes energy conservation achievements in performance evaluations for its energy engineers. The chief of engineering service at the medical centers is responsible for overall energy management, and performance evaluations are based on implementation of Executive Order 13123.

Training

VA developed a handbook that consolidated energy conservation methods, concepts, and evaluation procedures used by facility engineers. VA compiled the most effective technology and energy conservation opportunities in a concise, usable format.

VA has conducted many regional workshops and teleconferences. Engineering staff also participate in training offered by the Association of Energy Engineers in cooperation with DOE. In FY 2002, staff also participated in energy savings performance contract (ESPC) training courses.

VA also has an Energy Awareness Program, which educates employees on energy conservation measures throughout the year.

Showcase Facilities

During FY 2002, one VA facility was designated as an Federal Energy Saver Showcase for achieving savings through energy efficiency and renewable energy technologies.

Energy Efficiency Performance

Standard Buildings

In FY 2002, VA reported a 13.5 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. The rise in electrical consumption during FY 2002 is attributed to the installation of information technology equipment and state-of-the-art medical equipment.

Tactical Vehicles and Equipment Fuel Use

In FY 2002, VA reported consumption of 5.2 million gallons of gasoline and 1 million gallons of diesel fuel for its vehicles and equipment.

Renewable Energy

Self-Generated Renewable Energy

VA has several operational solar hot water heating systems at medical center facilities.

Petroleum

In FY 2002, VA used 8.6 million gallons of fuel oil, a decrease of 55 percent from FY 1985 levels. More than 83,000 gallons of LPG/propane was used, nearly 50 percent below FY 1985 levels.

Water Conservation

VA water consumption in FY 2002 was 9.4 billion gallons, at a cost of more than $18 million. Many VA medical centers are implementing best management practices to reduce water consumption, and medical centers have been directed to work with energy service companies to implement water conservation projects in conjunction with ESPC projects.

Implementation Strategies

Life-Cycle Cost Analysis

VA's policy is to fund only projects that are cost-effective based on life-cycle cost analysis. Medical centers use the analysis tool when making decisions about products, services, construction, and other projects.

Facility Energy Audits

Most VA facilities received energy audits in the 1980s. As a result, a handbook was prepared that consolidated energy conservation methods, concepts, and evaluation procedures for facility engineers. Medical centers that undergo major system or infrastructure changes receive new energy audits. During FY 2002, the medical centers that have ESPCs in place also underwent new energy audits as part of the contracts.

Financing Mechanisms
VA uses ESPCs to implement energy projects and has awarded many delivery orders for energy projects at facilities throughout the country. During FY 2002, six VA medical centers completed ESPC projects.

By the end of FY 2002, most VISNs were in various planning stages for implementation of ESPCs. Most medical centers have used alternative financing tools such as ESPCs for implementing projects.

ENERGY STAR® and Other Energy-Efficient Products
VA has asked procurement officials to purchase ENERGY STAR® equipment where available. The VA's standard product specification for new and renovated construction specifies that products be ENERGY STAR® compliant or among the top 25 percent in energy efficiency.

ENERGY STAR® Buildings
During FY 2002, VA worked with DOE's Oak Ridge National Laboratory to identify VA medical centers that qualify for the *ENERGY STAR®* label for buildings. Forty-nine medical centers were identified as meeting *ENERGY STAR®* criteria during a preliminary evaluation. VA expects that more buildings will qualify after further evaluations.

Sustainable Building Design
VA has integrated a "build green" strategy for its facilities by:
- Incorporating sustainable design concepts into solicitation requirements for architect/engineering firms on all major VA projects;
- Participating in the U.S. Green Building Council, National Institutes of Building Sciences, and other organizations that promote sustainable design principles; and,
- Continuously updating VA master specifications, design manuals, and design guides with sustainable design principles.

Energy Efficiency in Lease Provisions
VA incorporates energy efficiency into its lease bid packages by:
- Encouraging lease offerors to use ESPCs or utility agreements to achieve the ENERGY STAR® benchmark score of 75;
- Stipulating that all newly constructed facilities achieve ENERGY STAR® status within one year of achieving 95 percent occupancy, and maintain that level of performance;
- Providing lists of energy service companies qualified for ESPC projects, plus additional information from FEMP on energy efficiency, renewables, and water conservation;
- Applying American Society of Heating, Refrigerating, and Air Conditioning Engineers requirements to its buildings; and,
- Requiring offerers to include a design concept narrative that addresses architectural concept, building design, quality of construction materials, and energy efficiency.

Highly-Efficient Systems
The VA Medical Center at Mountain Home, Tennessee, is planning to build, operate, and maintain an on-site energy center. The project will be the first privately-financed and operated energy plant on VA property, and the first using VA's unique enhanced-use authority. The energy center will use the most recent cogeneration technologies and provide utilities to the Medical Center and other neighboring facilities. The project will replace existing inefficient systems with high efficiency units, and enable the center to reduce its energy consumption and achieve operational cost savings of more than $15 million over the term of the lease with no capital cost to the VA. The project will also result in a cost avoidance of more than $3 million in major construction funding, to be used for renovations at the research and educational facilities located at the center.

Electrical Load Reduction Measures
Most VA medical centers have emergency generators that have been used to shave peak electrical load, however, VA does not have a policy that mandates the use of the generators for peak shaving.

Energy Management Contact
Mr. Rajinder Garg
Chief, Operations and Energy Management Division (10NB0)
U.S. Department of Veterans Affairs
Room 823
810 Vermont Avenue, NW
Washington, D.C. 20420
Phone: 202-273-5843
Fax: 202-273-6160
E-mail: raj.garg@hq.med.va.gov

M. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Management and Administration

The Environmental Protection Agency (EPA) has designated the Assistant Administrator for Administration and Resources Management as the Agency Energy and Environmental Executive. The Senior Energy Official is supported by a national energy team and a national energy coordinator, located in the Sustainable Facilities Practices Branch (SFPB). The SFPB gives full-time attention to sustainability practices, policies, and project implementation. Key staff in the SFPB's energy team include the branch chief, national energy coordinator, an energy audit/program manager, two mechanical engineers, an architect, and support staff.

Management Tools

Awards

EPA is an active participant in the *You Have the Power* campaign and has recognized close to 30 employees as energy champions. EPA developed a new peer awards program to recognize and encourage energy and water conservation among its facility managers and building design and construction personnel. The awards honor managers who have spearheaded projects to reduce facility energy use and employees who have led cutting-edge projects or partnered with SFPB to reduce energy.

EPA has an Agency-wide awards program. The awards are not specifically for energy management performance, but are more inclusive, addressing sustainable design and resource conservation. Eleven EPA employees received the Assistant Administrator's Award for Innovation: eight for their efforts in procuring green power and three for their work on energy savings performance contracts (ESPCs) at EPA facilities.

Performance Evaluations

Employees who have energy management responsibilities are evaluated annually against criteria based on the Agency's energy management principles.

Training

EPA uses several education and training programs to ensure that employees are aware of the latest technologies and opportunities to increase energy efficiency.

The "Laboratories for the 21st Century" program (Labs21) provides information on energy-efficient technology alternatives for laboratory applications and creates a forum for laboratory designers, owners, and operators to obtain up-to-date information and support for implementing energy-efficiency and sustainable design projects.

During 2002, Labs21 sponsored a series of one-day workshops on energy-efficient laboratory design and operations. The Labs21 team designed the course to provide a comprehensive understanding of the opportunities to optimize the energy performance of new and existing laboratories.

The Labs21 annual conference included plenary and panel sessions, which highlighted strategies and technologies for improving energy and water efficiency and overall environmental performance in laboratories.

EPA also conducted its annual three-day Buildings and Facilities Conference, which all EPA facility managers attend. Conference attendees also included facility managers from General Services Administration (GSA)-operated regional offices and headquarters.

EPA has established credit card purchasing guidelines that identify specific environmental attributes when selecting products, such as the ENERGY STAR® label. The guidelines recommend purchasing products with recycled content, reduced packaging, energy-efficient designs, and those containing minimal hazardous materials or toxic chemicals.

The *Energizing EPA* newsletter is an internal newsletter that highlights EPA's efforts to improve energy and water efficiency at its facilities.

Showcase Facilities

EPA's New England Regional Laboratory in Chelmsford, Massachusetts, was designated a Federal Energy Saver Showcase during FY 2002. The laboratory features numerous energy-efficient products and techniques including: gas-fired boilers, variable air volume ventilation systems, skylights, and occupancy sensors. The windows are not only insulated and tinted, but are also shaded with photovoltaic sunshades which produce approximately 2,000 watts of solar energy daily.

Energy Efficiency Performance

Industrial and Laboratory Facilities

In FY 2002, energy use at all 19 EPA laboratory complexes decreased by almost 22.1 percent from 357,414 Btu per gross square foot per year in 1990 to 278,453 Btu per gross square foot in 2002. EPA's energy intensity for FY 2002 was adjusted to reflect purchases of 79.6 billion Btu of renewable energy.

EPA has been purchasing green power since 1999. By the end of FY 2002, EPA was using 100 percent green power in five of its 28 reporting facilities.

Tactical Vehicle and Equipment Fuel Use
EPA has incorporated alternative fuel vehicles (AFVs) into its nationwide fleet of more than 1,100 automotive vehicles. In FY 2002, EPA acquired 60 additional AFVs that use compressed natural gas, ethanol/gasoline mixtures, or electricity, bringing the Agency's total AFV fleet to 324 vehicles. This helped EPA meet the Energy Policy Act's requirement that 75 percent of nonexempt, new vehicles acquired by Federal agencies must be AFVs. For the fourth straight year, EPA exceeded this requirement by 10 percent or more.

To meet the requirements of Executive Order 13149, EPA began using compressed natural gas in EPA Headquarters' shuttle buses in January 2002. This effort helped reduce the Agency's petroleum use by more than 5,000 gallons or 16 percent from the 1990 baseline. By the end of FY 2002, EPA had increased average fleet miles per gallon by 2 miles per gallon from the FY 1999 baseline.

The EPA Administrator has committed to continue the Agency's fuel efficiency efforts and increase AFV use, directing EPA's Office of Transportation and Air Quality (OTAQ) and Facilities Management and Services Division (FMSD) to work with GSA to further improve EPA's own fleet and to invite other Federal and private fleets to join in the effort. In FY 2002, FMSD and OTAQ worked on developing a new "Fleet Excellence" fuel-efficiency program that will encourage private-sector organizations to reduce their fleet's miles per gallon by 3 percent annually.

Renewable Energy
In the summer of 1999, with assistance from GSA and the Department of Energy (DOE), the EPA laboratory in Richmond, California, became the first Federal building to receive 100 percent of its electricity from renewable sources. EPA signed a three-year contract with the Sacramento Municipal Utility District to purchase electricity generated from an existing geothermal plant and a new landfill gas plant. The contract was renegotiated during 2002 and extended for another three years. Four additional EPA facilities are receiving 100 percent of their power from renewable sources.

Self-Generated Renewable Energy
EPA has undertaken a variety of activities across the country to take advantage of self-generating sources of renewable energy, from solar arrays to geothermal heat pumps. Recent activities include:

- Roof-top Solar Arrays. During April 2002, EPA installed a photovoltaic (PV) roof, one of the two largest on the East Coast, on top of its National Computer Center in Research Triangle Park, North Carolina. The 100-kilowatt system incorporates PV cells backed with insulating polystyrene foam, turning solar energy into usable power while increasing the building's thermal insulation. The system supplies electricity to power the entire building's lights 24 hours per day. Since 2000, EPA's Region 5 Office in Chicago's Metcalfe Building has received renewable energy from a solar array on the roof that provides 10 kilowatts of power to the office building.

- Solar Wall. EPA's laboratory in Golden, Colorado, completed installation of a solar wall in March 2002. The transpired solar collector was installed on the south wall of the Hazardous Materials Building to augment the facility's heating and cooling system.

Purchased Renewable Energy
EPA's facilities in Richmond, California; Golden, Colorado; Cincinnati, Ohio; and Chelmsford, Massachusetts; purchased 100 percent renewable energy for the entirety of FY 2002; Manchester, Washington's, delivery of renewable power began November 1, 2001, and Corvallis, Oregon, purchased nearly 133,000 kilowatthours of green power in FY 2002. Combined, these facilities purchased 24.1 million kilowatthours of renewable energy in 2002. This represented 18.5 percent of EPA's electricity purchases for reporting laboratories. EPA has already surpassed DOE's voluntary goal of 5 percent renewable power usage in Federal agencies.

Based on these renewable power purchases, the Agency in 2001 qualified as a Founding Partner in EPA's Green Power Partnership. EPA joins Fortune 500 companies, cities, universities, and other partners to boost the market for green power. The program recognizes organizations committed to purchasing renewable energy proportional to their annual electricity use. Partners have access to a network of providers and partners, technical information, and public recognition.

Million Solar Roofs
Several EPA solar initiatives and project leaders have been recognized on the DOE's Web site as examples of the Million Solar Roofs Initiative. EPA Region 10 laboratory in Manchester, Washington, was recognized for its PV panels, which eliminated 50,000 tons of carbon emissions annually. On September 19, 2002, the National Computer Center at RTP began using its solar panels to generate electricity. The New England Regional Laboratory in Chelmsford, Massachusetts,

also began to reap the benefits of its unique solar sunshade panels in September 2001. In addition, EPA has funded solar panels in facilities it occupies but does not manage, such as the Region 5 headquarters Metcalfe Building in Chicago. The Agency's Edison, New Jersey; and Athens, Georgia; solar thermal systems also qualify under this initiative.

Petroleum
In FY 2002, EPA used fuel oil in five of its reporting laboratories. Fewer EPA facilities used fuel oil in FY 2002 than in FY 2001, because natural gas prices did not rise as high as the previous year. As a result, some boilers geared for natural gas burned more efficiently than last year. Two laboratory facilities also used propane. EPA used a total of 122,619 gallons of fuel oil in FY 2002 and 6,960 gallons of propane.

Water Conservation
During FY 2002, EPA used 186 million gallons of water in its 28 laboratories. EPA also made a commitment to assessing and reducing its water use by launching an Agency-wide water conservation initiative. EPA implemented the water management planning process at two facilities—its New England Regional Laboratory in Chelmsford, Massachusetts, and the Environmental Sciences Center in Fort Meade, Maryland. Best management practices incorporated in the Chelmsford laboratory when it opened in October 2002 included: water-efficient landscaping; low-flow toilets, urinals, faucets, and showerheads; distribution system audits and leak detection and repair; public information and education programs; and water reuse and recycling.

Implementation Strategies

Life-Cycle Cost Analysis
EPA has actively pursued ESPCs and ESPC-like arrangements to achieve improved energy and water performance. By determining the optimal energy conservation system based on an analysis of an entire list of energy conservation measures (ECMs) and their relative merits in certain combinations, and taking into account the effect of any relevant rebate programs or more favorable rate structures, EPA has been able to identify and implement significant energy-efficiency upgrades and life-cycle savings that would have gone unnoticed under the traditional process, which emphasized initial costs.

EPA also expanded the payback period it uses to evaluate life-cycle cost (LCC) savings by five to ten years. In contrast to ESPCs, these projects involve greater project-by-project decision-making and trade-offs when performing an LCC analysis. In a new laboratory EPA is building in Kansas City, Kansas, the Agency conducted extensive energy modeling of the design documents and identified and incorporated additional economical energy conservation measures into the project.

During FY 2002, EPA initiated energy/mechanical system master planning as part of the existing long-term master planning process for its facilities. In addition to looking at future space and programmatic needs of facilities, the Agency now works to identify short-, intermediate-, and long-term opportunities for more energy-efficient mechanical systems.

Facility Energy Audits
As part of the Agency's joint safety, health, environmental management, energy, and water audit process (SHEM audits), a facility's energy and water management practices and status are assessed. Each major facility is audited once every three years. The energy and water assessors identify, on a preliminary basis, opportunities for energy and water conservation measures. In FY 2002, three EPA facilities and offices included energy assessments as part of SHEM audits.

SFPB also performed more in-depth energy assessments for several EPA laboratories. In FY 2002, EPA developed a standard operating procedure for, what is known as, Stage 2 energy audits, a comprehensive review of laboratory energy use, mechanical systems, and potential upgrades. Following the Stage 2 audits, participating laboratories receive a draft report of findings, complete with recommended ECMs. Facility managers work with SFPB staff to analyze the findings and determine future steps for energy performance improvement. In FY 2002, Stage 2 audits were conducted at five EPA facilities.

In addition to the scheduled and Stage 2 audits, EPA has incorporated an audit report process into the overall ESPC project evaluation process for facilities considering these types of contracts. Audits performed through an ESPC tend to be more aggressive and thorough, and often result in energy projects because the energy service company's payment is generated from the savings in energy costs.

Financing Mechanisms
EPA continues to seek opportunities to utilize ESPCs and ESPC-like arrangements to finance the initial cost of comprehensive energy upgrades.

During FY 2002, work continued on an ESPC contract at EPA's Ada, Oklahoma, laboratory totaling more than $4 million. In FY 2002, EPA also continued to realize the benefits of the ESPC completed in April 2001 at its Ann Arbor, Michigan, laboratory. In the first full year of operation after implementing the ESPC, the Ann

Arbor laboratory saved more than 267,000 Btu per gross square foot from the average of the baseline years of FY 1993-1995. The ESPC also helped Ann Arbor save more than 17 million gallons of water, or 74 percent from the baseline years.

In another EPA laboratory, the Agency is pursuing an ESPC-like mechanism to finance upgrades to improve energy performance. EPA's Richmond, California, laboratory signed a design contract in FY 2002 to replace a single, oversized boiler with two smaller boilers, install a natural gas co-generator unit to provide electricity and hot water for laboratory operations, and upgrade HVAC controls equipment in the facility. Under an arrangement with the firm from which EPA leases the building, the lessor will finance the improvements, and EPA will convert its utility savings into lease payments.

EPA has also worked with other agencies to finance projects that could lead to energy performance improvements beyond its own offices. At the Atlanta Federal Center, EPA and GSA co-funded a project to sub-meter energy use where EPA occupies office space owned and operated by GSA. The main objective of the project is to accurately measure the energy efficiency and cost savings of installing occupancy sensors for lighting, occupancy-controlled surge outlets, and LED emergency lights. The results of this study will be used to justify cost-effective retrofits throughout this Federal building, benefitting EPA, GSA, and other Federal agencies.

ENERGY STAR® and Other Energy-Efficient Products

EPA actively promotes the purchase of energy-efficient products that carry the ENERGY STAR® label. The Agency reviews and updates its purchasing specifications regularly and incorporates ENERGY STAR® and other sustainable product requirements into new lease provisions.

ENERGY STAR® Buildings

Because the ENERGY STAR® program does not address energy-intensive facilities, such as laboratories, in its labeling program, EPA cannot designate its 28 laboratory facilities as ENERGY STAR® buildings. However, the Agency continues to work with GSA to achieve the ENERGY STAR® label for its leased office facilities. Currently, three EPA office buildings that are owned or leased by GSA have been awarded the ENERGY STAR® label. The lease on the Denver Regional Office expires in 2004, and EPA has arranged for the solicitation to include a requirement that any new building meet ENERGY STAR® criteria, as well as many other sustainable design requirements.

During FY 2002, EPA undertook efforts to achieve the ENERGY STAR® label at more of its office buildings throughout the country.

Sustainable Building Design

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. Even where EPA does not own the building, the Agency works with GSA to incorporate its holistic, systems approach to building design and renovation wherever possible. In fact, EPA has a Green Buildings Vision and Policy Statement that serves as a guide for each of these sustainable projects. Some of the EPA facilities that are applying these principles include:

- New Consolidated Facility, Research Triangle Park, North Carolina. In September, 2002, EPA accepted as substantially complete its new, state-of-the-art environmental research facility. This 1.2 million gross square foot facility is EPA's largest construction project to date and will house 2,000 researchers and support staff. Throughout each phase of the project, several environmental goals were realized, including: solid waste reduction, increased energy and water efficiency, healthy indoor air quality levels, and natural landscapes. A digitally controlled building automation system works with variable speed motors, fans, and pumps to serve only the actual energy demand, preventing energy waste. The National Computer Center is outfitted with approximately 2,183 photovoltaic roof tiles, which produce an amount of power equivalent to the electricity needed to light the building year-round.

- Chelmsford, Massachusetts, Region 1 Laboratory. EPA moved into its newly constructed 66,000-square-foot New England Regional Laboratory in October 2001**.** The facility received a White House Closing the Circle Award in June 2002 for sustainable design and recycling. Sustainable design features included water conservation products, such as low-flow sinks, electronic sensors, and a rooftop rain recovery system; energy-efficient designs included skylights, tinted windows, photovoltaic awnings, and night system setbacks. These and other energy-efficient features garnered a DOE Energy Showcase Award for the facility. From the beginning of the project, recycling efforts were also in place.

In addition to buildings that are now open or under construction, EPA is ensuring sustainable design elements in new and renovated office buildings currently under development, by working closely with GSA in the selection of architects, builders, and other

contractors, as well as incorporating sustainable design language into the solicitations for these vendors.

Energy Efficiency in Lease Provisions
For the past few years, EPA has been requiring "green riders" as part of its leases. The green rider, which includes energy and water efficiency measures and other environmentally preferable criteria, is an amendment to the Agency's solicitation for offers (SFO) for constructing or retrofitting EPA facilities.

During FY 2002, EPA worked closely with GSA to incorporate sustainable design elements in two lease projects–the Boston Regional Office and the Denver Regional Office. EPA's SFPB assisted GSA throughout the year in developing green rider provisions in the Denver SFO. Currently under construction, the Kansas City Science and Technology Center also has green language in its SFO to ensure that all construction features promote energy efficiency and environmentally preferable materials and design.

Industrial Facility Efficiency Improvements
EPA is continuing to maximize the energy and water efficiency and environmental performance of its facilities through a variety of innovative projects and common sense initiatives. Efficiency improvement opportunities that are underway at EPA facilities include:

- Cincinnati, Ohio. During Summer 2002, EPA's Andrew W. Breidenbach Environmental Research Center began the process of energy master planning, or taking into account the energy efficiency and mechanical needs of the facility as part of the overall facility master planning process. Throughout 2002, the entire Cincinnati complex received 100 percent green power for its electricity needs.

- Fort Meade, Maryland. EPA realized a 12 percent decrease in energy use in FY 2002 at this facility. Team members from EPA's Region 3, SFPB, AEREB, and SHEMD worked together to correct system programming errors, reduce exhaust velocities on exhaust stacks, improve the operation of bypass dampers, and identify other energy savings opportunities. Fort Meade's energy performance is also attributed to direct digital controls, VAV fume hoods, natural lighting, and other efforts**.** In September 2002, a contract for a pony boiler was signed to improve the efficiency of summer operations at the laboratory.

Highly Efficient Systems
EPA is using the ESPC process to further its installation of combined heat and power systems and locally available renewable energy sources. In addition to the installation of a geothermal heat pump in Ada, Oklahoma, as part of the ESPC upgrade there, a natural gas fuel cell was installed in the Ann Arbor, Michigan, laboratory to provide both base load power and emergency backup power for the facility.

Off-Grid Generation
EPA is using and studying distributed generation technologies to diversify its electric resources and provide more reliable, off-grid sources for the uninterrupted power its laboratories need:

- Ada, Oklahoma. The laboratory installed a ground source heat pump system as part of an ESPC, which became operational in the Spring of 2002.

- Ann Arbor, Michigan. A 200-kilowatt natural gas fuel cell was included as part of the laboratory's ESPC upgrade. In addition, as an alternative to six or more internal combustion engines that would provide clean/grey power, EPA teamed up with DOE's Oak Ridge National Laboratory to study microturbine and fuel cell options, which had a payback period of only two years.

Electrical Load Reduction Measures
Work continued on many EPA buildings in FY 2002 to reduce electricity load during peak times and throughout the day. In Seattle, Washington, the Region 10 office has contingency plans for power emergencies. In addition, the following ECMs undertaken over the past two years are producing an estimated yearly utility savings of $140,000: reducing maximum temperature set point from 72 to 68 degrees and raising the lowest cooling set point from 73 to 75 degrees; installing 123 motion sensors in conference rooms and all private spaces; and removing fluorescent tubes from fixtures in designated areas and in stairwells.

Energy Management Contact
Mr. Bucky Green
Facilities Management and Services Division
Sustainable Facilities Practices Branch
Environmental Protection Agency (3204R)
1200 Pennsylvania Ave., NW
Washington, D.C. 20460
Phone: 202-564-6371
Fax: 202-564-8234
E-mail: green.bucky@epa.gov

N. GENERAL SERVICES ADMINISTRATION (GSA)

Management and Administration

The Assistant Commissioner for Business Performance is the General Services Administration (GSA) Senior Energy Official, with responsibilities for meeting the goals and requirements of Executive Order 13123.

GSA formed a technical support team to expedite and encourage the agency's use of strategies identified in Executive Order 13123. The agency energy team consists of individuals from different programs at GSA including management, legal, procurement, and others.

Management Tools

Awards

GSA participates in the annual Federal Energy and Water Management Awards program, and received six awards in FY 2002. GSA also honors each one of the DOE award recipients internally with a ceremony and monetary award.

In addition to the DOE awards, GSA received the 2002 Presidential Award for Leadership in Federal Energy Management. GSA recognized all recipients of this award. GSA also recognizes employees, through incentives such as team awards and non-monetary bonuses.

Performance Evaluations

GSA senior management and regional senior management executives have energy performance measures in their performance evaluations. Regional energy coordinators' performance evaluations and position descriptions include responsibilities for the implementation of energy efficiency, water conservation, and renewable projects.

Training

Under the Energy Policy Act of 1992, GSA is required to hold five energy management workshops for Federal, state, local and tribal communities. In 2002, GSA held seven workshops in partnership with Federal agencies and state governments.

GSA continues to train its personnel in all aspects of energy and water management and conservation. GSA includes project managers responsible for renovation and new construction projects in many of these training activities. GSA currently has 28 trained energy managers on staff.

Showcase Facilities

During FY 2002, GSA, together with the Environmental Protection Agency (EPA) designated one Showcase facility, which will serve as a prototype for future EPA laboratories. The laboratory incorporates natural daylighting, highly efficient HVAC systems, a building-integrated photovoltaic sunshade, recycled and reused materials, and is electrified with 100 percent renewable power.

Energy Efficiency Performance

Standard Buildings

In FY 2002, GSA reported a 21.4 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. The agency achieved this reduction by directly investing in energy and water conservation opportunities with paybacks of 10 years or less. Between 1990 and 2002, GSA invested approximately $316.5 million in projects. GSA received credit for purchases of 71.1 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 66,174 Btu/GSF to 65,763 Btu/GSF.

Industrial and Laboratory Facilities

During FY 2002, GSA's energy usage was 271,666 Btu per gross square foot versus 432,303 Btu per gross square foot in FY 1990, a decrease of 37.2 percent.

Exempt Facilities

During FY 2002, GSA's excluded buildings including those sites that were entering or leaving the inventory in a given year, undergoing renovations, and outside parking garages.

Renewable Energy

Self-Generated Renewable Energy

GSA considers opportunities for solar and other renewable energy in new building design and retrofit projects. When GSA performs an energy audit of a facility, renewable opportunities are identified and implemented if life-cycle cost (LCC) effective. In addition, GSA facility standards recommend that renewable energy sources be considered in proposed designs.

In FY 2002, GSA received approximately 3.2 million Btu from self-generated projects which included six photovoltaic installations, five solar thermal projects, and one geothermal project.

Purchased Renewable Energy

GSA attempts to include the option for renewable purchases in all competitive procurements issued. In FY 2002, GSA purchased a total of 24,306 megawatthours of electricity from renewables through competitive power contracts and the use of green power

programs offered by local distribution companies. GSA currently has competitive power contracts that include renewable power components in six regions, and are under contract to receive wind power for a seventh region.

Petroleum
Since the 1973-1974 oil embargo, GSA has encouraged reducing the use of petroleum-based fuel. From FY 1985 to FY 2002, GSA's petroleum use in buildings decreased by 90.1 percent, from 7.6 million to .72 million gallons.

Water Conservation
GSA's facility water consumption for FY 2002 was approximately 4.5 billion gallons, at a cost of $18.8 million. GSA has had difficulty obtaining water consumption data for its buildings located in Washington, D.C. Data is received as much as one year behind, making it impossible to provide actual consumption data for these sites. Washington, D.C. sites comprise a large percentage of the Federal inventory and GSA's water reporting remains incomplete.

GSA facility and project managers continue to use GSA's Water Management Guide, which provides comprehensive guidance on how to meet the requirements of Executive Order 13123, from detailed descriptions of water conserving technologies and principles and how to measure water use and develop a water management plan to economic analysis and innovative financing options.

During FY 2002, GSA held a Water Workshop in Florida that achieved high attendance and positive feedback. GSA also expanded their definition of demand side management for area-wide utility contracts to include water conservation.

Implementation Strategies

Life-Cycle Cost Analysis
As identified in GSA's FY 2000 Implementation Plan, GSA uses life-cycle cost (LCC) analysis as a primary factor in determining which energy projects to fund. GSA conducted two LCC analysis training classes during the year. GSA personnel also attended Department of Energy (DOE) Federal Energy Management Program's LCC analysis training classes.

GSA strives to make LCC analysis a part of the selection process for the majority of its construction projects. In addition to being a criteria for the disbursement of dedicated energy conservation funds, other construction projects use the tool for selecting equipment prior to the issuance of construction bid documents to ensure that the most life-cycle cost effective equipment is installed.

Facility Energy Audits
GSA performs energy and water audits and surveys in accordance with its ten-year audit plan. Some audits are obtained at no cost from utilities, and others are obtained through DOE's SAVEnergy audit program. Energy-saving measures that are identified are developed into energy conservation project proposals using LCC methodology. Project submissions are compiled into a database for ranking by savings-to-investment ratio. As funding permits, projects are selected for approval and implementation. Funding for projects has been lower than needed to meet energy reduction goals.

GSA had planned to invest $50 million per year from FY 1994 through FY 2000 to meet the energy reduction goals of Executive Order 13123. The actual appropriations have averaged $16.8 million over six years. Other programs, such as GSA's annual Repair and Alterations Program, as well as the Chlorofluorocarbon Chiller Replacement Program, also invest in energy-efficient facilities and equipment. However, the sum of these investments may not be sufficient for GSA to meet the energy reduction goals.

Financing Mechanisms
Without receiving any funding for FY 2002, GSA was still able to distribute $4.5 million in reprogrammed funds to its Regions. GSA spent 1.9 million paying off a utility energy service contract (UESC) for one of the World Trade Center sites that is no longer standing, and used the remaining money to fund projects that were selected based on a savings-to-investment ratio that assisted GSA in achieving strategic goals.

GSA's Regional Energy Coordinators identify energy conservation opportunities and opportunities for energy savings performance contracts (ESPCs). The coordinators assemble and manage the project team, which may include a contracting officer, legal council, a project manager, and others. The Energy Center of Expertise (ECOE) coordinates congressional notification, provides guidance and information on best practices, and promotes the use of ESPCs. The Office of Finance pays the contractor and implements GSA accounting procedures.

GSA identified maximizing the use of alternative financing contracting mechanisms as a strategy in the FY 2002 Implementation Plan. In FY 2002, GSA awarded seven alternatively financed projects, all of which were ESPCs. GSA currently has 23 ESPCs and 19 UESCs in place. Among these:

- Region 5 GSA awarded a Super ESPC to NORESCO for more than $3 million for a group of three buildings in Minnesota.

- Region 6 GSA awarded a Super ESPC to Honeywell for more than $788,000 for a group of four buildings in Kansas.

- Region 7 GSA awarded a Super ESPC for a group of facilities in Arkansas, Louisiana, and Texas for more than $1 million.

- Region 8 GSA awarded a Super ESPC to Johnson Controls for $1.7 million for energy conservation measures at a group of downtown Denver facilities.

- Region 10 GSA awarded a Super ESPC to Johnson Controls for new construction of the Seattle Courthouse for $1.8 million.

- Region 11 GSA awarded Phase 1 of a Super ESPC to NORESCO in Washington, D.C. for $1.8 million.

ENERGY STAR® and Other Energy-Efficient Products
GSA supports the procurement of energy-efficient products through a number of activities. GSA provides product supply schedules that promote energy-efficient and environmentally preferable products and mandates the purchase of ENERGY STAR® computers and office equipment. GSA is a signatory to, and an active participant in the "Procurement Challenge," designed to identify the most energy-efficient products and to increase the purchase of these products.

ENERGY STAR® Buildings
GSA has successfully conducted an evaluation of all standard facilities using ENERGY STAR® software and forwarded the results to the Regions for data correction and certification as identified in its FY 2001 Implementation Plan. As of September 30, 2002, GSA has earned the ENERGY STAR® building label for 93 of its owned facilities and one leased facility. This represents approximately 19 percent of the eligible square footage, and 15 percent of facilities.

Sustainable Building Design
Project managers and energy coordinators attend conferences which provide information and assistance for incorporating sustainability into GSA's retrofit and new construction programs.

GSA has also incorporated sustainable design guidance into the following documents:

- The Design Excellence Program Guide,

- Facilities Standards for the Public Buildings Service, and

- GSA's Solicitation for Offers for Leasing.

GSA has incorporated sustainable design criteria into all guide specifications, facilities standards, and other construction requirements for new construction and retrofit projects. GSA's goal is to have all new design projects starting in FY 2003 meet criteria for the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System.

Energy Efficiency in Lease Provisions
During FY 2002, GSA issued an acquisition letter to all leasing activities on energy and environmental business practices and solicitation for offers to implement Executive Order 13123. The business practices describe the different leasing activities and when these provisions should be incorporated such as new leases and lease changes that included construction.

Industrial Facility Efficiency Improvements
Several of GSA's Super ESPC awards in FY 2002 were for projects with multiple facilities, some of which were in GSA's energy intensive inventory. GSA continues to look for opportunities for life-cycle cost effective measures to increase the energy efficiency of its industrial facilities.

Highly Efficient Systems
During FY 2002, GSA completed the installation of geothermal heat pumps (GHPs) at the Custom House in Portland, Maine, and funded a large GHP project in Gaithersburg, Maryland. GSA is pursuing a GHP system for the New Springfield Courthouse in Springfield, Massachusetts.

GSA continues to investigate the feasibility of district energy systems and other highly efficient systems in new construction or retrofit projects, when life-cycle cost effective.

Off Grid-Generation
GSA investigates the potential for off-grid generation technologies whenever an energy audit or study is conducted at facilities.

Electrical Load Reduction Measures
During FY 2002, GSA established and implemented specific electricity emergency load reduction plans for buildings. Region 9 was able to achieve ample load reduction when needed. Other Regions took advantage of local utility load response programs and incorporated them into each facility strategy with a great deal of success. Additionally, GSA looked for opportunities to improve their load management capabilities under

deregulation of the electricity industry. GSA also took advantage of DOE's Assessment of Load and Energy reduction Techniques (ALERT) audits to identify additional load reduction opportunities.

The ECOE developed a Tactical Curtailment Plan to determine the effectiveness and appropriateness of a number of specific actions that were implemented in California and nationwide.

Energy Management Contact
Mr. Mark Ewing
Director, Center of Energy Expertise
General Services Administration
Room 6344
18th and F Streets, NW
Washington, D.C. 20405
Phone: 202-708-9296
Fax: 202-401-3722
E-mail: mark.ewing@gsa.gov

O. International Broadcasting Bureau (IBB)

Management and Administration

The Associate Director for Management serves as the Senior Energy Official for the International Broadcasting Bureau (IBB). The agency's energy team is composed of representatives from the Office of Administration, Office of Engineering and Technical Services, Office of Contracts, and the Chief Financial Officer. The energy team is responsible for developing and preparing IBB's annual energy plan, reviewing energy efficiency measures at IBB facilities, investigating or exploring future energy reduction initiatives, and disseminating energy reduction and conservation materials.

Management Tools

Training

The Botswana transmitting station is pursuing ways to increase the awareness of the importance of energy conservation efficiency methods. Station personnel in Germany have received briefings on energy conservation, and the Ismaning assistant transmitter plant supervisor attended a seminar on renewable energy.

Energy Efficiency Performance

Industrial and Laboratory Facilities

IBB operates 13 large transmitting stations around the world. Except for three stations, all IBB transmitting plants are located in foreign countries, and thus are not required to meet the energy reduction mandates of Executive Order 13123. However, IBB is making efforts to comply with the goals at all facilities. Energy intensity in these facilities is measured in Btu per thousand broadcast hours. When measured in these units, IBB reported a 27.3 percent reduction in energy consumption in FY 2002 versus its FY 1997 baseline.

The energy consumed by a station during a year is mostly determined by the broadcast schedule (number of on-air hours) which is ultimately prescribed by Congress. The total IBB network broadcasts schedule has been increasing the last three years, and exceeded 500,000 hours for FY 2002.

All stations have energy conservation projects well under way, and are making significant improvements in building efficiencies, equipment demand, and energy costs.

Renewable Energy

Self-Generated Renewable Energy

Solar water heating panels have been installed in housing facilities at the Sri Lanka transmitting station. The Botswana station is exploring the feasibility of implementing renewable energy projects.

Water Conservation

A rain water recovery system at a station in the Northern Mariana Islands captures run-off water from the transmitter building roof. The system, soon to undergo renovation, results in annual cost savings of $4,500 for water that would otherwise have to be trucked to the site.

The Udorn, Thailand transmitting station purchased and installed digital timers for water heaters. The cost to implement the energy-saving features was less than one hundred dollars, and has an estimated annual cost savings of more than $58,000.

Implementation Strategies

Facility Energy Audits

An on-site energy audit was conducted in FY 2001 at the Saipan transmitting station, in conjunction with the transmitter building renovation project. An energy survey is also scheduled for the Sri Lanka transmitting station in September 2003.

Dominion Power conducted a no-cost lighting and motorized equipment survey at the Greenville, North Carolina, station. An independent facilities assessment was also conducted.

Financing Mechanisms

The Greenville station reported continuing energy savings contracts with power suppliers during FY 2002.

Due to liberalization of the European Common Energy Market, IBB transmitting stations in Germany have been able to negotiate reduced power rates and delivery conditions with power companies. Through these negotiations, the cost of power for the Ismaning and Holzkirchen stations has dropped from 11 cents per kilowatthour to less than 5 cents per kilowatthour. Favorable currency conversions rates also play a role in the cost savings achieved.

ENERGY STAR® and Other Energy-Efficient Products

The Botswana, Greece, Germany, Delano, and Philippines, and Thailand stations reported installation of energy efficient products such as energy-saving light fixtures and air conditioners. High-efficiency air conditioners installed in a Botswana station facility led to energy reductions of 30 percent. The Greenville station worked to procure energy efficient products, including information technology equipment. The

Thailand stations also installed infrared motion sensors in low traffic areas to shut down lighting when not in use.

Industrial Facility Efficiency Improvements

Highly-Efficient Systems
By far, the greatest energy savings for IBB transmitting stations are being achieved through modernizing station transmitters and associated equipment. Recently purchased transmitters are highly efficient solid state digital designs. In addition, the modulator section of many older transmitters have been replaced with solid state modulators which typically reduce energy consumption by more than 15 percent.

New and updated transmitters also include controlled carrier modulation (CCM), an electronic feature that typically reduces energy consumption by 13 to 22 percent depending on program material and technical settings. IBB is using various levels of CCM in most stations.

Electrical Load Reduction Measures
The Botswana station has ordered audio delay units, which will spread out the audio peaks on transmitters when all are broadcasting on the same program. Spreading out the audio peaks will prevent the transmitters from calling for maximum power at the same time. By keeping down the peak demand–the basis for the station's utility bill–energy costs will also decrease.

An energy manager service provided to the Delano transmitting station permits the station to examine power consumption and peak demand on a daily basis. It has allowed the station to shed 500 kilowatts of demand by rearranging program schedule and eliminating sign-ons and sign-offs. The Ismaning station also installed a power management system to control peak power loading.

Energy Management Contact
Ms. Freda Gerard
Director of Administration
International Bureau of Broadcasting
Wilbur J. Cohen Building, Room 1274
330 Independence Avenue, SW
Washington, D.C. 20547
Phone: 202-203-4006
Fax: 202-401-2374
Email: fgerard@ibb.gov

P. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

Management and Administration

The Assistant Administrator for Institutional and Corporate Management Systems is the National Aeronautics and Space Administration's (NASA's) Senior Energy Official, responsible for meeting the energy goals and requirements of Executive Order 13123. The Assistant Administrator provides Agency-wide executive and functional leadership, oversight, and guidance for the Agency's logistics, industrial relations, facilities, and environmental management and energy efficiency programs.

As part of NASA's efforts to streamline the operations of its Councils and Boards, the Energy Efficiency Board (EEB) was reclassified as a Panel reporting to the Environmental/Energy Management Board (EEMB). The Energy Efficiency Panel (EEP) provides an Agency-level forum to guide the planning and implementation of energy efficiency activities, including energy and water conservation, greenhouse gas reduction, and the use of renewable energy sources.

The EEP supports the EEMB for research and implementation of energy programs, issues, and initiatives. Significant issues and initiatives identified by the EEP requiring Agency-wide capital investments or investment policy to achieve or sustain compliance with Federal energy efficiency and water conservation goals and objectives are presented to the Enterprise Council through the EEMB.

Management Tools

Awards

NASA is developing an Agency Environmental and Energy Awards Program to recognize accomplishments in implementing all of the Greening the Government Executive Orders, which will be implemented in FY 2003. In addition, most NASA Centers and Component Facilities recognize employee contributions to energy and water savings through employee suggestion programs, by issuing monetary awards based on savings achieved, and by recognizing employee contributions in internal news publications.

The Kennedy Space Center (KSC) Environmental Program Branch manages two award programs for Center employees and contractors. The Catch an Environmentalist Award is a recognition program managed by the Environmental Program Office to reinforce positive behaviors. In FY 2002, this award was presented to NASA and contractor employees for contributions in the areas of effective program implementation and management, education/outreach/awareness, natural resources conservation, and hazardous waste management. The Environmental and Energy Award is a biannual competition conducted by the Center Awards Office. This award recognizes significant achievements in all areas of environmental and energy management. In FY 2002, the Center presented this award to two individuals and four teams for achievements in data reporting efficiency, pollution prevention/recycling, and energy conservation.

The KSC Joint Base Operations Support Contractor established the Energy Achievement Goals for Life and Environment (EAGLE) Award program to recognize employee contributions to energy and water efficiency and environmental improvement. During FY 2002, the program recognized the design and installation of a high efficiency pre-cool air-conditioning unit with state-of-the-art controls that will save $68,000 annually.

KSC hosted an Energy Awareness Week event that reached thousands of employees with *Spaceport News* articles and e-mail messages, facility tours, posters and outdoor displays and contests, by Center organizations, utility companies, and local government offices.

Performance Evaluations

Most NASA Centers and Component Facilities include, or plan to include, the successful implementation of energy management conservation requirements in performance evaluations and positions descriptions for all those involved in energy management activities. This practice extends to many Center Operations Support Services contractors.

Training

In FY 2002, NASA completed activities to ensure that all appropriate personnel receive training for energy and water management requirements, including:

- An Energy Efficiency and Water Conservation (EEWC) course was held in February 2002, at NASA's Management Education Center at Wallops Island, Virginia. The EEWC course was developed to provide energy and facilities management professionals the knowledge and skills required to successfully implement energy efficiency and water conservation projects.

- NASA Headquarters hosted the NASA 2002 Environmental Conference in Norfolk, Virginia, in March 2002. The Conference was attended by approximately 120 energy, environmental, and facilities professionals from across the Agency. The Conference included an energy efficiency track with sessions on sustainable design, DOE's

Assessment of Load and Energy Reduction Techniques (ALERT) protocol, renewable energy technologies, continuous commissioning, water conservation, Laboratories for the 21st Century, and energy-efficient lighting.

- The Kennedy Space Center Joint Base Operations Support Contractor presented three sessions of the course, Energy 101, to Center personnel.

In all, approximately 72 NASA employees and contractors received energy and water management training through NASA- and DOE Federal Energy Management Program (FEMP)-sponsored courses, industry conferences, and commercial or academic sources at a cost of approximately $116,000.

Showcase Facilities
NASA has two Showcase facilities; the Project Engineering Facility, Building 4203, at Marshall Space Flight Center and the Aircraft Maintenance, Hangar Building 1623, at Dryden Flight Research Center (DFRC). No new Showcase facilities were designated in FY 2002.

Energy Efficiency Performance
In FY 2000, NASA realigned its facility designations and historical energy consumption baselines to comply with the definitions and goals established by Executive Order 13123 for the three new categories of Federal buildings and facilities. These categories are:

- Standard buildings and facilities subject to, energy efficiency improvement goals. NASA refers to these as non-mission variable (NMV) buildings.

- Industrial, laboratory, research, and other energy-intensive and industrial and laboratory facilities. NASA refers to these as energy-intensive facilities (EIF).

- Exempt facilities or mission variable (MV) facilities.

Standard Buildings
In FY 2002, NASA reported a 21.6 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. This performance includes credits for renewable electricity and landfill methane purchases.

Industrial and Laboratory Facilities
The average energy intensity for NASA's EIF facilities was 273,333 Btu per gross square foot by the end of FY 2002, as compared to the FY 1990 baseline value of 323,971 Btu per gross square foot. This 15.6 percent decrease includes credits for renewable electricity and landfill methane purchases, but is significantly higher than the energy-intensity level reported in FY 2001. This is primarily due to the closure of the NASA Industrial Plant in Downey, California, that removed more than 1.6 million square feet from the energy intensive facilities category.

NASA continued its shared energy savings contract with Lockheed Martin Michoud Space Systems (LMMSS), the contractor operator of the NASA Michoud Assembly Facility that manufactures the Space Shuttle External Tank. NASA rewards LMMSS for exceptional performance in managing energy use by sharing 8 to 14 percent of energy savings achieved as an additional award fee. NASA's share of the savings are used to reduce the overall cost of the Space Shuttle External Tank program. In FY 2002, Michoud Assembly Facility used 893.1 billion Btu to produce 6.0 External Tanks, or 148.8 billion Btu per External Tank, compared with 203.5 billion Btu per External Tank in FY 1990. This represents a 27 percent decrease in energy consumption per External Tank produced.

Exempt Facilities
In FY 2002, only 5 million gross square feet, or 13.1 percent of NASA facility square footage was designated as exempt. These facilities are highly specialized and energy intensive, having been constructed for specific space flight and research programs. Examples are wind tunnels driven by multi-thousand horsepower electric motors, space simulation chambers, and space communication facilities. The facilities range from pre-World War II aeronautical test installations to new facilities that support the Space Shuttle and International Space Station programs. Energy consumption in these facilities varies directly with the level and intensity of program activities.

NASA adopted an internal goal to improve the energy efficiency of exempt MV facilities, where cost effective and without adversely affecting mission performance, by 10 percent by FY 2005 compared with FY 1985 levels. Due to the unique nature of their design and operation, wind tunnels are excluded from this goal.

Renewable Energy

Self-Generated Renewable Energy
NASA's use of self-generated renewable energy is not directly metered, but the quantity produced is relatively small. The following new projects were completed in FY 2002:

- A 4.7 kilowatt photovoltaic power system was installed on the roof of Building N-235 at Ames Research Center at a cost of $30,755.

- KSC installed a photovoltaic system to provide power for lightning sensing equipment. The system replaces a diesel generator that was operated continuously to provide power to this very remote area. The project cost $43,000 and will reduce energy and operations and maintenance costs by $30,000 annually. The Center also completed the design for concentrating solar collectors that will generate hot water to regenerate a desiccant dehumidification wheel at Building M6-639. This $85,000 technology demonstration project was funded by DOE, NASA, and the Florida Solar Energy Center.

- Marshall Space Flight Center (MSFC) completed a $66,000 project to install solar parking lot lighting.

Purchased Renewable Energy
NASA has focused its efforts on purchasing renewable energy from sources that are cost-competitive with conventional energy sources. NASA completed the following activities to increase energy purchases from renewable sources:

- The Goddard Space Flight Center (GSFC) continued working with Toro Energy of Maryland to bring a landfill methane supply pipeline to the Center. A 10-year utility supply contract was awarded to Toro Energy in FY 2000, but the contractor experienced delay in obtaining easements needed to construct the pipeline. Pipeline construction is now underway and delivery of landfill methane to the Center's central boiler plant began operation in January 2003.

- The Johnson Space Center (JSC) entered into new utility supply contracts that will deliver 10 million kilowatthours of electricity (worth about $420,000) and 5.8 million cubic feet of natural gas (worth about $25,000) from renewable resources each year. The natural gas company serving the Center is supplying two percent of the Centers natural gas requirements from landfill methane at no additional cost. Under a new Defense Energy Support Center electricity contract, the Center is also receiving 5 percent of its electricity from wind and hydroelectric resources at a total cost only 1.2 percent higher than the lowest available cost for conventional electricity.

- The Langley Research Center and MSFC continued to purchase steam generated from municipal solid waste.

Petroleum
NASA reduced facility petroleum use by 46 percent since FY 1985. Petroleum, including fuel oil and LPG, represents only 12.4 percent of facility fuel use and 4.6 percent of total facility energy usage.

Water Conservation
NASA used 2.2 billion gallons of potable water in FY 2002, compared with 2.3 billion gallons in FY 2000, a 6.2 percent decrease. Six of 14 Centers and Component Facilities have water management plans in place and have fully implemented at least four of the DOE Best Management Practices for Water. Other Centers implemented the following water conservation activities in FY 2002 to comply with energy efficiency requirements:

- Jet Propulsion Laboratory (JPL) is implementing the final phase of waterless urinals and anticipates completing this multi-year project in FY 2003.

- KSC initiated a Water Conservation Awareness program that includes the development of posters, a campaign slogan "One Small Drop for KSC, One Giant Lake for Mankind," and information displays.

- Michoud Assembly Facility continued its on-going program to reduce water consumption. The program includes recycling industrial wastewater, installation of water efficient devices, rehabilitation and upgrades to steam and chilled water systems, and maintenance surveys and repair of steam traps and leaks.

Implementation Strategies

Life-Cycle Cost Analysis
Projects and surveys are proposed by the energy manager at each Center and Component Facility. The projects and surveys compete for funding along with other Center requirements. To compete successfully, projects having energy conservation as their sole purpose must have relatively short amortization periods since construction funds are very limited and there are many other high priority projects competing for funding.

Life-cycle costing (LCC) is the primary tool for analyzing energy retrofit projects. Economic analyses are performed for all construction and revitalization projects in excess of $1.5 million.

Facility Energy Audits
NASA Headquarters provided guidance to Centers and Component Facilities indicating the level of auditing that will be required for different types of facilities,

recommendations on which mission variable facilities could benefit from comprehensive audits, and suggested criteria for determining audit priorities. Using this guidance, Center energy managers developed plans to perform the audits. During FY 2002, NASA completed audits for 7.7 percent of its total building square footage, including comprehensive audits covering more than 500,000 gross square feet and walk-through audits covering 2.3 million gross square feet. From FY 1991 through FY 2002, NASA completed energy audits for 81.7 percent of its total building square footage, including 79.4 percent of non-exempt square footage, and 84.4 percent of exempt and industrial square footage.

Financing Mechanisms

NASA made continued progress implementing energy saving performance contracts (ESPCs) and utility energy saving contracts (UESC) during FY 2002. By the end of FY 2002, NASA awarded eight ESPC delivery orders and five UESC at seven locations: Ames Research Center (ARC), Glenn Research Center (GRC), GSFC, JSC, KSC, Stennis Space Center (SSC), and Wallops Flight Facility. NASA also participated in DOD-managed ESPC and UESC contracts at two Centers: DFRC and KSC. These actions have resulted in $39.5 million in energy improvements for NASA facilities that are saving $5.0 million annually.

ARC issued its second ESPC delivery order to Johnson Controls, Inc. under the DOE Western Region Super ESPC contract. This $2.1 million project installed lighting system upgrades in several buildings. Annual savings of $266,900 are anticipated.

Wallops Flight Facility issued its first ESPC delivery order to Enviro Management and Research, Inc. of Rosslyn, Virginia, under a local ESPC administered by the GSFC. This $52,000 project installed lighting system upgrades in several buildings. Annual savings of $6,000 are anticipated.

KSC expanded the scope of its second UESC contract with FPL Services for energy efficiency improvements to Space Shuttle facilities. The original contract was awarded in FY 2001 for HVAC, lighting, and compressed air system upgrades. Additional work valued at $477,000 was added to the contract in FY 2002 that will save an additional $69,000 per year in energy costs.

SSC issued its first UESC contract to Mississippi Power for installation of power factor correction capacitors. The project will reduce electricity costs by avoiding penalty charges for poor power factor. The $143,000 project will save $51,000 annually.

JPL continued work on its own commercial-type ESPC contract that will be NASA's largest ESPC to date. The Laboratory received a final proposal from Sempra Energy Solutions that would provide $24.4 million in energy improvements and $3.3 million in guaranteed annual savings. The project involves installation of a 6.3 megawatt combined heat and power system, three microturbine power generation systems, and various lighting, heating, cooling, metering, and water conservation improvements for nine buildings.

GSFC is developing two additional ESPC delivery orders for award in FY 2003. The first delivery order will upgrade lighting systems and electric motors in several NASA buildings. The project cost is estimated at $794,700 with annual energy savings of $210,000. More NASA buildings will be upgraded with new lighting systems and electric motors after the second delivery is implemented. The project cost is estimated at $1.1 million with annual energy savings of $171,000.

JSC is developing its second ESPC delivery order for FY 2003 award under the DOE Central Region Super ESPC contract. This $1 million project is expected to result in annual savings of $100,000.

ENERGY STAR® and Other Energy-Efficient Products

In FY 2002, NASA Centers and Component Facilities continued to install high efficiency electrical products such as liquid crystal display (LCD) and other ENERGY STAR®-rated computer monitors, variable frequency drive systems for fans and pumps, high efficiency fluorescent lamps, electronic ballasts, compact fluorescent lamps as replacements for incandescent bulbs, light emitting diode (LED) and other low-power consumption exit lights, and occupancy sensors.

GRC developed and updated operating instructions and local guide specifications for lighting, occupancy sensors, and other equipment to ensure that energy-efficient products are specified in facility project designs.

JSC embedded the requirement to purchase energy-efficient products in its new Center Operations Support Services contract.

The Joint Base Operating Support Services Contract Energy Office at KSC performs reviews and approvals of the purchase of HVAC equipment based upon LCC analysis and ENERGY STAR® recommendations.

Michoud Assembly Facility purchased more than 1,200 ENERGY STAR® computers in FY 2002.

Sustainable Building Design

NASA continued development of an integrated sustainable design policy that will combine the traditional sustainability concepts of the Whole Building Design Guide along with building commissioning, design for maintainability, safety, and security. A new NASA directive, issued on August 21, 2002, sets Agency-wide policy for incorporating sustainable design principles in facility projects to reduce life-cycle costs, implement pollution-prevention principles, and minimize facility impacts on natural resources while maximizing occupant health, safety, security and productivity. Detailed implementation procedures and guidelines have been developed and integrated into the Agency's facilities project implementation process. A companion in-house training course has also been developed to begin in FY 2003. The Centers continued work on several facility project designs that incorporate sustainable design features.

For example, the Space Experiment Research and Processing Laboratory at KSC will incorporate an innovative passive stormwater retention area, 100 percent native plants with low water requirements, a central light well to bring natural light into the open plan office space, low volatile organic compound paints and coatings, high efficiency lighting with occupancy sensors, variable frequency drives on air handlers, chilled water pumps and cooling towers, and high efficiency chillers and passive solar thermal mass principles.

Industrial Facility Efficiency Improvements

NASA completed a number of projects in FY 2002 to improve the energy efficiency of standard and energy-intensive industrial facilities. Specific projects undertaken in FY 2002 include:

- A continuous commissioning pilot project was completed for three buildings at DFRC. The project was performed under a Cooperative Research and Development Agreement with the Texas Engineering Experiment Station, Energy Systems Laboratory, at Texas A&M University. The study identified opportunities to save $41,500 annually through low- and no-cost operational changes including equipment shutdown and temperature reset. These measures would correct problems associated with higher than necessary air flow rates, disabled economizers, poor locations of static pressure sensors, and simultaneous heating and cooling. The study also identified opportunities to save an additional $50,410 annually through HVAC system retrofits including variable frequency drives, variable air volume conversions, and fan sheave replacement. In total, the study identified measures that will save $0.33 per building square foot and will pay for themselves in less than two years, including the cost of the study.

- The Payloads Processing organization at the KSC implemented several low- or no-cost operational changes that are saving significant amounts of energy. Several air handling units and lighting systems serving various payload processing facilities were secured, faulty control components repaired, time of day schedule changes were made to reduce runtime, redundant equipment was secured, and underutilized facilities were placed into warehouse or standby mode. Together, these operations and maintenance measures cost only $38,600 to implement, but resulted in nearly $400,000 in energy use. The Boeing (PGOC) Energy Manager made a presentation on these achievements at the Laboratories for the 21st Century conference in Durham, North Carolina.

- Langley Research Center (LaRC) completed various facilities maintenance tasks including roofing and HVAC replacement projects at a cost of $3,774,000. The Center also completed a $159,000 lighting retrofit project in Building 1209 that installed new electronic ballasts, T-8 lamps, reflectors, parabolic lenses, occupancy sensors, and LED exit signs. These projects will save $776,000 annually. LaRC is applying reliability centered maintenance and predictive testing and inspection techniques in its maintenance program. Maintenance procedures are included in the Computerized Maintenance Management System. The Center also installed 17 new electronic meters providing time-of-day energy consumption at a cost of $60,000.

- KSC completed a $100,000 study of potential hardware and software solutions to improve energy information usefulness and automation. Design is currently 90 percent complete for a $483,000 metering project to improve hot and chilled water production and energy management at the point of use. Electrical meter reading crews have begun conversion from monthly written data recording practices to the use of automated handheld barcode meter reading devices. This will reduce multiple manual data manipulations and associated errors, enable automatic range sanity check, and reduce data collection time.

Off-Grid Generation

NASA completed the following actions in FY 2002 to install new solar hot water, solar electric, solar outdoor lighting, small wind turbines, fuel cells, and other off-grid alternatives:

- NASA Headquarters sponsored a study to determine the feasibility of a megawatt-scale grid-integrated photovoltaic power system for the Dryden Flight Research Center. The study is being performed by DOE's Idaho National Engineering and Environmental Laboratory.

- JPL applied to a program managed by the California South Coast Air Quality Management District to obtain three microturbines at no cost for on-site power generation. Approval of the application is expected shortly.

- KSC completed the design for a solar-powered desiccant dehumidification system for Building M6-639. This $85,000 technology demonstration project was funded by DOE, NASA, and the Florida Solar Energy Center.

Electrical Load Reduction Measures

GRC employs load management to combine several loads for efficient use of central process system equipment. A central controller was installed to improve efficiency for central process equipment. Electric motors were rewound and a solid state exciter was installed to improve power factor for central process equipment.

The KSC Complex Control System was augmented to enable load scheduling for discretionary air handlers in the Vehicle Assembly Building. This will save $50,000 annually in energy costs and make it easy to implement load shedding in emergency situations.

The Wallops Flight Facility implemented rolling chilled water shut off to some buildings during peak periods in the summer to reduce power consumption at the chiller plant.

The White Sands Test Facility rewired sewage aerators controls to operate only at night. This $200,000 project is saving $100,000 in on-peak demand charges.

Energy Management Contact

Mr. Richard Wickman
Energy Coordinator
Environmental Management Division
National Aeronautics and Space Administration
Mail Stop JE, Room 6X72
300 E Street, SW
Washington, D.C. 20546-0001
Phone: 202-358-1113
Fax: 202-358-2861
E-mail: Richard.A.Wickman@nasa.gov

Q. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

Management and Administration
The Senior Energy Official for the National Archives and Records Administration (NARA) is the Assistant Archivist for Administrative Services.

Management Tools

Training
NARA implemented an aggressive employee education program on energy conservation at the Archives I and Archives II facilities in FY 2002.

In FY 2002, five employees received energy management training.

Energy Efficiency Performance

Exempt Facilities
NARA owns and operated 13 separate facilities, all dedicated to the preservation, storage, display, and use of historical documents and artifacts. These documents and artifacts must be maintained in a controlled environment 24 hours per day, 365 days per year. NARA has designated these facilities as exempt for the purpose of Executive Order 13123.

NARA initiated the development of an agency Energy Plan in 1996 in concert with the agency's Strategic Planning Process. NARA has a policy to operate its facilities as efficiently as possible and still maintain the environmental conditions required for preservation and safe storage of the nation's archival documents.

The Archives II building, approximately 50 percent of NARA's square footage, was not operational until 1996, thus no 1990 baseline data is available. NARA's FY 2002 electricity consumption showed a reduction of 4 percent compared to FY 2001, and an increase in natural gas usage which precluded a shift to fuel oil as in the previous year.

Increased security requirements being implemented in FY 2002 and FY 2003 may result in increases in utility use in future years.

In FY 2002, various steps were taken to implement energy conservation measures at the Archives facilities and the Presidential Libraries. At the Carter Library, HVAC controls were replaced. Energy efficient chilled water pumps were installed at the Johnson Library.

NARA is constructing a new Visitors Center a the Franklin D. Roosevelt Presidential Library using energy efficient lighting and mechanical systems. Roofs are also being replaced at the Dwight D. Eisenhower Presidential Library and the John F. Kennedy Presidential Library; both with more energy efficient insulation.

Water Conservation
In FY 2002, NARA water consumption was 56.2 million gallons, an 8 percent decrease as compared to FY 2000 consumption.

Six NARA facilities have developed Water Management Plans.

Implementation Strategies

Facility Energy Audits
Ten percent of NARA facility space was audited during FY 2002. Since FY 1992, 24 percent of facilities have received energy audits.

Financing Mechanisms
A delivery order was awarded under DOE's Super Energy Savings Performance Contract during FY 2002 for the upgrade of the direct digital HVAC controls and for lighting retrofits at the Ronald Reagan Presidential Library.

A survey was also performed at the John F. Kennedy Presidential Library under a DOE Super ESPC and results are under consideration for implementation. Items included in the survey were direct digital controls, lighting upgrades, chiller replacement, retrofitting the electric heating system with gas-fired boilers, and water conservation measures.

Energy Management Contact
Mr. Mark Sprouse
Chief, Facilities Management Branch
National Archives and Records Administration
861 Adelphi Road
College Park, MD 20740-6001
Phone: 301-713-6470
Fax: 301-713-6516
Email: mark.sprouse@nara.gov

R. NUCLEAR REGULATORY COMMISSION (NRC)

Management and Administration
The Senior Agency Official for the Nuclear Regulatory Commission (NRC) is the Deputy Executive Director for Management services.

NRC formed an agency energy team in FY 2000, consisting of procurement, legal, budget, management, and technical representatives. The team is responsible for expediting and encouraging the NRC's use of appropriations, energy savings performance contracts (ESPCs), and other alternative financing mechanisms necessary to meet the goals and requirements.

Management Tools

Awards
NRC uses its award program to recognize exceptional performance in energy management.

Energy Efficiency Performance

Standard Buildings
In FY 2002, NRC reported a 7.4 percent decrease in energy consumption from FY 1985 for its One White Flint North (OWFN) facilities compared to its FY 1989 baseline year, and a 6.9 percent decrease for its Two White Flint North (TWFN) facilities compared to its FY 1996 baseline year, when measured in Btu per gross square foot

Renewable Energy
Self-Generated Renewable Energy
Energy audits conducted in FY 2000 at the OWFN and TWFN facilities concluded that self-generated renewable energy projects were not economically feasible.

Water Conservation
Water consumption at OWFN in FY 2002 was 9.6 million gallons, at a cost of slightly more than $65,000. Water consumption at TWFN was 12.3 million gallons, costing approximately $71,000.

Implementation Strategies

Life-Cycle Cost Analysis
In FY 2002, energy-efficient lighting was installed in the garage in the TWFN facility. Additionally, motion sensors to control lights were installed in restrooms, conference rooms, coffee stations, and workstations. In the OWFN facility, motion sensors were installed in lounges. Prior to the implementation of these energy conservation initiatives, PEPCO conducted a life-cycle cost analysis to ensure that an acceptable payback period could be achieved. The payback period of 5.7 years was used in NRC's capital budgeting decision to fund the project.

Financing Mechanisms
In FY 2002, NRC planned to use the General Services Administration (GSA) ESPC schedule as a financing mechanism to implement energy conservation projects. The ESPC requires a GSA certified contractor to incur all capital expenditures to implement energy conservation projects. The contractor is paid from the savings in utility bills as a result of the projects. However, the contract was not awarded until the first quarter of FY 2003.

ENERGY STAR® and Other Energy-Efficient Products
All specifications for renovation projects performed by NRC are developed to ensure that, when applicable, energy-efficient equipment and systems are incorporated into the renovation design. Additionally, the building operation and maintenance contract specifications for the OWFN and TWFN facilities have been updated to ensure that all building support replacement products and components are energy efficient. The NRC's Affirmative Procurement Program for Recovered Materials provides Internet links to online training for Federal purchase card users on ENERGY STAR® acquisitions and other energy-efficient products.

Electrical Load Reduction Measures
NRC participates in the PEPCO Load Curtailment Program. During high demand periods, NRC, at the request of PEPCO, reduces its energy load by de-energizing non-critical building support equipment. Additionally, an employee awareness program encourages employees to reduce usage of appliances at workstations during high demand periods.

Energy Management Contact
Mr. Mike Springer
Director
Office of Administration
Nuclear Regulatory Commission
11545 Rockville Pike
MS T7D57, Room 7D28
Rockville, MD 20852
Phone: 301-415-6222
Fax: 301-415-5400
E-mail: mls@nrc.gov

S. RAILROAD RETIREMENT BOARD (RRB)

Management and Administration

The Director of Administration for the Railroad Retirement Board (RRB) is designated as the energy conservation coordinator and is responsible for overseeing and supervising the RRB's conservation practices. The Director of Supply and Service is the designated Senior Energy Official and is responsible for administering the RRB's energy program to ensure all aspects of RRB's energy conservation plan are effectively implemented.

Bureau heads, managers, and supervisors are responsible for ensuring that established energy conservation procedures are consistently followed by the personnel they supervise. This includes ensuring that appropriate efforts are made to conserve energy in their work areas. This includes, but is not limited to, the reduction of unnecessary lighting, abiding by established air temperatures, and the judicious use of motor vehicles for official business.

Management Tools

Performance Evaluations

The senior agency official and the facility energy manager have performance standards that require the successful implementation of provisions of Executive Order 13123. The compliance with these requirements directly impacts their performance evaluations.

Training

RRB personnel responsible for energy management receive training in energy management, including the Department of Energy's (DOE) Federal Energy Management Program (FEMP) seminars. Seminars offered in FY 2002 included a three-day conference on combined heat and power sponsored by DOE.

Energy Efficiency Performance

Standard Buildings

In FY 2002, RRB reported a 17.4 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot.

The increase in energy consumption of only 1.0 percent from FY 2001 to FY 2002 was a significant accomplishment for RRB, considering that building operating hours were increased 8.3 percent through an expanded flexible-time program. Operating hours have increased 18.2 percent from the 1985 baseline.

The headquarters building in Chicago, Illinois, is the only building for which the RRB has operational control. The RRB operates and maintains the building under a delegation of authority agreement established in April 1986 with the General Services Administration (GSA).

Regional and field locations for the RRB are in GSA leased facilities and are reported under the GSA inventory of properties.

Tactical Vehicle and Equipment Fuel Use

RRB has implemented a program which provides a direct subsidy for employees using mass transportation to commute to work. Alternative fueled vehicles will be leased from GSA whenever a leased vehicle is required.

Renewable Energy

Purchased Renewable Energy

In FY 2002, RRB participated with GSA Region 5 in the development of an Illinois Electric solicitation. The solicitation requires that a portion of the power be generated from renewable energy sources. The contract began May 1, 2002 and was awarded to Exelon Energy Corporation. RRB purchased 22.1 megawatthours of renewable power in FY 2002 and expects to purchase 46 megawatthours in FY 2003.

Water Conservation

The RRB has taken major steps toward improving water conservation in its headquarters facility. In all bathroom and lavatories, all sinks and urinals have automatic faucets and flush valves with reduced consumption type diaphragms. In FY 2002, the RRB prepared documentation which was submitted to the metropolitan Sanitary District of Chicago. It identified plant water losses from the cooling tower and boiler blow-down. If approved, these proposed modifications will be completed in FY 2003, resulting in sewer charge savings for the RRB.

Implementation Strategies

Life-Cycle Cost Analysis

The agency uses life-cycle cost (LCC) analysis techniques in the development of its energy strategy to determine which projects should be considered in meeting its energy goals. Much of this analysis is done in conjunction with GSA, which is responsible for the implementation of all projects exceeding $50,000 under the current delegation of authority agreement. However, even projects under $50,000 are only considered after careful cost analysis and determination of no more than a 10-year simple payback. For example, a SAVEnergy audit performed by Architectural Energy Corporation (AEC) provided various alternatives and an LLC

analysis on various energy projects using the DOE 2.1E Building Energy Simulation Model.

Facility Energy Audits
GSA schedules energy audits for the RRB building. In FY 2002, RRB, in conjunction with GSA and FEMP, completed a SAVEnergy Audit. An Energy and Water Conservation Action Plan was performed by Architectural Energy Corporation of Boulder, Colorado, and included all areas of the RRB headquarters facility.

Financing Mechanisms
The RRB has successfully worked with GSA on utility energy services contracts. The Agency participated in partnership efforts with GSA region 5 in the development of an Illinois Electric solicitation to procure electricity under a single Government contract. This resulted in the procurement of electricity through Exelon Energy Corporation beginning May 1, 2002. RRB expects to purchase all its electric power under this contract agreement.

ENERGY STAR® and Other Energy-Efficient Products
The RRB supports procurement of energy–efficient products, and mandates the purchase of ENERGY STAR® computers and office equipment. RRB is a signatory to and an active participant in Planet GSA. Planet GSA includes four pillars: Buy Green, Build Green, Drive Green, and Save Green. With support from DOE and the Environmental Protection Agency (EPA), RRB, through GSA, will encourage the purchase and use of ENERGY STAR® products and other products that rank in the upper 25 percent for energy efficiency. Energy-efficient criteria have been incorporated into all RRB and GSA guide specifications and product specifications for new construction and renovation projects, as well as all new product specification language.

Sustainable Building Design
RRB employs sustainable design principles in all phases of Federal facility-initial design, construction, remodeling, and renovation and construction waste management. Sustainable principles apply to all elements of building and landscape design; maintenance and operation activities using water, energy, and pesticides; and those activities that impact indoor environmental quality and the recycling infrastructure. RRB/GSA, in collaboration with DOE and EPA, will promote the use of energy efficiency and renewable energy technologies. In FY 2002, the RRB completed the installation of a new energy-efficient HVAC system for three floors. This new HVAC system consists of variable frequency drives and an automated variable air volume control system which helped to significantly reduce the electrical consumption from the previous constant volume air system. In addition, RRB recently completed installation of new radiator control valves on two additional floors of the facility. These improvements provided greater building comfort and control as well as helped reduce utility consumption.

Energy Efficiency in Lease Provisions
RRB regional and field locations are located in Government owned or leased commercial space. These offices comply with existing energy conservation measures specified by GSA. All leasing arrangements are made through GSA which assures the energy efficiency in the facilities leased.

Highly Efficient Systems
GSA completed a prospectus development study for the RRB headquarters facility in FY 2002, which included the complete renovation of the HVAC systems and looked at the potential for a combined heat and power system for the RRB facility. In addition, RRB in discussions with the local gas utility provider had a preliminary cost analysis and feasibility study completed on potential savings from co-generation. The study showed a potential of $89,000 per year in overall utility cost savings from the installation of this equipment. Further analysis is planned in consideration of this project.

Electrical Load Reduction Measures
The RRB signed an agreement with Commonwealth Edison, the local utility provider to participate in a load curtailment program called Voluntary Load Reduction Program (VLR). This curtailment program will enable RRB to save on electrical costs and actively help reduce electrical load. The RRB updated its current energy emergency plan of action. The plan will be initiated when emergency electricity load reductions are required. As part of the VLR program, an energy tracking system is currently installed on all electrical meters to monitor electrical consumption and control electrical loads.

Energy Management Contact
Mr. Scott Rush
Facility Manager
U.S. Railroad Retirement Board
844 North Rush Street
Chicago, IL 60611
Phone: 312-751-4566
Fax: 312-751-4923
E-mail: rushscl@rrb.gov

T. SOCIAL SECURITY ADMINISTRATION (SSA)

Management and Administration

The Social Security Administration's (SSA) Senior Energy Official is the Deputy Commissioner for Finance, Assessment, and Management (DCFAM). Members of the SSA Energy Team represent the sections of SSA with responsibilities for energy management, and include facilities specialists, contracting officers, representatives from field offices, and others.

Management Tools

Awards

SSA recognizes employees whose job descriptions require energy management skills and whose overall performance or individual actions are exceptional. In FY 2002, SSA received an award from DOE for contributions to the *You Have the Power* energy awareness campaign. Many of SSA's energy and building managers received performance awards for their contributions to the energy program. The SSA also recognizes individual contributions to energy savings through the employee suggestion and performance award programs.

Performance Evaluations

SSA has included energy conservation duties in the agency's energy team position descriptions and in each building and energy manager specialist position in delegated field facilities. SSA plans to add performance metrics for energy conservation to other position descriptions as well.

Training

In FY 2002, 26 members of the Agency's nationwide energy/action team attended the Energy 2002 Conference. Other training included: Facility Energy Decision System Training, Energy Auditing 101, Water Resource Management, National American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Conference, and National Facilities Management and Technology Conference and Exposition. SSA staff also attend monthly and periodic meetings with the General Services Administration (GSA), the Department of Energy (DOE), and ASHRAE, and are active participants of numerous committees such as the DOE's *You Have the Power* and ASHRAE's Sustainability Task Force.

SSA educates its employees nationwide on the need for and benefits of energy conservation through an awareness program via e-mail, SSA's Facilities Management's Office of Reality Management's Web site, Commissioner memorandums, newsletters, and the agency's quarterly magazine. Many of SSA facilities nationwide sponsored exhibits for "Energy Awareness Month" and "National Recycling Day" to promote energy conservation and publicize energy projects underway or completed.

Showcase Facilities

While SSA has not designated a specific facility as a Showcase facility, SSA is renovating individual buildings with energy-efficient technologies such as thermal storage, efficient lighting, and passive solar technology. SSA has applied for "green" status for the new child care facility at SSA's main complex in Baltimore, Maryland, which was completed in Spring 2002. The SSA Headquarters Annex building received a 2.0 Leadership in Energy and Environmental Design (LEED™) certification, the first such designation received by any Federal building in Region III.

Energy Efficiency Performance

Standard Buildings

SSA became an independent agency in 1996, which serves as the baseline year for the agency. In FY 2002, SSA reported a 9.8 percent increase in energy consumption from FY 1996 for its standard buildings when measured in Btu per gross square foot. Energy consumption decreased by 3 percent from FY 2001. This decrease is attributed to the implementation of energy conservation projects and more efficient building operating practices.

SSA is committed to reducing energy usage and costs. While the Agency's energy initiatives have produced both cost efficiencies and significant reductions in energy consumption, SSA's overall energy consumption has increased since its baseline year.

Substantive changes in the way SSA does business continue to have an affect on the use of facilities and related energy costs:

- SSA has now offered its employees a 10 hour work day. This requires additional hours of operation from the normal 12 hour day, frequently extending to 16 hours a day, plus 8 to 16 hours each weekend. SSA is also striving to provide service to the public 24 hours a day, 7 days a week. This increased public service capability has been implemented in a few sites, with additional sites planned. Service to the public and commitment to flexibility for SSA's employees increases energy consumption and affects the Agency's energy reduction efforts.

- Extensive ongoing building renovations. SSA's Metro West Building in Baltimore, Maryland, is undergoing extensive exterior façade and window replacement work. This has increased SSA's energy use to maintain a comfortable work environment for the Agency's employees. SSA anticipates energy reductions once the work is completed and the exterior is sealed. There are also substantial retrofits occurring in SSA's main complex of buildings. Work was just completed on a 300,000 square foot building (the Headquarters Annex building) and is about to start on a 1 million square foot building. Retrofits include energy-efficient motors, better insulation, and energy savings devises.

- Consolidating employees into Government-owned space. SSA has improved space utilization in larger buildings. For example, 400 SSA employees formerly housed in prime leased space in San Francisco moved to the Western Program Service Center in Richmond, California. The Data Operations Center (WBDOC) in Wilkes-Barre, Pennsylvania, continues to see an increase in personnel due to the establishment of a new teleservice center in the building. SSA's Northeastern Program Service Center housed approximately 300 employees, who were displaced from the World Trade Center for nine months. Similar collocations into Federal space or expansion of the numbers of employees in other delegated buildings have occurred.

Industrial and Laboratory Facilities
SSA has designated the National Computer Center (NCC) located at the headquarters complex in Baltimore, Maryland, as an energy intensive building because it contains the main database and query servers for all of SSA's increasingly automated offices nationwide. The mainframe computers operate virtually 24 hours per day, year round, as SSA has become an online service provider. The NCC reduced energy by 6 percent from FY 2000 to FY 2001 and 5.5 percent from FY 2001 to FY 2002.

Tactical Vehicle and Equipment Fuel Use
All vehicles used by SSA are leased from GSA. SSA has an extensive ride-sharing program for employees and a limited transit subsidies program for qualified employees. SSA's Intranet Web sites disseminate comprehensive information on these programs.

Renewable Energy
SSA has analyzed a variety of solar and renewable energy technologies for its headquarters buildings. Natural daylight appears to be the most viable renewable energy source for implementation. SSA has received technical assistance from the Department of Energy's Federal Energy Management Program to explore the feasibility of installing solar tube lighting in the headquarters warehouse space.

Purchased Renewable Energy
SSA purchases competitive power for four facilities located in states that have deregulated. Approximately 3 percent, or 4,129 megawatthours of SSA's competitive power purchases under contract are from renewable sources.

Million Solar Roofs
SSA is exploring solar power for the UPS systems for the Northeastern Program Service Center (NEPSC) and the Great Lakes Program Service Center (GLSPC). In the Western Program Service Center (WNPSC), SAA is working with GSA and energy service companies (ESCOs) to evaluate the feasibility of using solar power technology for the Richmond, California, facility.

Additionally, SSA installed new solar/wind lighting fixtures in a portion of the parking area at the Mid-Atlantic Social Security Center in Philadelphia, Pennsylvania (MATSSC).

Water Conservation
SSA has completed numerous conversions of existing fixtures to energy-efficient, low-flow aerators and water closets and consistently used this technology in all major building retrofits. The Annex Building was recently completely retrofited with energy-efficient fixtures and technology. NEPSC completed an upgrade of the restrooms' hot water system. MATSSC has replaced all of the water fountains and GLPSC is working with GSA on major restroom retrofits that when complete will include energy-efficient fixtures.

Implementation Strategies

Life-Cycle Cost Analysis
SSA has used life-cycle cost analysis for energy audits, conservation projects, and prospectus projects. This mechanism has been effective in identifying projects that saved both energy and money.

SSA initiated and completed energy audits in all of its Government-owned delegated buildings. These audits identified projects and completed a life-cycle cost analysis for each project. In FY 2002, SSA initiated several projects throughout the country that were identified in the FY 2001 Implementation Plan. These projects included selected lighting retrofits, lighting controls, and dimmable ballasts at the headquarters Metro West Building, NEPSC, and GLPSC. SSA also

funded the purchase and installation of solar/wind lights in MATSSC.

Facility Energy Audits
Prior to FY 2002, SSA completed audits of 100 percent of all delegated spaces. SSA is currently working with ESCOs, who performed energy audits in WNPSC, GLPSC, and NEPSC in FY 2002, and reviewed all previous audits to determine new energy savings projects. SSA will continue to implement projects from existing energy audits that meet the criteria (10-year simple payback) for implementation as energy projects.

Financing Mechanisms
SSA has made extensive use of utility energy service contracts. In FY 2002, SSA awarded lighting projects in Maryland and New York via area-wide contracts. SSA is negotiating Super Energy Savings Performance Contracts (ESPCs) for WNPSC and GLPSC and is proceeding with contract awards in FY 2003.

In FY 2002, SSA budgeted $500,000 for energy projects, which included selected lighting retrofits, lighting controls, and dimmable ballasts in its headquarters Metro West Building, NEPSC, and GLPSC. SSA also funded commissioning of the HVAC system in WNPSC and installation of solar/wind lights in MATSSC.

SSA has budgeted $275,000 in FY 2003 to perform a feasibility and design study of solar or other renewable usage at NEPSC and GLPSC; an additional lighting project at the Metro West headquarters building; NCC lobby lights; Headquarters East Building lighting override switches, and purchasing green power and vending misers at the headquarters complex.

ENERGY STAR® and Other Energy-Efficient Products
SSA purchases energy-efficient and ENERGY STAR® products for installation in their buildings. The types of energy-efficient equipment installed include: ENERGY STAR®-office equipment (computers, monitors, copiers, and printers), and energy-efficient lamps, ballasts, motors, and building systems. Energy efficient specifications have been incorporated into construction criteria for prospectus level renovation projects as well. In FY 2002, GLPSC installed vending misers on all vending machines in the facility.

Agency policy requires language to be incorporated in SSA contracts to purchase energy-efficient computers, motors, equipment, and building systems. Government credit cards for micro-purchases have empowered many employees, and the Agency continues to train employees and micro-purchasers to ensure they are purchasing energy-efficient products.

ENERGY STAR® Buildings
SSA is profiling their buildings using the ENERGY STAR® software on the Environmental Protection Agency's Web site. SSA is gathering the facility data required to determine compliance with the ENERGY STAR® criteria. SAA has submitted the requirements for receiving "green" building status for the new headquarters child care center, completed in 2002.

Sustainable Building Design
In conjunction with the General Services Administration (GSA), SSA is renovating the headquarters complex. The renovations are prospectus level projects substantially funded by GSA. Sustainable building design principles are used to the maximum extent possible.

These projects, while not exclusively energy projects, will significantly affect SSA's energy baseline by installing:
- energy-efficient central heating and air conditioning plants;
- energy-efficient windows and doors;
- new central computer-based energy management systems;
- natural daylight; and,
- energy-efficient lighting and lighting controls.

SSA has built a new childcare facility for its headquarters, which incorporated sustainable design features. SSA has also completed renovations of the Annex Building at SSA headquarters and has included energy conservation and demand management features. This project's primary sustainable design features are an ice storage air conditioning system and natural daylight atriums. The Annex Building received a 2.0 LEED™ certification.

Energy Efficiency in Lease Provisions
SSA has added a provision on energy efficiency into their national solicitation for leased space. SSA will continue to work with GSA to identify the most energy-efficient buildings for its leased field offices.

The Annex Building at SSA's headquarters includes energy conserving and demand management features, such as an ice storage air conditioning system and atriums with daylighting. These features will be incorporated into the renovations of the remaining headquarters buildings.

Off-Grid Generation
SSA is working with GSA and DOE to install solar hotwater heating in its delegated facility in Philadelphia. SSA is evaluating the use of Super ESPCs to implement solar power for the UPS system in the Richmond, California, facility and with DOE in New

York and Chicago to install solar power for the UPS systems.

SSA is also producing off-grid power at the NCC. During peak electrical demand periods, SSA receives monthly credits on the utility bill, which provide a continuing demand savings for the agency. The installation of this service was accomplished through the local utility via a UESC.

Electrical Load Reduction Measures
Each of SSA's delegated buildings has a Building Curtailment Plan. The plans include methods for SSA managers and employees to increase energy awareness. SSA curtailment plans include items such as cycling air handler units, taking elevators offline, and turning off corridor and non-essential lighting. SSA has also made corrections to several energy-intensive items such as raising temperatures in computer rooms, completing several minor lighting retrofits, de-lamping, turning off monitors, and increasing employee awareness. At the headquarters complex in Baltimore, Maryland, SSA has the ability to take the entire headquarters complex offline during a power emergency and supply its own power from generators.

Energy Management Contact
Mr. Scott Howard
Social Security Administration
0134 Dunleavy Building
6401 Security Boulevard
Baltimore, MD 21235-6401
Phone: 410-965-4980
Fax: 410-966-3338
E-mail: scott.howard@ssa.gov

U. TENNESSEE VALLEY AUTHORITY (TVA)

Management and Administration

The Executive Vice President of Administration serves as the Tennessee Valley Authority (TVA) Senior Energy Official. TVA formed the Agency Energy Management Committee (AEMC) to facilitate compliance with Federal statutes, Executive Orders, Federal regulations, TVA energy and related environmental management objectives, and obligations under the Environmental Protection Agency's (EPA) Green Lights Program, and the ENERGY STAR® programs. The AEMC is comprised of representatives from each TVA organization responsible for energy management and associated environmental considerations in facility and general operations inside the agency. The AEMC also provides an avenue for sharing lessons learned and replicating success.

Management Tools

Awards

TVA utilizes pay for performance as one method to reward employee efforts toward meeting agency goals.

Performance Evaluations

To the extent to which employees are responsible for activities that are related to energy efficiency, their job descriptions contain performance goals and they are evaluated by the extent to which they accomplish such goals.

Training

TVA uses training methods such as information updates that are provided on current Federal requirements and regulations to employees, managers, and TVA customers upon request. Energy management and associated environmental training is provided to managers and employees as needed. Employee awareness activities are used to educate employees on how they impact energy consumption and the environment through their daily activities at work and home. TVA also educates staff on energy and environmental related topics through the TVA University.

Showcase Facilities

The TVA Chattanooga Office Complex (COC) continues to be TVA's designated Showcase facility. The COC was completed in 1986 and encloses approximately 1.2 million square feet of floor area, and is made up of five interconnected buildings (Signal Place, Lookout Place, Blue Ridge, Missionary Ridge, and Monteagle Place). It integrates the use of passive energy strategies, energy management practices, and environmental programs and activities. Occupant daily activities have been recognized as a major component in facility performance. Energy and environmental awareness programs have been established to inform the occupants about the impacts their actions have on this performance. The combinations of original design elements, energy and environmental activities, and aggressive energy reduction operation and maintenance efforts have resulted in the COC becoming a model facility.

Since initial construction, additional energy and environmental improvements have been implemented in the COC. One of these improvements was the design and installation of a chilled and hot water storage system for the COC and Monteagle Place buildings. The system allows the two buildings, through a symbiotic relationship, to better use site energy and reduce the need for source energy.

Energy Efficiency Performance

Standard Buildings

In FY 2002, TVA reported a 26.4 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. TVA received credit for purchases of 1.7 billion Btu of renewable electricity. This lowered the energy intensity of its standard buildings from 60,776 Btu/GSF to 60,599 Btu/GSF.

Industrial and Laboratory Facilities

In FY 2002, energy consumption in TVA's energy intensive facilities was 185,536 Btu per gross square foot, a 20 percent decrease compared to FY 1990.

Exempt Facilities

TVA has a long history of demonstrating energy reduction and will continue to work toward reducing energy use in its generation, transmission, and related energy intensive buildings. Energy reduction in these buildings has become increasingly more difficult given the majority of the energy consumption in these buildings is largely attributed to process energy (generation and transmission of electricity).

In FY 2002, TVA implemented or plans to implement projects to increase transmission power supply efficiency, hydropower efficiency, and nuclear efficiency in exempt facilities.

Tactical Vehicle and Equipment Fuel Use

TVA's fleet strategy is to examine current vehicle use and where possible, when vehicles need replacement, choose those that are more efficient. TVA, as a major provider of electricity will continue to use alternative fueled vehicles (AFVs) that use electric power and

acquire additional vehicles to meet requirements under the Energy Policy Act of 1992. TVA has also recognized the value of hybrid electric vehicle technology in reducing fuel consumption, increasing versatility, and promoting electric propulsion. TVA created a hybrid-fleet program in FY 2002 which is a partnership effort between TVA's Energy Management and Fleet Management organizations. TVA added two hybrid gas and electric vehicles to its fleet in FY 2002 and has made arrangements to purchase 10 more in FY 2003.

During FY 2002 TVA reduced gasoline fuel use by 5 percent and diesel fuel use by 21 percent compared to FY 2001.

TVA encourages employees to use mass transit systems, vans for group travel, and car pools, when available and feasible. The use of coordinated TVA and vendor delivery, pickup routing schedules, and just-in-time delivery has been expanded throughout TVA. This coordinated effort avoids double handling and, multiple trips to the same sites, and reduces deadheading.

As a major supplier of electricity, TVA is particularly interested in supporting the use of electric vehicles (EVs). TVA has incorporated EVs into its fleet operations and supports power distributors and local communities with EV technology demonstrations. TVA is also utilizing electric vehicles at its plant sites to reduce fuel consumption and emissions.

TVA currently has the following EVs:
- 2 U.S. Electricar Prism sedans,
- 1 U.S. Electricar S-10 pickup truck,
- 5 Solectria Ford sedans,
- 5 Ford Ranger pickup trucks,
- 3 GEM electric cars, and
- 3 EZGOs electric vehicles.

Renewable Energy

Self-Generated Renewable Energy
TVA is in the process of incorporating renewable energy options such as passive solar heating, geothermal heat pumps, and daylighting in its new Customer Service Center building design.

TVA has already installed photovoltaic panels and wind turbines in many locations in its service area to provide renewable energy to its customers through its GPS program.

TVA's River Operations staff considers energy efficiency and environmental impacts for each project and activity. TVA has cooperated with Voith Siemens, in establishing and operating Hydro Resource Solutions, LLC, a Tennessee limited liability company, which develops and markets energy efficiency enhancing hardware and software for the hydropower industry. The majority of projects completed at TVA hydro plants in FY 2002 pertain to energy management; however, the environmental impact and associated cost estimates are included as part of the project development process. Benefits from these projects include maintaining plant availability, reducing energy consumption, lowering maintenance costs, increasing megawatt capacity for units, improving security, increasing overall efficiency, and supporting environmental stewardship.

Purchased Renewable Energy
TVA purchased 495 megawatthours from the TVA GPS program for use in its Knoxville Office Complex and Huntsville office.

TVA's current efforts are directed toward large scale solar installations in highly visible locations through its GPS program. There are efforts underway to develop a program that would allow residential and small commercial customers to install solar generation and sell their excess power to TVA's GPS program.

Million Solar Roofs
Fourteen solar generating facilities are presently operating in Tennessee, Kentucky, Alabama, Virginia, and Mississippi. Two additional solar installations are planned to be built by the end of FY 2003. One commercial scale wind power generation site has also been operational since November 2000. TVA is looking at options for expanding its existing wind site by the end of 2003. A 2.6-megawatt landfill gas generation site has been operating since May 2001. GPS also benefits from generation produced from a 4-megawatt wastewater treatment methane gas project located at TVA's Allen Fossil plant near Memphis, Tennessee.

Petroleum
Utilization of the Total Base Number (TBN - measure of oil's alkaline) value as an oil indicator has resulted in a reduction in TVA's oil consumption due to extended oil drain intervals. Accordingly, the oil change interval in some smaller diesel engines has changed to 320 hours or 10,000 miles to protect TVA's equipment. Turbo pre-cleaners are being used on tractor scrapers and dozers to lengthen air filter life and extent oil change interval. Air filter indicators used on TVA's equipment have reduced filter changes (especially oil bath type), and additional engine protection.

TVA has expanded the fuel mag to small compressors to kill bacteria and spores that grow in fuel stored for long periods of time. The use of the units should decrease the amount of contaminated fuel to be disposed and eliminate down time due to filter and fuel injector plugging.

TVA's maintenance shops are using filter crushers to remove as much oil as possible from filters before disposal. The three maintenance facilities are using oil burners to heat their facilities using TVA's generated used oil.

These projects provide TVA with the benefits of minimal potential adverse environmental impacts from spillage of waste oil and fuel, increased operational efficiency, increased availability of units, and decreased cost due to reduction in oil consumption.

In FY 2002, TVA began to incorporate EPA emission standards in specifications for both on-road and off-road trucks. TVA began discussion with construction equipment providers on their emission standards.

TVA consumed 13,515 gallons of petroleum in building operations in FY 2002, a decrease of 38 percent from the FY 1985 baseline of 21,920 gallons.

Water Conservation

In FY 2002, TVA moved a large number of buildings from the industrial classification to the exempt classification. The buildings used to generate and transmit electricity and are a major user of potable water in TVA's building inventory. Although TVA is excluding these buildings, efforts to improve water efficiency will continue. During FY 2002, energy surveys including water were conducted at nine TVA power plant sites.

TVA consumed 1.7 million gallons of potable water in FY 2002 with an estimated cost of $337,654. These totals exclude the water consumption of the exempt buildings.

TVA considers water management plans as part of its operations and maintenance activities. As part of these activities, 70 facilities have been covered representing 3.5 million gross square feet, or 36 percent of TVA's standard and industrial facilities square footage.

TVA continues to implement Best Management Practices (BMPs) for water in its facilities. During FY 2002, TVA's Edney building met five of the 10 BMPs. TVA has now implemented BMPs in more than 11 percent of its gross square footage.

Implementation Strategies

Life-Cycle Cost Analysis

TVA's Energy Plan provides that life-cycle cost analysis will be used in making investment decisions regarding energy conservation measures.

Facility Energy Audits

TVA has currently evaluated its building inventory for potential energy conservation measures. These facilities will be re-evaluated in accordance with Executive Order 13123 and TVA's Memorandum of Understanding with the EPA. Energy surveys and building assessments are planned for FY 2002.

Financing Mechanisms

Funding procedures for energy management and related environmental projects are reviewed through the IEMP and the AEMC. Projects for facilities are primarily funded through renovation, operation, maintenance, and modernization efforts. Projects covered under general operations are ranked for economic benefit compared to other TVA projects to determine funding availability and implementation status and are funded mainly through the capital budgeting process.

ENERGY STAR® and Other Energy-Efficient Products

TVA's Energy Plan provides that TVA will strive, when cost-effective, "to meet the ENERGY STAR® building criteria for energy performance and indoor environmental quality in its eligible facilities to the maximum extent practicable by the end of 2002." This includes purchasing ENERGY STAR® and other energy efficient products whenever feasible. TVA continues its efforts to buy materials that have positive environmental qualities.

TVA is in the process of evaluating occupancy sensors to control energy use in individual work stations. TVA's Information Services group is partnering with the Procurement and Energy Management groups to investigate equipment that meets Executive Order 13123 objectives.

TVA continues its efforts to buy materials which have positive environmental qualities including soy ink, rechargeable batteries, low mercury lamps, and non-toxic supplies. TVA also purchases materials which meet sustainable architecture criteria.

ENERGY STAR® Buildings

TVA will continue to evaluate its buildings for compliance with ENERGY STAR® building criteria. During FY 2002, TVA plans to evaluate multiple facilities for energy efficiency and, where applicable, compliance with ENERGY STAR® building criteria.

Sustainable Building Design

TVA is building on earlier sustainable efforts by incorporating sustainable design criteria into renovation and new construction efforts. A "Sustainable Design Guideline" along with a "Sustainable Process" have been written and are currently being reviewed. All of these efforts are being incorporated into an agency sustainable program under TVA's IEMP. The guideline and process should be completed during FY 2002.

TVA is designing new buildings to not only meet energy efficiency standards but also sustainable standards. The technologies implemented include daylighting, passive solar heating, geothermal heat pumps, and advanced controls and non-toxic, recycle-content building materials are being incorporated into new building designs.

TVA implements various energy efficiency improvements in its facilities. Some examples of typical energy reduction improvements are as follows:

- Laboratory exhaust hoods have been equipped with variable speed drives to reduce exhaust requirements when hoods are not being used;
- Air handlers have been equipped with variable speed drives to reduce makeup air to laboratory space when the airflow to exhaust hoods is at a reduced level;
- HVAC and exhaust hood systems have been added to TVA's Energy Management and Control System;
- Energy Management Control Systems have been added to control heat pump heating and cooling systems;
- Variable frequency drives have been added to building HVAC units;
- New lighting systems using T-8 lamps, electronic ballasts and motion sensors have been installed in many existing buildings;
- New high efficiency heat pump systems have been installed in many buildings; and,
- Existing air handlers have been rebuilt to improve energy efficiency.

Energy Efficiency in Lease Provisions
Where applicable, TVA will use model lease provisions based on those recommended by the GSA, and such provisions will be incorporated into new and renewed leases provided they are cost-effective.

Industrial Facility Efficiency Improvements
TVA continuously looks for opportunities to improve energy efficiency in its industrial facilities. During FY 2002 several projects were implemented in TVA industrial facilities including the TVA Monteagle Place computer center. In Monteagle Place, inefficient lighting was replaced with new direct/indirect lighting, utilizing the new T-5 high-output lamps. Additionally, an under floor air-conditioning and heating system was installed providing occupants individual control and increased comfort and reduced energy use. In many of TVA's laboratory facilities existing exhaust hoods were retrofitted with variable speed drives. In addition, high-efficiency heat pumps were installed and connected to TVA's EMC system as part of the renovation of the Chickamauga laboratory facilities.

Highly Efficient Systems
TVA considers the implementation of high efficiency systems as mentioned above when it is life-cycle cost effective.

Off-Grid Generation
TVA is currently researching, testing, and demonstrating the use of renewable power technologies. TVA is building the first Regenesys energy storage facility in the United States, near Columbus, Mississippi. The 12-megawatt facility with a 120-megawatthour storage capacity will be the first utility-scale electrochemical flow-battery plant. With its compact size and minimal environmental impact, a Regenesys system can be located near customer loads reducing transmission system congestion and line losses.

Electrical Load Reduction Measures
As part of its operation and maintenance function, TVA has an emergency curtailment procedure which reduces energy use in its buildings during energy emergencies.

Energy Management Contact
Mr. Steve Brothers
Manager, Agency Energy Management
Internal Energy Management Program
Tennessee Valley Authority
CST 6D-C
1101 Market Street
Chattanooga, TN 37402-2801
Phone: 423-751-7369
Fax: 423-751-6309
E-mail: slbrothers@tva.gov

V. UNITED STATES POSTAL SERVICE (USPS)

Management and Administration

In the U.S. Postal Service (USPS) the Vice President of Engineering is the Senior Energy Official, with overall responsibility for design and implementation of energy efficiency policies and practices within the Agency.

The USPS headquarters energy management team consists of representatives from the environmental department and are responsible for planning, developing, organizing, and directing energy management for the USPS. This includes representatives from environmental management, maintenance policies and procedures, and contract management within the USPS. The agency team is responsible for providing as-needed technical guidance in their respective functional areas, support to program development and implementation, and program effectiveness reviews.

Management Tools

Awards

Where merited, USPS employees receive monetary awards for their energy accomplishments. These awards are given at the discretion of the supervisor on a case-by-case basis. In some instances, Vice President "spot" awards are awarded. The energy program utilizes the existing USPS award system and procedures in recognizing noteworthy employee contributions.

Performance Evaluations

Through annual goal setting and review, appropriate managers are evaluated regarding specific actions related to cost savings, including savings from energy programs. Managers achieving such savings, from energy management as well as from other means, are rewarded. Also, position descriptions include responsibilities and accountability for management of assigned functions, programs, and activities, which in some instances include energy management.

Training

USPS employees may receive ongoing training as part of the Corporate Voice of the Employee goal. Individual training, education planning, and implementation are decentralized to the facility and supervisor-subordinate level. There is no formal means to track either the number of hours or number of employees who receive energy management training. However, Postal employees are encouraged to participate in the educational and training opportunities presented by the Federal Energy Management Program (FEMP). Also, energy training is integrated into broader training provided employees charged with facility operations and maintenance responsibilities. For example, training on management of HVAC systems routinely covers energy efficiency aspects of such systems. Such in-house training programs are provided to Postal employees at the USPS National Training Center.

Showcase Facilities

USPS' energy showcase initiative is integrated with the environmental "green building" program, which is managed by the USPS facilities department and entails the use of sustainable design principles and renewable materials. Eighth Avenue Station, Fort Worth, Texas, was the first USPS green building. Since then, the main post office in Corrales, New Mexico, and a facility in South Raleigh, North Carolina, have been included in the program.

Energy Efficiency Performance

Standard Buildings

In FY 2002, USPS reported a 21 percent decrease in energy consumption from FY 1985 for its standard buildings when measured in Btu per gross square foot. Estimated energy use decreased in FY 2002 by about 5.2 percent compared to FY 2001.

The USPS utilizes financial performance and energy pricing data to generate consumption figures. These involve USPS-collected energy expenditure data and state-by-state Energy Information Administration (EIA) pricing data. To increase the accuracy of the energy usage numbers, weighted prices are calculated from the EIA data to take account of seasonal and area variation.

Industrial and Laboratory Facilities

No USPS buildings are classified as industrial or laboratory at this time. However, many facilities hold equipment that use a great deal of energy, and USPS may seek to reclassify some or all such buildings at a later time.

Exempt Facilities

The USPS has no exempt facilities. However, a certain proportion of total facility energy use is process energy, which is excluded from the requirements of Executive Order 13123.

Renewable Energy

Self-Generated Renewable Energy

Two facilities in California and one in Rhode Island are operating photovoltaic units. Geothermal heat pumps have been installed at Postal facilities in the Eastern, New York Metro, Southwest, and Great Lakes areas. At least 11 such facilities are using this technology.

Purchased Renewable Energy
USPS continues to seek opportunities to purchase renewable energy and encourages suppliers to do so in instances where there is competition to supply power.

Million Solar Roofs
The Postal Service operates solar installations in Rancho Mirage, California; and Block Island, Rhode Island. These activities will continue and new ones will be investigated as financing and opportunities become available.

Petroleum
USPS facility petroleum use in FY 2002 was approximately 5 million gallons, a 19.6 percent decrease from FY 2001. USPS petroleum consumption is estimated from financial and price data.

Water Conservation
Total water use in USPS facilities increased slightly from FY 2001 to FY 2002, while expenditures rose by more than 4 percent. Water use declined slightly in each year from 1999 to 2001 before stabilizing in 2002. USPS has been focusing on water conservation programs, setting benchmark standards, and comparing actual use to the benchmark for each USPS Performance Cluster. The number of clusters reaching the standard has been rising through time, and USPS will continue its efforts to provide guidance and support for water conservation efforts.

The USPS water conservation program aims to meet or exceed a target of 25 gallons per square foot of facility per year. In FY 2002, roughly 85 percent of USPS clusters met or exceeded this goal. USPS is working with other clusters to meet the goal, surveying about 100 facilities with high water usage to identify actions to increase conservation, developing pilot partnership water conservation management projects, promoting water conservation efforts, and issuing guidance and support. In addition, USPS developed a High Risk Water Geographic Information System Module in FY 2002 that identifies states that have water use restrictions.

Implementation Strategies
In FY 2000 the USPS developed a comprehensive ten-year energy program. The major strategies of the plan are:

- Energy Surveys and Retrofits,
- Operations and Maintenance,
- New Construction (green building),
- Purchasing Utilities and Materials,
- Emerging Technologies,
- Management and Employee Awareness,
- Standardization and Benchmarking,
- Goals and Policy,
- Energy Crisis Management, and
- Financing Methods.

Life-Cycle Cost Analysis
Postal Service energy conservation projects are subject to rate of return analysis, with a minimum required return on investment of 20 percent. In determining prospective returns on any project, the amount of energy saved, the cost of that energy, and changes in maintenance or other activities are taken into account. While USPS can identify projects with promising returns, it is also subject to extreme budgetary pressure and therefore has sought outside sources of capital investment (through shared energy savings programs) whenever possible.

Facility Energy Audits
USPS performs energy audits in the scope of broader project analyses. Since 1992, all major facilities operated by USPS have been surveyed (facilities larger than 250,000 GSF). In addition, some USPS areas have used a "Do it Yourself" audit mechanism for their smaller facilities (below 5,000 GSF). For example, in North Florida, a focused survey unearthed 236 separate energy efficiency projects with potentially attractive paybacks.

Financing Mechanisms
USPS makes extensive use of shared energy savings contracts. While many of these are local, USPS also is experimenting with broader shared energy savings projects that take in multiple facilities. USPS has found shared energy savings to be one of the most efficient means available to reduce energy use while preserving needed capital for other purposes. In FY 2002, three new contracts were implemented, involving $4.1 million in funding and promising 8.6 million kilowatthours of electricity savings per year.

Energy Star® and Other Energy-Efficient Products
USPS has issued an environmental products directory which is intended to aid personnel in locating energy-efficient products and services.

ENERGY STAR® Buildings
In FY2002, USPS carried out a national survey of energy use and operating characteristics of its stations and branches throughout the country. The data was organized into uniform format by USPS, and then turned over to EPA for analysis and review. It is expected that ENERGY STAR® criteria will be developed for USPS Stations and Branches from these data, and that individual facilities meeting the ENERGY STAR® criteria will be identified.

Sustainable Building Design
USPS has developed a variety of sustainable building designs that incorporate "green" principles. These design principles are contained in USPS' Master Specifications for facilities and are applied to all new construction projects as well as to retrofits. In addition, there is ongoing review to be sure that the sustainable design principles remain current and consistent with new technology.

Energy Efficiency in Lease Provisions
For leased facilities where USPS pays for utilities, USPS energy policy and standards are applied. These facilities are included in national energy program initiatives, and in some instances USPS may retrofit the facility. In leased space where the owner pays utility costs, lease provisions are negotiated on a case-by-case basis.

Highly Efficient Systems
The USPS Corrales, New Mexico, facility uses straw bales, a sustainable renewable resource, as insulation. The R factor for the straw bale design is R-40 to 50, two to three times greater than conventional insulating materials. The Corrales facility was recognized by General Services Administration in its annual Achievement Award for Real Property Innovation in 2001.

A feasibility study of combined heat and power has been conducted at a Processing and Distribution Center in Central Florida. USPS intends to proceed with the project, which will make efficient use of steam heat from a small electricity generating unit.

A Lincoln, Nebraska, facility is using geothermal energy to run its HVAC systems. Energy savings from the hookup are being monitored and compared to a conventionally powered USPS facility nearby. Also, the Postal Service has a Memorandum of Understanding with the Geothermal Heat Consortium to obtain design assistance when a new or replacement facility is considering geothermal as an energy source.

The South Raleigh Annex, in North Carolina, includes a wide variety of energy-saving devices. These include light colored roofing; an aluminum storefront with a thermal break, LED exit lights; dimmable energy-efficient, HID-pendent lighting; passive solar controls; low-e glazing; occupancy sensors; increased R-value, high efficiency HVAC system with full economizers, (minimum SEER of 10), heat recovery and positive pressure, and direct digital controls.

Off-Grid Generation
The Anchorage, Alaska, Processing and Distribution Center is powered by fuel cells (four 200-kilowatt units). Any power not consumed by the facility is fed back to the grid.

Electrical Load Reduction Measures
The USPS has installed meters at a number of California facilities to allow real-time response to high electricity prices at times of peak demand. Further, capability is being installed to curb demand significantly under such circumstances while maintaining essential functions.

In addition, USPS has developed a Pacific Area Energy Conservation Report and a Plan of Action for Energy Conservation in the USPS New York Metro Area, developed action plans in other areas, and coordinated with FEMP on energy conservation strategies. The USPS also has invited DOE's Assessment of Load and Energy Reduction Technique (ALERT) teams to survey larger Postal facilities for purposes of identifying load reduction options.

Energy Management Contact
Mr. Paul Fennewald
Environmental Programs Analyst
Environmental Management Policy
U.S. Postal Service
475 L'Enfant Plaza, SW
Room 1P-830
Washington, D.C. 20260-2810
Phone: 202-268-6239
Fax: 202-268-6016
E-mail: pfennewa@email.usps.gov

APPENDIX A
LIST OF AUTHORITIES

ENERGY POLICY ACT (Public Law 102-486), October 1992

FEDERAL ENERGY MANAGEMENT IMPROVEMENT ACT OF 1988 (Public Law 100-615), November 1988

NATIONAL ENERGY CONSERVATION POLICY ACT (Public Law 95-619), November 1978

DEPARTMENT OF ENERGY ORGANIZATION ACT (Public Law 95-91), August 1977
TITLE III - TRANSFERS OF FUNCTIONS

ENERGY POLICY AND CONSERVATION ACT (Public Law 94-163), December 1975
SECTION 381 - FEDERAL ENERGY CONSERVATION PROGRAMS

EXECUTIVE ORDER 13221, July 31, 2001
ENERGY-EFFICIENT STANDBY POWER DEVICES

EXECUTIVE ORDER 13123, June 3, 1999
GREENING THE GOVERNMENT THROUGH EFFICIENT ENERGY MANAGEMENT

SUPPLEMENT NO. 1 TO OFPP POLICY LETTER 76-1, July 2, 1980

OFPP POLICY LETTER NO. 76-1, August 6, 1976
FEDERAL PROCUREMENT POLICY CONCERNING ENERGY POLICY AND CONSERVATION

OTHER FEDERAL REGULATIONS

REVISION TO FEDERAL ACQUISITION REGULATION
48 C.F.R. 23.2 (2002)

FEDERAL ACQUISITION REGULATION
48 C.F.R. §§ 23.201-203 (1995)

FEDERAL ENERGY MANAGEMENT AND PLANNING PROGRAMS
10 C.F.R., Part 436 (1996)

FEDERAL PROPERTY MANAGEMENT REGULATION
41 C.F.R., Part 101-25 (1996)

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APPENDIX B
DATA COLLECTION

Standard Buildings and Facilities, Energy Intensive Facilities, and Exempt Facilities

The Federal agencies that own or control buildings are required to report the energy consumption in these buildings to FEMP 45 days after the end of each fiscal year. The General Services Administration (GSA) reports the energy of buildings it owns and operates, including usage by other Federal agency occupants. For agencies which have been delegated authority by GSA to enter into contracts for energy and utility services, the individual agencies are responsible for reporting the energy consumption and square footage figures.

The data shown in this report do not include leased space in buildings where the energy costs are a part of the rent and the Federal agency involved has no control over the building's energy management.

The Federal agencies submit their annual reports expressed in the following units: megawatthours of electricity; thousands of gallons of fuel oil; thousands of cubic feet of natural gas; thousands of gallons of liquefied petroleum gas (LPG) and propane; short tons of coal; billions of Btu of purchased steam; and billions of Btu of "other." DOE reviews this data for accuracy and confers with the submitting agency to clarify any apparent anomalies. The data are then entered into a computer database management program.

The tables shown in this Annual Report are expressed in billions of Btu derived from the following conversion factors:

Electricity	-	3,412 Btu/kilowatt hour
Fuel Oil	-	138,700 Btu/gallon
Natural Gas	-	1,031 Btu/cubic foot
LPG/Propane	-	95,500 Btu/gallon
Coal	-	24,580,000 Btu/short ton
Purchased Steam	-	1,000 Btu/pound

The above conversion factors for electricity and purchased steam refer to site-delivered energy (or heat content) and do not account for energy consumed in the production and delivery of energy products. Tables 1-A, 5-A, and 8-B of this report account for primary energy use, which is the sum of the energy directly consumed by end users (site energy) and the energy consumed in the production and delivery of energy products. According to the EIA, in 1999, steam electric utility plants (the largest source of electricity generation) were estimated to have used 10,346 Btu of fossil fuel energy to generate 1 kilowatt-hour of electricity. DOE uses this conversion factor to calculate primary energy use for electricity and 1,390 Btu per pound for purchased steam.

In addition, the Federal agencies annually report to FEMP the gross square footage of their buildings and the cost of their buildings' energy.

Vehicles and Equipment

The fuels used in vehicles and equipment are automotive gasoline, diesel and petroleum distillate fuels, aviation gasoline, jet fuel, navy special, liquefied petroleum gas/propane, and "other." All fuels in this category with the exception of "other" are reported in thousands of gallons. "Other" is reported in billions of Btu.

The conversion factors for these fuels are:

Gasoline	-	125,000 Btu/gallon
Diesel-Distillate	-	138,700 Btu/gallon
Aviation Gasoline	-	125,000 Btu/gallon
Jet Fuel	-	130,000 Btu/gallon
Navy Special	-	138,700 Btu/gallon
LPG/Propane	-	95,500 Btu/gallon

This report excludes those agencies that have been unable to provide complete fiscal year consumption data prior to the publication date. All agency omissions, as well as any anomalies in the data, are indicated by footnotes on the tables or in the text of the report.

Calculation of Estimated Carbon Emissions

In the past, DOE tracked and reported aggregate energy use for all Federal agencies and estimated carbon emissions using national fuel-specific emission factors. This approach, however, resulted in less accurate emission estimates for electricity use because carbon emission factors for electricity vary significantly by utility and State depending on the resource used to generate the electricity (e.g., coal, gas, nuclear, hydro).

To obtain a greater level of accuracy in estimating emissions from electricity use, DOE developed a new approach that places little or no additional reporting burden on the agencies. Agencies continue to report their aggregated national-level electricity consumption data as they have in the past. DOE then takes that total consumption figure and apportions it across the States in which the agency has facility locations. DOE will then multiply the apportioned electricity usage by the appropriate regional-level carbon emission factor assigned to each State. Once emissions from electricity use are calculated, these will be added to the emissions estimated from the other fuels used by the agency to determine total carbon emissions. (National factors may be appropriately used for fuel oil, natural gas, LPG/propane, coal, and purchased steam.)

DOE estimated State electricity usage by determining the percentage of facility floor area for the agency and apportioning the reported total electricity use according to that percentage. For the purposes of estimating changes in greenhouse gas emissions over time, DOE is assuming that floor area can be used as a reasonable proxy to represent the State-level usage pattern for electricity consumption for an agency. DOE uses historical square footage data for Government-owned buildings from GSA's Office of Governmentwide Policy, Office of Real Property to determine each agency's percentage floor area for each State.

DOE uses factors derived from data from EIA for estimating carbon emissions from non-electric fuels on a nation-wide basis. The regional emissions factors for electricity were calculated by summing the annual EIA data on electricity sales and carbon emissions for each State in a given region. These sums were then used to calculate the regional emissions/kWh (which were then converted to MMTCE/Quad). This value will be used for each State in a particular region.

Non-Electric Fuel National Coefficients
Million Metric Tons of Carbon Equivalent (MMTCE) per Site-Delivered Quad
(or Metric Tons of Carbon Equivalent [MTCE] per Site-Delivered Billion Btu)

Fuel	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Fuel Oil	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95
Natural Gas	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47	14.47
LPG/Propane	16.99	16.98	16.99	16.97	17.01	17.00	16.99	16.99	16.99	16.99	16.99	16.99	16.99
Coal	25.82	25.89	25.87	25.77	25.77	25.80	25.75	25.76	25.79	25.80	25.74	25.74	25.74
Purchased Steam	35.12	35.21	35.18	35.05	35.05	35.09	35.02	35.03	35.07	35.09	35.01	35.01	35.01

Source: EIA's *Emissions of Greenhouse Gases in the United States 2001*. Table B1, DOE/EIA-0573, December 2002. The factor for purchased steam is derived from the coefficient for coal adding associated losses for generation and transportation (using a factor of 1.39 to convert site-delivered to primary energy).

Electricity Regional Coefficients
Million Metric Tons of Carbon Equivalent (MMTCE) per Site-Delivered Quad
(or Metric Tons of Carbon Equivalent [MTCE] per Site-Delivered Billion Btu)

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
AK	66.63	63.51	59.34	59.42	58.42	59.33	59.53	63.33	56.48	55.52	57.68	59.47	59.47
AL, GA, MS, NC, SC, TN, VA	45.42	43.91	44.90	47.94	44.94	45.99	47.00	48.15	46.64	46.73	47.80	48.15	48.15
AR, KS, LA, MO, OK	64.43	65.26	65.55	61.92	64.06	65.35	64.73	65.15	64.69	65.36	64.75	65.52	65.52
AZ, CO, NM	83.70	78.50	82.03	82.02	80.49	72.87	70.30	70.98	71.79	72.15	74.32	74.68	74.68
CA	16.82	16.06	18.76	17.71	20.19	15.59	13.99	14.12	14.74	16.15	18.71	20.90	20.90
CT, MA, ME, NH, RI, VT	35.25	35.56	33.08	29.90	29.62	29.32	30.05	37.13	36.52	33.46	30.92	31.68	31.68
DC, DE, MD, NJ, PA	49.94	48.19	48.45	48.86	47.41	47.17	47.65	48.17	48.32	47.11	49.11	45.36	45.36
FL	48.33	50.80	49.50	49.92	48.59	47.10	48.03	48.86	50.52	48.91	47.68	46.97	46.97
HI	73.27	60.60	67.70	67.24	66.51	66.83	67.65	66.80	65.92	65.57	65.47	64.60	64.60
IA, MN, NE, ND, SD	75.96	74.11	75.58	76.43	73.77	72.44	71.63	71.15	74.52	72.61	73.27	72.05	72.05
ID, MT, NV, OR, UT, WA, WY	43.15	43.34	47.79	45.02	48.67	42.95	42.23	41.74	46.31	44.31	46.31	54.26	54.26
IL, WI	46.10	45.26	43.76	47.48	47.74	47.13	51.24	54.17	51.56	51.45	54.06	53.34	53.34
IN, KY, MI, OH, WV	85.54	82.63	82.08	82.38	81.04	79.17	81.54	82.48	83.18	80.85	82.29	80.69	80.69
NY	40.23	37.64	35.03	30.84	30.29	32.49	29.39	32.26	34.10	33.03	31.69	31.46	31.46
TX	66.89	65.88	65.39	67.42	63.49	62.54	62.14	61.73	60.64	62.36	61.37	58.42	58.42

Note: Regions match those defined in the Energy Information Administration's (EIA's) Electricity Market Module of the National Energy Modeling System. FY 2002 uses coefficients developed for FY 2001.

Source data for developing these coefficients: 1990-2001 U.S. Electric Power Industry Estimated Emissions by State, U.S. Energy Information Administration,

- Form EIA-767, "Steam-Electric Plant Operation and Design Report"
- Form EIA-759, "Monthly Power Plant Report"
- Form EIA-867, "Annual Nonutility Power Producer Report"
- Form EIA-860B, "Annual Electric Generator Report, Non-Utility"
- Form EIA-861, "Annual Electric Utility Report"
- Form EIA-906, "Power Plant Report"
- Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants"

Vehicle & Equipment Fuel National Coefficients, 1990 - 2001
Million Metric Tons of Carbon Equivalent (MMTCE) per Site-Delivered Quad
(or Metric Tons of Carbon Equivalent [MTCE] per Site-Delivered Billion Btu)

Gasoline	19.35
Diesel	19.95
Aviation Gas	18.87
Jet Fuel	19.33
Navy Special	21.49

Source: EIA's *Emissions of Greenhouse Gases in the United States,* 1998, Tables 11 and B1, DOE/EIA-0573(98), October 1999.

APPENDIX C
FEDERAL ENERGY EXPENDITURES, FY 1985 THROUGH FY 2002

TABLE C
FEDERAL ENERGY EXPENDITURES, FY 1985–FY 2002
(CONSTANT 2002 DOLLARS)

Year	Annual Energy Use (BBTU)	Annual Energy Cost ($ MILLION)	Annual Energy Cost ($/MMBTU)	Change in Energy Costs from 1985[1] ($ MILLION)
Standard Buildings & Facilities				
1985	415,502.5	$5,305.347	$12.769	$0.000
1986	443,667.3	$5,426.742	$12.232	$121.395
1987	465,393.9	$5,422.051	$11.650	$116.705
1988	440,381.3	$4,935.062	$11.206	-$370.285
1989	437,487.3	$4,585.214	$10.481	-$720.133
1990	424,687.7	$4,900.230	$11.538	-$405.117
1991	394,459.0	$4,528.991	$11.482	-$776.355
1992	401,667.6	$4,293.943	$10.690	-$1,011.403
1993	391,492.2	$4,488.980	$11.466	-$816.367
1994	373,532.2	$4,297.493	$11.505	-$1,007.854
1995	356,358.8	$4,010.930	$11.255	-$1,294.417
1996	347,893.7	$3,919.075	$11.265	-$1,386.272
1997	337,929.1	$3,749.823	$11.096	-$1,555.524
1998	331,117.8	$3,641.064	$10.996	-$1,664.283
1999	327,713.8	$3,510.868	$10.713	-$1,794.479
2000	320,930.3	$3,441.241	$10.723	-$1,864.106
2001	324,934.9	$3,930.583	$12.097	-$1,374.763
2002	316,801.8	$3,664.888	$11.568	-$1,640.549
Energy Intensive Facilities				
1985	78,736.6	$1,055.386	$13.404	$0.000
1986	20,321.6	$391.869	$19.283	-$663.517
1987	24,827.5	$366.368	$14.757	-$689.018
1988	55,666.3	$731.639	$13.143	-$323.747
1989	52,355.4	$569.287	$10.874	-$486.099
1990	69,504.3	$828.478	$11.920	-$226.908
1991	78,867.3	$869.827	$11.029	-$185.559
1992	92,246.2	$981.435	$10.639	-$73.951
1993	65,607.1	$644.291	$9.820	-$411.095
1994	65,637.1	$621.091	$9.462	-$434.295
1995	63,364.2	$566.423	$8.939	-$488.963
1996	63,655.1	$595.196	$9.350	-$460.190
1997	63,141.0	$597.045	$9.456	-$458.341
1998	62,365.8	$537.819	$8.624	-$517.567
1999	54,931.8	$506.459	$9.220	-$548.927
2000	63,747.8	$570.707	$8.953	-$484.679
2001	60,160.0	$638.788	$10.618	-$416.598
2002	61,210.8	$590.066	$9.640	-$465.320

[1]Changes in energy costs from 1985 should not be construed as savings resulting from Federal energy management activities. Many variables contribute to fluctuations in annual energy costs, including changes in square footage, building stock, weather, energy efficiency investments, service level, fuel mix, fuel prices, and vehicle, naval, and aircraft fleet composition. This table incorporates revisions to previously published energy consumption and cost data submitted to DOE by Federal agencies.

Source: Federal Agency Annual Energy Management Data Reports

TABLE C (Continued)
FEDERAL ENERGY EXPENDITURES, FY 1985–FY 2002
(CONSTANT 2002 DOLLARS)

Year	Annual Energy Use (BBTU)	Annual Energy Cost ($ MILLION)	Annual Energy Cost ($/MMBTU)	Change in Energy Costs from 1985[1] ($ MILLION)
Exempt Facilities				
1985	20,217.9	$277.946	$13.748	$0.000
1986	17,878.5	$236.887	$13.250	-$41.059
1987	17,195.9	$224.732	$13.069	-$53.214
1988	17,367.6	$218.801	$12.598	-$59.145
1989	14,840.0	$208.262	$14.034	-$69.684
1990	14,800.8	$223.497	$15.100	-$54.449
1991	17,851.3	$271.405	$15.204	-$6.541
1992	17,677.5	$222.294	$12.575	-$55.652
1993	16,981.0	$212.333	$12.504	-$65.613
1994	16,172.3	$222.435	$13.754	-$55.510
1995	22,376.0	$201.161	$8.990	-$76.785
1996	21,723.5	$210.279	$9.680	-$67.667
1997	25,437.2	$299.788	$11.785	$21.842
1998	16,977.4	$262.810	$15.480	-$15.136
1999	21,362.5	$259.801	$12.162	-$18.145
2000	29,908.5	$406.907	$13.605	$128.961
2001	29,892.1	$468.714	$15.680	$190.768
2002	24,101.0	$413.710	$17.166	$135.764
Vehicles & Equipment				
1985	934,268.4	$9,104.339	$9.745	$0.000
1986	924,833.7	$5,517.038	$5.965	-$3,587.301
1987	958,904.3	$5,846.892	$6.097	-$3,257.448
1988	846,896.2	$5,542.621	$6.545	-$3,561.719
1989	959,994.6	$6,234.688	$6.495	-$2,869.652
1990	926,994.8	$6,737.633	$7.268	-$2,366.706
1991	970,454.3	$8,325.926	$8.579	-$778.413
1992	783,122.4	$4,950.854	$6.322	-$4,153.485
1993	772,633.8	$5,211.156	$6.745	-$3,893.183
1994	722,790.5	$3,745.847	$5.182	-$5,358.493
1995	687,137.4	$3,867.937	$5.629	-$5,236.403
1996	675,111.5	$3,792.479	$5.618	-$5,311.860
1997	665,386.0	$4,377.033	$6.578	-$4,727.307
1998	627,339.2	$4,653.452	$7.418	-$4,450.887
1999	607,527.2	$4,129.860	$6.798	-$4,974.479
2000	579,135.6	$3,324.269	$5.740	-$5,780.070
2001	587,921.5	$4,698.487	$7.992	-$4,405.852
2002	643,844.7	$5,037.465	$7.824	-$4,066.874

[1]Changes in energy costs from 1985 should not be construed as savings resulting from Federal energy management activities. Many variables contribute to fluctuations in annual energy costs, including changes in square footage, building stock, weather, energy efficiency investments, service level, fuel mix, fuel prices, and vehicle, naval, and aircraft fleet composition. This table incorporates revisions to previously published energy consumption and cost data submitted to DOE by Federal agencies.

Source: Federal Agency Annual Energy Management Data Reports

TABLE C (Continued)
FEDERAL ENERGY EXPENDITURES, FY 1985–FY 2002
(CONSTANT 2002 DOLLARS)

Year	Annual Energy Use (BBTU)	Annual Energy Cost ($ MILLION)	Annual Energy Cost ($/MMBTU)	Change in Energy Costs from 1985[1] ($ MILLION)
Total Energy - All End-Use Sectors				
1985	1,448,725.4	$15,743.018	$10.867	$0.000
1986	1,406,701.1	$11,572.536	$8.227	-$4,170.482
1987	1,466,321.7	$11,860.043	$8.088	-$3,882.975
1988	1,360,311.3	$11,428.123	$8.401	-$4,314.895
1989	1,464,677.3	$11,597.451	$7.918	-$4,145.567
1990	1,435,987.7	$12,689.839	$8.837	-$3,053.179
1991	1,461,631.8	$13,996.149	$9.576	-$1,746.869
1992	1,294,713.8	$10,448.527	$8.070	-$5,294.492
1993	1,246,714.1	$10,556.760	$8.468	-$5,186.258
1994	1,178,132.0	$8,886.866	$7.543	-$6,856.152
1995	1,129,236.4	$8,646.451	$7.657	-$7,096.567
1996	1,108,383.9	$8,517.029	$7.684	-$7,225.989
1997	1,091,893.2	$9,023.688	$8.264	-$6,719.330
1998	1,037,800.2	$9,095.146	$8.764	-$6,647.872
1999	1,011,535.3	$8,406.988	$8.311	-$7,336.030
2000	993,722.1	$7,743.124	$7.792	-$7,999.894
2001	1,002,908.5	$9,736.572	$9.708	-$6,006.446
2002	1,045,958.3	$9,706.129	$9.280	-$6,036.889

[1]Changes in energy costs from 1985 should not be construed as savings resulting from Federal energy management activities. Many variables contribute to fluctuations in annual energy costs, including changes in square footage, building stock, weather, energy efficiency investments, service level, fuel mix, fuel prices, and vehicle, naval, and aircraft fleet composition. This table incorporates revisions to previously published energy consumption and cost data submitted to DOE by Federal agencies.

Source: Federal Agency Annual Energy Management Data Reports

APPENDIX D
INDUSTRIAL, LABORATORY, RESEARCH, AND OTHER ENERGY INTENSIVE FACILITIES

Department of Agriculture

Agricultural Research Service

Agriculture Research at NC State, Raleigh, NC
Agronomy Farm - Soil Tilth, Boone, IA
Animal Physiology Research, Columbia, MO
Appalachian Fr Research Station, Kearneysville, WV
Appalachian Soil & Water Con, Beckley, WV
Aquatic Weed Research Lab, Fort Lauderdale, FL
Aquatic Weeds Control Research Lab, Davis, CA
ARS Food Animal Protection Research & Southern Crops Research Laboratory), College Station, TX
ARS Research Fac Purdue University, West Lafayette, IN
ARS Research Fac University of Illinois, Urbana, IL
ARS Research Fac University of NE, Lincoln, NE
Arthropod-borne Anim Dis, Laramie, WY
Avian Disease & Oncology Lab, East Lansing, MI
BARC Worksite - Aroostook Farm, Presque Isle, ME
BARC Worksite - Aroostook Farm, Presque Isle, ME
Beltsville Agricultural Research Center, Beltsville, MD
Beneficial Insects Research, Newark, DE
Biological Insect Control Lab, Columbia, MO
Bruner Farm - Corn Insects, Ames, IA
Cattle Fever Tick Research Lab, Mission, TX
Central Great Plains Research Sta, Akron, CO
Central Plains Exp Range, Nunn, CO
Cereal Crops Research, Madison, WI
Cereal Rust Research Lab, St. Paul, MN
Children's Nutrition Research Ctr, Houston, TX
Citrus & Subtropical Prod Lab, Winter Haven, FL
Citrus Research Foundation Farm, Leesburg, FL
Coastal Plain Soil/Water Cons., Florence, SC
Columbia Plateau Con Research Center, Pendleton, OR
Conserv & Prod Research Lab, Bushland, TX
Corn Insects & Crop Genetics, Ames, IA
Cotton Quality Research Station, Clemson, SC
Cropping Sys & Plant Genetics, Columbia, MO
Cropping Systems Research Lab, Lubbock, TX
Crops Research Laboratory, Fort Collins, CO
Dairy Forage Research Center, Campus Facility , Madison, WI
Dairy Forage Research Facility, Prairie du Sac, WI
Eastern Reg Research Center, Wyndmoor, PA
Forage & Range Research Lab, Logan, UT
Ft Keogh Livestock & Range, Miles City, MT
Germplasm Intro Research Unit, Kingshill, USVI
Golden Nematode Research Farm, Prattsburg, NY
Grand Forks Human Nutrition Rc, Grand Forks, ND
Grassland Soil & Water Research Lab, Temple, TX
Grassland Soil & Water Research Lab, Riesel, TX
Grazing Lands Research Lab, El Reno, OK
Hayden Bee Research Center, Tucson, AZ
High Plains Grasslands Research Sta, Cheyenne, WY
Honeybee, Soil & Water Research, Baton Rouge, LA
Horticultural Crops Research Lab, Corvallis, OR
Horticultural Crops/water Mgmt, Fresno, CA
Hruska US Meat Animal Research Center, Clay Center, NE
Insect Biology & Population Research Laboratory, Tifton, GA
Irrigated Agriculture Research, Prosser, WA
Jamie Whitten Delta States RC, Stoneville, MS
Jean Mayer Hum Nutr Research Center, Boston, MA
Jornada Experimental Range, Las Cruces, NM
Knipling-Bushland US Livestock, Kerrville, TX
Landscape Ecol. of Range Land, Reno, NV
Mayaguez Inst Tropical Agri, Isabela, PR
Medical & Veterin. Entomology, Gainesville, FL
Mississippi State Research Center, MS
N. Central Soil Conser Worksite, Morris, MN
Nat. Clonal Germplasm Rep, Corvallis, OR
National Agricultural Library, Beltsville, MD
National Animal Disease Center, Ames, IA
National Aquaculture Research Ctr, Stuttgart, AR
National Arboretum, Washington, DC
National Clonal Germplasm Rep, Riverside, CA
National Clonal Germplasm Rep, Hilo, HI
National Peanut Research Lab, Dawson, GA
National Seed Storage Lab, Fort Collins, CO
National Soil Tilth Lab, Ames, IA
National Soil Tilth Lab, Treynor, IA
National Soils Dynamics Lab, Auburn, NC
Natl Clnl Grmplasm Repository, Davis, CA
Natl Center for Agric Util Research, Peoria, IL
Nat'l Forage Seed Prot Tes Center, Corvallis, OR
Natl Small Grains Research Facility, Aberdeen, ID
Natural Resources Research Center, Fort Collins, CO
NE Watershed Research Center, Klingerstown, PA
Nematology Growth Lab, Baton Rouge, LA
Nemotology Investigations, Ithaca, NY
New Enlgand Plant Soil Water, Orono, ME
No. Appalachian Exp Watershed, Coshocton, OH
No. Cen Soil Conserv Research Center, Morris, MN
Northern Grain Insects Research Lab, Brookings, SD
Northern Great Plains Research Lab, Mandan, ND
Northern Plains Soil & Water, Sidney, MT
Nothern Great Basin Exp Range, Burns, OR
NW Watershed Research Center, Boise, ID
OARDC Research Facility, Wooster, OH
Office-Port Terminal, Orient Point, NY
Palouse Cons Field Station, Pullman, WA

Pecan Genet & Improv Research Lab, Brownwood, TX
Pecan Genetics & Improvement, Somerville, TX
Plant Genetic Resources Unit, Geneva, NY
Plant Introduction Research, Ames, IA
Plant Introduction Sta, Glenn Dale, MD
Plant Pathology & Genetics, Davis, CA
Plant Science & Water Conserv, Stillwater, OK
Plum Isle Light Station, Greenport, NY
Plum Isle Animal Disease Center, Greenport, NY
Potato Research Lab, East Grand Forks, MN
Red River Valley Agric. Research Center, Fargo, ND
Reg Pasture Research Lab, State College, PA
Regional Plant Introduction St, Experiment, GA
Regional Poultry Research Lab, Georgetown, DE
Rice Research, Beaumont, TX
Richard Russell Agric. Research Center, Athens, GA
SE Fruit Tree Nut Research Lab, Byron, GA
Small Fruit Research Station, Poplarville, MS
Snake River Conser Research Center, Kimberly, ID
So. Central Family Farms Center, Booneville, AR
So. Great Plains Watershed, Chickasha, OK
Soil & Water Mgmt Research Worksite, Rosemount, MN
Soil & Water Pollution Research., Baton Rouge, LA
Soil & Water Shop, Baton Rouge, LA
Soil Drainage, Ohio State Univ, Columbus, OH
South Central Agric Research Lab, Lane, OK
Southeast Poultry Research Lab, Athens, GA
Southern Piedmont Cons Research Center, Watkinsville, GA
Southern Plains Range Research Sta, Woodward, OK
Southern Regional Research Ctr, New Orleans, LA
Stored Products Insects Lab, Newberry, FL
Subtropical Agri. Research Lab, Weslaco, TX
Subtropical Agricultural Research, Brooksville, FL
Subtropical Horticulture Research, Miami, FL
Sugarbeet, Bean & Cereal Research, East Lansing, MI
Sugarcane Production Research, Canal Point, FL
SW Cotton Ginning Research Lab, Mesilla, NM
Tree Fruit Research Center, Wenatchee, WA
Trop. Fruit Fly & Veg. Research lab, Honolulu, HI
Tropical Agricultural Research Sta, Mayaguez, PR
Tropical Fruit & Veg Research Lab, Kapaa, HI
Tropical Fruit & Veg. Research Lab, Hilo, HI
U.S. Grain Mkt Research Lab, Manhattan, KS
U.S. Horticultural Laboratory, Plymouth, FL
U.S. Agricultural Research Sta, Salinas, CA
U.S. Big Spring Field Station, Big Spring, TX
U.S. Horticultural Research Lab, Orlando, FL
U.S. Plant, Soil & Nutrition, Ithaca, NY
U.S. Salinity Laboratory, Riverside, CA
U.S. Sedimentation Laboratory, Oxford, MS
U.S. Sedimentation Laboratory, Holly Springs, MS
U.S. Sheep Experiment Station, Dubois, ID
U.S. Sugarcane Research Unit, Houma, LA
U.S. Vegetable Research Lab, Charleston, SC
U.S. Water Conservation Lab, Phoenix, AZ
Vegetable Crop Research, Arlington, WI
Virus Free Decidous Tree Sta, Moxee City, WA
Walnut Gulch Watershed, Tombstone, AZ
Western Cotton Research Lab, Phoenix, AZ
Western Regional Research Center, Albany, CA
Yakima Agricultural Research Lab, Wapato, WA

Animal & Plant Health Inspection Service
ADC District Headquarters, Rock Springs, WY
Animal Inspection Facility, Sweetgrass, MT
Animal Research Building, Fort Collins, CO
Biological Control Station, Niles, MI
Bird Quarantine Facility, Otay, CA
Blackbird Experimental Station, Stuttgart, AR
Chemical Gas Storage, Ames, IA
Center for Pl.health Sci.& Tech., Oxford, NC
Fire Ant Program, Gulfport, MS
Golden Nematode Station, West Hampton Beach, NY
Loyote Rabies Abatement Project, Laredo, TX
Medfly Rearing Facility, Waimanalo, HI
National Veterinary Labs, Ames, IA
Natl. Mon.& Research Analysis Lab, Gulfport, MS
Natl. Plant Germ Plasma Q.C., Beltsville, MD
New York Animal Import Center, Newburgh, NY
PPQ Field Station, Wilmington, NC
Predator Research, Logan, UT
Tick Force Office, Del Rio, TX
U.S. Plant Introduction Sta., South Miami, FL
USDA, AMS, Lsmg, Omaha, NE
USDA, APHIS, Mission, TX
USDA, APHIS, ADC Supply Depot, Pocatello, ID
USDA, APHIS, Aero, Raleigh, NC
USDA, APHIS, PPQ Hawthorne, CA
USDA, APHIS, PPQ Brawley, CA
USDA, APHIS, PPQ Amityville, NY
USDA, APHIS, PPQ San Bruno, CA
USDA, APHIS, PPQ San Saba, TX
USDA, APHIS, PPQ Fallbrook, CA
USDA, APHIS, PPQ Carolina, PR
USDA, APHIS, PPQ Des Moines, WA
USDA, APHIS, PPQ Chicago, IL
USDA, APHIS, PPQ, Pelham, AL
USDA, APHIS, PPQ, Spokane, WA
USDA, APHIS, PPQ, New Albany, NY
USDA, APHIS, PPQ, Lewiston, NY
USDA, APHIS, PPQ, Housing Qtrs, Presidio, TX
USDA, APHIS, VS, Ames, IA
USDA, APHIS, VS, Hawthorne, CA
USDA, APHIS, VS, Ames, IA
USDA, APHIS, VS, Ames, IA
USDA, APHIS, WS, Boardman, OH
USDA, APHIS, PPQ, San Juan, PR
Wildlife Research Center, Gainesville, FL

Department of Commerce

National Institute of Standards and Technology Campus, Gaithersburg, Maryland
National Institute of Standards and Technology Campus, Boulder, Colorado
National Institute of Standards and Technology Campus, Fort Collins, Colorado

National Oceanographic and Atmospheric Administration sites:
National Weather Service (NWS) Weather Forecast Office, Birmingham, Alabama
NWS Weather Forecast Office, Mobile, Alabama
NWS Weather Forecast Office, Anchorage, Alaska
NWS Electronic Tech Shop, Juneau, Alaska
National Marine Fisheries Service (NMFS) Auke Bay Laboratory, Juneau, Alaska
NMFS Marine Warehouse, Juneau, Alaska
NWS Weather Forecast Office, Juneau, Alaska
National Environmental Satellite, Data, and Information Service (NESDIS) Command and Data Acquisition Facility, Fairbanks, Alaska
NWS Weather Forecast Office, Bellemont, Arizona
NWS Weather Forecast Office, North Little Rock, Arkansas
NWS Weather Forecast Office, Eureka, California
NWS Weather Forecast Office, Hanford, California
NMFS Southwest Fisheries Science Center, La Jolla, California
NWS Weather Forecast Office, Monterey, California
NWS Weather Forecast Office, Oxnard, California
Office of Oceanic and Atmospheric Research (OAR) Optics Facility, Boulder, Colorado
OAR Laboratory Building, Erie, Colorado
NWS Weather Forecast Office, Grand Junction, Colorado
National Ocean Service (NOS) Table Mountain Gravity Observatory, Longmont, Colorado
OAR Laboratory Building, Platteville, Colorado
NWS Weather Forecast Office, Pueblo, Colorado
OAR Laboratory Building, Rollinsville, Colorado
NMFS Milford Laboratory Facility, Milford, Connecticut
NWS Weather Forecast Office, Jacksonville, Florida
NWS Weather Forecast Office, Melbourne, Florida
NWS Weather Forecast Office/Tropical Prediction Center, Miami, Florida
NWS Weather Forecast Office, Ruskin, Florida
NWS Weather Forecast Office, Peachtree City, Georgia
NWS Weather Forecast Office, Agana, Guam
NWS Weather Forecast Office, Honolulu, Hawaii
NWS Weather Forecast Office, Johnston, Iowa
NWS Weather Forecast Office, Pocatello, Idaho
NWS Weather Forecast Office, Lincoln, Illinois
NWS Weather Forecast Office, Romeoville, Illinois
NWS Weather Forecast Office, Indianapolis, Indiana
NWS Weather Forecast Office, Syracuse, Indiana
NWS Weather Forecast Office, Dodge City, Kansas
NWS Weather Forecast Office, Goodland, Kansas
NWS Weather Forecast Office, Wichita, Kansas
NWS Weather Forecast Office, Jackson, Kentucky
NWS Weather Forecast Office, Louisville, Kentucky
NWS Weather Forecast Office, Paducah, Kentucky
NWS Weather Forecast Office, Lake Charles, Louisiana
NWS Weather Forecast Office, Shreveport, Louisiana
NWS Weather Forecast Office, Slidell, Louisiana
NWS Weather Forecast Office, Caribou, Maine
NWS Weather Forecast Office/NEXRAD Facility, Gray, Maine
NWS Weather Forecast Office, Gaylord, Michigan
NWS Weather Forecast Office, Grand Rapids, Michigan
NWS Weather Forecast Office, Negaunee, Michigan
NWS Weather Forecast Office, White Lake, Michigan
NWS Weather Forecast Office, Jackson, Mississippi
NWS Weather Forecast Office, Pleasant Hill, Missouri
NWS NEXRAD Facility, St. Charles, Missouri
NWS Weather Forecast Office, Springfield, Missouri
NWS Weather Forecast Office, Glasgow, Montana
NWS Weather Forecast Office, Missoula, Montana
NOS Center for Coastal Fisheries and Habitat Research , Beaufort, North Carolina
NWS NEXRAD Facility, Newport, North Carolina
NWS Weather Forecast Office, Shallotte, North Carolina
NWS Weather Forecast Office, Bismarck, North Dakota
NWS Weather Forecast Office, Grand Forks, North Dakota
NWS Weather Forecast Office, Hastings, Nebraska
NWS Weather Forecast Office, North Platte, Nebraska
NWS Weather Forecast Office, Mt. Holly, New Jersey
NWS Weather Forecast Office, Albuquerque, New Mexico
NWS Weather Forecast Office, Las Cruces, New Mexico
NWS Weather Forecast Office, Elko, Nevada
NWS Weather Forecast Office/NEXRAD Facility, Las Vegas, Nevada
NWS Weather Forecast Office, Reno, Nevada
NWS Balloon Inflation Building, Winnemucca, Nevada
NWS Weather Forecast Office/NEXRAD Facility, Albany, New York
NWS Weather Forecast Office, Binghamton, New York

NWS Weather Forecast Office, Cheektowaga, New York
NWS Weather Forecast Office, Upton, New York
NWS Weather Forecast Office/NEXRAD Facility, Wilmington, Ohio
NWS Weather Forecast Office, Medford, Oregon
NWS Weather Forecast Office, Pendleton, Oregon
NWS Weather Forecast Office, Portland, Oregon
NWS NEXRAD Facility, Coraopolis, Pennsylvania
NWS Weather Forecast Office, San Juan, Puerto Rico
NOS Center for Coastal Environmental Health and Biomolecular Research, Charleston, South Carolina
NOS Hollings Marine Laboratory, Charleston, South Carolina
NWS Weather Forecast Office, Charleston, South Carolina
NWS Weather Forecast Office, Greer, South Carolina
NWS Weather Forecast Office, Aberdeen, South Dakota
NWS Weather Forecast Office, Rapid City, South Dakota
NWS Weather Forecast Office, Sioux Falls, South Dakota
NWS Weather Forecast Office, Morristown, Tennessee
NWS Weather Forecast Office, Old Hickory, Tennessee
NWS Weather Forecast Office, Amarillo, Texas
NWS Weather Forecast Office, Brownsville, Texas
NWS Weather Forecast Office, Corpus Christi, Texas
NWS Weather Forecast Office, League City, Texas
NWS Weather Forecast Office, Midland, Texas
NWS Weather Forecast Office, New Braunfels, Texas
Marine Operations Center-Atlantic , Norfolk, Virginia
NWS Weather Forecast Office, Sterling, Virginia
NWS Weather Forecast Office/NEXRAD Facility, Wakefield, Virginia
NESDIS Command and Data Acquisition Facility, Wallops Island, Virginia
NWS Weather Forecast Office, Airway Heights, Washington
NMFS Montlake Laboratory, Seattle, Washington
Marine Operation Center-Pacific, Seattle, Washington
NWS NEXRAD Facility, Charleston, West Virginia
NWS Weather Forecast Office, Dousman, Wisconsin
NWS Weather Forecast Office, Green Bay, Wisconsin
NWS Weather Forecast Office, La Crosse, Wisconsin
NWS Weather Forecast Office, Cheyenne, Wyoming
NWS Weather Forecast Office, Riverton, Wyoming

Department of Defense

Holston Army Ammunition Plant, Kingsport, TN
Radford Army Ammunition Plant, Radford, VA
AAFES Food Processing Plant, Grünstadt, Germany
Laundry Facility, Ft. Leonard Wood, MO
SIMA, Pascagoula, MS
COMOPTEVFOR, Norfolk, VA
NAVSPASURFLDSTA, Chula Vista, CA
NAVSPASURFLDSTA, Hawkinsville, GA
NAVSPASURFLDSTA, Hollandale, MS
NAVSPASURFLDSTA, Maricopa, AZ
NAVSPASURFLDSTA, Savannah, GA
NAVSPASURFLDSTA, Wetumpka, AL
NAVSPASURFLDSTAELPHAB, Trorc, NM
NAVSPASURFLDSTAKIKLK ACH CT, TX
NAVSPASURFLDSTAREDRVR LWSV, AR
TRIREFFAC, Kings Bay, GA
MCLB, Albany, GA
MCLB, Barstow, CA
NAVAVNDEPOT, Cherry Point, NC
NAVAVNDEPOT, Jacksonville, FL
NAVAVNDEPOT, North Island, CA
NAVORDMISTESTSTA, White Sands, NM
NAVWPNINDRESPLNT, Toledo, OH
NWIRP Bethpage, NY
NWIRP Bloomfield, CT
NWIRP Dallas, TX
NWIRP McGregor, TX
NSWC DIV, Indian Head, MD
NSY, Norfolk, VA
NSY, Portsmouth, NH
NSY PUGET SOUND Bremerton, WA
NUWC DIV, Keyport, WA
WV ABL, Mineral, CO
FISC, Pearl Harbor, HI
FISC, San Diego, CA
FISC, Yokosuka, Japan
NAVSHIPREPFAC, Yokosuka, Japan
NSY, Pearl Harbor, HI
SIMA, San Diego, CA
NAVPBRO, Magna, UT
NIROP, Pittsfield, MA
NIROP, Sunnyvale, CA
POMFLANT, Charleston, SC
SWFLANT, Kings Bay, GA
SWFPAC, Bangor, WA
AMFORRDRESINS, Bethesda, MD
NWS YORKTOWN SJC ANNEX
NSC, Jacksonville, FL
NSC, Norfolk, VA
NSC, Oakland, CA
NSC, Pensacola, FL
NSC PUGET SOUND, Bremerton, WA
NSD Guam
INTCOMBATSYSTESTFAC, San Diego, CA

UNISERUOFHEASCN, Bethesda, MD
Hill AFB, UT
Tinker AFB, OK
Robins AFB, GA
Kelly AFB, TX (closed)
McClellan, CA (closed)
Arnold AFB, TN

Commissary Stores
ABERDEEN, Baltimore, MD
MCLB ALBAN, Albany, GA
ALTUS, Altus, OK
ANCHORAGE, Anchorage, AK
ANDERSEN AFB, Yigo, Guam
ANDREWS AFB, Camp Springs, MD
ANNAPOLIS, Annapolis, MD
ARDEC, Patterson, NJ
ARNOLD AFB, Tullahoma, TN
ATHENS NSCS, Athens, GA
ATSUGI, Yokohama, Japan
BANGOR, Silverdale, WA
BANGOR ANGB, Bangor, ME
BARBERS POINT, Pearl City, HI
BARKSDALE AFB, Bossier City, LA
BARSTOW MCLB, Barstow, CA
BEALE AFB, Marysville, CA
BOLLING AFB, Washington, D.C.
BREMERTON, Bremerton, WA
BROOKS, San Antonio, TX
BRUNSWICK NAS, Portland, ME
C. E. KELLY, Pittsburgh, PA
CAMP CARROLL, Taegu, South Korea
CAMP CASEY, Tongduchon, South Korea
CAMP COURTNEY, Gushikawa, Japan
CAMP FOSTER, Naha, Japan
CAMP HOWZE, Munson, South Korea
CAMP HUMPHREYS, Pyongtaek, South Korea
CAMP KINSER, Naha, Japan
CAMP KURE, Hiroshima, Japan
CAMP LEJUENE, Jacksonville, NC
CAMP MERRILL, Dahlonega, GA
CAMP PAGE, Taegu , South Korea
CAMP PENDLETON, Oceanside, CA
CAMP STANLEY, Uijongbu , South Korea
CAMP ZAMA, Tokyo, Japan
CANNON AFB, Clovis, NM
CARLISLE, Carlisle, PA
CHARLESTON AFB, Charleston, SC
CHARLESTON NWS, Charleston, SC
CHERRY POINT, Havelock, NC
CHINA LAKE, Ridgecrest, CA
CHINHAE NAS, Chinhae, South Korea
COLUMBUS AFB, Columbus, MS
CORPUS CHRISTI, Corpus Christi, TX
CRANE NWSC, Crane, IN
CUTLER, Machias, ME
DAHLGREN, Fredericksburg, VA
DAVIS-MONTHAN, Tucson, AZ
DDC (New Cumberland), Harrisburg, PA
DOVER, Dover, DE
DSCR, Richmond, VA
DUGWAY, Dugway, UT
DYESS AFB, Abilene, TX
EDWARDS, Rosamond, CA
EGLIN AFB, Niceville, FL
EIELSON AFB, Fairbanks, AK
EL CENTRO, El Centro, CA
ELLSWORTH AFB, Rapid City, SD
F. E. WARREN, Cheyenne, WY
FAIRCHILD, Spokane, WA
FALLON, Fallon, NV
FITZSIMONS, Aurora, CO
FT. BELVOIR, Alexandria, VA
FT. BENNING, Columbus, GA
FT. BLISS, El Paso, TX
FT. BRAGG - NORTH, Fayetteville, NC
FT. BRAGG - SOUTH, Fayetteville, NC
FT. BUCHANAN, San Juan, Puerto Rico
FT. CAMPBELL, Clarksville, TN
FT. CARSON, Colorado Springs, CO
FT. DETRICK, Frederick, MD
FT. DRUM, Watertown, NJ
FT. EUSTIS, Newport News, VA
FT. GILLEM, Atlanta, GA
FT. GORDON, Augusta, GA
FT. GREELY, Delta Junction, AK
FT. HAMILTON, New York, NY
FT. HOOD I , Killeen, TX
FT. HOOD II, Killeen, TX
FT. HUACHUCA, Sierra Vista, AZ
FT. HUNTER-LIGGETT, King City, CA
FT. IRWIN, Fort Irwin, CA
FT. JACKSON, Columbia, SC
FT. KNOX, Louisville, KY
FT. LEAVENWORTH, Leavenworth, KS
FT. LEE, Petersburg, VA
FT. LEONARD WOOD, Waynesville, MO
FT. LEWIS, Tacoma, WA
FT. MCCOY, La Crosse, WI
FT. MCPHERSON, Atlanta, GA
FT. MEADE, Laurel, MD
FT. MONMOUTH, Eatontown, NJ
FT. MONROE, Hampton, VA
FT. MYER, Arlington, VA
FT. ORD (MONTEREY), Monterey, CA
FT. POLK, Leesville, LA
FT. RILEY, Junction City, KS
FT. RUCKER, Daleville, AL
FT. SAM HOUSTON, San Antonio, TX
FT. SHAFTER, Honolulu, HI
FT. SILL, Lawton, OK
FT. STEWART, Hinesville, GA
FT. WAINWRIGHT, Fairbanks, AK
GOODFELLOW, San Angelo, TX
GRAND FORKS AFB, Grand Forks, ND
GREAT LAKES NTC, Waukegan, IL
GUAM (OROTE), Agat, Guam
GULFPORT NCBC, Gulfport, MS

GUNTER AFB, Montgomery, AL
HANNAM VILLAGE, Seoul, Korea
HANSCOM, Bedford, MA
HARIO HOUSING, Hario, Japan
HARRISON VILLAGE, Indianapolis, IN
HICKAM AFB, Honolulu, HI
HILL AFB, Ogden, UT
HOLLOMAN AFB, Alamogordo, NM
HUNTER AAF, Savannah, GA
HURLBURT FIELD, Fort Walton Beach, FL
IMPERIAL BEACH, Imperial Beach, CA
IWAKUNI MCAS, Iwakuni, Japan
JACKSONVILLE, Jacksonville, FL
KADENA AFB, Naha, Japan
KANEOHE BAY, Kaneohe Bay, HI
KEESLER AFB, Biloxi, MS
KEFLAVIK, Keflavik, Iceland
KELLY, San Antonio, TX
KEY WEST NAS, Key West, FL
KINGS BAY NSB, St. Marys, GA
KINGSVILLE, Kingsville, TX
KIRTLAND AFB, Albuquerque, NM
KUNSAN AFB, Kunsan City, South Korea
LACKLAND AFB, San Antonio, TX
LAKEHURST, Toms River, NJ
LANGLEY AFB, Hampton, VA
LAUGHLIN AFB, San Antonio, TX
LEMOORE, Fresno, CA
LITTLE CREEK NAB, Virginia Beach, VA
LITTLE ROCK AFB, Jacksonville, AR
LOS ANGELES AFB, Los Angeles, CA
LUKE AFB, Phoenix, AZ
MACDILL AFB, Tampa, FL
MALMSTROM AFB, Great Falls, MT
MARCH AFB, Riverside, CA
MAXWELL AFB, Montgomery, AL
MAYPORT NS, Atlantic Beach, FL
MCCHORD AFB, Tacoma, WA
MCCLELLAN AFB, North Highlands, CA
MCCONNELL AFB, Wichita, KS
MCGUIRE AFB, Wrighttown, NJ
MEMPHIS NAS, Memphis, TN
MERIDIAN NAS, Meridian, MS
MINOT AFB, Minot, ND
MIRAMAR NAS, San Diego, CA
MISAWA AFB, Misawa, Japan
MITCHEL FIELD, Garden City, NY
MOFFETT FIELD, Mountain View, CA
MOODY AFB, Valdosta, GA
MTN HOME AFB, Mountain Home, ID
NELLIS AFB, Las Vegas, NV
NEW LONDON, Groton, CT
NEW ORLEANS NSA, New Orleans, LA
NEW RIVER MCAS, Jacksonville, NC
NEWPORT, Newport, RI
NORFOLK NB, Norfolk, VA
NORTH ISLAND, San Diego, CA
OCEANA NAS, Virginia Beach, VA
OFFUTT AFB, Bellevue, NE
OSAN AFB, Osan, South Korea
PARRIS ISLAND, Beaufort, SC
PATRICK AFB, Cocoa Beach, FL
PATUXENT, Lexington Park, MD
PEARL HARBOR, Honolulu, HI
PENSACOLA, Pensacola, FL
PETERSON, Colorado Springs, CO
POINT MUGU, Point Mugu, CA
POPE AFB, Fayetteville, NC
PORT HUENEME, Port Hueneme, CA
PORTSMOUTH, Portsmouth, NH
PORTSMOUTH NNSY, Portsmouth, VA
PRESIDIO OF SF, San Francisco, CA
PUSAN, Pusan, South Korea
QUANTICO, Woodbridge, VA
RANDOLPH AFB, San Antonio, TX
REDSTONE ARSENAL, Huntsville, AL
ROBINS AFB, Macon, GA
ROCK ISLAND AR, Rock Island, IL
ROOSEVELT ROADS, Ceiba, Puerto Rico
SAGAMI DEPOT, Tokyo, Japan
SAGAMIHARA, Tokyo, Japan
SAN DIEGO NS, San Diego, CA
SAN ONOFRE, San Clemente, CA
SASEBO, Sasebo, Japan
SCHOFIELD BKS, Wahiawa, HI
SCOTIA, Schenectady, NY
SCOTT AFB, Belleville, IL
SELFRIDGE ANG, Mt Clemens, MI
SEYMOUR JOHNSON, Goldsboro, NC
SHAW AFB, Sumter, SC
SHEPPARD AFB, Wichita Falls, TX
SIERRA, Herlong, CA
SMOKEY POINT NS, Marysville, WA
TAEGU, Taegu, South Korea
TINKER AFB, Oklahoma City, OK
TOBYHANNA, Scranton, PA
TRAVIS AFB, Fairfield, CA
TWENTYNINE PALMS, Twentynine Palms, CA
TYNDALL AFB, Panama City, FL
USAF ACADEMY, Colorado Springs, CO
VANCE AFB, Enid, OK
VANDENBERG AFB, Lompoc, CA
WALTER REED, Washington, D.C.
WEST POINT, Highland Falls, NY
WHIDBEY ISL NAS, Oak Harbor, WA
WHITE SANDS MR, Las Cruces, NM
WHITEMAN AFB, Knob Noster, MO
WHITING FIELD, Pensacola, FL
WINTER HARBOR, Bangor, ME
WRIGHT-PATTERSON, Dayton, OH
YOKOSUKA NESC, Yokosuka, Japan
YOKOTA AB, Tokyo, Japan
YONGSAN, Seoul, South Korea
YUMA MCAS, Yuma, AZ
YUMA PG, Yuma, AZ

Department of Energy

Argonne National Laboratory- East
Advanced Photon Source (APS)
Buildings 400-402, 411-413, 415, 420, 431-435, 438, 450, 460
Intense Pulsed Neutron Source (IPNS)
Buildings 360, 361, 363-379, 370T1, 374A, 375-TR11, 382, 385, 389B, 390, 391, 399 399-TR03, 399-TR04

Metered Utilities
Buildings 108, 115, 116, 128, 129, 572, 573, 574, 576, 582, 583, 595

Fermilab
003 Feynman Computer Center
323 Collider Detector Facility/Cdf
325 D0 Assembly Building
400 Meson Wonder Enclosure
402 Ms-1 Meson Service Building
404 Ms-2 Meson Service Building
406 Ms-3 Meson Service Building
408 Meson Detector Building
410 Meson Central Cryogenics
412 Meson Assembly Building
414 Meson Service #4
416 Polarized Proton Lab - Mp
418 Meson Service Ms7
420 Meson West Lab -- MW9
422 Meson Counting Bldg Mw9
500 Proton Pagoda
502 Proton Assembly
504 Proton Tagged Photon
506 High Intensity Laboratory
508 Proton Service #1
510 Proton Service #2
512 Proton Service #3
514 Proton Service #4
516 Proton Service #5
518 Proton Service #6
520 Proton Pole Building
522 Exp Area Operations Ctr
600 Neutrino Lab A
602 Neutrino Lab B
603 Rd T&M Shop
604 Neutrino Lab C
605 Lab C-D Cross Connect Building
606 Neutrino Lab D
608 Neutrino Lab E
610 Laboratory F
612 Laboratory G
613 Neutrino Service Building #E
614 Neutrino Lab Nwa
615 Neutrino Service #0
616 Neutrino Service #1
618 Neutrino Service #2
620 Neutrino Service #3
622 Neutrino Service #4
623 Neutrino Service Building #7
624 Neutrino Target Service
625 Neon Compressor Building
626 Wide Band Lab
628 Pb6/Pb7
630 KTeV
700 Muon Laboratory
800 Industrial Building #1
801 Industrial Building #2
803 Industrial Shed #2A
804 Industrial Building #3
805 Industrial Building #4
806 Industrial Center
807 Industrl Compressor Bldg
809 Magnet Storage
840 Low Level Waste Handling Bldg.
850 Super Shed/Lundy Barn
855 Caseys Pond Pump House
921 Site 37 Shop
922 Site 38 Maintenance
923 Roads/Grounds Equip Stge
924 Site 38 Equipment Building
926 Site 39
928 Site 38 HUS Building
929 Fuel Service Center
930 Site 38 Barn
931 Radiation Physics Calibration
932 Site 38 Fire Station
934 Site 38 Extinguisher Bldg
936 Site 38 Hazardous Storage
938 Receiving Warehouse #1
940 Receiving Warehouse #2
941 Scale House
T004-T009 Trailers
T016 Trailers
T017 Trailers
T022-25 Trailers
T027-T029 Trailers
T032 Trailers
T034 Trailers
T035 Trailers
T038-T040 Trailers
T045 Trailers
T046 Trailers
T049-T054 Trailers
T057 Trailers
T058 Trailers
T060 Trailers
T061 Trailers
T066-T069 Trailers
T072 Trailers
T076 Trailers
T077 Trailers

T079 Trailers
T081-T087 Trailers
T091-T108 Trailers
T110 Trailers
T111 Trailers
T115 Trailers
T116 Trailers
T119-T122 Trailers
T124 Trailers
T128-T130 Trailers
T132 Trailers
T134 Trailers
T136-T149 Trailers
T151 Trailers
T156-159 Trailers
T162 Trailers
T163 Trailers
T164-T171 Trailers
T173-T176 Trailers

Lawrence Livermore National Laboratory
All facilities are classified as Industrial and other Energy Intensive Facilities.

National Renewable Energy Laboratory
Golden, Colorado site
Alternative Fuels User Facility
Field Test Laboratory Building
High Flux Solar Furnace
Outdoor Testing Facility
Solar Energy Research Facility
Thermal Test Facility
Waste Handling Facility

Boulder, Colorado site
252 Blade Test Facility
Buildings 253, 248, 249, 257
255 Dynomometer Spin Test Facility
256 Modal Test Facility
H-1 Hybrid Power Test Bed Facility

Stanford Linear Accelerator Center
3 Auxiliary Control Building
23 Central Lutility Building
24ES& H Building
25Light Fab. Building
025S LFB Sub-Station
26Heavy Fab. Building
28 Warehouse/Users Offices
29 Metal Stores Shelter
33 Light Assembly Building
34 Electronics Building Annex
35 PMU Shops Building
36 Chemical Storage Shelter
38 Treatment Plant Plating
40 Central Laboratory
41 Administrative and Engineering
42 Cafeteria
43 Auditorium
44 Test Laboratory
45 Test Lab. Facility
050S Comp. Center Sub-Station
81 Gen. Services Building
82 Fire Station
83 Main Gatehouse
84 Central Lab. Addition
101 Cooling Tower 101
123 Hyd. Furnace Housing
126 Transportation Tire Shop
241 Sem. Office Trailer East
242 Sem. Office Trailer West
243 Facilities Design Office
272 Training & Conference Center
280 Physics/Engineering Building
299 EPR Office Trailer
449 Metal Finishing Facilities

Pacific Northwest National Laboratory
105KE Reactor Facility
105KW Reactor Facility
105NA Emergency Diesel Building
107N Recirculation Cooling Building
108F Biology Laboratory - Abandoned
108N Chemical Unloading Facility
109N Heat Exchanger Building
117NVH Valve Control House
1313N Change & Control Building
1314N Liquid Waste Loadout Building
1315N Reactor Effluent Valve House
1316N Valve House
1322N Waste Treatment Pilot Plant
142K Cold Vacuum Drying Facility
151B Primary Substation
151D Primary Substation
151N 230 Kv Electrical Substation
153N Switchgear Building
1604K Nuclear Waste Processing/handling bldg.
166AKE Material Storage Building
1705N Instrum & Elec Facility
1706KEL Development Laboratory
1706KER Water Studies Recircultn Bldg
1713KE Area Shop Building
1713KER Warehouse
1714KW Oil and Paint Storage Building
1714NA Receiving & Inspection Facility
1717K Maintenance Shop
1722N Decontamination Hot Shop Bldg.
181B River Pump House
181D River Pump House
181KE River Pumphouse
181KW River Pumphouse
181N River Water Pump House
181B Reservoir Pump House
182D Reservoir & Pump House
182-K Emergency Water Reservoir Pump House
182N High Lift Pump House Building
183.1KE Head House/Chlorine
183.1KW Head House/Chlorine

183.5KE Lime Feeder Building
183.6KE Lime Feeder Building
183.6KW Other Industrial Facility
183D Filter Plant
183KE Filter Plant Head House, Chlorine
183KW Filter Plant Head House, Chlorine
183N Water Filter Plant Building
184N Plant Service Boiler House
184NA Auxiliary Power Annex Building
184NB Air Handler Main Building
184NC Air Handler Annex Building
1908KE Effluent Water Monitoring Sta
190DR Main Pump House
190KE Warehouse
2025E Other Industrial Facility
202A Purex Canyon & Service Facility
202S Redox Canyon & Service Facility
203A Acid Pumphouse
204AR Waste Unloading Facility
206A Vacuum Acit Fractionator Bldg.
211A Chem Makeup Tank Farm Pmphouse
212A Fission Product Loadout Station
212B Fission Product Loadout Station
212H Canister Storage Facility
213A Fission Product Loading Station
213W Waste Compactor Building
216A Valve Control Facility
216A271 Valve Control House
216Z9B Industrial Building
220A Other Industrial Facility
221B Process Treatment Building
221BB Process Steam & Condensate Bldg
221BF Condensate Effl. Discharge Fac.
221BG B Plant Cooling Water Sampling
221T Process Canyon/Lab/Office
221T Process Canyon/Lab/Office
221TA Vent Fan House
222S Control Laboratory
222SA Standards Process Develop Lab
222SB Filtration Building
224UA Calcination Facility
225B Waste Encpsltn. & Storage Bldg
225BB Other Industrial Facility
225BC Encapsulation Compressor Fac
225BG WESF Closed Loop Cooling Equipment Bldg.
231Z Materials Engineering lab
2336W WRAP - 1 Facility
234-5Z Plutonium Fabrication Facility
236Z Plutonium Reclamation Facility
2403EA Compressor Leanto
2404E Dmrhf Compressor Building
241A271 Tank Farm Control House
241A401 Tank Farm Condensor House
241AN273 Compressor Building
241AZ Waste Disposal Tank Farm
241SX281 Emergency Cooling Water Pump hse
241SX701 Waste Disposal Condenser House
241SY271 Instrumnt & Elect Contrl Hse
241SY272 Electrical Building
241T601 Chemical Makeup Building
242A Evaporator Building
242A702 Other Industrial Facility
242S Evaporator Building
242T Waste Disposal Evaporator Bldg.
242T601 Control Facility
242TB Vent Facility
244U Salt Well Receiver Vault
251W Primary 230KV Switching Statn
254BY Control House
267Z Riser #9 Valve House
2703E Chemical Engineering Laboratory
2706T Equipment Decontamination Bldg
2706TA Equipment Decontamination Bldg
2706TB Equipment Decontamination Bldg
2710S Inert Gas Generator Bldg.
2711A Air Compressor Building
2711B Breathing Air Compressor House
2711E 200 East Garage
2711EA Regulated Equipment Maint. Shop
2711EB Maintenance Shop
2712A Pumphouse
271T Office & Service Building
2728W Dimensional Inpectn Bldg
272W Machine Shop Building
2736ZB Plutonium Storage Support Fac
276-U Solvent Recovery Facility
277T Blow Down Building
277W Fabrication Shop
277W Fabrication Shop
282E Pumphouse & Reservoir
282EC Included with 282E facility
282W Reservoir Pumphouse building
283E Water Filtration Plant
283W Water Filtration Plant
284E Power House & Steam Plant
284W Power House Steam Plant
291A Exhaust Air Fltr & Stack Plenm
291AD Filter Pit & Shack
291AR Exhaust Air Filter Stack Bldg
291B Exhaust Air Control Building
291BD Air Control House
291U Exhst Fan Cont Hse, Sand Filtr
291Z Exhst Air Filter Stack Bldg
292T Fission Products Release Lab
293A Off-Gas Treatment Facility
295AA Scd Sample & Pumpout Station
3020 William R. Wiley EMSL
303C Materials Evaluation Lab
305 Engineering Testing Facility
305B Hazardous Waste Storage Fac.
306W Materials Development Lab
309 Sp-100 Ges Test Facility
310 Treated Effluent Disposal Fac.
312 Water Plant Building
315 Filter Water Plant Building
318 Radiological Calibrations Lab
320 Analysis & Nuclear Reserch Lab

321 Hydromechanical/Seismic Fac
323 Mechanical Properties Lab
324 Waste Tech Engineering Lab
324 324 High Bay
325 Radiochemical Processing Lab
326 Materials Sciences Lab
327 Post Irradiation Test Lab
329 Chemical Sciences Lab
331 Life Sciences Lab
331B Dog Kennel
331C PNNL Facility/on BPA bill
331D Biomagnetic Effects Lab
331G Interim Tissue Repository
331H Aerosol Wind Tunnel Res Fac
333 N Fuels Building
335 Sodium Test Facility
336 High Bay Test Facility
337B High Bay & Service Wing
338 Materials Research and Development
340 Waste Neutralization Facility
340B Included with 340 facility
350 Plnt Oprns and Maint Fac
350A Paint Shop
3621B Emergency Generator Building
3621D Emergency Generator Bldg & Shop
3708 Radioanalytical Lab
3714 Organic Chemistry Laboratory
3720 Environmental Sciences Lab
3730 Gamma Irradiation Fac
3731 Graphite Machine Shop
3731A Graphite Machine Shop
3745 Radiological Sciences Lab
3745B Positive Ion Accelerator Lab
377 Geotechnical Engineering Lab
382 Pump House Building
382B Fire Pump Station
408A Main Heat Dump, East
408B Main Heat Dump, South
408C Main Heat Dump, West
409A Closed Loop Heat Dump, East #1
409B Closed Loop Heat Dump, East #2
427 Fuels & Material Exam. Fac
427A Argon/Hydrogen Mixing Building
4621E Auxiliary Equip. Bldg., East
4621W Auxiliary Equip, Bldg., West
616 Nonradioac Haz Chem Waste Fac
622A Elevator Control Bldg
622R Meteorology Lab
6266 Waste Sampling & Chrctrztn Fac
6266A Contaminated Liq. Waste Vault
6266B Vas Pump Building
6267 Env'L Sample Archive Facility
6290 Rigging Services Facility
6652C Space Science Facility
6652D Pumphouse
6652DOME2 Atmospheric Facility
6652E Lysimeter Preparation Bldg
6652H Ale Laboratory I
6652J Ale Laboraty II
6652LP Rattlesnake Mtn Lowr Pumphouse
6652M Fallout Laboratory
5541UP Upper Pumphouse
747A Whole Body Counter
MO-045 Body Count Lab
MO-426 Sample Rec/Prep Storg @ 1120n
MO-719 Calibration Laboratory @ 272w

Y-12 National Security Complex
9201-01 Manufacturing / Industrial
9201-01W Manufacturing / Industrial
9201-05 Manufacturing / Industrial
9201-05N Manufacturing / Industrial
9201-05W Manufacturing / Industrial
9202 Laboratory / Office
9203 Laboratory / Office
9203A Laboratory Development
9204-02 Manufacturing / Industrial
9204-02E Manufacturing / Industrial
9204-04 Manufacturing / Industrial
9205 Laboratory
9206 Processing / Industrial
9212 Processing / Industrial
9215 Manufacturing / Industrial
9217 Manufacturing / Industrial
9217-01 Manufacturing / Industrial
9401-03 Steam Plant
9404-11 Manufacturing / Industrial
9731 Manufacturing / Industrial
9737 Laboratory / Office
9769 Laboratory
9770-03 Laboratory / Storage
9980 Laboratory - Physical Testing
9981 Laboratory - Physical Testing
9995 Laboratory
9996 Manufacturing / Industrial
9998 Manufacturing / Industrial

Lawrence Berkeley National Laboratory
002 Advanced Materials Lab
002A Storage
004 ALS Support Facility
005 AFR
005A Storage Container
005B Storage Container
006 The ALS (Advanced Light Source)
007 ALS Support Facility
007A Storage
007C Offices
010 ALS Support Facility
010A Telecommunications Equipment
013A Environmental Monitoring Station
013B Environmental Monitoring Station
013C Environmental Monitoring Station
013D Environmental Monitoring Station
013E Environmental Monitoring Station
013F Environmental Monitoring Station
013G Environmental Monitoring Station
013H Environmental Monitoring Station

014 ES LAB
016 AFR LAB
016A Storage
017 EHS
017A Storage Container
017B Storage Container
025 ENG Shops
025A ENG Shops
025B Storage
026 Health Services, EH&S
027 ALS Support Facility
029 (vacant)
029A (vacant)
029B (vacant)
029C EE
029D (vacant)
030A Storage Container
030B Storage Container
030C Storage Container
030D Storage Container
030E Storage Container
030F Storage Container
030R Storage Container
030S Storage Container
031A FA
031B ES Storage Container
031C ES Storage Container
031D ES Storage Container
031L Office Trailer
033A Strawberry Canyon Guard House
033B Blackberry Canyon Guard House
033C Grizzly Peak Guard House
034 ALS Chiller Building
036 Grizzly Substation
037 Utility Services Building
040 Storage
041 Communications Lab
043 Site Air Compressor/FD Emerg Gen
044 ENG
044A PHY
044B ENG
045 Fire Apparatus
045A Equipment Storage - FD
046 AFR, EE, ENG, Printing
046A ENG Division Offices
046B ENG
046C AFR
046D AFR
047 AFR
048 Fire Station, Emerg. Command Ctr.
048A Storage Container
050 AFR, PHY, Auditorium, Library
050A Directorate, PHY, NSD
050B PHY, CSD
050C CSD, NERSC
050D CSD
050E CSD
050F CSD - ICS, NERSC
051 The Bevatron
051A Bevatron
051B EPB Hall
051F ES, EET
051G PHY
051L Comp Sci - Training
051N ES
051Q ES
052 Cable Winding Facility
052A Storage
053 E&E, AFRD
053A Storage
053B AFR
054 Cafeteria
054A Automated Teller
055 LS
055A LS
055B Emergency Generator Building
056 Biomed Isotope Facility
058 Heavy Ion Fusion
058A Accelerator R&D Addition
060 Hibay Lab
061 Storage
062 MS, CS Lab
062A EE, MS
062B Telephone Equip. Storage
062C Storage Container
062D Storage Container
063 EE
064 LS/ES
064B FAC
065 OFFICES
065A Offices
065B Offices
066 Ctr for Surface Sci. Catalysis
067B EE: Mobile Window Therml Test Fac
067C EE: Indoor Environment Lab
067D Mobile Lab
067E Storage
068 Upper Pump House
069 FACILITIES DEPT. OPERATIONS
070 NS, EE LAB
070A NS, LS, CS, ES, ENG LAB
070B Telephone Equip. Storage
070E Storage Container
070G Storage
071 ION BEAM TECH, CTR BEAM PHY
071A Low Beta Lab
071B CTR BEAM PHYS
071C Offices
071D Offices
071F Offices
071G Offices
071H Offices
071J Offices
071K Offices
071P Offices
071Q Restroom Trailer
072 Nat'l Ctr for Electron Microscopy
072A High Voltage Electron Microscopy

072B Atomic Resolution Microscope
072C ARM Support Lab
073 ATM AEROSOL RSCH
073A Utility Equipment Building
074 LS LABS
074F Dog Kennel
075 NTLF, Radioisotope Services
075A EH&S
075B EH&S
075C Calibration Building
075D Storage
075E EH&S Offices
076 FAC Shops
076K FA Offices
076L FA Offices
077 ENG Shops077A Ultra High Vacuum Facility
077H Utility Storage
077J Storage Container w/pwr & FP
077K Storage Container w/pwr & FP
077L Storage Container w/pwr & FP
077M Storage Container w/pwr & FP
077N Storage Container w/pwr & FP
077P Storage Container
077Q Storage Container w/pwr & FP
077R Storage Container w/pwr & FP
077S Storage Container w/pwr & FP
078 Craft Stores
079 Metal Stores
080 ALS Support Facility
080A ALS Support Facility
081 Chemical Storage
082 Lower Pump House
083 LS LAB
083A LS Lab Trailer
084 LS Human Genome Lab
084B Utility Building
085 Hazardous Waste Handling Facility
085A Storage Racks
085B Offices
085D Storage Container
085E Storage Container
085F Storage Container
085G Storage Container
085H Storage Container
085J Storage Container
085K Storage Container
088 88 CYCLOTRON
088D Emergency Generator Building
090 DOE, EE, EHS, ES Offices
090B Offices
090C FA Offices
090F FA Offices
090G FA Offices
090H FA Offices
090J FA Offices
090K FA Offices
090P ES
090Q Restroom Trailer
090R Transformer Equipment
100/400 Joint Genome Institute
903 Warehouse, Receiving
937 Berkeley Tower
941 2000 Center St.
943 Oakland Scientific Facility

Department of Health and Human Services

Centers for Disease Control and Prevention
Clifton Road facility, Atlanta, Georgia
Chamblee facility, Atlanta, Georgia
Lawrenceville facility, Lawrenceville, Georgia
Cincinnati Taft North facility, Cincinnati, Ohio
Cincinnati Hamilton facility, Hamilton, Ohio
Morgantown facility, Morgantown, West Virginia
San Juan facility, San Juan, Puerto Rico
Ft. Collins facility, Ft. Collins, Colorado
Spokane facility, Spokane, Washington
Pittsburgh facility, Pittsburgh, Pennsylvania

Food and Drug Administration
Module I and II (MOD I and 2), Beltsville, Maryland
Beltsville Research facility, Beltsville, Maryland
Gulf Technical Services, Dauphin Island, Alabama
Winchester Engineering and Analytical Center (WEAC), Winchester, Massachusetts
San Juan District and Lab, San Juan, Puerto Rico
Atlanta Offices and Laboratory, Atlanta, Georgia
Los Angeles Offices and Laboratory, Los Angeles, California
National Center for Toxicology Research (NCTR), Jefferson, Arkansas

Indian Health Service
Aberdeen Service Area, SD, ND, NE, 49 buildings
Albuquerque Service Area, New Mexico, 26 buildings
Anchorage Service Area, Alaska, 23 buildings
Bemidji Service Area, MN, 9 buildings
Billings Service Area, MT, WY, 16 buildings
Nashville Service Area, MS, NC, 4 buildings
Navajo Service Area, NM, AZ, 54 buildings
Oklahoma City Service Area, OK, KS, 20 buildings
Phoenix Service Area, AZ, CA, NV, UT, 40 buildings
Portland Service Area, WA, OR, ID, 23 buildings
Tucson Service Area, AZ, 6 buildings

National Institutes of Health
Bethesda Campus & NIHAC, Bethesda, Maryland, and Poolesville, Maryland

Research Triangle Park, Research Triangle, North Carolina
Frederick Cancer Research and Development Center (FCRDC), Frederick, Maryland
Rocky Mountain Laboratory, Hamilton, Montana
Gerontology Research Center, Baltimore, Maryland
5 Research Court, Rockville, Maryland
Federal Building, Bethesda, Maryland
12441 Parklawn, Rockville, Maryland
12300 Twinbrook, Rockville, Maryland
Twinbrook I & II, Rockville, Maryland

Department of Justice

FBI Headquarters, J.Edgar Hoover Federal Building, Washington, D.C.
FBI Training Facility, Quantico, Virginia
Western Regional Data Center
FBI Complex, Clarksburg, West Virginia
Justice Data Center, Rockville, Maryland

Department of the Treasury

Bureau of Alcohol, Tobacco, and Firearms
Canine Training Center, Front Royal, Virginia

Bureau of Engraving and Printing
Washington Currency Facility, Washington, D.C.
Western Currency Facility, Fort Worth, Texas

Internal Revenue Service
Martinsburg Computer Center, Martinsburg, West Virginia
Andover Service Center, Andover, MassachusettsAtlanta Service Center, Atlanta, Georgia
Austin Service Center, Austin, Texas
Brookhaven Service Center, Holtsville, New York
Cincinnati Service Center, Cincinnati, Ohio
Fresno Service Center, Fresno, California
Memphis Service Center, Memphis, Tennessee
Ogden Service Center, Ogden, Utah
Philadelphia Service Center, Philadelphia, Pennsylvania

U.S. Mint
Philadelphia Mint, Philadelphia, Pennsylvania
Denver Mint, Denver, Colorado
San Francisco Mint, San Francisco, California
West Point Bullion Depository, West Point, New York
Fork Knox Bullion Depository, Fort Knox, Kentucky

U.S. Secret Service
Rowley Training Center, Beltsville, Maryland

Environmental Protection Agency

Robert S. Kerr Environmental Research Lab, Ada, Oklahoma
National Vehicle and Fuel Emissions Laboratory, Ann Arbor, Michigan
National Exposure Research Laboratory, Athens, Georgia
Science and Ecosystem Support Division, Athens, Georgia
Andrew W. Breidenbach Environmental Research Center, Cincinnati, Ohio
National Health and Environmental Effects Research Laboratory - Western Ecology Division, Corvallis, Oregon
National Health and Environmental Effects Research Laboratory - Mid-Continent Ecology Division, Duluth, Minnesota
Region 2 Laboratory, Edison, New Jersey
Environmental Science Center, Fort Meade, Maryland
Region 8 Laboratory, Golden, Colorado
National Health and Environmental Effects Research Laboratory - Gulf Ecology Division, Gulf Breeze, Florida
Environmental Laboratory, Houston, Texas
University of Nevada, Las Vegas - On Campus EPA Facilities, Las Vegas, Nevada
Region 10 Laboratory, Manchester, Washington
National Air and Radiation Environmental Laboratory, Montgomery, Alabama
National Health and Environmental Effects Research Laboratory - Atlantic Ecology Division, Narragansett, Rhode Island
National Health and Environmental Effects Research Laboratory - Western Ecology Division, Newport, Oregon
Central Regional Laboratory, Richmond, California
Research Triangle Park, Research Triangle Park, North Carolina

General Services Administration

Federal Center-Admin, Waltham, MA
Boston New Ch, Boston, MA
EPA Laboratory, Lexington, MA
US Border Station, Calais, ME
US Border Station, Coburn Gore, ME
US Border Station, Fort Fairfield, ME
US Border Station, Houlton, ME
US Border Station, Jackman, ME
US Border Station, Limestone, ME
US Border Station, Orient, ME
US Border Station, Vanceboro, ME
US Border Station, Van Buren, ME
US Border Station, Calais, ME
St. Pamphille, Saint Francis, ME
US Border Station, Madawaska, ME
USBP Sec Hd Houlton, Hodgdon, ME
US Border Station, Fort Kent, ME
USBS/TWP20, Saint Francis, ME
USBS, Township 11, Saint Francis, ME
US Border Station, Derby Line, VT
US Border Station, Norton, VT
US Border Station, Beebe Plain, VT
US Border Station, Alburg Springs, VT
US Border Station, North Troy, VT
US Border Station, West Berkshire, VT
US Border Station USPO, Derby Line, VT
US Border Station, Beecher Falls, VT
US Border Station, Canaan, VT
USBS East Richford, Richford, VT
US Border Station, Richford, VT
USBP Sector Hdqtrs, Swanton, VT
USBS, Highgate Springs, VT
Swanton Border Patrol Bldg, Highgate Springs, VT
Administration Bldg., Champlain, NY
Inspection Bld Borde, Chateaugay, NY
Temp Frme Gar Bdr St, Massena, NY
Inspection Building, Mooers, NY
Border Station, Fort Covington, NY
Border Station, Rouses Point, NY
Border Station, Rouses Point, NY
Border Station, Trout River, NY
US Mission to the UN, New York-Manhattan, NY
Rainbow Br Pt Entry, Niagara Falls, NY
Food and Drug Admin., New York-Queens, NY
Chas. E. Bennett FB, Jacksonville, FL
Airside Commerce, Orlando, FL
Columbus, Miami, FL
2385 Chamblee Tucker, Atlanta, GA
Gnann House, Plains, GA
GSA/FBI Motor Pool, Memphis, TN
Southplace Office Park, Nashville, TN
Federal Building, Chicago, IL
Minton-Capehart F/B, Indianapolis, IN
US Border Station, Sault Ste Marie, MI
Cust Cargo Inspection Facility, Detroit, MI
Food & Drug, Detroit, MI
Ambassador Bridge, Detroit, MI
Detroit Computing Ct, Detroit, MI
Border Station, Grand Portage, MN
Custom & Immigration Station, Noyes, MN
US Border Station, International Falls, MN
Prop. Border Station, Baudette, MN
FDA Fornsc Chem Center, Cincinnati, OH
25 Funston Road, Kansas City, KS
11510 West 80th, Lenexa, KS
Federal Bldg, Kansas City, MO
Executive Hills, Kansas City, MO
Buckeye Industr. Park, Kansas City, MO
USBP SH Bldg 13, New Orleans, LA
USBS Import Dock, Santa Teresa, NM
Border Station, Columbus, NM
Austin Finance Ctr, Austin, TX
USBS B&M-Admin Bldg, Brownsville, TX
Gateway USBS Bldg A, Brownsville, TX
USBS-Columbia Admin, Laredo, TX
US Border Station, Laredo, TX
USBS Admin Building, Del Rio, TX
BPSH Bldg 1, Hqtrs, Del Rio, TX
USBS Br Of The Amers, El Paso, TX
USBS Amdin Building, Eagle Pass, TX
USBS Admin Building, Hidalgo, TX
Juarez-Lincoln USBS, Laredo, TX
USBS Admin Building, Los Indios, TX
BPSH Bldg A, Laredo, TX
Los Tomates USBS Ad, Brownsville, TX
BPSH Administratn Bd, Mcallen, TX
Headquarters Bldg, Marfa, TX
USBS Pharr Admin Bld, Pharr, TX
USBS Paso Del Norte, El Paso, TX
USBS Admin Building, Progreso, TX
USBS Admin Building, Roma, TX
USBS Main Building, El Paso, TX
Federal Building, Dallas, TX
US Border Station, Fabens, TX
USBS Intl RR, Laredo, TX
US Border Station, Presidio, TX
Eagle Pass Border PT, Eagle Pass, TX
World Trade Bridge U., Laredo, TX
Chief Mtn BS & Qtrs, Babb, MT
Piegan BS & Qtrs, Babb, MT
Roosville BS, Eureka, MT
Sweetgrass BS, Sweetgrass, MT
Border Patrol Sector Hq, Havre, MT
Turner B, Turner, MT
Ambrose BS, Ambrose, ND
Dunseith BS, Dunseith, ND
Portal BS, Portal, ND
St John BS, St John, ND
Bldg A Main Building, Pembina, ND
Border Patrol Sector Hq, Grand Forks, ND
Lukeville Dock, Lukeville Arizona, AZ
BS Old Cus Bldg, Nogales, AZ

BS Garage, Sasabe, AZ
BS Main Bldg, Douglas, AZ
Border Patrol Sector Hqrs, Tucson, AZ
BS Main Bldg, San Luis, AZ
BS Main Bldg, Naco, AZ
BS Office Bldg, Nogales, AZ
BS Old Customs Bldg, Calexico, CA
BS Exist Main Bldg, San Diego, CA
BS Main Bldg, Andrade, CA
New Commercial Fac, San Diego, CA
BS Main Bldg, Tecate, CA
BS Bulk Lot Bldg, Calexico, CA
US Border Patrol Station, Calexico, CA
Parkway Centre, Alameda, CA
Dalton Cache Bor Sta, Haines, AK
Station Building, Tok, AK
Post Office Ct Jail, Nome, AK
Housing Unit No 2, Nome, AK
Int Ag Motor Pool, Anchorage, AK
Skagway Border Station, Skagway, AK
US Border Station, Eastport, ID
US Border Station New, Porthill, ID
E.Green - W.Wyatt FB, Portland, OR
Station Bldg, Blaine, WA
Danville Border Station, Danville, WA
Station & Quarters, Curlew, WA
Station, Laurier, WA
Station, Metaline Falls, WA
US Border Station, Oroville, WA
US Border Station, Sumas, WA
Kenneth G. Ward BS, Lynden, WA
Fed Bldg USDJ INS, Seattle, WA
Fed Bldg USPO & CH, Richland, WA
Border Patrol Sect Hq, Blaine, WA
Border Patrol Sec Hq Annex, Blaine, WA
Border Patrol Sect Hq, Spokane, WA
Jackson FB, Seattle, WA
FDA Bldg, Bothell, WA
New Border Station, Point Roberts, WA
Pacific Hiway Border, Blaine, WA
Border Patrol Annex, Spokane, WA
Central Heating Plant Stm, Washington, D.C.
West Heating Plnt Stm, Washington, D.C.
Wilbur J. Cohen Bldg, Washington, D.C.
Reagan Bldg FOB, Washington, D.C.
U.S. Secret Service Headquarters, Washington, D.C.
Flam Lab- Bldg "A", Gaithersburg, MD
1401 Research Blvd, Rockville, MD
Rickman Building, Rockville, MD
New Carrollton Fed, Lanham, MD
The Gaither Dist Ctr, Gaithersburg, MD
Census Computer Facility, Bowie, MD

International Broadcasting Bureau

Botswana Transmitting Station, Francistown, Botswana
Delano Transmitting Station, Delano, California
Germany Transmitting Stations, Munich (Ismaning), Munich (Holzkirchen), Lampertheim, and Frankfurt, Germany
Greece Transmitting Stations, Kavala and Rhodes, Greece
Greenville Transmitting Station, Site A and Site B, Greenville, North Carolina
Kuwait Transmitting Station, The State of Kuwait
Morocco Transmitting Station, Tangier, Morocco
Philippines Transmitting Station, Tinang Island and San Fernando, La Union, Philippines
Northern Mariana Islands (renamed Robert E. Kamosa Transmitting Station), Saipan, Mariana Island, Northern Mariana
Sao Tome Transmitting Station, Vieux Fort St. Lucia, Sao Tome
Sri Lanka Transmitting Station, Colombo, Sri Lanka
Thailand Transmitting Station, Udorn and Bangkok, Thailand
Marathon Transmitting Station, Marathon, Florida

National Aeronautics and Space Administration

Ames Research Center, Moffett Field, CA
Model Development Facility
Technical Services Shop
Central Computation Facility
Thermal Protection Facility
Arc Jet Facility
Model Construction Facility
Program Support Communication Network Facility
Flight Data Complex
Numerical Aeronautics Simulator
Unitary Plan Wind Tunnel Auxiliary Building
Advanced Computation Facility
Flight Data Facility
High Pressure Air Housing

Glenn Research Center, Cleveland, OH
Chemistry Laboratory
Instrument Research Laboratory
Operations/Integration Building

Goddard Space Flight Center, Greenbelt, MD
Central Flight Control Range
Instrument Construction/Development Laboratory
Payload Testing Facility
Environmental Testing Laboratory
Network Control Center

Spacecraft Operations Facility
Data Interpretation Laboratory
EOS/DIS Building
Goddard Geophysical and Astronomical Observatory Area

Jet Propulsion Laboratory, Pasadena, CA
Environmental Laboratory
25 Foot Space Simulator
Spacecraft Assembly Facility
Space Flight Operations Facility
10 Foot Space Simulator
Space Flight Support
Frequency Standards Laboratory
Earth & Space Sciences Laboratory
Micro Devices Laboratory

Johnson Space Center, Houston, TX
Crew Systems Laboratory
Photographic Technology Laboratory
Central Heating & Cooling Plant
Auxiliary Chiller Facility
Space Environment Simulation Laboratory
Life Sciences Laboratory
Central Computing Facility
Vibration and Acoustic Test Facility
Atmospheric Re-Entry Materials & Structures Evaluation Facility
Radiant Heat Facility
Thermo Chemical Test Area
Sonny Carter Training Facility
Avionics Systems Laboratory
Planetary & Earth Science Laboratory

Kennedy Space Center, Kennedy Space Center, FL
Hangar L, Life Sciences Support Facility
Hangar AE, Missile Assembly Building
First Wash Building
East High Pressure Wash/Surf Prep
Robot Wash Building
Media Blast
Program Support Communication
Electromagnetic Lab
Central Instrumentation Facility
Film Storage
PGOC Warehouse
Warehouse #1
Operations and Checkout Building
Space Station Processing Facility
Payload Support Building
Canister Rotation Facility
Multi-Payload Processing Facility
Spacecraft Assembly & Encapsulation Facility
Payload Hazardous Servicing Facility
Vertical Processing Facility
Ordnance Storage

Langley Research Center, Hampton, VA
East Area Compressor Station (Closed)
Hydrodynamics Research Facility
Space Environmental Effects Laboratory
Structures and Materials Research Laboratory
Steam to Hot Water Exch/Pump House
Central Heating and Steam Generation Plant
Conference Center
Central Scientific Computing Facility
Refuse-Fired Steam Generating Facility
Flight Dynamics Drop Model Facility (Closed)
Anechoic Noise Facility
Compressor Station
Vacuum Pumping Station - Gas Dynamics Complex
Flight Simulation Laboratory
Central Scientific Computing Facility
Earth Orbiting System-DIS-DAAC Facility
Cockpit Motion Facility

Michoud Assembly Facility, New Orleans, LA
Entire Facility is Industrial

Marshall Space Flight Center, Huntsville, AL
Microwave Anechoic Chamber
Communications Facility
Photographic Laboratory
SSME - Block II Facility
LIDAR Facility
Power Systems Laboratory
MAST/FSL Simulation Facility
Space Science Labortory
Laboratory & Office Building
Test Stand Support Building
Test Facility 300
Test Facility 116
Structural Test Facility
Test Facility Terminal Building
Hot Gas Test Facility
Test Control and Service Building
TPTA Refurbishment Facility
Pump and Boiler House
Propulsion and Structural Test Facility
Test & Data Recording Facility
Space Environmental Effects Laboratory
Air Compressor Building
Materials & Processes Laboratory
Atmospheric Research Facility
Heat Treatment Facility
Structural Dynamics & Thermal Vacuum Laboratory
Hydrogen Test Facility
Air Compressor Building
High Pressure Test Facility
Multi-Purpose High Bay Facility
Hydraulic Equipment Development Facility
LH2 Vaporization Facility
High Pressure GN2 Facility
Boiler Plant
Computer Facility
Pump House
Advanced Engine Test Facility

Test Support Building
Block House
Boiler House
Helium Compressor Building
Non-Destructive Evaluation Laboratory
Shops & Neutral Buoyancy Simulator
Productivity Enhancement Facility
Engineering & Developmental Laboratory
Developmental Processes Laboratory
X-Ray Calibration Facility
Office and Wind Tunnel
Compressed Air Facility
Air Compressor Facility
High Bay Shop Building
Space Station Development Laboratory
Surface Treatment Facility
High Reynolds Number Facility
Low Density Flow Facility
Engine Dynamic Fluid Flow Facility

NASA Industrial Plant, Palmdale, CA
USAF Plant 42, Production Site 1 (Palmdale)

Santa Susana Field Laboratory, Canoga Park, CA
Entire facility is laboratory space.

Wallops Flight Facility, Wallops Island, VA
Mainland/Island Areas
Radar Facility
Machine Shop - Fabrication
Aircraft Projects/Hangar Area
Electronics Support/Storage

Social Security Administration

National Computer Center (NCC), Baltimore, Maryland

APPENDIX E
EXEMPT FACILITIES

Department of Defense

Cold Iron Facilities
SUBASE, New London, CT
NSY, Norfolk, VA
PWC, Norfolk, VA
WPNSTA, Charleston, SC
NAS, Pensacola, FL
NAS, Key West, FL
NAVSTA Roosevelt Roads, PR
SUBASE, Kings Bay, GA
NAVSTA, Mayport, FL
WPNSTA EARLE Colts Neck, NJ
NAVSTA, Gauntanamo, Cuba
NSWC COASTSYSTA, Panama City, FL
NAVPHIBASE, Little Creek, VA
NETC, Newport, RI
NAVSTA ROTA SP
NAVSTA, Pascagoula, MS
NAVSTA, Ingleside, TX
NUSC, New London Laboratory
NSC, Oakland, CA
NAVSTA, San Diego, CA
NAS NORTH IS San Diego, CA
NSY Puget Sound Bremerton, WA
NSY, Pearl Harbor, HI
SUBASE, Pearl Harbor, HI
FLEASWTRACENPAC, San Diego, CA
FLEET ACTIVITIES, Chinhae, South Korea
WPNSTA, Concord, CA
COMFLEACT, Yokosuka, Japan
NAVSTA, Guam
CBC Port Hueneme, CA
NAVSHIPREPFAC, Guam
COMFLEACT, Sasebo, Japan
PWC, Pearl Harbor, HI
NAVSTA, Pearl Harbor, HI
SUBASE, San Diego, CA
NAVRESREDCOMREG 22, Seattle, WA
SUBASE, Bangor, WA
NAVSTA, Everett, WA

Simulators
WPNSTA, Charleston, SC
NAS, Pensacola, FL
NAS, Jacksonville, FL
NAS, Dallas, TX
NAS, Kingsville, TX
NAVAIRDEVCEN, Warinster, PA
NAS, Lemoore, CA
NSWC DIV, Pt. Hueneme, CA
MCAS, Miramar, CA

Transmitters
NAS, Jacksonville, FL
NAVSECGRUACT, Winter Harbor, ME
NRTF DIXON
RADTRANF, Annapolis, MD
NAVRADTRANFAC SADDLEBUNCH KEYS
NAVSECGRUACT, Sabana Seca, Puerto Rico
NAVCOMMSTA, Jacksonville, FL
NAVRADSTA /T/ Jim Creek, WA
NAVSECGRUACT GALETA IS PN

Other
NAS, Dallas, TX
NAVCOMMU, Washington, D.C.
NAF, El Centro, CA
NSWC COASTSYSTA, Panama City, FL
COMFLEACT, Yokosuka, Japan
NAVOBSY, Washington, D.C.
NAF, Atsugi, Japan
CBC, Port Hueneme, CA
CBC, Gulfport, MS
MCAS, Iwakuni, Japan
PWC, Pearl Harbor, HI
NAVSTA ROTA SP
NAS, Keflavik, Iceland
NAVCOMMSTA, Keflavik, Iceland
DoD SCHOOLS, Keflavik, Iceland
HDQTRS 4TH MARDIV, New Orleans, LA
NAVSTA, Pascagoula, MS

"Other" category includes energy consumed by non-Defense activities, private parties, contractors, and State and local governments.

Department of Energy

Lawrence Berkeley National Laboratory
050B PHY/CSD Building
943 Oakland Scientific Facility

Fermilab
201 Ap30 Service
202 Ap10 Service
203 Ap50 Service
204 Apo Target Hall
205 Ap50 Gas Storage
206 Booster Gallery East & West
207 Booster Tower Southwest
208 Booster Tower Southeast

212 Accelerator - Linac, X-Gallery
214 Central Utility
216 A0 Kicker
217 A0 Lab
218 A-O Service Bldg./Vehicle
220 A-1 Service Building
221 A-2 Service Building
222 A-3 Service Building
223 A-4 Service Building
224 B-O Service Building
225 B-1 Service Building
226 B-2 Service Building
227 B-3 Service Building
228 B-4 Service Building
229 B-48 Kicker Building
230 C-O Service Building
231 C-1 Service Building
232 C-17 Kicker Building
233 C-2 Service Building
234 C-3 Service Building
235 C-4 Service Building
236 C-4 Pump House
237 C-48 Kicker Building
238 D-0 Service Building
239 D-0 Vehicle Access Building
240 D-1 Service Building
241 D-2 Service Building
242 D-3 Service Building
243 D-4 Service Building
244 D-48 Kicker Building
245 E-0 Service Building
246 E-1 Service Building
247 E-17 Kicker Building
248 E-2 Service Building
249 E-3 Service Building
250 E-4 Service Building
251 F-0 (Rf) Service Building
252 F-1 Service Building
253 F-2 Service Building
254 F-23 Power Supply Building
255 F-27 Power Supply Building
256 F-3 Service Building
257 F-4 Service Building
258 D0 Gas Shed
259 B12 Gas Shed
267 F-17 Service Building
283 Switchyard Service Building
299 A-1 Refrigeration Building
300 A-2 Refrigeration Building
301 A-3 Refrigeration Building
302 A-4 Refrigeration Building
303 B-1 Refrigeration Building
304 B-2 Refrigeration Building
305 B-3 Refrigeration Building
306 B-4 Refrigeration Building
307 C-1 Refrigeration Building
308 C-2 Refrigeration Building
309 C-3 Refrigeration Building
310 C-4 Refrigeration Building
311 D-1 Refrigeration Building
312 D-2 Refrigeration Building
313 D-3 Refrigeration Building
314 D-4 Refrigeration Building
315 E-1 Refrigeration Building
316 E-2 Refrigeration Building
317 E-3 Refrigeration Building
318 E-4 Refrigeration Building
319 F-1 Refrigeration Building
320 F-2 Refrigeration Building
321 F-3 Refrigeration Building
322 F-4 Refrigeration Building
324 G2 Service Building
330 C0 Experimental Hall
708 MI 8 Service Building
710 MI 10 Service Building
720 MI 20 Service Building
730 MI 30 Service Building
740 MI 40 Service Building
750 MI 50 Service Building
752 MI 52 Service Building
760 MI 60 Service Building
762 MI 62 Service Building
851 Central Helium Liquefier
854 Master Sub-Station
860 Kautz Road Sub-Station
Rpt 20 OSF (FIMS Enclosures)

Brookhaven National Lab
518 Treatment Facility
519 Well House
521 Air Sparge/Soil Vapor Extraction
598 Ground Water Treatment Plant
645 Well Control House
704 Fan House
0707A Pumphouse
0707B Water Treatment House
715 Stack Monitoring Station
725 National Synchrotron Light Source
750 High Flux Beam Reactor
751 Cold Neutron Facility
0901A Van De Graff Building
906 Pet Imaging Laboratory
907 Heavy Ion Power Supply A
908 Heavy Ion Power Supply B
909 Heavy Ion Beam Tunnel
912 AGS Experimental Halls
0912A Mechanical Equipment Building
913 AGS Tunnel
0913A Fan House A-Northeast
0913B Fan House B-North
0913C Fan House C-Northwest
0913D Fan House D-Southwest
0913E Fan House E-Southwest
0913F Proton House D18
0913G Proton House E18
0913H Proton House F18
0913I Proton House G18
0913J Proton House H18

0913K Proton House I18
0913L Proton House J18
0913M Proton House K18
0913N Proton House L18
0913O Proton House L18A
0913P Proton House A18
0913Q Proton House B18
0913R Proton House C18
0913S H-10 Equipment House
0913T Storage
914 Booster Equipment
915 AGS Well101
916 AGS Well 102
917 AGS Well103
918 AGS Warehouse
919 G-2 Experiment Group
0919A AGS Crogenics/Target Group
0919B Works Building
0919C G-2 PLAN-B Refrigerator Room
0919F G-2 Pump House
0919G G-2 R&D Refrigerator Room
0919H PTR Rect.House #1
0919I PTR Rect.House #2
0919J PTR Rect.House #3
920 E-10 Power Building
921 EXP. Power Supply Bldg G-2
922 Scientific Assembly
923 Electronic Equip. Repair
925 Works Building
927 N. Experimental Tunnel
928 Siemens MG Power Supply
929 RF Power Supply
930 200 MEV LINAC
931 BLIP
932 F-10 House Equipment
940 Online Data Facility
941 Power Supply and Support Bldg
942 AGS Booster Tunnel
946 Beam Stop Pump House
949 G -2 Tunnel
951 Tower Equipment
952 Storage
953 Rectifier House A
961 Storage
962 Storage
963 Storage
964 Storage
966 EXPMTNL COPUTER/ELE
975 Machine Shop/SPS
1000 Injection Tunnel
1000P W-Line Power Supply
1002 BRAHMS Experimental Hall
1002A Instrumentation/BRAHMNS Service
1002B 2 O'clock Cryo Service Building
1002C Fast Electronics Hut
1002D Brahms Counting House
1004A RHIC RF Support Building
1004B 4 O'Clock Cryo/Main Power Supply
1005E East Ejection Power Supply
1005H Rhic Facility Compress Bldg
1005P Cooling Tower NO.7
1005R Cryogenics Refrigerator Wing
1005S Collider Center
1006 Star Experimental Hall
1006A Star Service Building
1006B 6 O' Clock Cryo Service Buildi
1006C Star Counting House
1006D Office Modulars
1007W West Ejection Power Supply
1008 Phenix Experimental Hall
1008A Phenix Service Building
1008B SERVICE BLDG
1008C Phenix Counting House
1008E Office Modular
1008F Mixing Building
1010 Phobos Experimental Hall
1010A 10 O'Clock Cryo/Phobos Service
1010B Phobos Counting House
1012 Future Facility/ Experimental
1012A 12 O'clock Cryo/Polarimeter S.
1013 Equipment Storage
1070 Environmental Monitoring Station
1101 Assembly Building
Various Trailers

East Tennessee Technology Park
101 Offices and Storage
131 Maintenance Shop
413 Product Withdrawal Facility
601 LMES Offices - North End of 1st Flr
631 Tails Withdraw
633 ORGDP Test Loop-Facility
711WSU K-711 Flammable Haz/Mix Waste
719 Storage Bldg.
722 Property Sales
723 Property Sales
726 PCB Waste
731 K-27 & K-29 Switch House
736 Scrap Storage (previously ADJ 725)
761 K761 Switch House K-31
766 CRBR Sampling Storage Shed (S K-720)
791K791 Switch & Control Room
797 Electrical Switchgear Room K-1004-J
798 K-1023 Elect Switchgear Rm (M&EC)
799 Generator Bldg
801 Intake Water Pump House
802 Recirculating Water Pump House
803 Valve House
804 Valve House
806 McKinney Ridge Site Radio Reptr Stn.
814 Radio Repeater - McKinney Ridge Site
822 Pump House
832 Recirculatin Water Pump House
833 Cooling Water Return Pump House
834 Valve House
891 Raw Water Poplar Creek Pumphouse
892 K-892 Laydown Area
895 Cyl Disposal House/Destruct Facility

901 Clinch Riv Raw H2O Pump Stn
1000 Visitor Control Center
1002 Cafeteria, Auditorium, Document Cenetr
1003 IH Department
1005 Leased Offices (M&EC)
1006 Development Lab (MCL)
1007 Computer Science Facility
1010 Lab-Receiving & Handling (M&EC)
1015 Laundry
1018 Laborer Storage (No longer in use)
1020 Health Physics, Training Offices
1021 Emergency Response Equip Stg Bldg
1023 Computer Science Office (M&EC)
1024 Offices
1030 National Security Program Office
1035 K-1035 West (PME)
1036 K-1036 Middle Area
1037 Avlis Research
1039 Telephone Bldg.
1052 Advanced Machine Dev Lab (M&EC)
1055 Gas Cylinder Storage Shed
1056 Materials Warehouse (BSI)
1058 K-1058 Laydown Area (STA)
1059 Materials Warehouse
1061 Oil Storage Bldg
1095 K-1095 Former Paint Shop (STA)
1098 Maintenance Shop/Storage Plumbers
1099 Seismac Instrument House
1101 Air Plant
1102 Fan & Transfer Bldg.
1132 HF Storage Tank Shed
1133 HF Storage Tank Shed
1200 K-1200 South Bay (M&EC)
1203 Waste Water Treatment Plant
1207 Storage Bldg
1210 Component Test Facility
1211 CTF Storage
1216 Scale House on Blair Road
1220 Centrifuge Plant Demo bldg.
1231 Process bldg.
1232 WSU K-1232 - Chemical Recovery Fac.
1233 Collection Facility
1301 Nitrogen Production Facility (Vacant)
1302 RCRA Storage - Cells A,B,D
1303 Mercury Distillation Recov Unit Area
1400 Waste Management Project Offices
1401 Maintenance Bldg
1402 Electrical Control House
1413 Laboratory
1414 Garage & Gas Station
1415 Storage Shed (SFL)
1416 Storage Bldg
1419 Operations Control Room for CNF
1420 Decontamination Bldg
1423 K-1423 Repack Fac. (West High Bay)
1425 Waste Oil Storage
1430 TSCAI Maintenance Shops
1501 Steam Plant
1513 Pump House and Sample Station
1515 Water Filtration Plant
1547 Visitors Overlook
1548 Canteen Trailer (N K-1007)
1550 Restroom Facility
1556 Office Trailer (N K-1007)
1600 Computer Maintenance Shops
1652 Plant Protection Headquarters
1004-A Laboratory
1004-B Laboratory
1004-C Laboratory
1004-D Laboratory
1004-E Lab Storage Bldg.
1004-F Laboratory Storage Bldg
1004-J Special Development Bldg.
1004-L Pilot Plant
1004-M 1004L Electrical Switchgear Room
1004-P Test Facility-Isostatic
1004-Q Laboratory
1004-R Laboratory
1004-S Laboratory
1004-T T-Laboratory
1004-U Offices
1006-C Chiller bldg (MCL)
1007-A Canteen
1008-A Changehouse
1008-B Changehouse
1008-C HP Offices/Respirator Cleaning & TST
1008-D Physical Therapy/HVAC Shop
1008-F Maintenance Administration
1010-A Lab Receiving & Handling Fac (M&EC)
1024-B Storage W 1024
1024-C Equipment Stroage
1024-D Prefab N of 1024 (Former 1310-AU)
1024-E Prefab Storage Unit (Former 1310-AV)
1024-F 9x32 Storage Container N 1024
1024-G 9x32 Storage Container N 1024
1024-I Blue Trailer
1025-A Rad Source Control Bldg
1025-B Drum Warehouse
1025-C WSU K-1025-C- Haz/Mixed Waste
1025-D Rad Source Control Bldg
1025-E Warehouse
1028-40 Gatehouse Near K-1414 (Not In Use)
1028-45 Gate House Portal 4
1028-47 Gate House Portal 5
1028-49 Gate House Portal 10
1028-50 Gate House Portal 6
1028-55 Gate House Portal 7
1028-57 Gate House Portal 2 (Main)
1028-58 Gate House Portal (N K-1007)
1028-59 Gate House Portal 2 (East)
1028-60 Gate House Portal @ K-1070 C/D
1028-62 Gate House Portal 10
1028-65 Gate House Portal 3
1028-70 Gate House Portal 1, K-1007
1028-72 Gate House Portal 11
1028-73 Gate House Portal 12
1028-74 Gate House Portal (Closed)
1028-75 Gate House Portal (Closed)

1030-A Product Certification
1030-B Product Certification
1030-DP K-1030 DP
1034-A Plant Records Vault
1037-C Smelter House
1039-1 Integrated Comm Office
1040 Maintenance Shop, K-633
1045 Maint Office & Carpenter Storage
1045-C Storage Building
1052-B Component Test & In Process (M&EC)
1055-A Chlorine Storage Shed (STA)
1059-A Materials Stg Bldg. (Frmr 1134)
1064-B Salvage Material Yard Office
1064-E Salvage Yard Shop
1064-G Drum Deheading Facility
1064-H Storage Shed
1064-J Storage Shed
1064-K Salt Shed
1065-A RCRA Storage Facility
1065-B RCRA Storage Facility
1065-C RCRA Storage Facility
1065-D RCRA Storage Facility
1065-E RCRA Storage Facility
1098-D Maintenance Offices
1098-E Heat Treatment Facility (Cook)
1098-F K-1098-F Laydown Area (Sta)
1098-G Heavy Equip. Storage Shed
1102-A Fan & Transfer Bldg.
1102-B Fan & Transfer Bldg.
1131-D Sprinkler Valve House
1203-04 Chlorination Control RM
1210-A Process Area
1210-B Office Area
1232-D Equipment Storage Shed
1232-G Pump House
1310-A Office Trailer (S K-1004-B)
1310-AA K-1423 Office Trailer (W of K-1423)
1310-AB K-1423 Office Trailer (W of K-1423)
1310-AC K-1423 Office Trailer (W of K-1423)
1310-AD K-1423 Office Trailer (N of K-1423)
1310-AE K-1423 Office Trailer (N of K-1423)
1310-AF K-1423 Office Trailer (N of K-1423)
1310 AG K-1423 Office Trailer (N of K-1423)
1310-AH K-1423 Office Trailer (N of K-1423)
1310-AI K-1423 Office Trailer (N of K-1423)
1310-AJ K-1423 Office Trailer (N of K-1423)
1310-AK K-1423 Office Trailer (N of K-1423)
1310-AL K-1423 Office Trailer (N of K-1423)
1310 -AM K-1407/CNF Office Trlr (NW K-1420)
1310-AN K-1407/CNF Office Trlr (NW K-1420)
1310-AP K-1407/CNF Office Trlr (NW K-1420)
1310-AQ Prefab Bldg (E of K-1200)
1310-AW Prefab Bldg HP (E K-1220)
1310-AX Bioassay Station @ Portal 3
1310-AY Bioassay Station (W of K-1435-A)
1310-B Office Trailer (S of K-1004-B)
1310-BA K-1407/CNF Changehouse (W K-1419)
1310-BB K-1407/CNF Stg Trailer (S K-1407-F)
1310-BC K-1407/CNF Stg Trailer (E K-1407-D)
1310-BD K-1407/CNF Stg Trailer (W K-1407-F)
1310-BE K1407/CNF Office Trailer (BTWN K-1407G/K)
1310-BJ Storage Bldg. Fay K-1310bj
1310-BK Storage Bldg. Fay K-1310bk
1310-BM Maintenance Office and Breakroom
1310-BN Storage Trailer
1310-BN Equip Storage Trailer (Near K-1414)
1310-BP Equip Storage Trailer (Near K-1414)
1310 BQ STSOD Storage Trailer (E K-302-1)
1310-BR WTSOD Storage Trailer (E K- 301-5
1310-BS Storage Trailer @ Portal 9
1310-BT WTSOD Storage Trailer
1310-BW WTSOD Storage Trailer @ K-1066-H
1310-BX WTSOD Storage Trailer @ K-1066-H
1310-BY Storage Trailer (N K-1004-L)
1310-BZ Office Trailer at K-1098
1310-C Officer Trailer (N K-1004-C)
1310-CA Conference Room (SE K-1098-D)
1310-CB Office Trailer
1310-CC Officer Trailer
1310-CD SW-31 Transfer Station (E K-1008-D)
1310-CE Personnel Monitoring Station @K1417
1310-CG Deactivated Boundary Control Station
1310-CH Storage Bldg (K-1066-G)
1310-CJ Storage Trailer (N K-1131)
1310-CK Supervisor Field Office (K-1417)
1310-CL Supervisor Field Office (L-1065)
1310-CM Office/Supply Trailer (@K-1417)
1310-CN Office/Supply Trailer (@K-1417)
1310-CP Break Room
1310-CQ Cool Down Unit
1310-CR Cool Down Unit
1310-CS Personnel Monitoring Station @ K-1417
1310-CW Changehouse Trailer
1310-CX Storage Shed (Near K-1414)
1310-D Office Trailer (N K-1004-C)
1310-DC RAD Vacuum Cleaner Facility
1310-DE Property Sales Office
1310-DF Property Sales
1310-DL Portable Trailer
1310-DN Storage Bldg.
1310-DP Sale Bldg.
1310-DX Frisker Station - East of 302-01
1310-DY Frisker Station - East of 309-01
1310-DZ Frisker Station - East of 310-02
1310-E Office Trailer
1310-EA Frisker Station - West of 305-12
1310-EB Frisker Station - West of 304-04
1310-ED Office Trailer
1310-EE Storage Shed East of K-1004-D
1310-EJ Office Trailer
1310-EK CNF 90-Day Storage Shed
1310-EP Boundary Control Station @ K-1419
1310-EQ Construction Access Monitor Gate
TRA1310-ER Wood Framed & Siding Trailer
1310-ES Office Trailer (ORISE)
1310-ET 8 x 18 Trailer
1310-EX Forklift Changing Station

1310-F Office Trailer
1310-H Office Trailer - SW K-1210 (M&EC)
1310-J Office Trailer (E of K-25-310-03)
1310-K Office Trailer - S K-1210 (M&EC)
1310-L Office Trailer - Portal 3 (ESC)
1310-M Office Trailer - Portal 3 (DIG)
1310-N Officer Trailer - Portal 3 (DIG)
1310-P Office Trailer - Portal 3 (GLR)
1310-U Body Count Trailer @ K-1020
1314-A Prefab Storage Bldg.
1314-B Prefab Storage Bldg.
1314-C Prefab Storage Bldg.
1314-D Prefab Storage Bldg.
1314-E Prefab Storage Bldg.
1314-G Blast/Paint Facility (South) CMP
1407-H Central Neutralization FAC (CNF)
1407-J Settling Basin
1407-K Chemical Addition
1407-P Electrical Field Shop @ K-1407-A
1408-A Pyrofax Heating Unit
1414-C Storage
1420-D Sprinkler Valve House
1423-AWSU WSU Reserved for TSCAI Support
1423-BWSU WSU NDA/NDE Support
1423-C Office/Change House
1423-D Trailer
1423-EWSU WSU TSCAI & NDE Support
1423-F WTSOD Office Trailer
1423-G Property Sales
1423-Office Office Space & Document Center
1430-A TSCAI Instrument Shop
1430-B TSCAI Instrument/Electrical Shop
1435-A Office, Lab, Control Bldg.
1435-B Drum Storage & Drum Handling
1435-C1 Bldg Office/Cooldown K-1435-C1
1435-D5 Trailer Portable Metal Pig.
1435-E Maintenance Field Office
1435-F Instrument Shop in D A
1435-G Office Trailer
1435-H Office Trailer & Storage
1435-I TSCA Office Trailer
1435-I1 Operations Office
1435-J Motor Control Center
1435-K Office Bldg.
1435-L Fire Foam House
1435-P Nitrogen Bottle Station
1435-Q Project Management Trailer
1435-R DOE Office & Project Support Trailer
1435-S Waste Processing Office
1435-T Technical Support Office
1435-U Operations Support Office
1435-V CONF-Lunchroom
1435-W Mens Changehouse
1435-X Computer Trailer
1435-Z Restroom Trailer
1501-C Foam House
1501-E Crusher Transfer Bldg.
1501-H Maintenance Shop
1501-Q Electrical Maintenance Shop
1515-E Production Support Bldg.
1515-H Chlorine Feed Bldg.
1545-A Office Trailer
1546-C Office Trailer
1550-J Office Trailer
1550-K Office Trailer
1550-W Office Trailer
1600-A TTF Office Addition
1704-1 Personnel Monitoring Station
1704-2 Personnel Monitoring Station
1775-A TVS Office Railer
1775-B Breakroom Trailer
1775-C TCGRS Office Trailer
1775-D TCGRS Control Room
1775-E TCGRS Analysis Lab
25-301-01 Process Bldg.
25-301-02 Process Bldg.
25-301-03 Process Bldg.
25-301-04 Process Bldg 301-4
25-301-05 Process Bldg 301-5
25-302-01 Process Bldg 302-1
25-302-02 Process Bldg. 302-2
25-302-03 Process Bldg 302-3
25-302-04 Process Bldg 302-4
25-302-05 Process Bldg 302-5
25-303-01 Process Bldg 303-1
25-303-02 Process Bldg 303-2
25-303-03 Process Bldg 303-3
25-303-04 Process Bldg 303-4
25-303-05 Process Bldg 303-5
25-303-06 Process Bldg 303-6
25-303-07 Process Bldg 303-7
25-303-08 Process Bldg 303-8
25-303-09 Process Bldg 303-9
25-303-10 Process Bldg 303-10
25-304-07 Process Bldg 304-1
25-304-02 Process Bldg 304-2
25-304-03 Process Bldg 304-3
25-304-04 Process Bldg 304-4
25-304-05 Process Bldg 304-5
25-305-01 Process Bldg 305-1
25-305-02 Process Bldg 305-2
25-305-03 Process Bldg 305-3
25-305-04 Process Bldg 305-4
25-305-05 Process Bldg 305-5
25-305-06 Process Bldg 305-6
25-305-07 Process Bldg 305-7
25-305-08 Process Bldg 305-8
25-305-09 Process Bldg 305-9
25-305-10 Process Bldg 305-10
25-305-11 Process Bldg 305-11
25-305-12 Process Bldg 305-12
25-306-01 Process Bldg 306-1
25-306-02 Process Bldg 306-2
25-306-03 Process Bldg 306-3
25-306-04 Process Bldg 306-4
25-306-05 Process Bldg 306-5
25-306-06 Process Bldg 306-6
25-306-07 Process Bldg 306-7

25-309-01 Process Bldg 309-1
25-309-02 Process Bldg 309-2
25-309-03 Process Bldg 309-3
25-310-01 Process Bldg 310-1
25-310-02 Process Bldg 310-2
25-310-03 Process Bldg 310-3
25-311-01 Process Bldg 311-1
25-312-01 Process Bldg 312-1
25-312-02 Process Bldg 312-2
25-312-03 Process Bldg 312-3
27-402-01 Process Bldg 402-1
27-402-02 Process Bldg 402-2
27-402-03 Process Bldg 402-3
27-402-04 Process Bldg 402-4
27-402-05 Process Bldg 402-5
27-402-06 Process Bldg 402-6
27-402-07 Process Bldg 402-7
27-402-08 Process Bldg 402-8
27-402-09 Process Bldg 402-9
300-C Coolant Pump Bldg.
300-C-1 Coolant Unloading Bldg.
300-C-2 Coolant Storage
300-C-3 Coolant Drying Bldg.
502-1 Process Bldg 502-1
502-2 Process Bldg 502-2
502-3 Process Bldg 502-3
602-1 Process Bldg 602-1
602-2 Process Bldg 602-2
602-3 Process Bldg 602-3
602-4 Process Bldg 602-4
602-5 Process Bldg 602-5
602-6 Process Bldg 602-6
633-D Equip. Trailer (NW of K-633)
708-E Scale House and Pit
710-A Sewage Treatment Pump House
710-E Compressor House
720-A Storage Bldg. (E K-1414)
720-B Gas Metering Station B (X-10)
720-C Gas Metering Station C (Y-12)
733-A Oil Filter and Handling
733-D West Sprinkler Valve House
733-E East Sprinkler Valve House
733-J Storage Shed
741-B Elza Swicht House @ Y-12 (OLD)
743-C Oil Transfer House @ Y-12
791N K791N Switch House N K33
791S K791S Switch House S K33
801-A Water Treatment Facility
892Y Storage Bldg.
902-1 Process Bldg 902-1
902-2 Process Bldg 902-2
902-3 Process Bldg 902-3
902-4 Process Bldg 902-4
902-5 Process Bldg 902-5
902-6 Process Bldg 902-6
902-7 Process Bldg 902-7
902-8 Process Bldg 902-8
Storage1 Parts Storage Bldg (K1414)

Oak Ridge National Laboratory
3092 Off-Gas Scrubber Facility
6000 Holifield Radioactive Ion Beam Facility
7900 High Flux Isotope Reactor

Department of Health and Human Services

National Institutes of Health
Bethesda Campus Multilevel Parking Garages,
Bethesda, Maryland

Department of State

Harry S Truman Building, Washington, D.C.
Charleston Regional Center, Charleston, SC

Department of Transportation

Federal Aviation Administration
Oklahoma City, OK
Air Route Surveillance Radar-1D
Air Route Surveillance Radar-3 Main Building
Air Route Surveillance Radar-3 Equip. Building
Air Route Surveillance Radar-3 Tower Building
Airport Surveillance Radar-8 Training Lab
Building 213 (Airport Surveillance Radar-8 Stor.)
Antenna Range Shop
Antenna Test Shop
Ant. Test Tower (ATCBI)
Base Maintenance
Building "K" (Credit Union)
Line Maintenance Building
Line Maintenance Shed
Radar Antenna Bldg.
VHF Omni-Range-700 Antenna Test
Air Route Surveillance Radar-3 Radar Test (RMM)

Air Route Surveillance Radar-4
Airport Surveillance Detection Equipment-3
Airport Surveillance Radar-7 Training Facility
Airport Surveillance Radar-9
Building 210 (Airport Surveillance Radar-9 Stor.)
FPS-66 Training Fac.
IND. Waste Treament Plant
Prog. Supt. Fax. (Terminal Doppler Weather Radar2)
Terminal Doppler Weather Radar #2 EQUIP. Bldg.
RADIO RFI
SPECIAL PURPOSE Bldg.
Terminal Doppler Weather Radar #1 Building
Thomas P. Stafford
TSI Lab Building
Waste Coll. Sys. Stg. Bldg.
TSI Compressor Buld'g.
Air Route Surveillance Radar-3 Storage
TSI Storage
Guard House (North)
Guard House (South)
VHF Omni-Range/Distance Measuring Equipment/TACAN
G National Air Space System
Systems Support Facility
Hazardous Waste Building
MARK 1 F (Conn. to Instrument Landing System Complex)
MARK 1-E (Conn. to Instrument Landing System Complex)
MARK 1-F (Conn. to Instrument Landing System Complex)
MARK 20 (Conn. to Instrument Landing System Complex)
MARK 20 Annex (Conn. to Instrument Landing System Complex)
LSTC (Conn. to Instrument Landing System Complex)
Mark1-B (Conn. to Instrument Landing System Complex)
Digital Remote Switch
Grounds Maintenance II

Atlantic City, NJ
Shelter (PUMP)
Storage/General
Office Building
Water Treatment Plant
Hazmat Storage
Communications Building
Fuel Farm
Fuel Farm
Fuel Farm
Pump House
Pump House
Exp. Lighting Storage
JP-4 Pump House
Treatment Plant
JP-4 Trans Bldg.
Office Building Addition
Radar Beacon Bldg.
Radio Communications Link
RCL Trailers was #291
Airport Surveillance Radar-5 Building
Peripheral Communications
Garage
WSR-57 Modulator
Doppler VHF Omni-Range #2
Generator Bldg.
Storage
Upper Air Facility
Exp. VHF Omni-Range Tac
Mode S Site
Mode S Trailer
Mode S Trailer
Aircraft Safety
FAM Logistics Office
Fire Safety
Wind Tunnel
Metal Shop/Aircraft Test
Project Storage
Pump House
Fuel Tank and Generator
Fuel Test/Cardox Storage
Fire Test Cell
Fuel Storage
Fuel Pump House
Crashworthiness Lab
Catapult Storage Metal Building
Sewage Lift Station
Drop Test Facility
Storage
Sprinkler Test Building
Drum Storage Building
Eair Radar
Central Communications
Storage
Sewage Lift Station
Storage
Aircraft Blower
Pump House
Compressor Bldg.
Fire Test Facility/Office
Air Test Bldg.
Chemical Labs
Log Cabin/Fuel Farm Office
Pump House
Guard Hose @ 18-A Gate
New Helipad Building
Storage
Fuel Test Lab
Friction Test Bldg.
Airport Surveillance Detection Equipment Bldg.
RCL (Modular Lab)
Vapor Extraction Building
Biotreatment Building
Extraction Control Building
Pavement Test Facility
FAA Fire Station

Power Conditioning System
Storage
Storage
Refeuler Repair
Faa Wash Rack
Storage
Storage Trailer
Pump House
Instrumentation Trailer
Engine Enclosure
Aircraft Maint. Storage
R/G Sand Storage
Aviation Security Bldg.
Aircraft Battery Shop
Bulk Storage Building
Trace Storage Building

Massena, NY
Eisenhower Lock
Snell Lock

Other locations
Flight Service Station, Bettles, AK
Flight Service Station (10)
Air Traffic Building Maintenance, Tanana, AK
Air Traffic Building Maintenance (7)
Utility Building Cold Bay, AK
Air Traffic Control Tower, Fairbanks, AK
VHF Omni-Range, Kotzebue, AK
VHF Omni-Range (25)
Homing Beacon, Ambler, AK
Homing Beacon (11)
Airport Surveillance Radar, Fairbanks, AK
Air Traffic Control Tower- Bethel, AK
QS, Dillingham, AK
Tower Building, Anchorage, AK
Utility Building, Middleton, AK
Tower Building, Kodiak, AK
Air Traffic Control Tower- Kansas City, MO
Air Traffic Control Tower- Des Moines, IA
Automated Flight Service Station, Columbia, MO
Air Route Traffic Control Center, Olathe, KS
Air Traffic Control Tower- Sioux City, IA
Automated Flight Service Station, Chesterfield, MO
Radio Communications Link Terminal, Columbia, MO
Air Route Surveillance Radar, Kirksville, MO
Air Route Surveillance Radar (6)
Airport Surveillance Radar, Wichita, KS
Airport Surveillance Radar (5)
Air Traffic Control Tower, St. Louis, MO
Air Traffic Control Tower (17)
Flight Service Station, Wichita, KS
Air Traffic Building Maintenance, Springfield, MO
VHF Omni-Range, Goodland, KS
VHF Omni-Range/TACR (49)
Remote Communications Air Ground, Salina, KS
Headquarters Facility (Airway Facilities Field), Kansas, MO
Automated Flight Service Station, Columbus, NE
Headquarters Facility (5) (Airway Facilities Field)
Air Traffic Building Maintenance, Chanute, KS
Air Traffic Building Maintenance, Scotts Bluff, NE
Air Traffic Building Maintenance, Lincoln, NE
Remote Communications Air Ground, Manhattan, KS
Air Route Traffic Control Center, Islip, NY
Air Traffic Control Tower, Rochester, NY
Automated Flight Service Station, Islip, NY
Automated Flight Service Station, Millville, NJ
Air Traffic Control Tower, Pittsburgh, PA
Automated Flight Service Station, Leesburg, VA
Flight Service Station, Islip, NY
Air Route Traffic Control Center, Leesburg, VA
Air Traffic Control Tower, Washington, DC
Air Route Surveillance Radar, Benton, PA
Air Traffic Control Tower, Caldwell, NJ
International Flight Service Station Transmitter, Sayville, NJ
Automated Flight Service Station, Williamsport, PA
Air Traffic Control Tower, Long Island, NY
VHF Omni-Range, Calverton, NY
VHF Omni-Range (78)
Headquarters Facility, Charleston, WV
Flight Service Station, Salisbury, MD
Flight Service Station (4)
Headquarters Facility (6) (Airway Facilities Field), Norfolk, VA
Utility Building, Roanoke, VA
Headquarters Facility (Airway Facilities Field), Poughkeepsie, NY
Air Traffic Building Maintenance, Long Island, NY
Airport Surveillance Radar, Syracuse, NY
Airport Surveillance Radar (13)
Air Route Surveillance Radar, Riverhead, NY
Air Route Surveillance Radar (7)
Air Traffic Control Tower, Islip, NY
Air Traffic Control Tower (25)
Automated Flight Service Station, Altoona, PA
Airport Surveillance Radar, Chicago, IL
Airport Surveillance Radar (16)
Air Route Surveillance Radar, Cooperville, MI
Air Route Surveillance Radar (13)
Air Traffic Control Tower, W. Chicago
Air Traffic Control Tower (38)
Air Traffic Building Maintenance, Columbus, OH
VHF Omni-Range, Stronghold, IL
VHF Omni-Range (80)
Headquarters Facility (Airway Facilities Field), Willmar, MN
Headquarters Facility (6) (Airway Facilities Field)
Tower Building, Flint, MI
Tower Building (8)
MULTI, Dayton, OH
MULTI (7)
Automated Flight Service Station, Grand Forks, ND
Automated Flight Service Station, Huron, SD
Headquarters Facility (Airway Facilities Field), Traverse City

Headquarters Facility(5) (Airway Facilities Field)
Air Route Traffic Control Center, Oberlin, OH
Automated Flight Service Station, Lansing, MI
Flight Service Station, Dayton, OH
Automated Flight Service Station, Kankakee, IL
Air Traffic Control Tower, Grand Rapids, MI
Automated Flight Service Station, Green Bay, WI
Air Route Traffic Control Center, Aurora, IL
Automated Flight Service Station, Princeton, MN
Automated Flight Service Station, Terre Haute, IN
Air Route Traffic Control Center, Farmington, MN
Air Route Traffic Control Center, Indianapolis, IN
Air Traffic Control Tower, Detroit, MI
MULT, Minneapolis, MN
Air Traffic Control Tower, Rapid City, SD
MULT, Indianapolis, IN
Air Traffic Control Tower, Minneapolis, MN
Airport Surveillance Radar, Nantucket, MA
Airport Surveillance Radar, Boston, MA
Air Route Surveillance Radar, Cummington, MA
Air Traffic Control Tower, New Haven, CT
Air Traffic Control Tower (19)
Airport Surveillance Radar, Manchester, NH
Airport Surveillance Radar, Portland ME
VHF Omni-Range, Augusta, ME
VHF Omni-Range (14)
Automated Flight Service Station, Bangor, ME
Automated Flight Service Station, Burlington, VT
Headquarters Facility, Boston, MA
Air Traffic Control Tower, Providence, RI
Automated Flight Service Station, Bridgeport, CT
Air Route Surveillance Radar, North Truro, MA
Air Traffic Control Tower, Boston, MA
Air Traffic Control Tower, Otis AFB, MA
Air Route Traffic Control Center, Boston, MA
Air Route Surveillance Radar, St. Albans, ME
Air Route Surveillance Radar, Bucks Harbor, ME
Automated Flight Service Station, Cedar City, UT
Automated Flight Service Station, Great Falls, WY
Automated Flight Service Station, Casper, WY
Remote Communications Air Ground, Alamosa, CO
Remote Communications Air Ground (8)
Remote Transmitter Receiver, Ogden, UT
Tower Building, Tobe, CO
Remote Transmitter Receiver, Renton, WA
Remote Transmitter Receiver, Spokane, WA
Distance Measuring Equipment, Wenatchee, WA
Remote Transmitter Receiver, Seattle, WA
Air Route Surveillance Radar, Klamath Falss, OR
Airport Surveillance Radar, Salt Lake City, UT
Airport Surveillance Radar (12)
Air Route Surveillance Radar (15)
Air Traffic Control Tower, Denver, CO
Air Traffic Control Tower (21)
VHF Omni-Range, Myton, UT
VHF Omni-Range (63)
Flight Service Station, Redmond, OR
Flight Service Station (13)
Tower Building, Spokane, WA
Storage Building, Mica Peak, WA
Air Route Traffic Control Center, Auburn, WA
Air Route Traffic Control Center, Salt Lake City, UT
Air Route Traffic Control Center, Longmont, CO
Automated Flight Service Station, Boise, ID
Automated Flight Service Station, Seattle, WA
Automated Flight Service Station, Denver, CO
Air Route Surveillance Radar, Malstrom AFB, MT
Air Traffic Control Tower, Colorado Springs, CO
Air Route Surveillance Radar, Salt Lake City, UT
Automated Flight Service Station, Bosie, ID
Automated Flight Service Station, Casper, WY
Air Traffic Control Tower, Eugene, OR
Automated Flight Service Station, McMinnville, OR
Air Traffic Control Tower, Grand Junction, CO
Air Route Surveillance Radar, Lake Side, MT
Air Traffic Control Tower, Twin Falls, ID
Flight Service Station (8)
Air Traffic Building Maintenance, Tallahassee, FL
Air Traffic Building Maintenance (7)
Remote Transmitter Receiver, Briltol, TN
Automated Flight Service Station, Miami, FL
Automated Flight Service Station, Anderson, SC
Automated Flight Service Station, Greenwood, MS
MULTI, Orlando, FL
Remote Communications Air Ground, London, KY
Air Route Surveillance Radar, Newport, MS
Air Route Surveillance Radar (16)
Airport Surveillance Radar, Atlanta, GA
Airport Surveillance Radar (36)
Remote Transmitter Receiver, Savannah, GA
Air Traffic Control Tower, Mobile, AL
Air Traffic Control Tower (53)
VHF Omni-Range, San Juan, PR
VHF Omni-Range (82)
Flight Service Station, Mccombs, MS
Air Route Traffic Control Center, Memphis, TN
Automated Flight Service Station, Raleigh Durham, NC
Automated Flight Service Station, Nashville, TN
Automated Flight Service Station, Louisville, KY
Air Traffic Control Tower, Pensacola, FL
Air Traffic Control Tower, Greer, SC
Automated Flight Service Station, Jackson, MS
Air Traffic Building Maintenance, Tri City, TN
Air Traffic Control Tower, Wilmington, NC
Air Traffic Control Tower, Atlanta, GA
Air Route Traffic Control Center, Miami, FL
Center Radar Approach Control, San Juan, PR
Air Traffic Building Maintenance, Jacksonville, FL
Air Traffic Control Tower, Orlando, FL
Automated Flight Service Station, Gainsville, FL
Air Traffic Control Tower, Opa Locke, FL
Automated Flight Service Station, Macon, GA
Air Traffic Control Tower, Memphis, TN
Air Traffic Control Tower, Charleston, SC
Air Traffic Control Tower, Charlotte, NC
Air Route Traffic Control Center, Atlanta, GA
Air Route Traffic Control Center, Jacksonville, FL

VHF Omni-Range, New Orleans, LA
VHF Omni-Range/TACR (65)
Air Traffic Control Tower, Corpus Christi, TX
Air Traffic Control Tower (37)
Airport Surveillance Radar, El Paso, TX
Airport Surveillance Radar (17)
Air Route Surveillance Radar, Rogers, TX
Air Route Surveillance Radar (17)
Remote Communications Air Ground, El Paso, TX
Remote Communications Air Ground (5)
Terminal Doppler Weather Radar, Houston, TX
Flight Service Station, Gallup, NM
Flight Service Station (10)

Air Route Traffic Control Center, Houston, TX
Air Route Traffic Control Center, Albuquerque, NM
Air Traffic Control Tower, Houston, TX
Air Traffic Control Tower, Albuquerque, NM
Automated Flight Service Station, Albuquerque, NM
Air Traffic Control Tower, Lafayette, LA
Automated Flight Service Station, De Ridder, LA
Automated Flight Service Station, Conroe, TX
ARTS, El Paso, TX
Automated Flight Service Station, Ft. Worth, TX
Air Traffic Control Tower, Oklahoma City, OK
Air Route Traffic Control Center, Fort Worth, TX
Automated Flight Service Station, San Angelo, TX
Air Traffic Control Tower, Lubbock, TX
Automated Flight Service Station, McAleaster, OK
Air Traffic Control Tower, San Antonio, TX
Flight Service Station, Austin, TX
Air Traffic Control Tower, Dallas-Fort Worth, TX
Flight Service Station, Fort Worth, TX
Flight Service Station, Jonesboro, AR
Air Traffic Control Tower, Tyler, TX
Electrical Distribution, Lafayette, LA
Air Traffic Control Tower, El Paso, TX
ADQF1, Jonesboro, AR
Mobile Air Traffic Control Tower, Dallas-Fort Worth, TX
ARTS, Oakland, CA
Airport Surveillance Radar, Oakland, CA
Airport Surveillance Radar (13)

Air Route Surveillance Radar, Fallon, NV
Air Route Surveillance Radar (6)
Air Traffic Control Tower, Las Vegas, NV
Air Traffic Control Tower (40)
ATCB, Las Vegas, NV
Headquarters Facility, Reno, NV
Headquarters Facility (5)
Flight Service Station, Red Bluff, CA
Flight Service Station (11)
VHF Omni-Range, Kaunakakai, HI
VHF Omni-Range/TACR (62)
Tower Building, Long Beach, CA
Tower Building (6)
Automated Flight Service Station, San Diego, CA
Terminal Radar Approach Control, Phoenix, AZ
Air Route Traffic Control Center, Fremont, CA
Center Radar Approach Control, Honolulu, HI
Flight Service Station, Prescott, AZ
Air Route Surveillance Radar, Mount Luguna, CA
Air Route Surveillance Radar, Mill Valley, CA
Automated Flight Service Station, Ranco Muirieta, CA
Air Route Surveillance Radar
Automated Flight Service Station, Riverside, CA
Automated Flight Service Station, Oakland, CA
Automated Flight Service Station, Hawthorne, CA
Air Route Traffic Control Center, Palmdale, CA
Air Route Surveillance Radar, Crescent City, CA
Automated Flight Service Station, Honolulu, HI
Air Traffic Control Tower, Sacramento, CA
Air Traffic Building Maintenance, Ontario, CA
Air Traffic Control Tower, Fresno, CA
VHF Omni-Range, San Catalina, CA
Air Traffic Control Tower, Birmingham, AL
Terminal Radar Approach Control, Peachtree, GA
Honolulu Combined Facility, Honolulu, HI
Automated Flight Service Station, Chesterfield, MO
Turner-Fairbanks Facility, McLean, VA
James River Reserve Fleet, Newport News, VA
Beaumont Reserve Fleet, Beaumont, TX
Suisun Bay Reserve Fleet, San Francisco, CA

General Services Administration

Connecticut Bank Building, Norwich, CT
Dummy for FBI, New Haven, CT
GSA CD Depot 234, Watertown, MA
Parking Facility, Portland, ME
Merchants Bank Building, Brattleboro, VT
Queens Plaza South, New York-Queens, NY
Silvio V Mollo FB, New York-Manhattan, NY
Federal Building, New York-Queens, NY
WS Jamiesons Line, Burke, NY
4288 BWY, New York-Manhattan, NY
Corporate Tower, New Rochelle, NY

MIL - Pine Plaza, Niagara Falls, NY
Greenway Plaza, Melville, NY
2025 Richmond Ave ASO, Richmond, NY
No. 7 World Trade Ct., New York-Manhattan, NY
29 NO Middletown Road, Nanuet, NY
841 Canandaigua Road, Geneva, NY
76 Eleventh Avenue, New York-Manhattan, NY
Picotte Building, Schenectady, NY
2389 Richmond Ave., Richmond, NY
15 Lewis Street, Geneva, NY
6560 Niagara Falls B, Niagara Falls, NY

1 Corporate Dr., Holtsville, NY
1196 Fulton Street, New York-Kings, NY
65TH INF Shopping Center, Rio Piedras, San Juan, PR
Centro Europa, SANTURCE, San Juan, PR
Villa Captain II, Mayaguez, Mayaguez, PR
O'Neale Commercial C, St. Croix, U.S. VI
SSA Metro West, Baltimore, MD
BWI Commerce Park-9, Hanover, MD
Windsor Corporate PA, Woodlawn, MD
Winding River Plaza, Brick Town, NJ
First National Bank, Camden, NJ
USPO CTHSE, Danville, VA
Federal Building, Farmville, VA
Customhouse, Norfolk, VA
Wise County Plaza, Wise, VA
Birmingham, Bolt Bldg, Duffield,
Old PO and Courthouse, Martinsburg,
Frank Johnson Annex, Montgomery, AL
Federal Building, Sarasota, FL
1425 Building, Miami, FL
FB-PO-CT, Clarksdale,
FB, Greenville, SC
SSA Building, Rockford, IL
GSA INTERAG MTR POOL, Chicago, IL
OHARE Lake Office Plaza, Des Plaines, IL
Clyde Savings Bldg, North Riverside, IL
2100 N California, Chicago, IL
WASH Bicentennial Bldg, Springfield, IL
Smoke Tree Bus Park, North Aurora, IL
10 West Jackson Blvd, Chicago, IL
One Congress Center, Chicago, IL
E Empire Eastport, Bloomington, IL
Burrell Building, Chicago, IL
1279 North Milwaukee, Chicago, IL
Bank of America, Chicago, IL
901 Warrenville Road, Lisle, IL
1700 South Wolf Road, Des Plaines, IL
Elm Plaza So. Tower, Hinsdale, IL
IL Business Center, Springfield, IL
2360 E Devon Ave., Des Plaines, IL
River Center, Chicago, IL
Schaumburg Atrium, Schaumburg, IL
600 Joliet Rd, Willowbrook, IL
2350 E Devon, Des Plaines, IL
Gateway IV, Chicago, IL
Citicorp Center, Chicago, IL
29 North Wacker Drive, Chicago, IL
Governors Offfice Park, Olympia Fields, IL
One Oakbrook Terrace, Oakbrook Terrace, IL
Xerox Centre, Chicago, IL
Stewart Square, Rockford, IL
Midway Business Ctr, Chicago, IL
635 Butterfield Rd., Oakbrook Terrace, IL
5353 S Laramie, Chicago, IL
Illinois Fin Center, Springfield, IL
Northwestern Bldg, Evanston, IL
The Rookery, Chicago, IL
Heritage Place, Moline, IL
1600 Corporate Center, Rolling Meadows, IL
4849 N Milwaukee Ave, Chicago, IL
ATT Corporate Center, Chicago, IL
801 Warrenville Road, Lisle, IL
1000 Tower Lane Bldg, Bensenville, IL
Olympian Office Center, Lisle, IL
The PK at NW Point, Elk Grove Village, IL
945 Lakeview Parkway, Vernon Hills, IL
2860 River Road, Des Plaines, IL
One S. Wacker Bldg, Chicago, IL
1830 2nd Ave., Rock Island, IL
The Esplanade, Downers Grove, IL
Network Centre, Effingham, IL
Burr Ridge Executive, Burr Ridge, IL
Firstar Bank Bldg, Vernon Hills, IL
Two ILL Center, Chicago, IL
EMCO Plaza Bldg, Joliet, IL
SSA Bldg, Elkhart, IN
Pendleton Trade Ctr, Indianapolis, IN
429 Penn Center, Indianapolis, IN
Fed Bldg PO, Benton Harbor, MI
Fed Parking Facility, Detroit, MI
595 East 16th Street, Holland, MI
Pontiac Place Bldg, Pontiac, MI
9622 Grand River, Detroit, MI
29 Pearl Street, Grand Rapids, MI
605 N. Saginaw, Flint, MI
Dominos Farm House, Ann Arbor, MI
Brewery Park Phase I, Detroit, MI
3440 Broadmoor, Grand Rapids, MI
Woodcrest Office Park, Troy, MI
Arlington Plaza, Sault Ste Marie, MI
Danser Building, Petoskey, MI
Broadmoor Assoc II, Grand Rapids, MI
USPS Bldg Courthouse, Fergus Falls, MN
Federal Building, Minneapolis, MN
Food and Drug Admin. Bldg, Minneapolis, MN
Frank T. Bow Federal Bldg, Canton, OH
Federal Bldg, Toledo, OH
Fed Parking Facility, Dayton, OH
Plaza Nine Bldg, Cleveland, OH
Commerce Place, Middleburg Heights, OH
Plaza South II Middleburg Heights, OH
Sanning Apartments, Cincinnati, OH
One Cleveland Ctr, Cleveland, OH
Lakewood Center West, Lakewood, OH
2026 West Main Street, Springfield, OH
4411 Montgomergy Road, Norwood, OH
CBLD Building, Cincinnati, OH
Moraine Bus Ctr 2, Moraine, OH
Bank One Center, Cleveland, OH
Eaton Center, Cleveland, OH
Renaissance, Cleveland, OH
6747 Engle Road, Middleburg Heights, OH
228th Lake Shore B, Euclid, OH
Society Tower, Cleveland, OH
6161 Oaktree, Independence, OH
Rockside Center III, Independence, OH
BP Amercia Bldg, Cleveland, OH

5 Point Shopping Ct. Cleveland, OH
Moraine Bus. Ctr 3, Moraine, OH
Building One Moraine, Moraine, OH
Federal Bldg, Wausua, WI
Social Security Off, Wisconsin Rapids, WI
Ace Industrial Dr., Cudahy, WI
700 Regent St., Madison, WI
State ST Square Bldg, Marshalltown, IA
I 80 Building, West Branch, IA
Service BG-Eisenhower, Abilene, KS
U S CT and Custom House, St. Louis, MO
Federal Bldng, Sedalia, MO
Social Security Bldg, Independence, MO
2610 Ave "Q" Kearney, Kearney, NE
Federal Bldg, Harrison, NE
Federal Bldg Courthouse, Lafayette, LA
Open Land - FDA Site, New Orleans, LA
Bldg 27, Houma, LA
Federal Bldg Courthouse, Ardmore, OK
SSA District Office, Ardmore, OK
Federal Building, Muskogee, OK
Seminole Agency Bldg, Wewoka, OK
U S Border Station, Rio Grande City, TX
U S Courthouse, Corpus Christi, TX
Federal Bldg USPO, Fairfield,TX
Courthouse, Corpus Christi, TX
Bush Ranch, Crawford, TX
Unnamed Warehouse, Houston, TX
Starr Camargo Bridge, Rio Grande City, TX
Unnamed Building, Laredo, TX
Unnamed Road, Crawford, TX
University Gardens, Austin, TX
Nueces Place Condos, Austin, TX
GSA Parking Lot, Denver, CO
GSA Storage Bldg, Bismarck, ND
New Parking Lot, Bismarck, ND
EQPT Depot MP SHOP, Ogden, UT
Sunbeam Appl Svc, Salt Lake City, UT
Garage, Cheyenne, WY
U. S. Courthouse, Tucson, AZ
Sandra Day O'Connor Bldg, Phoenix, AZ
Building 1, Flagstaff, AZ
2160 E Van Buren Ave, Phoenix, AZ
U.S. Old Mint Bldg, San Francisco, CA
General Services, San Francisco, CA
POT ANX 1, Washington, D.C.
White House, Washington, D.C.
US International TR, Washington, D.C.
Judiciary Center, Washington, D.C.
425 7th Street NW, Washington, D.C.
625 D Street NW, Washington, D.C.
628 E Street NW, Washington, D.C.
1310 L Street NW, Washington, D.C.
DELASALLE, Avondale
3200-3244 Hubbard Rd, Landover, MD
SS Metro Plaza 2, Silver Spring, MD
Beltsville Warehouse, Beltsville, MD
MAT Land CO, Glendale Heights, MD
12100 Parklawn Dr, Rockville, MD
Hunter Building, McLean, VA
6700 Springfield Ctr Dr, Springfield, VA
Fillmore, McLean, VA
Crystal Mall 2-3-4, Arlington, VA
883,885,901-27 South Pickett, Alexandria, VA
841881 South Pickett, Alexandria, VA

National Aeronautics and Space Administration

Ames Research Center, Moffett Field, CA
Pilot Model of 3.5 Foot Hypersonic Wind Tunnel
12 Foot Pressure Wind Tunnel
Pressurized Ballistic Range
Flight Support Facility
7 X 10 Foot Wind Tunnel #1
7 X 10 Foot Wind Tunnel #2
Magnetic Calibration Laboratory
14 Foot Transonic Wind Tunnel Laboratory
40 X 80 Foot Wind Tunnel
2 X 2 Foot Transonic Wind Tunnel
Electrical Substation
6 X 6 Foot Transonic Wind Tunnel
Unitary Plan Wind Tunnel Building
3.5 Foot Hypersonic Wind Tunnel
Fluid Dynamics Laboratory
Hypervelocity Free Flight Facility
Life Sciences Research Laboratory
Airborne Missions/Life Science Facility
Vestibular Research Facility
Vertical Motion Simulator
Space Projects Facility
Space Sciences Research Laboratory
Aircraft Service Facility
Outdoor Aerodynamic Research
Man-Vehicle System Research Facility
High Altitude Aircraft Support Facility
Fluid Mechanics Laboratory
Biomedical Research Laboratory
Human Performance Research Laboratory
Automated Sciences Research Facility
Computational Fluid Dynamics Building
Vertical Gun
12 Foot Wind Tunnel Auxiliaries
Propulsion Simulations Calibration Laboratory
Model Preparation Facility
Model Assembly
Magnetic Test Laboratory
14 Foot Electrical Equipment Building
Fan Blade Shop
20-G Centrifuge
80 X 120 Foot Wind Tunnel
Electrical Substation North
11 Foot Transonic Wind Tunnel

9 X 7 Foot Subsonic Wind Tunnel
8 X 7 Foot Subsonic Wind Tunnel
3.5 Foot Hypersonic Wind Tunnel Auxiliary Building
3.5 Foot Hypersonic Wind Tunnel Storage Building
Thermal Protection Boiler
Life Sciences Equipment Facility
Life Sciences Flight Experiments
Vertical Motion Simulator Equipment Facility
Aircraft Service Facility
Aircraft Service Facility
RSRA Calibration Facility
Aircraft Service Facility
Bioscience Laboratories

Goldstone Deep Space Communications Complex, Goldstone, CA
Entire facility is exempt.

Glenn Research Center, Cleveland, OH
Engine Research Building
Icing Research Tunnel - Refrigeration Building
Icing Research Tunnel - Cooling Tower No. 1
Icing Research Tunnel
Engine Research Building - West Wing
Special Projects Laboratory
Materials Research Laboratory
Engine Research Building - Northwest Wing
Engine Research Building - High Pressure Facility
8 X 6 Ft. Supersonic Wind Tunnel
8 X 6 Ft. Supersonic Wind Tunnel - Cooling Tower No. 2
Materials & Structures Laboratory
8 X 6 Ft. Supersonic Wind Tunnel - Drive Equipment Building
8 X 6 Ft. Supersonic Wind Tunnel - Air Dryer Building
Central Air Equipment Building
Central Air Equipment Building - PSLCooling Tower No. 3
Central Air Equipment Building - Cooling Tower Water Pump Building
Engine Research Building - Spray Cooler Building
Engine Research Building - Cooling Tower No. 4
10 X 10 Ft. Supersonic Wind Tunnel
10 X 10 Ft. Supersonic Wind Tunnel - Office & Control Building
10 X 10 Ft. Supersonic Wind Tunnel - 2nd Compressor & Drive Building
10 X 10 Ft. Supersonic Wind Tunnel - Air Dryer Building
10 X 10 Ft. Supersonic Wind Tunnel - Substation "K"
10 X 10 Ft. Supersonic Wind Tunnel - Main Compressor & Drive Building
10 X 10 Ft. Supersonic Wind Tunnel - Low Pressure Fuel Pump Building
10 X 10 Ft. Supersonic Wind Tunnel - High Pressure Fuel Pump Building
10 X 10 Ft. Supersonic Wind Tunnel - Cooling Tower No. 5
10 X 10 Ft. Supersonic Wind Tunnel - Cooling Tower Water Pump Building
Central Air Equipment Building - PSL Desiccant Air Dryer
Engine Research Building Combustion Air Heater
Engine Components Research Laboratory
Materials Processing Laboratory
Basic Materials Laboratory
10 X 10 Ft. Supersonic Wind Tunnel - Shop Building (#86)
10 X 10 Ft. Supersonic Wind Tunnel - Exhauster Building
PSL Heater Building
PSL Engine Test Building
Central Air Equipment Building - PSL Cooling Tower No. 6
Aero-Acoustic Propulsion Laboratory & Control Room
Electric Power Laboratory
Energy Conversion Laboratory
Space Power Research Laboratory

Goddard Space Flight Center, Greenbelt, MD
Spacecraft Systems Development/Integration Facility

Johnson Space Center, Houston, TX
Jake Garn Simulator and Training
Mission Simulation Development Facility
Mission/Space Station Control Center
Emergency Power Building

Kennedy Space Center, FL
Complex 34

Langley Research Center, Hampton, VA
8-Foot Transonic Pressure Tunnel (Closed)
University of Virginia & ART Management Office Building
30 X 60 Foot Tunnel
Transonic Dynamic Tunnel
16 Foot Transonic Tunnel
Subsonic Tunnel Offices
Hypersonic Propulsion Facility
Frequency Converter Building
National Transonic Facility (NTF)
Drive Control Facility
0.3-Meter Transonic Cryogenic Tunnel
Atmospheric Sciences/Systems Development Laboratory
Unitary Wind Tunnel
8 Foot High Temperature Tunnel
TDT Complex--Cooling Tower
16 Foot TWT Cpx.--Equipment Fac.
16 Foot TWT Cpx.--Valve House
16 Foot TWT Cpx.--Cool.Twr/Pump Hse
16 Foot TWT Complex--Annex
16 Foot TWT Complex--Annex
16 Foot TWT Complex--Annex
16 Foot TWT Cpx.--Gas Stor. Shed

16 Foot TWT Cpx.--Motor House #1
16 Foot TWT Cpx.--Motor House #2
16 Foot TWT Complex--Annex
16 Foot TWT Cpx.--Air Exchange Twr.
16 Foot TWT Complex--Annex
16 Foot TWT Complex--Access Area
High Speed 7 X 10 Foot Tunnel
14 X 22 Foot Subsonic Tunnel
High Intensity Noise Research Laboratory
Hypersonic Propulsion Facility
Hypersonic Propulsion Facility
Hypersonic Propulsion Facility
Hypersonic Propulsion Facility
NTF Annex--ME
NTF Annex--Vent Structure
NTF Tunnel Model Storage
NTF Annex
Foundry & Glass Blowing Shop
0.3 Meter Tunnel Annex
Gas Dynamics/Fluid Mechanics Research Facility
Hypersonic Facilities Complex - West Wing
Hypersonic Facilities Cooling Tower
Hypersonic Facilities Complex - East Wing
60-Inch M18 Helium Tunnel Facility
Atmospheric Sciences Laboratory Annex
Unitary Complex--31 Inch M10 Annex
Unitary Complex Cooling Tower
Unitary Complex Annex--Chem. Treat.
Unitary Complex Annex--Sprink. House
Unitary Complex Annex--Flamm. Stor.
8 Foot HTT Complex--Bottle Storage
8 Foot HTT Complex--Combuster Fac.
8 Foot HTT Complex--Cooling tower
8 Foot HTT Complex--Fuels Equip. Fac
8 Foot HTT Complex--Storage Annex
8 Foot HTT Cpx--6000PSI Bottle Fld
8 Foot HTT Complex--Annex

Plum Brook Station, Sandusky, OH
Entire facility is exempt.

Spaceflight and Data Network, Ponce de Leon, FL
Entire facility is exempt.

White Sands Complex, White Sands, New Mexico
Entire facility is exempt.

White Sands Test Facility, Las Cruces, New Mexico
Boiler Building
Water Treatment Building
300 Area Cooling Pond
Boiler Building
Switchgear Building
Altitude Simulation System Building
Steam Generator Support Building
Treated Water Storage Facility
Altitude Simulation System (Steam Generator)

National Archives and Records Administration

National Archives I, Washington, D.C.
National Archives II, Washington, D.C.
Hoover Presidential Library, West Branch, Iowa
Roosevelt Presidential Library, Hyde Park, New York
Truman Presidential Library, Independence, Missouri
Eisenhower Presidential Library, Abilene, Kansas
Johnson Presidential Library, Austin, TX
Ford Presidential Library, Ann Arbor, Michigan
Ford Museum, Grand Rapids, Michigan
Carter Presidential Library, Atlanta, Georgia
Reagan Presidential Library, Simi Valley, California
Kennedy Presidential Library, Boston, Massachusetts
Bush Presidential Library, College Station, Texas

Tennessee Valley Authority

Bandy, R. H. 115 kV Switch House
O2H Water Level Gauge House
Engineering Labs Building P
Grandview Radio/Microwave
Columbia 161 Well House
Brindley 46 kV Switch House
Sebastopole Radio Repeater
Estill Springs 46 kV Switch House
Hillsboro 46 kV Switch House
Salem Carpet Mills 46 kV Switch House
Unionville 46 kV Switch House
Cerulean 69 kV Switch House
Haletown 69 kV Switch House
Peedee 69 kV Switch House
Adairville 69 kV Switch House
Pembroke 69 kV Switch House
Etowah Switch House 69 kV Switch House
Williamsport 46 kV Switch House
Cornersville 46 kV Switch House
Wellhouse
Kirkmansville 69 kV Switch House
Marble 69 kV Switch House
Rienzi 46 Switch House
Bluff City 161 kV Pump House
Tuscumbia Microwave
Brawley Mtn Microwave/Radio
Hopkinsville Microwave
Nickajack FTC Elec Sim Control
Centerville Microwave
Columbia 161 kV Pump House

Waynesboro Radio Repeater
Great Falls Microwave
Courtland 46 kV Switch House
Wellhouse (Watauga Dam)
Broadview Microwave
Hornbeak Radio/Microwave
Lena Radio/Microwave
Wauchecha Bald Radio
Fort Mountain Radio Station
White Oak Mountain Radio
Bruce Radio Station
Clarksville Water Tower/COMM
Weyerhauser 161 kV Switch House
Bryant 161 kV Switch House
Grove Oak 46 kV Switch House
Section 46 kV Switch House
South Macon 161 kV Switch House
Columbus Air Force Base 46 kV Switch House
Cowan 46 kV Switch House
Sewanee 69 kV Switch House
Middale 69 kV Switch House
Hopkinsville 161 Well House
Falling Water 161 kV Switch House
Weyerhaeuser Co. 161 kV Switch House
Lebanon 161 kV Pump House
South Calvert 161 kV Switch House
Clarksburg 161 kV Switch House
Martin Radio
Russellville District 69 kV Switch House
Culleoka 46 kV Switch House
Kirkville 46 kV Switch House
Charlotte 69 kV Switch House
Dupont 69 kV Switch House
Hendersonville 161 kV Switch House
Jersey Miniere Zinc-Elmwood
Jersey Miniere Zinc Co 161 kV Switch House
Greeneville Ind Park 161 kV Switch House
Holston Mountain Load
Roane Mountain Microwave
Dunmor 69 kV Switch House
Roane Mountain 161 kV Switch House
Bonicord 69 kV Switch House
North Sardis 161 kV Switch House
Terrapin Mtn Radio
Booneville District 46 kV Switch House
Ludlow 46 kV Switch House
Belfast 161 kV Pump House
Hickory Valley 161 kV Pump House
TFH Spillway Emergency Generator Building
GFH Intake House
Ridgedale 161 kV Switch House
Sherwood 46 kV Switch House
SHF Coal Yard Lighting
Hinze Radio/Microwave
WTH Electrical Equipment Building
Burney Mountain Microwave
Holston Mountain Microwave
Scottsboro Pump House
RPS Discharge Structure Pumping Station
Nickajack FTC New Pump House
Kerr-Mcgee Inc. 161 kV Switch House
Elkton Hill Radio/Microwave
O1H Diesel Generator Building
Old Pump House
Big Sandy Pumphouse - Heat/Ltg
Big Sandy Pumphouse - Motor
Camden 161 kV Pump House
Lexington Water Pump (Temporary)
West Sandy Pump House
West Sandy Pump House (Lts/Ht)
APH Diesel Generator Building
O2H Trash Rack House
O2H Water Treatment Plant
South Jackson 161 kV Generator Bldg
West Point 500 kV Pump House
Lightfoot 69 kV Switch House
Fultondale Battery Building
O2H Penstock Valve House
Saulsbury 46 kV Switch House
COF Gas Turbine Switchgear 1
TFH Diesel Generator Building
MHH Diesel Generator Bldg
NJH Diesel Generator Building
Bonicord
O2H Well Pump House
TLH Emergency Generator Building
Dandridge Pump Sta. (Doug Dam)
FNH Diesel Generator Building
Hardwick Clothes Inc
Lynchburg 46 kV Switch House
Brownsville 161 kV Switch House
Dry Creek Primary 161 kV Switch House
Moscow 161 kV Switch House
Sardis 161 kV Switch House
Russellville 161 kV Switch House
Huntsville 161 kV Storage
Guntersville 161 Kv Switch House
Guntown 161 kV Switch House
Red Bay 161 kV Switch House
Collinsville 161 kV Switch House
Casky 69 kV Switch House
GAF Breaker Switchgear Bldg
Volunteer 500 kV Pump House
Fultondale 115 kV Switch House
Sequoyah Training Radio
Bristow
DAYTON 161KV
Ellis Mountain Microwave
Aberdeen
Savannah 161 kV Switch House
Water Valley 161 kV Switch House
Glasgow 161 kV Switch House
Aberdeen 161 kV Switch House
Hickman Microwave
Shawnee Repeater Station
Franklin 161 kV Switch House
Logan Aluminum
Bolivar District 46 kV Switch House

Elkton 69 kV Switch House
Penchem 69 kV Switch House
Hopson 69 kV Switch House
Fultondale AL 115kv Switch House
Waynesboro 161 kV Switch House
Erin 161 kV Switch House
Livingston 161 kV Switch House
Alamo 161 kV Switch House
Braytown 161 kV Switch House
Scott 115 kV Switch House
Green Top Mountain Microwave
JSF Sample Bldg.
O2H Oil Purification Building
Rollins 46 kV Switch House
Sequatchie Valley Radio Station
Fain Mountain Microwave
Trace Park Microwave
Rock Springs Microwave
Lynn Grove Microwave
Anderson Microwave
Russell Hill Microwave
Fabius Microwave
Phipps Bend 500 Pump House
Starkville (New) 161 kV Switch House
Cranberry 161 kV Switch House
Lewisburg 161 kV Switch House
Wininger Microwave
Smithville Radio
Monte Sano VHF
Signal Mountain Microwave
Lambert Chapel Microwave
Pickwick Microwave
New Castle Microwave
Beech Grove Microwave
Donelson Microwave
Monsanto Microwave
Beech Grove Microwave
Nickajack FTC Ventilator Building
CHH Diesel Generator Building
GAF Hydrogen Trailer Port A
Finger
Norton Hill Microwave
McEwen Microwave
Church Hill Microwave
Combs Knob Microwave
Rockhouse, Buckeye, Bagwell Pump House
WCF Coal Sampling Bldg.
Sewanee Microwave
Bunker Hill Microwave
Van Vleet Radio/Microwave
Sharps Ridge Microwave
Pump Station (Watts Bar Res)
Woodall Mountain Microwave
Lamar Microwave
Graham Microwave
Morristown District 69 kV Switch House
Morristown Microwave
Hollis Chapel Microwave
Bowling Green Microwave
Stephensville Microwave
Johnsonville Microwave
Spring Hill Microwave
New Johnsonville Microwave
Singleton Compressor/Phone Bldg
CUF Coal Sample Bldg
Duck River Ltg/Heat
Bolivar
Clinton 161 kV Switch House
Monsanto Chemical 161 kV Switch House
Solutia Switch House
Hiwassee Microwave
Morristown 161 kV Switch House
Vanleer Microwave
Cottonport Radio
Grand River Radio/Microwave
Rogersville Microwave
Germantown Microwave
KIF Transfer Station D
Model TN Microwave9097S-Utilities
Oak Ridge Microwave
Thorton Town Microwave
Oswald Dome Microwave
Nance 161 kV Switch House
Olive Branch 161 kV Switch House
Stevenson 161 kV Switch House
Casky 161 kV Switch House
Davidson 500 kV Pump House
Roosevelt Mt Microwave
Jackson 500 kV Switch House
Moulton 161 kV Switch House
Monte Sano Microwave
Montlake Microwave
Eaves Bluff Microwave/Radio
Sturgis 161 kV Switch House
TFH Aeration and Compressor Building
Henegar 161 kV Switch House
Martin Pump House
Pump House
Weakley 500 kV Pump House
Roane 500 kV Pump House
Cordova 500 kV Pump House
Madison 500 kV Pump House
Sullivan 500 kV Pump House
Wilson 500 kV Pump House
Shelby 500 kV Pump House
Montgomery 500-kV-Pump House
Trinity 500 kV Pump House
KIF Transfer Station C
WTH Oil Purification Building
Louisville 161 kV Switch House
BRH Small Turbine Generator
N Maintenance Building
NTH Compressor and Blower Building
Manchester 161 kV Switch House
Bolivar 161 kV Switch House
Marshall Pump House
Louisville 161 kV Switch House
State Line Microwave

Coffeeville 161 kV Switch House
Boiler Building
Raccoon Mtn Microwave
WBF Plant 161 kV Switch House
Copper Basin 161 kV Switch House
BRH Spillway Equipment Building
WEH Oil Purification Building
East Bowling Green 161 kV Switch House
WBN Diesel Generator Building Dg-2
GAF Transfer Station C
FTL Modular Unit
Glasgow Modular Unit
Nickajack Modular Unit
WBH Modular Unit
O3H Valve House
Whiteside Pump House
Meredith Microwave
Dekalb 161 kV Switch House
Leake 161 kV Switch House
Booneville 161 kV Switch House
Lewisburg 46 kV Switch House
Shelbyville 46 kV Switch House
Raccoon Mtn Pump House
Newport 161 kV Switch House
Centerville Fallout Shelter
Centerville 161 kV Switch House
Aquatic Biology Lab-Hatchery
North Huntsville 161 kV Switch House
Selmer 161kV Switch House
Carthage 161 kV Switch House
Arab 161 kV Switch House
Oakland 161 kV Switch House
Tusculum 161 kV Switch House
Springfield 161 kV Switch House
Holly Springs 161 kV Switch House
Pigeon Forge 161 kV Switch House
Elizabethton 161 kV Switch House
Edgoten 161 kV Switch House
Nixon Road 161 kV Switch House
GFH Rock House
Loudon 161 kV Switch House
Murphy 161 kV Switch House
Hartsville N.P. 161kV Switch House
Chl/Dc/Msc Coal Laboratory
BRF Sewage Treatment Plant
GAF Hopper Bldg
JOF Draft System Electrical Bldg.
Albertville District 46 kV Switch House
Highway 412 Switch House
Calhoun City 161 kV Switch House
Portland 161 kV Switch House
Pin Hook 161 kV Switch House
FTL Plant 161 kV Switch House
Tri State 161KV Switch House
McGregor Chapel 161 kV Switch House
Smyrna 161 kV Switch House
Corinth 161 kV Switch House
Cadiz 161 kV Switch House
Huntsville 161 kV Switch House
Double Bridges 161 kV Switch House
NASA 161 kV Switch House
Columbus District 46 kV Switch House
SQN Node Bldg
Miller 161 kV Switch House
Dickson 161 kV Switch House
Oxford 161 kV Switch House
Knoxville 161 kV Switch House
N Engineering Lab Bldg H
East Shelbyville 161 kV Switch House
Goose Pond 161 kV Switch House
Columbia District 46 kV Switch House
Ardmore 161 kV Switch House
North Pigeon Forge 161 kV Switch House
Valley Creek 115 kV Switch House
Farley 161 kV Switch House
Murfreesboro 161 kV Switch House
GAF Oil Pumping Station
TFH Intake Structure
Burnsville 161 kV Switch House
Concord 161 kV Switch House
Concord 161 kV Switch House
East McMinnville 161 kV Switch House
McMinnville 161 kV Switch House
BRF Aux Hopper
GAF 161 kV Switch House
COF Transfer Station E
Lowland 69 kV Switch House
Alpha 69 kV Switch House
West Ringgold 230kV Switch House
Columbia Primary 161 kV Switch House
KIF Truck Sample Prep Bldg.
Union City 161 kV Switch House
Mt. Pleasant 161 kV Switch House
BRF Breaker Bldg
National Carbide 161 kV Switch House
BRF Electrical Switchgear Bldg
Freeport Abandoned Switch House
WCF Sample Prep Bldg
Backwater Protection
Asbury Microwave
APH Valve House
PDW Pumping Station
BFN Telephone Node Bldg. (W-19)
JSF Transfer Station B
Cullman 161 kV Switch House
Athens 161 kV Switch House
APH Dam
Fort Payne 161 kV Switch House
West Cookeville 161 kV Switch House
Reynolds 161 kV Switch House
Spring City 161 kV Switch House
Starkville (Old) 161 kV Switch House
Finley 161 kV Switch House
Brownsville District 161 kV Switch House
Humboldt 161 kV Switch House
Batesville 161 kV Switch House
CUF PPTR Control Bldg 1A
GAF Coal Sample Collection Bldg

BRF Hydrogen Trailer Port
KIF Fly Ash Reclaim
Columbia 161 kV Shelter
GAF Conveyor Control Bldg
Murfreesboro Maintenance Building
CUF Accessory Bldg.
Franklin 500 kV Switch House
Martin 161 kV Switch House
Monsanto 161 kV Switch House
JSF Reclaim Hoppers
COF Transfer Stations C & D
Jetport 161 kV Switch House
Counce 161 kV Switch House
Bluff City 161 kV Switch House
Engineering Labs Building A
North Bristol 161 kV Switch House
WPM Philadelphia
Philadelphia 161 kV Switch House
BFN Toxicity Testing Lab
KIF Chlorination Bldg
Hartsville HTSE Warehouse
Mayfield 161 kV Switch House
Lebanon 161 kV Switch House
Fleet Harbor Pumping Station
Dyersburg 161 kV Switch House
Lawrenceburg 161 kV Switch House
Smithville 161 kV Switch House
GAF Transfer Station D
BRF Pptr Control Bldg
Tupelo 161 kV Switch House
JSF Chlorination Bldg
Calvert 161 kV Switch House
Decatur 161 kV Switch House
Norris Modular Unit
Melton Hill Modular Unit
KIF Transfer Station B
SHF Demineralizer Bldg 1
Shoals 161 kV Switch House
Aquatic Biology Lab-Tractor Shed
ALF Switchgear Bldg.
SHH Intake and Access Tunnel
SHF Railroad Hopper Bldg
Pulaski Radio Tower
Pulaski Microwave
Wilson 500 kV Maintenance Bldg - M1
JSF Breaker Structure
North Knoxville 161 kV Switch House
DGH Modular
COF New Water Treatment Bldg.
CUF Water Supply Pumping Station
Moccasin 161 kV Switch House
GAF Transfer Station B
Aquatic Biology Lab.-Shed
JSF Conveyor Switchgear Bldg
BFN Biothermal Research
Aquatic Biology Lab-Wet Lab
Okolona 161 kV Switch House
Experimental Greenhouse
RPS Ventilation Fan Building
Mount Pleasant 161 kV Switch House
Scottsboro 161 kV Switch House
Wartrace 161 kV Switch House
Charleston 161 kV Switch House
Catalyzer # 2 - Nitro Fertilization Lab
SQN Intake Pump.Stat.
Clarksville 161 kV Switch House
East Cleveland 161 kV Switch House
Paducah 161 kV Switch House
Columbus 161 kV Switch House
CUF Reclaim Hopper
North Nashville 161 kV Switch House
Chesterfield 161 kV Switch House
New Albany 161 kV Switch House
Rockwood 161 kV Switch House
COF Transfer Station F
White Pine 161 kV Switch House
Lafayette 161 kV Switch House
CUF Transfer Station F
Franklin 161 kV Switch House
Covington 161 kV Switch House
Hickory Valley 161kV Switch House
JSF Hopper Bldg
Midway 161 kV Switch House
Davidson 500 kV Switch House
Milan 161 kV Switch House
Fayetteville 161 kV Switch House
Belfast 161 kV Switch House
Sullivan 500 kV Switch House
BRF Live Pile Hopper
WBF Control Bldg
WBF Hopper Bldg
Oglethorpe 161 kV Switch House
Bowling Green 161 kV Switch House
Chemical Feed House
BRF Transfer Sta C
O3H Dam/Gallery
Albertville 161 kV Switch House
Hopkinsville 161 kV Switch House
MSW Plant
Huntsville 161 kV Switch House
Summer Shade 161 kV Switch House
Crossville 161 kV Switch House
Winchester 161 kV Switch House
Shelby 500 kV Switch House
CUF Transfer Station A
TLH Dam
Athens 161 kV Switch House
BRH Powerhouse
West Nashville 161 Kv Switch House
COF Water Supply Pumping Station
West Point 500 kV Switch House
Alcoa 161 kV Switch House
CTH Powerhouse/Dam
Baxter 161 kV Switch House Land
Murffessboro Ind Park 161 kV Switch House
JSF Fly Ash Silo
Northeast Substation
Sullivan Static Condensor

PAF Scrubber Maintenance Bldg
Weakley 500 kV Switch House
BRF Transfer Sta B
Truck Coal Sample Station
COF Conveyor Control Bldg
SHF Surge Hopper Bldg 1
BFN Radwaste Evaporator Bldg
BRF Transfer Sta A
Well Houses
COF Transfer Stations A & B
Roane 500 kV Switch House
Union 500 kV Switch House
Engineering Labs Building D
CUF Surge Hopper Bldg
ALF Transfer Tower
ALF Water Intake Structure
JOF Draft Sys. Electrical Building
SHF Demineralization Bldg 2
SHF Fly Ash Blower Bldg
JOF Hopper Bldg
WCF Hopper Bldg
Wilson 500 kV Switch House
Northeast Johnson City 161 kV Switch House
PAF Coal Wash Laboratory
Aquatic Biology Lab (Main)
Great Lakes SW Station
Maury 500 kV Switch House
Lowndes 500 kV Switch House
NTH Powerhouse
COF Barge Unloader Building 1
ALF Combustion Turbine Maint Facility
GAF Combustion Turbine Maintenance Bldg
WBF Fuel Handling
Madison 500 kV Switch House
RPS Service Equipment Building
RPS Power Storage Building
Jackson 500 kV Switch House
BRF Live Storage Silo
Limestone 500 kV Switch House
KIF Hopper Bldg No. 2
Freeport 500 kV Switch House
Trinity 500 kV Switch House
WCF Breaker Bldg.
SHF Hopper Bldg
CUF Transfer Station C
Lonsdale 161 kV Switch House
COF Old Water Treatment Plant
Phipps Bend 500 kV Switch House
Powerhouse
Radnor 161 kV Switch House
South Jackson 161 kV Switch House
JSF Demineralizer Bldg
JSF Water Treatment Plant
WCF Forced Oxidation Blower Bldg.
Boiler House
KIF Sample & Hopper Bldg No. 1
WBN Intake Pumping Station-Intake
PAF Barge Unloader
PAF Conditioner Bldg
Marshall 500 kV Switch House
GAF Water Treatment Plant
Catalyzer # 1 - Mineral Lab
Catalyzer # 4 - Radio/High Pressure Lab
Catalyzer # 5 - Plant
Catalyzer # 6 - Nitro Fertilization Office
Catalyzer # 3 - Plant
PAF Breaker Building N
CUF Breaker Structure
COF 161 kV Switch House
COF Dry Fly Ash Eqpt Bldg
BRF Pumping Station
National Center For Emmissions Research
GFH Powerhouse
WTH Control Building
CUF Transfer Station B
WIH Powerhouse/Dam
Raccoon Mtn Ps Plant 500 kV (161 kV)
CUF Transfer Station D&E
SHH Powerhouse
SQN Diesel Gen. Bldg.
South Jackson
WCF Crusher Bldg
O2H Powerhouse/Dam
TFH Powerhouse/Dam
SHF Ash Handling System
Hartsville Admin # 1
JOF Crusher Bldg
CUF Live Storage Silos
KIF Water Supply Pumping Station
WBN Diesel Generator Building Dg-1
ALF Crusher Tower
WCF Switchyard Control Bldg
South Nashville 161 kV Switch House/Nash ADCC
Nashville ADCC/Switch
PAF Transfer Station A
O3H Powerhouse/Control Bay
KIF Water Treatment Plant
WBN Makeup Water Treatment Plant Mwp
Niles Ferry 69 kV Switch House
JSF Control Bldg
HIH Dam
KIF Switchyard Control Bldg
GAF Utility Bldg
Vonore 69 kV Switch House
KIF Crusher Bldg
PAF Limestone Preparation Bldg
BFN Unit 1 & 2 Dsl.Gen. Bldg
PAF Scrubber Control Bldg
BFN Unit 3 Diesel Generator Bldg
Cable Tunnels
BRF Control Wing
Engineering Lab Annex
WTH Powerhouse
Western Area Radiological Lab
BFN Low Lvl Rdwst Bldg. (E-32)
WBN Reactor Building Reac
WBH Control Bldg
JSF 161kV Switch House Structure

N Engineering Lab Bldg N
N Engineering Lab Bldg B
FPH Powerhouse/Dam
CUF Utility Bldg
WCF Water Supply
O1H Powerhouse/Dam
BFN Unit 3 Restart
HIH Powerhouse/Control Building
SHF Limestone Conditioner Bldg
JOF Water Supply Bldg
APH Powerhouse
RPS Surge Chamber and Tunnel
WCF Scrubber Unit 8
Prototype Operations Building, Plant
Substation # 1 Plant
WCF Scrubber Unit 7
BFN Control Building
BOH Powerhouse/Dam
SQN Control Bldg.
Chemical Engineering Building Lab
SHF AFBC Boiler Bay (Pilot Plant)
Prototype Opers Bldg (Pilot Plant)
BLN Control Bldg
MHH Powerhouse/Dam
WCF Service Bldg B
WCF Fuel Handling System
SQN Reactor Bldg.
SHF Fuel Handling
KIF Fuel Handling
Chl/Dc/Msc Laboratory Bldg/Power Stores
L&N Building East, Plant
WCF Service Bldg. A
NJH Powerhouse/Dam
KYH Powerhouse/Dam
WBH Powerhouse/Dam
BLN Reactor Bldg
NOH Powerhouse/Dam
GUH Powerhouse/Dam
CRH Powerhouse/Dam
DGH Powerhouse/Dam
FLH Powerhouse/Dam
GAF Fuel Handling
CHH Powerhouse/Dam
WBN Turbine Building Tb
FNH Powerhouse/Dam
SHF AFBC Boiler Bldg
WBF Boiler Bay
Monteagle Place
WBF Service Bay
PKH Powerhouse/Dam
WEH Powerhouse/Dam
BLN Auxiliary Bldg
SQN Aux.Bldg
WBN Auxillary Building Aux
SHF Bag House
RPS Powerplant Chamber and Tunnels
PAF Coal Wash Plant
SQN Turbine Bldg.
BLN Turbine Bldg
BFN Reactor Building
ALF Powerhouse
BFN Turbine Building
CUF Absorber Building
WCF Powerhouse Plant A
GAF Powerhouse
BRF Powerhouse
JSF Powerhouse
WCF Powerhouse Plant B
SHF Powerhouse
COF Powerhouse
JOF Powerhouse
KIF Powerhouse
CUF Powerhouse
PAF Powerhouse
WBF Powerhouse

APPENDIX F
FEDERAL INTERAGENCY ENERGY POLICY COMMITTEE
(656 COMMITTEE)
FY 2002

Committee Chair
Mr. David K. Garman
Assistant Secretary
Energy Efficiency and Renewable Energy
U.S. Department of Energy, EE-1
Forrestal Building, Room 6C-016
1000 Independence Avenue, SW
Washington, DC 20585
Phone: 202-586-9220
Fax: 202-586-9260

Agriculture
Mr. Lou Gallegos
Assistant Secretary for Administration
U.S. Department of Agriculture
Administration Building, Room 240W
1400 Independence Avenue, SW
Washington, DC 20250-0103
Phone: 202-720-3291
Fax: 202-720-2191

Commerce
Mr. Otto J. Wolff
Chief Financial Officer and
Assistant Secretary for Administration
1401 Constitution Avenue, NW
Washington, DC 20230
Phone: 202-482-4951
Fax: 202-482-3592

Defense
Mr. Raymond Dubois, Jr.
Principal Deputy Under Secretary of Defense
(Acquisition, Technology & Logistics)
3015 Defense Pentagon, Room 3E1006
Washington, DC 20301-3015
Phone: 703-697-2880
Fax: 703-695-1493

Education
Mr. Willie H. Gilmore
Director of Office for Management
U.S. Department of Education
400 Maryland Avenue, SW, Room 3E-1069
Washington, DC 20202-4500
Phone: 202-401-0470
Fax: 202-401-0485

Environmental Protection Agency
Mr. David O'Connor
Acting Assistant Administrator
for Administration and Resources Management
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
MC310A
Washington, DC 20460
Phone: 202-564-4600
Fax: 202-564-0233

General Services Administration
Mr. F. Joseph Moravec
Commissioner of Public Buildings Service
General Services Administration
Room 6344
18th and F Streets, NW
Washington, DC 20405
Phone: 202-501-1100
Fax: 202-219-2310

Health and Human Services
Mr. Dennis Williams
Assistant Secretary for Management and Budget
U.S. Department of Health and Human Services
Hubert H. Humphrey Building,
Room 514-G
200 Independence Avenue, SW
Washington, DC 20201
Phone: 202-690-6396
Fax: 202-690-5405

Housing and Urban Development
Ms. Carole A. Jefferson
Deputy Assistant Secretary for Administration
U.S. Department of Housing and Urban Development
451 7th Street, SW
Washington, DC 20410
Phone: 202-708-3123
Fax: 202-708-0614

Interior
Ms. P. Lynn Scarlet
Assistant Secretary for Policy,
Management and Budget
U.S. Department of the Interior
Room 5512
1849 C Street, NW
Washington, DC 20240
Phone: 202-208-4203
Fax: 202-208-1220

Justice
Ms. Janis A. Sposato
Acting Assistant Attorney General
for Administration
U.S. Department of Justice
Main Justice Building
950 Pennsylvania Avenue, NW, Room 1740
Washington, DC 20530-0001
Phone: 202-514-3101
Fax: 202-616-6695

Labor
Mr. Patrick Pizzella
Assistant Secretary for Administration
and Management
U.S. Department of Labor
200 Constitution Avenue, NW
Room S-2203
Washington, DC 20210
Phone: 202-693-4040
Fax: 202-693-4055

National Aeronautics and
Space Administration
Mr. Jeffrey E. Sutton
Assistant Administrator for Institutional and Corporate
Management
National Aeronautics and Space Administration
Code J, Room 6W17
300 E Street, SW
Washington, DC 20546-0001
Phone: 202-358-2800
Fax: 202-358-3068

Postal Service
Mr. Tom Day
Vice President, Engineering
U.S. Postal Service
8403 Lee Highway
Merrifield, VA 22082-8101
Phone: 703-280-7001
Fax: 703-280-8401

State
Mr. William A. Eaton
Assistant Secretary for Administration
U.S. Department of State
Harry S Truman Building
2201 C Street, NW, Room 6330
Washington, DC 20520
Phone: 202-647-1492
Fax: 202-647-1558

Tennessee Valley Authority
Ms. LeAnne Stribley
Executive Vice President of Administration
Tennessee Valley Authority
400 W. Summit Hill Drive
Knoxville, TN 37902
Phone: 865-632-4352
Fax: 865-632-8160

Transportation
Ms. Melissa Allen
Assistant Secretary for Administration
U.S. Department of Transportation
Room 10314
400 7th Street, SW
Washington, DC 20590
Phone: 202-366-2332
Fax: 202-366-9634

Treasury
Mr. Edward R. Kingman, Jr.
Assistant Secretary
for Management and Chief Financial Officer
U.S. Department of the Treasury
Main Treasury Building, Room 2426
1500 Pennsylvania Avenue, NW
Washington, DC 20220
Phone: 202-622-0410
Fax: 202-622-2795

Veterans Affairs
Dr. Jacob Lozada
Assistant Secretary for Human Resources
and Administration
U.S. Department of Veterans Affairs
Room 806
810 Vermont Avenue, NW
Washington, DC 20420
Phone: 202-273-5803
Fax: 202-273-7090

Office of Management and Budget
Mr. Mark Weatherly
Deputy Associate Director
Energy and Science Division
Office of Management and Budget
New Executive Office Building
Room 8002
725 17th Street, NW
Washington, DC 20503
Phone: 202-395-3404
Fax: 202-395-3049

APPENDIX G
PERSONNEL OF THE DEPARTMENT OF ENERGY'S
FEDERAL ENERGY MANAGEMENT PROGRAM

FY 2002 Personnel

David K. Garman
Assistant Secretary, Energy Efficiency and Renewable Energy
and Chair, Federal Interagency
Energy Policy Committee

Federal Energy Management Program Staff:

Beth Shearer, Director
Executive Secretary, Federal Interagency Energy Policy Committee,
Executive Director, Interagency Energy Management Task Force

Joan Glickman, Special Assistant

Schuyler Schell, Team Lead, Agency Services

Brian Connor, Team Lead, Internal Departmental Services

Ted Collins
Anne Crawley
Lincoln Capstick
Doug Culbreth
Danette Delmastro
Beverly Dyer
Alan Gann
Nellie Greer
Brad Gustafson
Annie Haskins
Shawn Herrera
Lisa Hollingsworth
Steve Huff
Arun Jhaveri
Randy Jones
Paul King
Bill Klebous
Rick Klimkos
Melinda Latimer
Will Lintner
Claudia Marchione
David McAndrew
Ladeane Moreland
Vic Petrolati
Will Prue
Ab Ream
Cheri Sayer
Tatiana Strajnic
Alison Thomas
Joyce Ziesler